

The Targeting System of Language



Leonard Talmy

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**The MIT Press
Cambridge, Massachusetts
London, England**

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This book was set in Stone Serif by Westchester Publishing Services. Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Names: Talmy, Leonard, author.

Title: The targeting system of language / Leonard Talmy.

Description: Cambridge, MA : The MIT Press, [2017] | Includes bibliographical references and index.

Identifiers: LCCN 2017014398 | ISBN 9780262036979 (hardcover : alk. paper)

Subjects: LCSH: Cognitive grammar. | Subjectivity. | Systemic grammar. | Linguistic analysis (Linguistics)

Classification: LCC P165 .T25 2017 | DDC 415.01/835—dc23 LC record available at <https://lcn.loc.gov/2017014398>

10 9 8 7 6 5 4 3 2 1

For my friend and partner,
Eileen Eastman.
Thanks for your kindness and insight.

Acknowledgments

For their helpful comments or discussions on aspects of this book, my great thanks to Melissa Bowerman, Per Aage Brandt, Ellen Dodge, Nick Evans, Julius Hassemer, David Kamholz, Günther Lampert, Martina Lampert, Thomas Li, Teenie Matlock, Kevin Moore, Yo Matsumoto, Cornelia Mueller, Stephen Palmer, and Kurt Stocker. My great thanks as well to Howard Schwartz and Tom Hunt for solving all my book-writing computer problems, and to Teresa McFarland and Stacy Krainz for research assistance. And my special thanks to Stacy Krainz for helping me prepare this book for publication.

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1 Overview

This study proposes that a single linguistic/cognitive system underlies two domains of linguistic reference, those traditionally termed anaphora and deixis. Broadly, an anaphoric referent is an element of the current discourse, whereas a deictic referent is outside the discourse in the spatiotemporal surroundings. This is a distinction made between the lexical and the physical, one that has traditionally led to distinct theoretical treatments of the corresponding referents. But our proposal, on the contrary, is that language engages the same cognitive system to single out a referent whether it is speech-internal or speech-external. This single system, here named “targeting,” can be outlined as follows.

1.1 Summary of Targeting

As a speaker communicates with a hearer, her attention can come to be on something in the environment that she wants to refer to at a certain point in her discourse. This object of her attention will be called her **target**. Such a target can be located near or far in either the **speech-internal** or the **speech-external** environment—that is, in traditional terms, it can be either anaphoric or deictic. To communicate about such a target, she needs the hearer to know what it is and to have his attention on it jointly with her own at the relevant point in her discourse. The problem, though, is how to bring this about. She cannot somehow directly reach into the hearer’s cognition, take hold of his attention, and place it on her selected target at the intended moment.

A particular language-mediated process solves this problem. In this process, the speaker places a specialized lexical form at the relevant point in her discourse, and, on hearing this, the hearer undertakes a specialized procedure. Her form is here called a **trigger** because it initiates, or “triggers,” his procedure. Every language has a particular set of mostly closed-class triggers. The English set includes *this/these, that/those, here, there, yonder, now, then, therefore, thus, so, such, yay, the*, personal pronouns, relative pronouns, and tense markers. Such triggers are not simply static “placeholders,” as

some linguistic approaches view them, but in effect they actively direct the hearer to undertake his procedure.

For its part, in turn, the hearer's procedure has three stages. In the first stage, the trigger directs the hearer to find certain elements of information to which he does have ready access. These elements of information function as **cues** to the speaker's intended target. Such cues have so far been found to belong to ten distinct categories, representing ten different sources of information. This first stage can thus be called the **trigger-to-cues stage**.

In the second stage, equipped with the cues he has ascertained, the hearer uses them in combination to determine the speaker's intended target. The cues together thus guide him toward the target, which he could not have known directly. Generally, each cue rules in some candidates for target status while ruling out others. In association, the cues thus enable the hearer to narrow down to the target, singling it out from alternative candidates. This second stage of the procedure can accordingly be called the **cues-to-target stage**.

In the third stage, having determined the target, the hearer maps his concept of it back onto the trigger in the speaker's sentence. He relates this concept to the full conceptual content of the sentence in accord with the trigger's syntactic relation to the sentence. He thus has his attention on the target jointly with that of the speaker at the point of the discourse, and with the relationship to it, that she had intended. This stage can then be called the **target-back-to-trigger stage**.

This whole interaction rests on a coordination of the speaker's and hearer's cognitive processing. As part of her cognitive processing, the speaker aims to get the hearer's attention jointly with her own on her target at a particular point in her discourse, selects the appropriate trigger to insert at that point, and ensures that cues in sufficient quantity and informativeness are available for the hearer to use to determine that target. In turn, as part of his cognitive processing, the hearer perceives the trigger and, in consequence, carries out the three-stage procedure in which he finds the cues, determines the target, and integrates the concept of it back into the discourse, there to join his attention on it with that of the speaker.

This entire sequence—including the selection of a trigger, the three stages with their use of cues, and the cognitive processing of both speaker and hearer throughout—will be called **targeting**. Such targeting is understood as a linguistic/cognitive system that equally underlies both anaphora and deixis, and in which they are unified as an essentially single phenomenon. This targeting system is, then, the central topic of the present study.

This study is set in the framework of cognitive semantics as put forth in Talmy (2000a, 2000b, 2011). What most distinguishes it from other studies in the same general area are the ideas just presented, which can be summarized as follows. Deixis and anaphora both rest on a trigger-initiated three-stage procedure—engaged in by

a speaker and hearer—in which the hearer finds cues, uses them to determine the speaker's intended target, and maps the concept of that target back onto the trigger and into its sentence. The cues to the target fall into ten categories representing ten different sources of information. This “targeting” process is a single linguistic and cognitive system in which deixis and anaphora are unified. And the cognitive processing of both speaker and hearer in this targeting system can in many respects be inferred and built into the analysis.

This book has fourteen chapters. The present first chapter sets the stage for our study of targeting. In successive sections, it surveys (1.2) and illustrates (1.3) the ten cue categories; outlines the properties of triggers (1.4), cues (1.5), and targets (1.6); characterizes the conceptualization of space and time that targeting rests on (1.7); compares the analysis here with others (1.8); and addresses our use of new terms (1.9). The remaining chapters are grouped into six parts. Parts I through V present the ten cue categories analyzed individually. They divide the ten categories into five groups of two categories each. Part VI in turn concerns sequences in targeting. In it, chapter 13 treats the interaction sequences that triggers are lexicalized to occur in, as well as the steps by which such an interaction leads to joint attention. And chapter 14 treats cue conflict, where the hearer, in sequence, first assesses and then resolves the conflict. Finally, the new terms in our analysis—which appear in boldface where first treated in the text—are defined in a glossary.

1.2 Survey of the Ten Cue Categories

As mentioned, cues to a target can be analyzed as belonging to ten distinct categories that represent ten different sources of information. These ten categories are outlined here, and, in order, are the subjects of the next eleven chapters—eleven because our treatment of the first cue category extends over the first two chapters that follow. These categories can in turn be placed into five groups of two categories each. These groups are also reflected in this survey and are the subjects of parts I through V in the book. For simplicity in the survey, the categories are illustrated only with speech-external targets, but the chapters that follow treat both speech-external and speech-internal targets.

Each example in this survey includes one or more cues additional to the cue being illustrated. In fact, two or more cues are always needed in any given case for a hearer to determine a speaker's intended target. Such cues are usually in different categories but sometimes are in the same category.

Any two such cues will have one of three **concordance relations** to each other. In two of these relations, the cues are compatible. The cues then either **corroborate** each other, providing the same information about the target, or **complement** each other, providing different information about the target. In the present survey, the cues included in each example have one of these two compatible relations. In the third

relation, two cues **conflict** with each other, providing incompatible information about the target. But such conflict typically initiates a constructive resolution in the hearer that again helps guide him to the target. The whole of chapter 14 is dedicated to this conflict relation, while section 1.3.3 illustrates it.

1.2.1 The Lexical Cue Categories

In one group of two categories—the **lexical cue categories**—the cues to the target are provided by lexical forms in the speaker's utterance. In one category, the cues are provided by the trigger and, in the other, by forms around the trigger.

Core cues The trigger that a speaker includes in an utterance not only initiates the three-stage targeting procedure in the hearer, but in addition is always lexicalized to provide cues to certain characteristics of the target. These are here called **core cues**. For example, a speaker might say either (1a) or (1b) on opening the door to his lab to let a visitor look inside, where a woman and several machines are located.

- (1) a. She's new here. b. These are new here.

If he says (1a), the trigger *she* provides the core cues that the target has the characteristics of being uniplex, an entity, animate, female, and third-person (i.e., not the speaker or hearer). In surveying the lab, the hearer perceives that one part of its contents, the woman there, exhibits these five characteristics. These perceivable characteristics then function as targetive cues (see section 1.2.3). The hearer combines these two types of cues, the core cues and the targetive cues—which corroborate each other—and settles on the woman as the speaker's probable intended target.

If the speaker instead says (1b), the trigger *these* indicates that the target has the characteristics of being multiplex, entities, proximal, and third-person. In surveying the lab, the hearer will now likely select the machines as the speaker's intended target.

In the third stage of the targeting process for either sentence, the hearer, having determined the target, maps the concept of it back onto the trigger. In accord with the trigger's syntactic relation to the sentence, the hearer then integrates that concept into the overall conception expressed by the sentence. In the present cases, where the trigger is a subject nominal in construction with the predicate adjective *new*, the hearer ascribes the concept of "newness" to the concept of the target—that is, the woman or the machines. This third stage will not be described in the remaining examples.

Co-form cues The linguistic constituents located around a trigger are here called its **co-forms**. A **co-form cue**, then, consists of any information provided by a co-form that helps the hearer determine the target of that trigger. The further a constituent is from a given trigger, the less likely it is to provide a co-form cue relevant to that trigger and the less it would be regarded as a co-form of it.

To illustrate, suppose that a customer in a pet shop that has only one parrot among its animals goes up to the clerk behind the counter and, without gesturing or looking, says (2).

(2) That's the kind of parrot I like.

The trigger in the speaker's utterance, *that*, directs the hearer, that is, the clerk, to look for cues and use them to find a target. It also provides the core cues that that target has the properties of being uniplex, an entity, distal, and third-person. However, the hearer cannot narrow down to the target with these core cues alone, because too many components in the scene have these properties. But in the same utterance, the co-form *parrot* provides the co-form cues that the target has the properties of being a single entity with the identity of a parrot. These core and co-form cues corroborate each other in one respect—in indicating that the target is a unitary entity. But they also complement each other, with the core cue indicating that the target's location is distal, and the co-form cue indicating that its identity is that of a parrot. As hearer, the clerk will combine these cues to single out the one parrot in the shop as the speaker's intended target.

1.2.2 The Bodily Cue Categories

In another group of two categories—the **bodily cue categories**—the cues are provided by the body of one of the speech participants. Those of the gestural cue category consist of movements or configurations of parts of the speaker's body that she produces volitionally, while those of the corporal cue category consist simply of the location of the speaker's or hearer's whole body.

Gestural cues A speaker can volitionally produce a gesture in association with a trigger in her utterance to help direct the hearer to her intended target. Such a gesture is here called a **targeting gesture** to distinguish it from other types of gestures. And the guidance to the target that it provides is called a **gestural cue**.

To illustrate, suppose that a speaker says (3) to a guest standing beside her, while pointing toward one corner of a table across the room from them. That corner is clear in front, but a bottle of wine is standing about a foot back from its edge. (We note that in (3), as throughout this book, an exclamation point placed before a word indicates heightened stress on that word.)

(3) You can put your glass down right !-there.

The trigger *there* in the speaker's utterance not only alerts the hearer to find a particular target, but it also provides the core cues that this target is distal and is a location, not an entity. However, this cue by itself is not enough, given the multitude of distal locations in the situation. But the speaker's gesture also provides a gestural cue to the target. By our analysis (see chapter 5), this gesture leads the hearer to imagine an

intangible line extending from the speaker's finger to the table's corner, where the target should be.

In combination, these core and gestural cues corroborate each other in indicating that the target is distal. But they also complement each other in indicating respectively that the target is a location and that this location is situated where the imaginal line terminates at the table's corner. Integrating these cues, the hearer will select the surface of the table at the corner as the intended target—singling it out from other regions of space in the room. He will not select the bottle as the target—though it is equally included by the pointing gesture—because it is an entity, not a location.

The hearer is additionally guided toward this intended target by co-form cues from the phrase *put your glass down* and by the epistemic cues that they evoke (see section 1.2.4), namely, the knowledge that a glass is normally placed by resting it on a clear horizontal surface. This knowledge corroboratively rules in the table's surface and rules out the bottle as the target.

Suppose now that the speaker instead says (4).

(4) Could you please bring !-that over to me?

Here, the trigger *that* provides the core cues that the target is uniplex, distal, third-person, and is an entity, not a location. The gestural cue is the same as in section 1.2.4. Combining these core and gestural cues, the hearer will now select the bottle of wine in the corner portion of the table as the intended target, singling it out from other entities in the room. He will not select the portion of the table's surface included by the gesture because it is a location, not an entity. The hearer is now additionally guided by co-form cues from the expression *bring over* and the epistemic cues they evoke: the knowledge that a person can bring only something he can readily hold. This knowledge here rules in the bottle and rules out the table's surface.

Laterally ambiguous gestures. In a comparable example, a gestural cue and a core cue again combine to provide complementary information about the target, thus enabling the hearer to single it out. But here, ambiguity and its resolution are brought into the analysis. Suppose that a speaker in conversation with a companion wants to target a woman standing together with a man across a crowded room. The speaker points toward the couple while saying (5a).

(5) a. She's the director of our lab. b. That's the director of our lab.

The gesture rules in the couple while ruling out the other people in the room, but the speaker is far enough away that it cannot indicate which member of the couple is intended. We will say that this gesture has **lateral ambiguity**. But the trigger *she* provides the core cues that the target is uniplex, an entity, animate, female, and third-person. This cue then provides the additional information needed for the hearer to

narrow down to the woman of the couple as the intended target. We will say that the core cue here enables the **lateral disambiguation** of the gestural cue. Note that if the speaker had said (5b), the trigger *that*—indicating only that the target is uniplex, an entity, distal, and third-person—would not provide enough information for such lateral disambiguation.

We note that a process of disambiguation can also be regarded as proceeding in the reverse order. Thus, the trigger *she* in (5a) rules in all the third-person women in the room as candidates for target status while ruling out all the men, but it does not narrow this selection down to the woman in the couple. The gestural cue then provides the additional information needed to zero in on that particular woman.

Corporal cues The sheer presence of the speaker’s—or, in certain cases, the hearer’s—body at a particular location in space at the time of the speaker’s utterance can serve as a **corporal cue** to the speaker’s intended target. If the hearer is not already aware of this location, he must determine it perceptually or establish a mental image of it (as in a phone conversation) in order to make use of it as a cue. A corporal cue does not need to be accompanied by a gestural cue.

To illustrate, a woman in a booth at a fairground could reply as in (6) when asked by someone standing in front of her about the whereabouts of a certain man, Fred.

(6) Fred was here earlier.

In her utterance, the trigger *here* has its “corporal reading” (some languages have a distinct morpheme for this sense). Specifically, in addition to directing the hearer to find a target, it provides the core cue that that target is the spatial region surrounding the speaker’s current location. The hearer combines this core cue with the corporal cue consisting of the speaker’s actual location, which he perceives directly (or would imagine if on the phone with her). This cue combination allows him to select the region immediately around the woman out of all possible regions as the target. The speaker did not need to gesture—for example, by pointing to the ground in front of herself—but relied on the hearer’s determining her bodily location. The utterance goes on to indicate that the man asked about was previously situated in the region now being characterized.

1.2.3 The Collateral Cue Categories

An event of targeting includes three particular entities with distinct roles relevant to the present discussion. By launching a targeting event, the entity with the role of “speaker” in effect engenders the other two roles. One of these is the role of “hearer” for the entity that the speaker addresses to initiate a targeting procedure in. The other is the role of “target” for the entity in the speaker’s attention that she wants the hearer to determine through this procedure. In short, these are the entities that the speaker talks

to and about. These two entities with engendered roles might be regarded as collateral to the speaker. Cues provided by them might then be said to belong to a group of two **collateral cue categories**. Cues provided by the target are in one category, and those by the hearer are in the other category and are treated next in turn.

Targetive cues A speaker's target generally exhibits characteristics that the hearer can discern, whether immediately or after a search. These characteristics can serve as cues for the hearer. A speech-external target in particular can produce sensory stimuli that provide the hearer with perceptual cues. These cues help guide the hearer toward the very entity producing them, which he can then single out as the target. These cues that the target itself provides will be called **targetive cues**. Two main types of such cues, the feature type and the salience type, are discussed next in order.

Targetive feature cues. Any intrinsic or contingent feature that a target exhibits, such as its own identity or its current distance away, can serve as a **targetive feature cue**. Its use was already seen in the "she's new" example in (1a). The trigger *she* in the speaker's utterance there provided the hearer with the core cues that the target had the features of being uniplex, an entity, animate, female, and third-person. And in processing the visual scene before him, the hearer perceived one element with those same features—the woman in the lab. Taking these latter features as **targetive feature cues** then allowed him to combine them with the core cues—they corroborated each other—and to settle on that entity as the intended target.

A related example rests on a co-form cue instead of core cues. As they round his house onto an open field with a tractor in the distance, a farmer says (7) to a visitor without gesturing or looking at the tractor.

(7) That's my tractor.

The co-form cue from the noun *tractor* in the speaker's utterance ascribes to the target the feature of being a tractor in its identity. The physical tractor in the field in turn provides the visual stimulus of being a tractor in its identity. This is then the **targetive feature cue**. The two cues corroborate each other and help the hearer zero in on the tractor in the field as the intended target.

Targetive salience cues. Where the features that a speaker's utterance ascribes to the target are insufficient for its determination, the hearer can instead search his perceptual environment for the most salient phenomenon within it. He entertains this phenomenon as a target candidate that exhibits **targetive salience cues**.

To illustrate, an experienced camper at a lake with a novice companion might, without gesturing, say (8) just after what seemed like a long plaintive sound could be heard.

(8) That's a loon.

The trigger *that* in the speaker's utterance directs the hearer to search for a target and provides the core cues that it is a uniplex distal third-person entity. But the noun *loon* provides few co-form cues to the hearer, who is less familiar with the word. These cues together do not ascribe enough features to the target for the hearer to determine it. He instead performs a salience search of his environment.

The sound that the hearer has just heard has several forms of salience. It is unique in its surroundings, nonprototypical for its category, and unfamiliar to the hearer. This salience of the sound constitutes a targetive salience cue. This cue then tends to rule that sound in as a target candidate and to rule out other concurrent sounds or, for that matter, nonsonic phenomena without salience. Further, the temporal nearness of the sound to the trigger's moment of occurrence provides a perichronal cue (section 1.2.5) that tends to rule the sound in as a target candidate while ruling earlier occurring sounds out. Combining these cues, the hearer is likely to settle on the long plaintive sound as the speaker's intended target.¹

Hearer-focus cues A **hearer-focus cue** is a cue metacognitively available to a hearer indicating that her own current object of attention may be the speaker's intended target. In that case, she must also be sure that both the object and her attention on it are perceived by the speaker. To illustrate, a speaker who sees his friend looking fixedly at one particular car among others on the road might say (9) to her without himself gesturing.

(9) That's a Ferrari.

The trigger *that* in his utterance directs the hearer, his friend, to ascertain any available cues and use them to determine a target he has in mind. The trigger itself provides her with the core cues that the target is a uniplex distal third-person entity. However, she does not find a gestural cue or a targetive cue from some especially salient object in the environment to help with her search. But among the additional cues she can check for is her own current focus of attention. She metacognitively notes that the object of her attentional focus is the car she is gazing at. And she is aware that the speaker can see both the car and her fixed look at it. In the absence of more compelling cues, she accepts the direction of her attention as a hearer-focus cue. She combines it with the core cues to settle on the car she is looking at as the target that the speaker aims to communicate about with his utterance.

1.2.4 The Background Cue Categories

In a still further group of two categories, the **background cue categories**, cues to the target arise from an extended field of phenomena—from the surrounding environment in one category, and from the hearer's own cognitive infrastructure in the other.

Environmental cues The **environment** is everything that extends out from the speaker in the speech-external domain and from the trigger in the speech-internal domain. An **environmental cue** then is any information provided by a component of the environment that helps the hearer determine the target. In the two domains, respectively, such information consists of physical stimuli that the hearer can perceive and of syntactic properties that the hearer can discern. Environmental cues are here chiefly divided into ones that help a hearer either locate a target or bound it and are addressed next in order. A secondary division that crosscuts the first rests on whether an environmental cue involves content or structure.

Environmental locating cues. **Environmental locating cues** come from aspects of content and structure within the total environment that guide the hearer in narrowing down to just a certain portion that the target is located in. This reduction process thus limits the search space that the hearer must check through to find the target. We here sketch two variants of such reduction. As one of the variants, the reduced portion can be a continuous region that encompasses the target. To illustrate, a speaker on a farm might, without gesturing, say either (10a) or (10b) to a visitor.

- (10) a. That Cessna in the field is Jane's. b. That Cessna in the air is Jane's.

The core cue from the trigger *that* and the co-form cue from the noun *Cessna* direct the hearer to search for a uniplex distal third-person entity with the identity of a Cessna. But the prepositional phrase in each utterance provides further co-form cues that help the hearer limit her search. Both phrases direct the hearer to attend perceptually to the surrounding environment and to abstract out certain aspects of its structure and content. For both phrases, in fact, this abstraction here includes the horizontal layer of space directly above and adjacent to the horizontal plane of the land. More specifically, the hearer knows from the phrase in (10a) that she can limit her search to the horizontal layer of space at her own eye level just above the land and can dispense with looking up or down. And she knows from the phrase in (10b) that she can limit her search to the space overhead and omit looking through the space at eye level or below.

In the second variant, the reduced portion is not continuous but consists of a set of distinct elements, one of which will be the target. To illustrate, a speaker might say (11) to a hearer as they stand in a field with a number of cows and horses, where one of the latter is grey.

- (11) That grey horse is Jane's.

The co-form cue from the noun *horse* may first lead the hearer to find all the elements of the environment with the identity of a horse. These together constitute the reduced portion. Guided by another co-form cue from the adjective *grey*, the hearer need then only look through that portion—that is, through the set of horses—to find the grey

one as the target. The hearer need not search through the entire environment for all occurrences of a grey color.

Environmental bounding cues. **Environmental bounding cues** are aspects of content and especially structure in the environment that help a hearer determine the outer boundary of what the speaker intends as his target. The hearer is generally guided to a particular set of such environmental aspects by cues of other categories.

To illustrate, as they stand atop a hill near a lagoon, a speaker might say (12) to a hearer while pointing at the middle of the lagoon.

(12) !-Mist forms there at night.

The trigger *there* in the speaker's utterance initiates the hearer's targeting procedure and provides the core cue that the target is a distal location. At the same time, the speaker's pointing gesture may lead the hearer to imagine an intangible line extending from the finger to one point at the lagoon's center. The hearer interprets this as a gestural cue to the target, but is that target to be the one point, or some larger area around it? The hearer's general knowledge provides the epistemic cue that mist does not form at a single point, but over some area. But then, what area? An environmental bounding cue provides this final information about the target. The hearer perceives that an area of roughly uniform appearance extends from the gesturally indicated point out to the lagoon's perimeter. This perimeter is a structural delineation within the environment. The hearer thus settles on the target as being not the spot pointed at, but the entire surface of the lagoon as bounded by its outer perimeter.

Epistemic cues An **epistemic cue** is any information that a hearer derives from his own knowledge and beliefs that then helps him determine the speaker's intended target. To illustrate, after they get off a train, a speaker might say (13) to a companion beside her while pointing toward three people—two men and a woman—waiting for her in the station. One of the men looks substantially older and the other younger than the speaker.

(13) That's my father.

As before, the trigger *that* in the speaker's utterance initiates a targeting procedure in the hearer and provides the core cue that the target is a uniplex distal third-person entity. But by itself, this cue does not much reduce the set of target candidates since there are many such entities in the scene. The gesture does narrow this set down to the three people in its scope. But since its distance away gives rise to lateral ambiguity, it does not indicate which of these three is the intended target.

In addition, though, the word *father* provides the co-form cue that the target is a man who has sired a child. And the phrase *my father* provides the further co-form cue

that the targeted man has sired the speaker herself. The ‘man’ portion of these semantic co-form cues provides further complementary information that rules out the woman and narrows the target pool down to the two men of the trio. But neither of these co-form cues by itself distinguishes between the two men.

However, the word *father* also activates the conceptual category “father” in the hearer’s knowledge store, which, besides other information, provides the epistemic cue that a father is older by some years than his child. And the combination of this epistemic cue with the phrasal co-form cue indicates specifically that the targeted man is older than the speaker. The further combination of this result with the environmental content cues provided by the two men’s appearances finally leads the hearer to rule out the younger-looking man and to conclude that the target is the man in the pair of men who looks older than the speaker.

1.2.5 The Temporal Cue Categories

In this final group of two **temporal cue categories**, cues to the target arise from the temporal characteristics of elements present in an event of targeting. Cues of this sort from the trigger are in one category, and cues from nontrigger elements are in the other.

Chronal cues The sheer occurrence of a trigger in a speaker’s utterance at a particular location in time can serve as a **chronal cue** to the speaker’s intended target. For certain triggers, such as English *now*, this target is itself an interval of time, one that extends through the moment of that trigger’s occurrence. The speaker’s utterance, further, regularly identifies a particular state or event that occurs within or throughout this targeted interval. We can illustrate with a speaker saying (14) to a guest in her house.

(14) The bathroom is free now.

The trigger *now* in her utterance directs the hearer to determine the target, and it provides the core cue that this target is a temporal interval. It further indicates that this interval extends through her trigger’s moment of occurrence. But this latter indication in turn rests on what can be analyzed as an independent process, namely, determining that trigger’s moment of occurrence. That is, the hearer must determine the chronal cue—the moment at which the speaker’s trigger is uttered—and combine it with the core cue so as to center the interval around that trigger moment. As it happens, determining this chronal cue is straightforward, consisting simply of the hearer’s taking cognizance of the moment at which he just heard the trigger.

In addition, the hearer’s knowledge about bathroom use provides the epistemic cue that the length of the targeted interval should be reckoned in minutes—rather than, say, hours or, for that matter, decades, as would be the case for the interval targeted by the *now* in the sentence *We are in the age of the internet now*.

The hearer concludes that the target is an interval of some minutes passing through and centered on the trigger he has just heard. He then temporally locates the state referred to by the utterance—the bathroom’s availability—as occurring throughout this interval.

Perichronal cues A **perichronal cue** is any temporal property of an element other than the trigger that helps the hearer determine that trigger’s target. In the majority of cases, though, perichronal cues do not help determine the target directly. Rather, they are the temporal properties of elements near a trigger that help determine which of those elements can serve as cues to its target, ruling some of them in and others out on the basis of their timing. For example, a perichronal cue could consist of whether the time of occurrence of a speech-external or speech-internal element is close enough to that of a particular trigger for it to serve as a cue to that trigger’s target.

To illustrate, suppose that two joggers are running along the sidewalk past successive parked cars spaced amply apart, each car in turn to the left of them. At one point, one runner says (15a) to her companion while pointing leftward and, a few moments later, says (15b) while again pointing leftward.

(15) a. That’s my car. b. And that’s my husband’s car.

To examine the second communication, the trigger *that* in the speaker’s (15b) utterance directs the hearer to find a particular target and provides the core cues that it is a uniplex distal third-person entity. In addition, the co-form cue from the word *car* tells him to look for a car as that target. Further, the gestural cue from the speaker’s second pointing movement and the targetive cue from the car appearing directly in view on the left both provide the perichronal cues that their occurrence is close enough in time to that of the trigger for them to be relevant.

By contrast, the previous (15a) pointing movement and the car it pointed at are ruled out as providing gestural and targetive cues relevant to the present (15b) trigger. Though the hearer might in principle entertain them as potential cues, their time of occurrence is too distant from that of the current trigger, so he concludes not to use them as indications of the speaker’s currently intended target. Thus, through his observation of perichronal cues, the hearer takes into account only the concurrent gesture and the car immediately to his left as pertaining to the present event of targeting and disregards the earlier gesture and other cars along the curb.

1.3 Illustrating the Cue Categories in Complex Interaction

In the preceding survey of cue categories, the cue of each category under discussion was seen to interact with cues of other categories. Those interactions needed to be noted to show how the hearer assembled enough information to determine the target. But they were relatively modest in extent, and the description of them was kept limited.

In this section, such cue interactions are the focus. Though still only illustrations, the examples here are complex enough to include a greater number of cue categories and types of interaction.

The hearer's cognitive processing of these is here described in terms of discrete consecutive steps, either for clarity of presentation or to reflect logical relations. This will be called a **regularized description**. However, such a description is not based on assumptions about any actual sequences of distinct operations in the cognitive processing. Any such sequences and operations will need to be determined experimentally.

The first two examples have only compatible cues. The cues in these examples are respectively to a speech-external and to a speech-internal target. The third example includes conflicting cues.

1.3.1 Interaction of Compatible Cues to a Speech-External Target

In this illustration involving a speech-external target, a couple walking along a sidewalk stop a foot in front of a gift shop window and look in. The speaker knows that her companion had wanted to learn what the color puce looks like, among other colors he was unclear about, such as vermillion and chartreuse. The speaker spots puce coloring among the gift items on display and—wanting to direct the hearer's attention to it—says (16) while pointing.

(16) Those boxes are puce colored.

In the display's setup, a platform extends back behind the shop window. A single cluster of gift items appears in the front portion of the platform, while three separate clusters are arrayed left to right along the rear portion. The middle cluster in the rear includes some boxes that are red; some boxes that are of a hue which is unknown to the hearer—hue number 1; a single box with unknown hue number 2; and some statuettes of unknown hue number 3. And the front cluster has some boxes of unknown hue number 4. While saying (16), the speaker points toward the rear middle cluster, but her gesture is laterally ambiguous, unable to single out specifically what is puce colored.

The trigger *those* in the speaker's utterance sets the hearer off on a three-stage targeting procedure. In addition to other information, the trigger provides the core cue that the target is distal. This core cue rules out any proximal entities from being the target. However, the hearer cannot use this cue by itself, because the distal/proximal distinction that it entails is topological. It could distinguish between entities separated by inches as readily as by miles. It must be combined with information from another cue. That operation is described below.

At the same time, the orientation of the speaker's head and body provides a gestural cue, namely, that the target is situated within the corridor of space extending forward from her front. This gestural cue thus rules out all entities located outside this corridor as candidates for target status.

The platform that the hearer perceives nearby within this corridor of space can then provisionally suggest an environmental locating cue. This cue is that the perimeter defining the platform's expanse is also the boundary of the region in which the target is located. If confirmed, this cue would then eliminate any other regions in the corridor as areas in which the target might be found.

The hearer can now combine this environmental locating cue with the earlier-mentioned core cue that the target is distal. Now that this "distal" indication is associated with the perimeter-bounded platform, it loses its topological relativity. It now rules in the rear portion of the platform, and rules out the front portion. This fact also eliminates the possibility that the target is in the cluster of gift items located in that front portion. Accordingly, puce cannot be the unknown hue 4 of the boxes in that cluster.

A second gestural cue—the one provided by the speaker's pointing finger—is not precise enough to pinpoint the target, but it is precise enough for certain other indications. First, it corroborates the environmental locating cue that the target is situated within the perimeter of the platform, thus confirming a cue that was only provisional. Second, it corroborates the just-seen indication that the target is located in the rear of the platform. This indication itself had been derived by combining the environmental locating cue with the core cue. And third, it provides the new indication that the target is located in the region of the middle cluster out of the three clusters along the platform's rear. This gestural cue thus rules out both side clusters from consideration.

In addition to its core cue that the target is distal, the trigger *those* provides the core cue that the target has an 'entity' character. This cue thus rules out the possibility that the target is a location, among other non-entity-like options. If it had been viable, such a location, in accordance with the preceding cues, could have been the volume of space occupied by the middle cluster, or the portion of surface it rests on. What this additional core cue does rule in as target candidates, then, is either a particular physical object, or objects, within the cluster or the full ensemble of the cluster.

A third core cue provided by the trigger *those* is that the target is third-person, which excludes the speaker and hearer as target candidates. This core cue thus corroborates the same exclusion indicated by the two gestural cues, which located the target where the speaker pointed at within the corridor defined by her bodily orientation.

Additional information next comes from the morpheme *box* that the speaker uses in her utterance. It provides the co-form cue that the target has a "box" identity. Further, through the visual stimuli they produce, the statuettes in the middle cluster provide the targetive cue that they have a "statuette" identity, while the remaining items in that cluster provide the targetive cue of having a "box" identity. In conjunction with these targetive cues, then, the co-form cue rules out the statuettes in the cluster as candidates for target status—thus eliminating unknown hue number 3 as puce—but rules in the

remaining items. This co-form cue also corroborates the preceding two core cues in the elimination of the collocutors and of any locations from target candidacy.

An additional co-form cue comes from the plural morpheme *-es* on *box*, which indicates that the target is multiplex. At the same time, the trigger *those*—in addition to its core cues that the target is distal, entity-like, and third-person—provides the core cue that the target is multiplex. This final core cue and the co-form cue from the plural morpheme *-es* thus corroborate each other in their indication that the target is multiplex. This redoubled indication thus rules out the single box of unknown hue number 2 as a candidate for the target. But they still leave the red boxes and the boxes of unknown hue number 1 as candidates.

What then distinguishes between these two candidates is an epistemic cue from the hearer's knowledge of discourse principles. He knows that the speaker, following an informativeness principle, would not present as new information something that her addressee would be assumed to know already, such as what red is. On the basis of this epistemic cue, the hearer reasons that the speaker could not have been informing him about the red boxes, and hence must have been referring to the last remaining target candidate, the boxes of unknown hue number 1.

But the hearer still has more cues to note and narrowing down to do. The present tense of the verb *are* can be regarded as a second trigger in the speaker's sentence. It provides the choral cue that the target occupies its location during an interval that extends through the moment of the trigger's utterance—that is, the current moment. The target thus does not occupy its location during an interval wholly before or after this current moment. This cue thus eliminates from potential target status any puce-colored boxes that may have been present in the past or might be present in the future at the indicated location. If the speaker had intended such a target in, say, the past, she would instead have said something like (17a) or (17b). With such temporally displaced boxes ruled out, the presently appearing boxes of unknown hue number 1 continue to be ruled in.

- (17) a. Those boxes were puce-colored (yesterday).
- b. Some boxes there (yesterday) were puce-colored.

Finally, suppose that the couple had also been stopping at shop windows at other locations along the street, pointing at and commenting on items in them. A factor must be present that leads the hearer to deal only with the gestural and targetive cues concurrent with the present trigger and associate these all with each other, rather than to use cues from the recent past now in memory. The concurrentness of the present gestural and targetive cues is a perichronal cue that rules them in, while the nonconcurrentness of the previous cues is a perichronal cue that rules them out.

In sum, so far, the hearer is prompted into a targeting procedure by the trigger *those* in the speaker's utterance. In the first stage of this procedure, he discerns some

dozen specific cues from eight different categories. And in the second stage, he integrates these cues to the point where they enable him to narrow down to the speech-external target evidently intended by the speaker. This target turns out to be the boxes of unknown hue number 1. The narrowing-down process has ruled out any other items currently visible in the window display; any items that were or will be in that display; any items that were or will be seen in other displays along the way; and, generally, any non-items or items outside the display.

In the third stage of the procedure, the hearer next maps the concept of the now-identified target back onto the trigger *those*. In accord with the trigger's syntactic relation to the sentence—namely, as the determiner of a subject nominal within a construction of predicate-adjective attribution—he integrates that concept into the sentence's overall conception. As the final result, he concludes that the boxes he has perceptually narrowed down to, tinted with one of the hues he had not known, are in fact puce-colored.

1.3.2 Interaction of Compatible Cues to a Speech-Internal Target

Shifting focus from a speech-external to a speech-internal target, we provide an illustration in which a man and a woman are alone in a room, and he says the two consecutive sentences in (18) to her.

- (18) a. My sister led her mare down the hill toward some cowboys.
b. She was dappled.

The trigger *she* in the speaker's (18b) utterance directs the hearer to undertake a three-stage targeting procedure. It also provides the core cues that the target is uniplex, an entity, animate, female, and third-person. Although the hearer herself has the first four of these characteristics, she lacks the fifth. Relative to the speaker, the hearer is not third-personal but second-personal and, if the speaker had intended her as the target, he would have instead used the trigger *you*. Accordingly, the core cue that the target is third-person rules out the hearer herself as a possible target, but rules in other female animate entities as candidates for target status.

The hearer might accordingly look for the speaker's intended target in her physical surroundings. But from her perception of those surroundings, environmental content cues arise with the information that no such female beings are present there. These environmental cues thus suggest ruling out the speech-external environment as the target's location.

This suggested exclusion may then be corroborated in the hearer's cognitive processing by the state of the cues from three further categories. First, there is an absence of gestural cues—the speaker does not produce targeting gestures as he speaks. This suggests that, in the immediate physical surroundings, the target is not present to be gestured at. Second, in full corroboration with the environmental content cues, there is

an absence of targetive cues provided by perceptual stimuli from another woman. This again suggests that the target is not present in the immediate physical surroundings. Third, the tense of the verb *was* in (18b)—which can be regarded as a second trigger in that sentence—provides the chroral cue that the target's time of occurrence is not that of the trigger itself, that is, the present. If it had been, it too might have indicated a target in the current immediate physical surroundings. These multiple indications to rule out the speech-external environment as the target's location then strongly suggest ruling in the speech-internal environment as its location.

To find the target, the hearer thus directs her attention to the speech-internal environment. This consists of the discourse—both its formal and its semantic aspects—that the trigger *she* occurs in. But perichronal cues from this discourse increasingly rule out portions of it the further they are in time from the trigger's occurrence and increasingly rule in portions the closer they are. These perichronal cues may finally narrow the location of the target down to the utterances in (18) themselves and eliminate utterances outside them.

The hearer may next consider environmental content and structure cues present in the discourse surrounding the trigger (rather than considering them in her physical surroundings, as she had done earlier). These cues consist of information about the formal and semantic components of the utterances that have been ruled in through perichronal cues and indicate that the target is likely to be one of those components.

To consider the formal components of an utterance, first, they generally consist of its morpheme, word, and phrase constituents, as well as the grammatical relationships that these bear to each other. The formal components of (18a) include four noun phrases, a verb, and two prepositions, as well as their contained and containing constituents and all the grammatical interrelationships present. Those in (18b) include a trigger, a verb, and an adjective, as well as their grammatical relationships.

For their part, the semantic components of an utterance generally consist of the meanings of the formal components and their relationships, as well as of their pragmatic implications. The semantic components of (18a) include the speaker's sister, her mare, a hill, some cowboys, an act of leading, and a path of descent and approach, among other indications and relationships. And the semantic components of (18b) include a quality of dappledness and (from the trigger) a directive to find a target together with core cues to that target.

The core cues just referred to—those provided by the trigger *she* in (18b)—can now interact with the remaining environmental content cues. A first result comes from the core cue that the target is animate. This cue actually eliminates all the formal components of both utterances from the possibility that the target is one of them. The reason is simply that formal linguistic components are never animate. This elimination leaves only the semantic components within the two utterances as candidates for target status.

But then this same core cue that the target is animate further eliminates some of these semantic components as well. To begin with, it eliminates all the semantic components of (18b), since none of them—for example, neither the dappledness nor the trigger's directive or core cues—is animate. We can note that this core cue eliminates itself as well because it is in fact not itself an animate, but rather it is part of a directive to find an animate. Even if it were not excluded for this reason, it would be excluded because a trigger, with the rarest of exceptions, always directs a hearer to a target outside itself.²

These exclusions then leave only the semantic components of (18a) as contenders for target status. But now another core cue provided by the trigger *she*—that the target has an “entity” character—rules out such semantic components as the act of leading and the downward approaching path. It rules in only four semantic components: the speaker's sister, her mare, a hill, and the cowboys.

With respect to these four ruled-in components, the core cue that the target is animate again comes into play to rule out the hill. At the same time, the core cues that the target is uniplex and female both rule out the cowboys. Among the semantic components of the first utterance, then, the core cues together rule in the speaker's sister and her mare as candidates for target status, but they rule out the rest.

It was noted that perichronal cues tend to rule out earlier utterances in general. But it can be noted that they here rule out any earlier references to uniplex females in particular. This again leaves only the two uniplex females referred to in (18a) as target candidates.

The hearer's ability to select a single target from these two remaining candidates is furthered by information from the co-form *dappled*. This adjective provides the co-form cue that the target has the property of being ‘dappled’. But this adjective has two main meanings. One involves spots of different shades intrinsically present on the skin or fur of a nonhuman animal. The other involves spots of light being reflected off of any surface. If the first meaning is in effect, the co-form cue from the adjective is enough to finally narrow the selection down to the mare, because the mare is a nonhuman animal while the sister is human. But if the second meaning is in effect, the co-form cue does not distinguish between the two remaining candidates, since they both present surfaces.

An epistemic cue then finally enables the hearer to zero in on the target. This cue is the hearer's linguistic knowledge that, for the second meaning of the adjective *dappled* to be in effect, the adjective must be accompanied by a phrase referring to light or shade. This meaning would be evoked, for example, in a sentence like that in (19).

- (19) My sister was dappled in the sunlight
(that filtered through the leaves of the trees).

However, the utterance in (18b) did not include such a phrase. Accordingly, the hearer concludes that only the first meaning of *dappled* can be in effect. Thus, the hearer finally settles on the mare as the speaker's intended target.

In sum, to this point, the trigger *she* in the speaker's second utterance initiates a targeting procedure in the hearer. In the first stage of the procedure, the hearer discerns over a dozen either negative or positive cues—that is, cues that are missing or that are present with specific content—from seven different categories. In the second stage, her processing of these cues enables her to narrow down to the speech-internal target intended by the speaker. This target turns out to be the mare referred to in the speaker's first utterance. This narrowing-down process has ruled out everything in the current speech-external environment and, within the speech-internal environment, all the formal components and all but one of the semantic components.

In the third stage of the procedure, the hearer next maps the concept of the now-identified target back onto the trigger *she*. Since, as a semantic component, the target 'mare' is already a concept, the hearer simply maps this concept—or a copy of it—onto the trigger. In accord with the trigger's syntactic relation to the sentence—namely, as a subject nominal within a construction of predicate-adjective attribution—she integrates that concept into the sentence's overall conception. She concludes that the mare in the discourse just referred to by the speaker has naturally dappled skin.

1.3.3 Interaction of Incompatible Cues to a Speech-External Target

In this third illustration, the target is again speech-external, but now there are some conflicts among the cues. Our example is only sketched here, but it is elaborated in section 14.1. In this example, a woman sitting across a restaurant table from a man says (20) to him. At the same time, she looks at his mouth and touches her fingertip to her own teeth at a particular spot on the right side.

(20) You've got something in your teeth right here.

The trigger *here* in the speaker's utterance directs the hearer to determine the speaker's intended target and, to that end, to determine the available cues to it. These cues include the following. The trigger itself provides the core cue that the target is a location proximal to the speaker. An environmental locating cue from the perceivable surroundings indicates that the speaker's body is the setting for this targeted location. One of the speaker's two gestural cues, the manual one from her finger, indicates that the targeted location is a spot on the right side of her teeth. Another gestural cue from the speaker's gaze—here called an "ocular" cue to distinguish it from the manual cue—indicates that the targeted location is at the hearer's mouth. And the phrase *in your teeth* provides the co-form cue that the targeted location is at the hearer's teeth.

The hearer's processing of these assembled cues begins with an assessment phase. An initial operation of "consistency checking" within this phase examines the cues for their mutual compatibility. It proceeds on the basis of a certain set of principles, including one of plausibility. Here, taking all the cues at face value can lead to an implausible

conception, such as one in which some of the hearer's teeth are in the speaker's mouth. He thus concludes that some of the cues in fact are in conflict.

A second operation of "clustering" within the assessment phase segregates the cues into groups that are each internally compatible but that are incompatible with each other. Here, the co-form cue and the ocular gestural cue are compatible with each other in one group, both indicating that the targeted location is at the hearer. Incompatible with this first group is a second group that includes the core cue, the manual gestural cue, and the environmental cue—all compatibly indicating that the targeted location is at the speaker.

A third operation of "evaluation" within the assessment phase assigns opposite states of validity to the two incompatible groups on the basis of a greater-benefit principle and a priority principle. This operation yields the result that the two cues in the first group are "valid" while the three cues in the second group are "anomalous."

The hearer's processing next proceeds to a resolution phase. This phase retains the valid cues, that is, the co-form cue and the ocular gestural cue. But it adjusts the anomalous cues—that is, the core, environmental, and manual gestural cues—so that they become compatible with the valid cues. The full coherent set of cues that results can then lead to the intended target.

The main operation in this resolution phase is that of "mapping." This operation acts on the location at the teeth in the speaker's body that is seemingly targeted by the anomalous cues. Through this mapping, the hearer imaginally translates that location to the structurally homologous location on his own body. A "rotational" mapping targets a location on the right side of his teeth, while a "reflective" mapping targets a location on the left side.

After the resolution phase, the five cues in consideration are all mutually compatible, as they would have been at the outset if the speaker had instead said (21) while reaching across the table to point at the hearer's mouth.

(21) You've got something in your teeth right there.

At this point, the hearer can proceed to any remaining processing of the now-compatible cues—such as distinguishing corroborative and complementary relations among them—much as in the preceding two illustrations.

1.4 Characterizing the Trigger

To set the stage for the present study, the current section and the next two examine certain basic features of the three main elements in targeting: the trigger, the cues, and the target. We begin with a characterization of the trigger, which is greatly elaborated in chapters 2 and 3.

1.4.1 Features of the Trigger

Centrally, a trigger is any linguistic constituent lexicalized to initiate the three-stage targeting procedure in the cognition of the hearer who hears it. That is, it directs the hearer to ascertain all the available cues, use them in combination to determine the target, and map the concept of that target back onto the trigger for integration into the sentence. A trigger is thus at the beginning and at the end of the targeting procedure, which, to emphasize this point, might alternatively be referred to as the “targeting cycle.” We will treat the three stages of this cycle as three features of the trigger. Then five further features can be associated with a trigger.

First, a trigger has an associated formal realization—one from a relatively wide range of possibilities—though the prototype may be that of a single closed-class independent segmental morpheme (see section 2.1.3).

A second additional feature is that a trigger itself always provides some elements of information—its core cues—that help a hearer determine the target (sections 2.2 and 2.3).

As a third additional feature, while every trigger directs the hearer to look for all available cues as the first stage of the targeting procedure, some triggers are lexicalized to require an accompanying cue from a specific category. They thus direct the hearer to search for that cue type in particular (section 3.1.1). For example, the trigger *thataway*—as in *The posse rode off thataway*—requires the presence of a gestural cue and directs the hearer to look for one.

For a fourth additional feature, a trigger can be lexicalized with certain grammatical indications that represent its relation to neighboring constituents or to its sentence as a whole (section 3.1.2). In the third stage of the targeting procedure, such indications help guide the hearer in relating the concept of the target to the overall conception expressed by the sentence. For example, suppose that a speaker has used the trigger *him* in a sentence. After the hearer has heard the trigger, has determined the male entity that it targets, and has mapped the concept of that male entity back onto the trigger, the trigger’s accusative form narrows down the relations that that concept can have to the sentence’s overall conception—for example, as being the Patient of an action.

And for a probable fifth additional feature, since the speaker’s intended target is seemingly always something specific, the trigger is apparently always grammatically definite. Some analysts have argued that, in the relevant constructions, such indefinite forms as English *one*, *ones*, *some* and *any* are anaphors—hence, triggers. But we argue (section 3.4.3) that such forms are only in construction with the actual triggers, themselves being either overt or ellipsized.

1.4.2 Distinguishing the Trigger from Other Linguistic Forms

Some of the features just outlined for a trigger distinguish it from linguistic forms of other types. We here focus on its first two features—that is, on the ways in which a trigger initiates the first two stages of a targeting procedure.

Lexicalized to introduce cues As we have outlined, the first feature of a trigger is that it directs a hearer to ascertain cues to a target as the first stage of the targeting procedure. But how does such a feature distinguish triggers from other linguistic forms? After all, clues and indications that a hearer can use as aids in processing every form in a discourse are ubiquitous, both speech-internally and speech-externally. Among other functions, they can help the hearer narrow in on the specific referent that the speaker intends a particular non-trigger form to have. For example, consider the referent of the non-trigger form, the verb *cut*, in the (22) sentence that a husband says to his wife.

(22) I cut the grass around the sundial.

The wife is here helped by a speech-internal clue from the direct object NP *the grass* to narrow the referent of *cut* down to one involving a mower on a lawn, rather than, say, a knife on steak or scissors on hair. Further, a speech-external clue—her knowledge that their home has a sundial as well as her knowledge of where it is located in the backyard—lets her narrow down where the action referred to by *cut* occurred. However, a linguistic non-trigger form like *cut* is not specifically lexicalized to direct the hearer to look for clues that would help narrow down its reference in this way. That procedure rather is a pervasive concomitant of a hearer's utterance processing.

By contrast, it is an inherent part of a trigger's lexical meaning to direct the hearer to look for cues—both cues provided by the trigger itself and cues in the other nine categories—so as to use them to determine the target. Evidence for this is that the absence of relevant cues for a trigger renders its utterance ill-formed. This is the case, for example, if a speaker says (23) to a hearer over a purely auditory phone connection.

(23) This is my new laptop.

Here, the hearer cannot see any gestural, corporal, or targetive cues nor produce a hearer-focus cue that the speaker might see and use. But at least one of these would be necessary for the hearer to determine the target. A lack of relevant cues for a trigger, as here, might be analogized to the lack of an appropriate syntactic setting for it, so that its use here could be regarded as effectively ungrammatical.

By contrast, if the husband of example (22) had omitted a reference to grass, as in (24), and if their house lacked a sundial, the wife might be puzzled about the type of cutting involved and where it took place, but the sentence would at worst be infelicitous, not effectively ungrammatical.

(24) I cut around the sundial.

Lexicalized to require the use of cues to determine a target As seen, triggers are lexicalized to direct a hearer not only to ascertain cues, but also to use those cues to determine a particular entity outside the trigger itself—that is, the target. If speech-external,

the target is an object or phenomenon elsewhere in the spatiotemporal environment. If speech-internal, it is a particular constituent elsewhere in the discourse. Now, as with this latter case, some lexical forms other than triggers are also lexicalized to direct a hearer to a particular constituent in the discourse outside themselves. Such forms will be called **constituent-stipulating forms**. Our aim in this section is to distinguish the behavior of such forms from that of triggers with speech-internal targets.

Each constituent-stipulating form is associated with a certain linguistic device, often particularized in a specific way that will guide the hearer to its designated outside constituent. Such (particularized) devices range from being wholly to nearly definitive in pinpointing the outside constituent. As an example, the syntactic device of “lateralized adjacency” is wholly definitive. The Japanese closed-class form *o*, for instance, is associated with this device. Under the appropriate particularization of the device, the outside constituent designated by the form is the nominal immediately to its left, to which it accords direct-object status.

The phonological device of “overlay” is also wholly definitive. For example, in English, heightened stress—here treated as a constituent-stipulating form—is associated with this device. Under this device, the form’s designated outside constituent is the very constituent that it appears on, to which it accords the status of being in focus. Japanese *o* and English heightened stress are thus both constituent-stipulating forms associated with devices, one of them particularized, that unequivocally direct the hearer to the location of their designated outside constituent.

An English verb is another constituent-stipulating form that directs a hearer to find a particular constituent outside itself functioning as its subject. For example, the speaker using the verb *inspected* in (25) intends that the hearer will be directed to the constituent *the manager of the property* as the subject, rather than to any of the many other constituents in the sentence. Certain devices can be adduced to perform this function. In particular, English can be analyzed as using certain indications under six devices in combination to guide a hearer to such a subject constituent. Despite this abundance, the result now is not wholly definitive. But it is still nearly so.

- (25) Operating manuals in hand, the manager of the property
 every day in the month of March
 systematically inspected the furnaces in the basement.

The following are the six devices, most of them particularized, at work here in guiding the hearer to the outside constituent required by the verb as its subject. Under the device of “lexical-category requirement,” the outside constituent is generally, though not necessarily, a noun phrase. Under the device of “clausal location,” the constituent is in the same clause as the verb. Under the device of “lateralized positioning,” the constituent is generally, though not necessarily, somewhere to the left of the verb. Under the device of “sentence positioning,” the constituent is generally, though not necessarily,

at the beginning of the sentence. Under the device of “constituent status,” the constituent must be a major constituent of the clause (not, e.g., an embedded noun phrase). And under the device of “semantic appropriateness,” the constituent’s referent must be able, in one’s general knowledge, to function plausibly as an Agent (or other realizer) of the verb’s action.

Triggers differ from such constituent-stipulating forms as the preceding in two main respects. With regard to the first, a trigger is on the one hand like constituent-stipulating forms in that it is associated with a specific device—namely, that of targeting—for guiding a hearer to a specific outside entity, the target. But this device is not applied in a fixed way nor does it take on one of a certain set of particularizations. Instead, a trigger directs the hearer to ascertain any and all cues to the target that are available in a given situation.

Second, a trigger in general is nondefinitive about the location of its target. Thus, the target of an anaphoric trigger is a constituent at some indeterminate location in the surrounding discourse. Such a speech-internal target is situated among an extensive number of candidate constituents. And the target of a deictic trigger can be at virtually any spatial remove from the speaker and potentially at some temporal remove from the speech event. Such a speech-external target is situated amid an indefinitely large number of candidate entities. While the hearer of an English verb would be able (if the six devices failed) to exhaustively consider every constituent in the verb’s sentence as a possible subject, he could not exhaustively consider every speech-external candidate as a possible target.

As a third difference, the outside entity that a trigger is associated with is not—as with a constituent-stipulating form—limited to being a linguistic constituent, but it can also be something in the spatiotemporal environment, as already seen. In sum, little more than an algorithmic procedure is needed from a hearer to determine the constituent associated with a constituent-stipulating form, whereas the full complex system of targeting is needed for a hearer to determine the target of a trigger.

1.5 Characterizing the Cues

In any given targeting event, the cues to the target are the sole means available to the hearer to determine the target. As seen, they are elements of information about the target coming from ten different sources—the basis for the ten categories they are here placed in. The cues in these categories were surveyed and illustrated earlier. Here, they are characterized with regard to how the hearer determines and processes them. As seen, the hearer determines the cues in the first stage of targeting, the trigger-to-cues stage, and processes them in the second stage, the cues-to-target stage. These are the two stages in which cues play a role and are addressed next in turn.

1.5.1 Cue Determination

A hearer determines the cues to a target based both on their autonomous characteristics (the next three subsections) and on their interactive characteristics (the fourth subsection).

Felicity requirements for cues For elements of information to function as cues to a target in any event of targeting, they must accord with three **cue felicity requirements**, as we will call them. These requirements are that they must be adequate in number and informativeness, accessible to the hearer, and in fact accessed by the hearer.

The need for all three of these felicity requirements for cues—their adequacy, accessibility, and accessing—can be demonstrated by a gestural cue in visual use. If a particular gesture is necessary in a given situation as a cue to the target, but the speaker does not produce the gesture, there is an inadequacy in the number and informativeness of the cues. However, if instead she now does produce the gesture, she has in that respect fulfilled the requirement for cue adequacy. But if she gestures, say, while distant from the hearer, or on the other side of a tree from him, or in the dark, the cue is not visually accessible to the hearer. However, if instead the speaker's gesture is now illuminated close enough along a straight unobstructed line to the hearer—that is, if it is visible to him—then she has also fulfilled the requirement for cue accessibility. But then if, say, the hearer's back is turned, he cannot visually access the cue. However, if instead the hearer in this case in fact faces the speaker and looks at her gesture, the requirement for cue accessing is now also fulfilled. Only with all three requirements met is the gestural cue felicitous.

The speaker is responsible in full for the first two felicity requirements and in part for the third. Before producing her targeting utterance, she must ensure that the cues are adequate and accessible, and that the hearer can access them either immediately or after some minor maneuvering. The hearer then is also in part responsible for the third requirement—he must succeed in accessing the cues, whether he is able to do so immediately or after some minor maneuver. Through this collaborative arrangement, the hearer determines the cues in the first stage of a targeting procedure.

The first felicity requirement is addressed in the next subsection, and the remaining two in the subsection following that.

Cue adequacy To begin with the initial felicity requirement, in using a trigger, a speaker must first ensure **cue adequacy**. That is, she must establish that cues in sufficient quantity and informativeness are present in the situation so that the hearer, in determining and combining them, can unambiguously identify her intended target. Thus, the speaker cannot be heedless as to which cues may happen to be available, but must function as an active Agent—indeed, as a proactive Agent—in enabling the hearer's cue acquisition and processing. With decreasing cue adequacy, the speaker's use of a trigger becomes

more infelicitous until, as seen, it is effectively ungrammatical. To be sure, less-than-full cue adequacy does occur, perhaps often, but it can be repaired if the hearer indicates the need for more information and the speaker then supplies it.

Ensuring cue adequacy can be thought to manifest a particular type of cognitive system within the occurring range of types. As a foil for comparison, we first mention a type that it is not. Ensuring adequacy is not a templatic system that prespecifies the number and categories of cues that must be present. Thus, it does not require that cues from, say, a particular eight out of the ten categories must be present and that the hearer must always look for those eight kinds of cues. Rather, it is an “adequacy system,” requiring only that cues in whatever number and of whatever category be present as long as they together allow the hearer to unambiguously determine the target.

To ensure cue adequacy, further, the speaker must use certain processes. These **cue-adequacy processes** are of three types: productive, perceptual, and presumptive.

The productive process. In the prototype of the **productive process**, the speaker herself generates the cues outright—they do not exist independently. With one exception, the cues of three categories exist solely as a result of this productive process. Specifically, the speaker must produce core cues (by uttering the trigger), co-form cues (by uttering co-forms), and gestural cues (by maneuvering body parts). The exception is that, in an interchange, the speaker can use something previously said by the current hearer as a co-form cue.

The perceptual process. In the **perceptual process**, the cues exist independently and the speaker uses her perception of them to make sure they are present. Prototypically, the cues of three further categories are of this type. The speaker perceives targetive cues arising from the entity serving as target, environmental cues from the content or structure of the surroundings, and corporal cues from the location of her own body.

But cues in these categories can also be generated or affected by the speaker. Thus, the speaker wholly generates the targetive cues when she forms a gesture that itself is the target (see section 5.1.1 for such “self-targeting gestures”). An example of this is a speaker’s clenching her hand while saying *This is a fist*. The generation of a cue in this way is the prototype use of the productive process.

In addition, though, the productive process can be regarded as extending to include cases where the speaker does not generate new cues but affects the character of otherwise existing cues. Thus, the speaker can alter targetive cues (as by changing a physical target’s location or orientation), environmental cues (as by repositioning environmental elements), and corporal cues (as by walking to a particular location).

The presumptive process. In the third cue-adequacy process, the **presumptive process**, the speaker surmises that certain cues exist in the cognition of the hearer, and she

presumes or judges that the hearer will be able to determine those cues within himself. This process is in play in the epistemic and hearer-focus cue categories.

With respect to epistemic cues, the speaker expects that the hearer has certain information in his memory relevant to determining the target and presumes that he can identify that information as the relevant cue. For hearer-focus cues, the speaker infers that the hearer is attending to some entity and presumes that the hearer can become metacognitively aware of his own attentional focus on that entity as a cue to its being the target. Further, as treated in the next subsection, the speaker also presumes that the hearer can access temporal cues through his own internal time sense, certain previously perceived cues through memory, and certain corporal or targetive cues through inference.

Of the three cue adequacy processes, then, only the productive process yields cues expressly designed for their target-determining function. The cues that the other two processes yield exist independently, but they can be exploited to perform this target-determining function.

How temporal cues relate to cue adequacy processes. Not yet addressed, the temporal cue categories—those of choral and perichronal cues—can now be seen to have a special relation to the first two processes. On the one hand, the choral cue—the moment at which the trigger occurs—depends on the productive process, since the speaker utters the trigger at her own chosen moment. The same holds for the perichronal cues associated with the co-forms and gestures produced by the speaker, since she again decides their moments of occurrence. Further, insofar as targetive, environmental, and corporal cues can be affected by the speaker, the perichronal cues associated with them also involve the productive process.

On the other hand, if the speaker produces the trigger, co-forms, and gestures in accord with the norms and requirements in her language for their timing—both in their own realization and with respect to external phenomena—then their choral and perichronal cues leave little to choice. From this perspective, the speaker might well be able to regard such temporal cues as, in effect, occurring independently, rather than as the result of her own volitional production. She would then simply perceive, or note, their availability to the hearer in accord with the perceptual process.

But then, from this same perspective, temporal cues that in fact do deviate from the norms could now indeed be treated as being due to the speaker's choice through the productive process. To illustrate this (see section 11.2 for elaboration), the speaker of (26) intentionally selects the moments at which the trigger *now* and the co-forms just before it occur. That is, she sets the choral and perichronal cues here fully in accord with the productive process.

(26) If you want to save my life, press the green button . . . riiiiight . . . NOW!

Cue accessibility and accessing We turn now to the remaining two felicity requirements. In ensuring that cues adequate in number and informativeness are present in a given situation, the speaker must also ensure that those cues are accessible to the hearer. This additional requirement will be called **cue accessibility**. We here heuristically divide this accessibility that cues can have with respect to a hearer into six **cue accessibility types**. Correspondingly, the hearer must exercise his capacity to access the cues. This further requirement will be called *cue accessing*. In conjunction with these different types, the hearer in turn must access the cues through six corresponding **cue accessing processes**. These six pairings, here labeled simply for their accessing component—perceptual, interoceptive, reflective, working-memory, storage, and inferential accessing—are treated next in order. Finer-grained aspects of the accessing processes are treated in the chapters that follow.

Perceptual accessing. The most extensive cue accessibility type involves the external perception—or exteroception—of a cue. The cue is perceivable in one or another external sensory modality, having what we will call **perceptual accessibility** to the hearer. In the corresponding cue accessing process, the hearer perceives the cue in that modality, and thus does **perceptual accessing** of it (i.e., accesses it perceptually). The cues of four categories have solely such perceptual accessibility and accessing. These are core, co-form, gestural, and environmental cues. Thus, as for core and co-form cues, if the discourse is oral, the trigger and co-forms uttered by the speaker must be audible to the hearer, and the hearer must hear them. (This description holds only for the formal aspect of such cues; their semantic aspect is generated in cognition.) A gesture must be visible or tangible to a hearer, and the hearer must correspondingly see or feel it. And an environmental cue must be visible, audible, or odorous to the hearer, who in turn must see, hear, or smell it.

It is also largely the case that corporal and targetive cues have perceptual accessibility. Thus, generally, the location of the speaker's body is visually accessible to the hearer, while the hearer in turn accesses it visually. And generally, a target—whether speech-external or speech-internal—produces perceivable stimuli in one or more sensory modalities that the hearer in turn perceives. The case of corporal and targetive cues without perceptual accessibility is addressed under inferential accessing.

Interoceptive accessing. To determine a temporal cue—chronal or perichronal—a hearer generally must first externally perceive the occurrence of a trigger or cue and then ascertain the time of that occurrence. But this ascertainment itself seems not to be made through some external perceptual modality. Rather, in accord with time perception studies (e.g., Block and Gruber, 2013), it can be posited that such temporal cues are metacognitively accessible to a hearer through his own internal sense of temporal progression. For example, in processing the trigger *now* in (27) for the chronal cue it

provides, the hearer may access this cue simply by noting the trigger's moment of occurrence in relation to his internal sense of the ongoing progression of time.

(27) The meteor-tracking satellite is directly overhead right now.

This temporal sense could simply be classed with the perceptual accessing just addressed. But to mark its distinctive internal nature—where the hearer simply takes note of certain temporal metrics otherwise ongoingly registering in his cognition—the hearer will here be said specifically to have interoception (or, alternatively, chronoception) of his time sense with regard to the trigger's moment of occurrence. We will then say that the choral cue has **interoceptive accessibility** to the hearer, and that he does **interoceptive accessing** of it (i.e., accesses it interoceptively).

Reflective accessing. As seen, to determine a hearer-focus cue, a hearer must internally ascertain the status of a certain state within his own cognition. Specifically, he must ascertain whether his attentional system is currently focused on some external entity in perception and, if so, what that object of his attention is. Thus, in the “Ferrari” example of (9), the hearer had to become metacognitively aware of focusing on a car. This process is comparable to the one in (27) in which the hearer internally consulted the time sense in his own cognition, and these two processes might be classed together. But what the hearer accessed in (27) was updated instant by instant, while in (9) it is a cognitive state that can last a while and shift more infrequently. To mark the difference, we will say that this more durative cognitive state has **reflective accessibility** to the hearer and that the hearer does **reflective accessing** of it (i.e., accesses it reflectively).

Working-memory accessing. This subsection treats cases where the cues needed for targeting are not concurrent and discusses what that entails for cue accessibility and accessing. As background, certain cue types—core and choral cues—necessarily appear at the trigger moment. Certain other cue types—speech-internal targetive cues and almost all co-form cues—necessarily occur outside the trigger moment. Still other cue types—gestural and targetive cues—can occur either at or outside the trigger moment (see section 12.1 for a fuller treatment). In a targeting event, such cues are thus often temporally staggered—accessible to the hearer at different times—and can be combined only cumulatively through time.

From the perspective of the hearer's cognition at the time of the final cue in such a series, the earlier cues are no longer directly accessible. Rather, they are now accessible only in the hearer's working memory—specifically, in his memory of phenomena just preceding the finally occurring cue. This will be called **working-memory accessibility**. Correspondingly, the hearer must find such cues in his working memory through a **working-memory accessing** of them.

—A pre-cue. We first illustrate the case where a cue needed for targeting precedes the trigger by some moments. For a speech-external example, a speaker might point toward a cow and horse standing together in a field, retract his hand, and, after a pause, say (28a). At the moment that the hearer hears the trigger *that*, his perception of the pointing movement has already taken place, and it is only through accessing it in working memory that he can retroactively treat it as a gestural cue to be combined with the choral, core, and co-form cues now becoming accessible at and near the trigger's occurrence.

(28) a. That's my horse. b. That's a crossette.

Comparably, a speaker might say (28b) to a companion at a fireworks display some moments after a particular effect has ended and none other has yet started. At the time of the trigger *that*, the prior perception of the effect has only working-memory accessibility to the hearer, and the hearer in fact accesses it in working memory, now treating it as a targetive cue.

For a speech-internal example, by the time that the hearer of (29) hears the trigger *it*, he has already processed the phrase *my wallet*. At the moment the trigger is heard, yielding its core and choral cues, that phrase's form and meaning are accessible only in the hearer's working memory. There, the phrase is retroactively treated as exhibiting targetive cues, with its meaning as the target.

(29) My wallet is hand-tooled. I keep it in my vest pocket.

—A post-cue. Instead of preceding it, a cue needed for targeting can also follow the trigger by some moments. For a speech-external example, standing before a number of horses, a speaker might look at the hearer and say (30a), but again he pauses before pointing toward one particular horse. Here, the previously perceived choral, core, and co-form cues are now accessible only in the hearer's memory when he first perceives the pointing movement and processes it as a gestural cue.

(30) a. That's my horse.

b. When you're done with it, can I use the pen?

And a speech-internal example appears in (30b). Here, the core and choral cues provided by the trigger *it* (a cataphor in traditional terms) are accessible to the hearer only in her working memory when she hears the phrase *the pen* (a postcedent in traditional terms). The meaning of this phrase is the target.

—Attained access. This case in which a hearer perceives a relevant cue only after the trigger has been uttered has an important variant. In the basic case in (30a), a required cue—the gestural cue from the pointing movement—had delayed perceptual accessibility to the hearer, but he then accessed it as soon as it became available. In the

variant, though, the cue is already accessible to the hearer at the onset of the trigger; it is the hearer, however, who delays in accessing it. Normally, once a cue is perceptually accessible, the hearer is situated so that he at most needs to redirect his gaze, his auditory attention, his touch, or the like as required to perceptually access the cue. At times, though, the hearer delays, and one cause of this is that he is not suitably located. In that case, on hearing the trigger, he would need to move to a location where he would have perceptual access to the cue. At that point, he will have only working-memory access to the choral, core, and co-form cues. But he will have what we will call **attained perceptual access** to the additional cue.

Attained perceptual access is significant in targeting because certain triggers can depend on it for their felicity. The following case is an illustration. The judgments of most speakers asked about it generally agree with the ones reported here, though some do differ. In it, a wife standing at the living room window points out and says (31a) to her husband who is looking at her as he lies on the couch across the room.

- (31) a. That's the neighbor's new car.
b. The neighbor's new car is over there.

Here, the trigger *that* requires that the hearer visually access the visual targetive cues produced by the target. If the speaker judges that the husband will move to stand beside her and look out the window toward the car, thus attaining perceptual access to the targetive cues, then her use of the trigger *that* is felicitous. But if she judges that he will not join her, then the use of *that* is infelicitous.

In that case, she may instead use the trigger *there*, as in (31b). This trigger shares with the trigger *that* the requirement that the hearer perceptually access the gestural cue, which the husband here does do, but it does not require that the hearer perceptually access the targetive cue (see section 2.3.3 for this ostensive/nonostensive distinction).

In turn, if the husband is in another room, the wife can felicitously say (31b) with the trigger *there* if she judges that he will come to the doorway and attain perceptual access to her gesture. Otherwise, this utterance too is infelicitous.

Storage accessing. The cues that a hearer acquires in the interoceptive, reflective, and working-memory types of accessing (and sometimes in the perceptual type as well) are temporary forms of information needed only for the current act of targeting. But epistemic cues—whether a hearer derives them from his long-term memory or recently laid-down memory—can be regarded as information that the hearer has stored or potentially will store in his knowledge. We will say that they have **storage accessibility** to a hearer, and that he does **storage accessing** of them (i.e., accesses them in storage).

In the “father” example of (13), for instance, the hearer learned that one of two men being pointed at was the speaker's father. The epistemic cue there—the information

that a father is some years older than his child—was stored in the hearer’s knowledge. That information had storage accessibility to the hearer, and the hearer accessed it in storage while processing the co-form *father*.

Inferential accessing. It was noted that, in general, corporal and targetive cues are perceptually accessible to the hearer. But there are conditions where such cues—which would still be perceivable under different conditions—are in fact not perceptually accessible. Their cue accessibility type is then actually that of **perceptual inaccessibility**. In this case, the hearer must infer the cues from the information otherwise available to him and may generate a representation of them in cognition. This corresponding cue accessing process will be called **inferential accessing**.

While all previous forms of cue accessing were of information already in existence, inferentially accessed cues consist of information newly formed through cognitive processing. It is because of such inferential accessing of cues that our analysis, in its most generic formulations, does not speak of a hearer’s “finding” or “discerning” cues—with the implication that they already exist—but rather of his “determining” or “ascertaining” them.

To illustrate, suppose that the speaker saw her kite coming down so as to land at a location that itself could not be seen due to its distance and obscuration by trees. While saying (32a), the speaker gestures by pointing her finger forward and upward at a forty-five-degree angle to suggest a parabolic projection that first rises and then descends onto the kite’s location (see section 5.2.3 for elaboration). Targetive cues from the location are perceptually inaccessible to the hearer. The hearer accordingly constructs a cognitive representation of the location and the cues it might provide by inferring the structure of the unseen environment from that of the seen (see section 10.2.2 for elaboration).

- (32) a. My kite landed way over !-there.
- b. The street vendors here are selling all kinds of local food.

Comparably, a hearer on the phone with his friend, who is traveling through an unidentified town in South America, might hear her say (32b). The trigger *here* in the speaker’s utterance requires an accompanying corporal cue, the location of the speaker’s body. But this location is not perceptually accessible to the hearer. He accordingly constructs a cognitive representation of it—as well as of the region around it that it helps to target—through inference based on whatever information he does have (see section 6.2 for more detail).

Interaction within cue determination In the cases just seen, each determination of a cue by the hearer was independent of the others. But in some cases, one cue determination can guide another. As analyzed here, a determination can be positive—a cue of the relevant category is found—or negative—no such cue is found.

Positive cue determination. In what can be regarded as a causal sequence, the determination of one cue precedes that of another and alerts the hearer to search for the second. To illustrate, consider again the farmer in (7) who said *That's my tractor* to a visitor as they came into view of a field with a tractor in the distance. The hearer first had to attend to the noun in the utterance to derive from it the co-form cue that the target was a tractor. Only after that was the hearer alerted to scan her surroundings so as to detect the targetive feature cue provided by the physical tractor in the field.

If the hearer had already spotted the tractor before the utterance, there is still a causal sequence. The co-form cue in that case caused the perception to function *as* a cue, turning it into a targetive cue.

Negative cue determination. The absence of one type of cue can prompt the hearer to look for another type. Consider example (9) where the hearer, looking fixedly at a particular car, heard the speaker say *That's a Ferrari*. She might not have immediately considered her own attentional focus as a cue to the speaker's intended target. But the gestural and targetive salience cues she might have checked for first were absent—the speaker was not gesturing, and nothing in the street scene was uniquely prominent. These absences may then have spurred her to check internally for a hearer-focus cue.

In a related way, the absence of a particular cue type in one domain may prompt a hearer to look for it in another domain. Thus, in the “dappled” example (18) of section 1.3.2, there was an absence of targetive cues—as well as of environmental and gestural cues—indicating a female in the speech-external domain (i.e., the hearer's physical surroundings) to serve as the target of the trigger *she*. This absence can have spurred the hearer to check the speech-internal domain for targetive cues to a female there.

1.5.2 Cue Processing

The actions of the hearer described in the preceding sections lead to a state in which all the cues available in a particular event of targeting are assembled together in his cognition, thus comprising the first stage of targeting. The hearer must now process the assembled cues in combination—with regard for their potential interactions—to determine the target. This **cue processing** comprises the second stage of targeting. An outline of this cue processing, some of which was mentioned earlier, is organized into four parts in the following subsections. As before, our regularized description proposes operations and phases in the processing, and presents these as consecutive. But experimentation will be needed to determine the validity of these proposed elements of processing and whether they occur in the indicated sequence or instead in part overlap, alter their order, interweave with stage 1 processes, or the like.

Processing of incompatible cues In an event of targeting, a hearer's processing of the cues he has assembled can be regarded as starting with the assessment phase described

in section 1.3.3. That phase itself starts with the operation of consistency checking, which examines the cues for their mutual compatibility. He will find either that all the cues are compatible or that conflicts exist between some of them.

If he finds conflicts, he remains within the assessment phase and proceeds to its next two operations. As seen, in the second operation of clustering, he sorts the cues into two different groups. The cues in each group are compatible with each other but are incompatible with those in the other group. And in the third operation of evaluation, he judges the cues of one group as being valid and those of the other as being anomalous.

Finally, in the resolution phase that follows the assessment phase, the hearer uses certain operations, such as that of mapping, to alter the anomalous cues in a way that they become compatible with the valid cues.

Processing of compatible independent cues The cue processing by the hearer that is addressed in the remaining subsections here pertains to compatible cues. It thus pertains to the cues within each of the two groups formed in the case of conflict, as well as to the full complement of cues after the conflict has been resolved. It also pertains to all the cues the hearer has assembled where the operation of consistency checking has found them all to be compatible in the first place.

The hearer's processing here begins by determining the effect of each cue in the compatible set. The usual role of a cue's information is to ascribe a particular attribute to the target. Where this is the case, the cue in effect divides all potential candidates for target status in the relevant domain into two groups, those with the attribute and those without it (with adjustments for fuzzy boundaries). Accordingly, the cue rules in the elements of the former group for further consideration as target candidates and rules out the elements of the latter group.

The hearer's processing next assesses, for any pair of cues in the compatible set, which of two relations they have to each other. They can corroborate each other, providing the same information about the target, or complement each other, providing different information. Focusing on the latter circumstance, the present subsection addresses the case where such complementary cues remain independent of each other without interaction of their effects, while the next subsection addresses the case where they are interdependent.

Independent complementary cues. Within a set of independent complementary cues, each cue divides the domain of target candidates into two groups in a different way, and these different divisions crosscut each other. These cues can be regarded as effecting their divisions either concurrently or consecutively. If concurrent, a single candidate for target status emerges at once in the hearer's cognition. If consecutive, a successively smaller portion of the pool of candidates remains ruled in, until just a single candidate

remains. In this case, through cumulative processing, the hearer narrows down to the final candidate for target status.

This crosscutting of complementary cues can further involve ambiguity. Where a cue rules in two or more elements in a domain as target candidates, their plurality can be regarded as an ambiguity in the cue's indication. Then the indications of complementary cues can be viewed as leading to a disambiguation. Such a disambiguating process in the hearer can again be thought to occur concurrently or consecutively. In the former case, the cues disambiguate each other at the same time. In the latter, following one sequence or another, they engage serially in a progressive disambiguation.

Illustrations. All these processes were seen, for instance, in the example in (5a), where the speaker pointed across a crowded room toward a man and woman standing together, and said to a hearer *She's the director of our lab*. The core cue from the trigger *she* in the speaker's utterance ascribed to the target the attribute of being female. This cue in effect divided all potential candidates for target status there into two groups. One group consisted of all the women in the room, who had that attribute, and the other group consisted of everything else, which lacked the attribute. Accordingly, the cue ruled in the former group as potential candidates while ruling out the latter group, thus greatly reducing the pool of candidates. But it still left as ambiguous which of the women was the target.

At the same time, the gestural cue from the speaker's pointing finger divided the potential target candidates in the room into two groups that differed from the first two groups and crosscut them. The gesture ascribed to the target the attribute of being located within the imaginal beam extending from the finger. But at the finger's distance away, this beam was wide enough to enclose both members of the couple across the room. The man and woman there thus composed one group. Everything else in the room lacked that attribute and so composed the other group. The gestural cue accordingly ruled the two individuals of the couple in as potential target candidates, while ruling everything else out, thus also greatly reducing the pool of candidates. But now this second cue left as ambiguous which individual of the couple was the target.

In accord with the alternatives just proposed, the hearer's cue processing then either concurrently superimposed the two different divisions produced by the two cues or imposed one division on the other. Correspondingly, either the two cues brought about their mutual disambiguation or one cue disambiguated the other. The single result is that the woman in the couple emerges as the target: the one candidate ruled in under both cues.

Processing of compatible dependent cues In the preceding subsection, each complementary cue in a compatible set could independently, without interaction with

the other cues, divide target candidates into two groups on the basis of the attribute it ascribed to the target. But the cues of certain types depend on other cues for their indications to reach that state, thus requiring additional processing. In three such types, the cues are relative, multivalent, and provisional, addressed next in order. All three types occurred in the “puce” example (16) of section 1.3.1.

Relative cues. Illustrating the first type, one core cue from the trigger *those* in the puce example (16) ascribed to the target the attribute of being distal from the speaker, along a proximal/distal parameter. But since this attribute is intrinsically relative (topological), that cue could not by itself definitively divide all the potential target candidates into two groups of proximal ones and distal ones. To be definitive, that cue needed to be combined with cues ascribing absolute (Euclidean) attributes to the target. In example (16), it was combined with gestural and environmental locating cues, together indicating that the target was located within the perimeter of the shop window platform. This combining process thus changed the core cue’s attribution from a relative one to an absolute one. In this change, the notion “distal” resolved into comprising the rear portion of the platform, as distinguished from its front portion.

Multivalent cues. An environmental bounding cue in targeting is often multivalent because there can be indefinitely many boundaries in a perceptual scene for a hearer to select from. Thus, in the puce example (16), the hearer could have selected the perimeter of the entire visual scene, of the building housing the shop, of the display window, of the shop’s interior, or of the platform inside the window, among other possibilities. It was only by combining this multivalent cue with other cues that the relevant boundary could be selected. One further such cue was the gestural cue provided by the orientation of the speaker’s body, which narrowed the target’s location to the corridor of space in front of the speaker. This narrowing greatly reduced the set of potentially relevant boundaries to select from.

Provisional cues. A hearer might provisionally select one value of a multivalent cue—for example, due to its greater salience—but then require confirmation from other cues to keep that value in play. The environmental bounding cue in the puce example (16) illustrated this phenomenon as well. Within the corridor in front of the speaker, the hearer may have tentatively settled on the perimeter of the platform due to its salience. This provisional selection was then confirmed by the gestural cue provided by the speaker’s pointing finger.

In sum, where a cue by itself is underspecified or insufficiently independent, the three ways seen here in which it is clarified by other cues are for a relative cue to become absolute, for a multivalent cue to become limited, and for a provisional cue to become confirmed. For a related case, see section 3.3.2 for “cue codetermination.”

Reasoning-based processing of cues Finally, a hearer's processing of cues can include operations best associated with the cognitive capacity of reasoning and inferring.

Counterfactual principle. One such operation is based on what might be called the **counterfactual principle** expressed in (33). This principle in turn rests on the hearer's presumption that the speaker follows the relevant linguistic and discourse rules in formulating her utterances.

- (33) The speaker cannot have intended her utterance to mean X because,
 if she had, linguistic or discourse rules
 would have required a different formulation.

This counterfactual principle generally acts in conjunction with certain types of information in the hearer's knowledge store, itself thus serving as an epistemic cue. One such type is knowledge about discourse management, such as that a speaker would not present as informative something that she assumes the hearer already knows. For instance, in the puce example (16) of section 1.3.1, the hearer at one point in his processing ruled out the red boxes in the rear middle cluster of gift items as a target candidate. His reasoning was that, if they were to have been the target, the speaker, aware that the hearer knew what red is, would not have instructed him about their color, and so would not have produced the sentence that she did (compare the Gricean maxim of relevance).

The counterfactual principle can alternatively act in conjunction with another body of information in the hearer's knowledge store, the lexicon, again yielding an epistemic cue. Thus, in the dappled example (18) of section 1.3.2, the hearer consulted her lexical knowledge about one sense of the adjective *dappled* and found that it must be accompanied by a phrase about light. Since such a phrase was absent from the speaker's utterance, she reasoned that that sense could not have been in effect. If the speaker had intended that sense, he would have had to include such a phrase.

Comparison operation. Reasoning-based cue processing may also include a **comparison operation**. Consider example (13) where the expression *my father* provided conform cues and activated epistemic cues indicating that the target was a man some years older than the speaker. If the group waiting in the station had consisted solely of a man and a woman, the hearer could have simply used the 'man' part of the cue indications to rule in the man of the couple and rule out the woman. But since the set of target candidates came down to two men, the hearer had to use the relative-age part of the indications. The hearer accordingly had to compare the perceptually apparent age of each man in turn against knowledge of the speaker's age in order to assess which of the men was old enough to be the speaker's father and which one was not. The hearer thus had to undertake this relatively complex cue-processing operation involving comparison to determine the target.

1.6 Characterizing the Target

Of the three main elements in targeting, the trigger and cues were characterized in the preceding two sections, and the target is now characterized here. In the remainder of the present introduction, we simply outline certain basic features exhibited by a target, but then devote two fairly lengthy sections to one further feature, its open ontology.

As indicated at the outset, then, the main defining feature of a target is that it is something in the global environment that a speaker has in mind and wants a hearer to think of at a particular point in her discourse. She utters a trigger at that discourse point to set him to search for that target and map its concept back onto the trigger.

As also seen, our analysis divides the global environment into two domains, the speech-internal and the speech-external, approximately corresponding to the traditional anaphoric/deictic distinction. Another feature of a target, then, is that it is located in one or the other of these domains (with the occasional exception of a target that straddles the boundary).

A further feature of a target is the domain-based relations that it can have with a trigger. While the target is either speech-external or speech-internal, the trigger is always speech-internal. Accordingly, in the case of deixis, the trigger and target occur in different domains. But in the case of anaphora, they are in the same domain. In the same-domain case, in fact, the target is generally also in the same portion of discourse as the trigger.

The same-domain case in turn entails certain relationships in a two-party discourse. The trigger and the target can both be produced by the same party; this is the **single-speaker case**. Here, the speaker's trigger necessarily targets an aspect of her own speech. Since she is the voluntary producer of her speech, she has intentionally produced both the trigger and the target it refers to. Alternatively, the trigger and target can be separately produced by the two different parties; this is the **cross-speaker case**. Here, typically, the current speaker's trigger targets something in what the current hearer had said in a prior turn as speaker.

A further feature of the target is that it has a role in two of the three targeting stages. Much as cues have a role in stages 1 and 2, the target has a role in stages 2 and 3. We do not summarize these roles here, but simply note that its role in the cues-to-target stage was just treated in section 1.5.2, and its role in the target-back-to-trigger stage will be treated in section 3.1.2.

The feature of the target that we expand on now is its ontology—that is, the types of phenomena that it can consist of. It might have been thought that there would be constraints on the types of targets that a trigger could refer to and constrictions on the ranges over which such types could extend. That is, the phenomena a trigger could target might have fit only into some small set of preset defined categories. Perhaps some such restrictions do exist and will need to be discerned. But as a provisional

generalization, given the findings so far, the target that a trigger refers to can be anything. We will refer to this feature as a target's **open ontology**. The next two sections detail this feature respectively for speech-internal and speech-external targets.

1.6.1 The Open Ontology of Speech-Internal Targets

Earlier, as a first approximation, the aspects of speech making up a speech-internal target were dichotomized into the formal and the semantic. But in the finer-grained analysis here, such aspects are seen as arrayed along a more continuous scale. This scale, depicted as going from left to right, proceeds from the most physical—that is, sensorily perceivable—aspects of speech to the most conceptual. Over its middle portion, the scale progresses through associations of the physical with the conceptual—specifically, the form/meaning associations of morphemes and constructions—proceeding from associations where the form is more prominent to ones where the meaning is more prominent. The succession of targets presented for illustration proceeds along the scale in this indicated direction. The sheer range of different speech aspects making up these targets is our demonstration that speech-internal targets have a largely open ontology.

Target differences from the physical to the conceptual We here sketch out the proposed speech-internal scale with an illustrative succession of targets ranging from the most physical to the highly conceptual, with later examples proceeding still further into the scale's conceptual region. Most examples in this section will be cross-speaker interchanges in which party X first produces one utterance, and party Y then produces another utterance containing a trigger that targets some aspect of X's utterance.

As a foil for comparison, we begin with a target actually just outside the speech-internal scale. It is located, as it were, just to the left of the scale's left end, the physical pole of the scale. If X in (34) produces a digestive sound while speaking, Y could target that sound with the trigger *that* in (34a). Though the targeted sound is concurrent with and spatially near X's physical production of speech, it is external to that speech and would exist even if X were not speaking.

(34) X: Hi. I'm just back from surfing for hours in the cold Pacific.

Y: a. Is that your stomach rumbling?

b. Is that a rasp I hear in your voice?

If Y instead says (34b), the trigger *that* now does target something present in X's speech production. Now, on the one hand, this target, his hoarseness, is certainly an aspect of his speech—a phenomenon that would mostly not be present if he were not speaking—and so technically is speech-internal. On the other hand, it is not an aspect of language as a structured system. Thus, an analysis might almost as readily treat this target as speech-external, classed together with any sound effects in the environment that provide targetive cues, such as X's stomach rumbling. An example like (34b) can thus be

thought to represent an intermediate case between speech-external and speech-internal targeting. Such gradience between a target being external or internal to speech helps support the theoretical move undertaken in this work to unify deixis and anaphora.

Consider next the single-speaker examples in (35a) (Levinson, 1983) and in (35b), in which the proximal trigger *this* targets an aspect of the speaker's own speech. In both examples, this aspect is a deliberate divergence in the speaker's pronunciation from the canonical phonetic realization of the utterances. But this divergent realization is regular in certain other forms of speech production. Accordingly, these targets might be judged to be more a part of the language system and to differ from the speaker's hoarseness, the target of the previous example. Specifically, the previous target was nonvoluntary, only perhaps on the proposed scale and, if on the scale, at its very left end. The present targets are voluntarily produced, more clearly on the scale, and then a bit further to the right along it.

- (35) a. This is what phoneticians call creaky voice.
 <with glottal pronunciation over *this*,
 over *creaky voice*, or over the whole sentence>
- b. Dis iz toking vid a yidish ektsent.
 (This is talking with a Yiddish accent.)
 <pronounced with a Yiddish accent>

In a similar way, the trigger *that* in Y's utterance in (36) targets what is for her a divergent phonetic realization, one now in her collocutor X's speech.

- (36) X: I plan to invest more in aluminium.
 Y: I like that pronunciation of the element we call "aluminum."

This target represents the physical aspect of speech as much as the preceding three targets, from hoarseness, through creaky voice, to a foreign accent. But for the first time here, the target rests on the speaker's understanding of a morpheme as an association between a particular phonological shape—which is fully physical when realized phonetically—and a particular concept. It is thus firmly on the proposed speech-internal scale, not at all open to an alternative treatment as speech-external, as was the hoarseness of (34b). And it is further to the right along the scale than the creaky voice and accent targets of (35) because it participates in the morphemic association of the physical and the conceptual that occupies the middle portion of the scale.

Still, since the target is understood to be one shape variant among a certain set of alternatives associated with the same concept, it is more rooted in the tangible side of speech than in the conceptual side. This balance shifts toward the other side over the next two examples. The next target in (37), then, may be judged to lie further to the right along the speech-internal scale than in the preceding case.

- (37) X: Then the players formed a scrum. Y: What does that mean?

On the one hand, the trigger *that* in speaker Y's question here does still target the phonological shape of a morpheme (*scrump*) in the collocutor's speech, much as in the preceding example. But here, the co-form cues from the verb *mean* and other co-forms alter the character of the target. The target here is not simply the shape of a morpheme compared against shape alternatives. It is rather the shape *as* one component of the shape-concept association that constitutes a morpheme. The answer asked for is accordingly the identity of this associated concept. This speech-internal target is thus now well into speech as a linguistic system.

In the next example, (38), the trigger *that* in speaker Y's utterance targets the particular sense within the polysemous range of the morpheme with the phonological shape /fʌni/ that speaker X had selected as his intended sense.

(38) X: Fran wore her hat in a funny way at the party.

Y: Is that 'ha ha' or 'strange'?

The target now is on the conceptual side of the shape-concept association that constitutes a morpheme. In fact, this example is an approximate mirror image of the "aluminum" example in (36). There, the target was the particular shape among alternatives morphemically associated with a single concept (the thirteenth element). Here, the target is the particular concept among alternatives morphemically associated with a single shape (/fʌni/). The target here is thus further toward the conceptual end of the speech-internal scale.

We can proceed still further rightward toward the scale's conceptual end. The target here is again a concept associated with a morphemic shape, but now the preponderance of the hearer's attention is on the concept side of that association, unlike the preceding example in which substantial attention was also on the shape evoking the concept. Thus, in (39), The trigger *that* in Y's utterance targets the concept 'ice' that is associated with the morpheme *ice* in X's utterance. But scant attention is drawn to the phonological shape /ays/ associated with that morpheme.

(39) X: There's ice all over our driveway.

Y: I'll try to avoid that when I come visit.

Perhaps even further rightward into the conceptual portion of the scale is a target that, as in the last example, is a conception associated with linguistic material, but where this material consists of more than one morpheme. It might comprise a short expression, an utterance, or a larger portion of discourse. Such expanded linguistic material has what we will call a **conceptual complex** associated with it. This conceptual complex generally includes additional conceptual content—generated through cognitive processing—beyond the concepts narrowly associable with the component morphemes and constructions making up the linguistic material. This full conceptual complex is now the target of the trigger. Such a target is here regarded as being

further rightward on the scale because of the additional conceptual content generated in it.

In (40), for example, speaker Y's trigger *that* targets the conceptual complex that she associates with the noun phrase *a castle built only of sausages* within speaker X's utterance. But Y's question about structural integrity may not make sense if that conceptual complex is based solely on the narrow sum of the literal meanings of the component elements in the noun phrase. It may instead make sense only if Y augments this narrow sum with further conceptual content based on inference and general knowledge. Thus, the familiar linearity of sausages might suggest their being strung together to form long chains, in turn arranged to visually indicate some contours of a picture-book castle (rather than, say, being packed together to form the walls and floors of an actual castle).

- (40) X: There's a castle built only of sausages on the fairground.
Y: What holds that together?

If X in the preceding example had instead spoken as in (41), with information distributed more widely over his sentence, the target of Y's trigger *that* would still have virtually the same conceptual content.

- (41) X: Using only sausages, they built a castle on the fairground.
Y: What holds that together?

The difference is that this content would now be associated not with the contiguous forms composing a noun phrase, but rather with discontinuous sets of forms. Such a target might be judged to be still further to the right on the proposed scale. The reason is that the conceptual complex that comprises the target depends less on any association with formally identified syntactic units and more on the use of inference within the conceptual domain. This use of inference is needed so that only the relevant conceptual components within the total conception evoked by the sentence come to be included in the targeted conceptual complex.

Target differences in the cross-speaker case We pause here in the rightward progression along the speech-internal scale to mark a further distinction within cross-speaker discourse. Of concern here is where the two collocutors in the discourse take turns speaking, and a trigger in one speaker's utterance refers to a target in the other speaker's utterance. Here, each speaker is in turn a hearer to the other. The point at hand is that the targeting is processed differently across the two collocutors.

This difference was first consequential in the example of (40). There, X was the first speaker. His utterance included the extended noun phrase *a castle built only of sausages*, but lacked a trigger (other than tense). Y was then the hearer, and she processed X's utterance. Among other things, Y had to construct a conceptual complex in association with the extended noun phrase, built up from its simpler elements and her inferences

about them. She could not simply consult her internal lexicon to look up the concept associated with a particular morphemic shape, as she might have done for *ice* in (39). We will accordingly call her the **constructing hearer** for this form of processing she had to undertake.

Then, in Y's turn to speak, her trigger *that* targeted the conceptual complex she had constructed in association with the extended noun phrase she had just heard. But the new hearer X, on hearing Y's trigger, did not need to construct any conceptual complex. The target was associated with his own speech of a moment before, which was still active in his working memory. What he had to do instead was to calculate which portion of his speech the trigger pertained to—here, his extended noun phrase. And he had to identify its corresponding conceptual complex—that is, the relevant portion of his utterance's overall conception—a conceptual complex that he had at the outset. He will accordingly be called the **recalling hearer** for the type of processing that now *he* had to undertake.³

These differences in processing, it might be thought, would lead to the conclusion that the two collocutors had singled out two different targets—a constructed one and a recalled one. This difference would then have to be added to chapter 2's inventory of ontological distinctions that speech-internal targets can exhibit.

But whether or not analysts should hold this view about the targets, my surmise is that the two collocutors themselves do not do so. They may instead experience the matter much as in, say, a visual speech-external case. For example, if a speaker points at one of several horses while saying *That's my horse* and the hearer then directs his gaze to that horse, both assume that there is a single targeted horse located in physical space that they are both regarding in the same way. Comparably here, both X and Y may feel that there is a single targeted entity—an NP-associated conceptual complex—located within "thought space" that they are both regarding in the same way.

Target differences across conceptual specificities We continue our rightward progression into the speech-internal scale's conceptual region in two ways. First, we address the conceptual complex associated with the whole of an utterance, not just part of one (as mostly seen to this point). Second, we show that a speaker can target increasingly greater degrees of specificity of that conceptual complex. To illustrate, consider first the example in (42).

- (42) X: The boss told Tom he had to clear out his desk
and pick up his closing paycheck.
Y: Could you repeat that?
X: Tom had to empty his desk and get his pay.

Here, after X produces his initial utterance, the trigger *that* in Y's request for repetition might seem to target the whole of that utterance, along with the entirety of its

associated conceptual complex. But in what may be the prototype case, the target actually intended by Y—who may not have heard the original utterance clearly—might be solely the central import, the gist, of the conceptual complex, as well as a new utterance conveying that alone. Such a gist represents a low degree of specificity for the full conceptual complex. Adopting this interpretation, X responds with a simplified utterance that conveys the gist—he does not retain the original wording or style of delivery.

Alternatively, Y—who may have heard the original utterance well enough to get the gist—may instead want her trigger to target the original utterance in its exact wording so that, on second hearing, she can get all the informational details on which to draw inferences. Her intended target here represents a greater degree of specificity for the conceptual complex. Y may accordingly say (43) with its additional co-form *exactly*. X would then repeat his original utterance with its exact wording.

(43) Y: Could you repeat that exactly?

Further, though, speaker X may have delivered his original utterance with a distinctive pattern of intonation, stress, and pacing that added certain suggestions of attitudinal stance to the conceptual complex. Y might then suppose that X had overheard the boss's dismissal, and that his delivery reflects the boss's own delivery. Perhaps Y dislikes Tom and, motivated by *schadenfreude*, wants to savor the blow delivered to him. Y might then add the further co-forms in (44), so that her trigger now targets the original utterance in its delivery style as well as wording, thus also targeting the utterance's conceptual complex at its greatest degree of specificity.

(44) Y: Could you repeat that exactly the way you just said it?

Assumed target specificity. In the second and third of the preceding examples, Y needed to add co-form cues for X to realize that her intended target was not to be merely the prototype, that is, the gist of the utterance. But X can also conclude on his own, without extra indications by Y, that her intended target is at certain higher levels of specificity, calling for certain particulars of wording or delivery. He bases this on epistemic and environmental cues from general knowledge and the context. Thus in (45), the general knowledge that a phone number must be known exactly to be useful makes it clear that X's "repetition" of his original utterance must include the exact wording of the number, but need preserve merely the gist of its remainder.

(45) X: The best number to reach me at is 383-4121.

Y: Could you repeat that please?

X: You should call me at 383-4121.

Comparably, suppose now that the context is a drama class and that the instructor has just demonstrated how a student should deliver a certain line in a play. If the student now says *Could you repeat that?*, she is clearly targeting neither the conceptual

import nor the wording of the utterance—which she presumably already knows—but solely its delivery.

Terminology. Some analysts have set up distinct labels for the case where the target of a trigger is a whole utterance. Thus, Lyons (1977) calls this “textual deixis,” and Levinson (1983) calls it “discourse deixis.” But such labeling can be faulted in three respects. First, given the fine gradation in the possible types of speech-internal targets demonstrated in this section on open ontology, there seems little basis for singling out the utterance as a special case meriting its own label. Second, as seen in the present subsection, even the notion of a “whole utterance” is questionable, since only certain aspects of an utterance—and different aspects in different contexts—are targeted. Third, even on the basis of the distinctions marked by the traditional terminology, there is little reason to label this phenomenon as deixis instead of as anaphora, since the antecedent here is a portion of speech.

The motivation for the distinct labeling seems to be to reserve the term “anaphora” solely for cases where the antecedent is a noun phrase. Thus, Diessel (1999) specifically writes: “Anaphoric demonstratives are coreferential with an NP in the preceding discourse.” But as section 2.2.8 shows, even within a traditional approach, the antecedent that an anaphor refers to can be a clause, a verb phrase, or an adjective phrase (or its semantic equivalent). In any case, by the terms and distinctions of the present framework, a target consisting of a whole utterance or conceptual aspects thereof is clearly speech-internal.

Target differences across conceptual levels In a progression still further rightward along the scale, the conceptual complex associable with an utterance (or other portion of discourse) can range from being the most starkly literal to being highly elaborated. Though perhaps more of a gradient, this range is here divided under a coarse-grained resolution into three “levels” without precise boundaries between them. To some extent, particular levels can be separately targeted.

The hearer’s processing of an utterance up to the first conceptual level, then—what can be called the **literal-semantic level**—is attained through the basic procedure of composition. It consists of the relevant senses of all the morphemes and constructions within the utterance in their specific pattern of interrelationships.⁴ Then the hearer’s processing of the utterance up to a second conceptual level, what might be called an **immediate-pragmatic level**, calls on certain directly associable aspects of his general knowledge. These are additional concepts and inferences that can turn the content at the literal-semantic level into a plausible conception. And the hearer’s processing of the utterance up to a third conceptual level, what can be called a **further-knowledge level**, adds in more distantly associable aspects of his general knowledge. Context can

help select these aspects from what is otherwise his indefinitely extended continuum of knowledge. For illustration, consider the utterance in (46).

(46) The goblet of wine slowly went around the banquet table.

A hearer processing this utterance up to the first conceptual level—that of literal-semantic composition—would have a conception in which a goblet of wine moved through space along a path consisting of a closed circuit located at or beyond the perimeter of a banquet table. Processing the utterance up to a second immediate-pragmatic level could add that the goblet was successively passed from hand to hand by diners in a linear array seated within reaching distance of each other adjacent to the perimeter of the table. In processing the utterance up to a third further-knowledge level, the hearer might add the notions that the second-level event was the custom or ritual of a particular social order, that the diners were members of that order, and that they each sipped from the goblet as part of the ritual.

To illustrate the separate targeting of these different utterance-associated conceptual levels, consider the illustration in (47).

(47) X: Blanche needs to work on herself.

Y: a. I agree with that. / b. What does that mean?

Here, X first produces an utterance. At the same time, Y, as constructing hearer, builds up a conceptual complex in association with the utterance. Then Y, now as speaker, uses the trigger *that* to target certain aspects of X's utterance. But the aspects targeted in (47a) and (47b) differ along the lines of the distinctions just outlined.

In (47a), the target is a conceptual complex associable with the utterance's morphemes and constructions at a third further-knowledge level. This complex includes notions of self-administered therapy for psychological improvement. But in (47b), the target is a conceptual complex associable with the utterance only up to a second immediate-pragmatic level. Specifically, Y here indicates that she has understood X's utterance only up to this limited degree. The content at this degree is what she targets. Her question asks for the further implications of this merely basic understanding (e.g., X might need to make explicit the implication of psychological self-improvement).

Target differences across conceptual aspects We here further address the higher conceptual levels associable with an utterance—especially the third further-knowledge level. But where the preceding subsection treated such a level as the whole of a conceptual complex, we here show that a trigger can, out of an indefinite diversity, target just one portion or aspect of that complex. We regard this as a still further rightward progression into the conceptual region of the scale because it involves additional conceptual processing.

We examine such targets using the illustration in (48). This is a single-speaker example, hence where the speaker's trigger targets aspects of her own speech. The corresponding single hearer is then necessarily a constructing hearer.

- (48) John bicycled to Fresno this morning.
 a. That exertion was bad for his health.
 b. He hadn't taken that route before.
 c. He'd never seen that kind of scenery before.

The conceptual complex of the opening utterance. Consider first the speaker's opening utterance. In association with it, the hearer will build up a conceptual complex, one that is up into a third further-knowledge level. We cannot be definite about his actual cognitive processing—including the use of linguistic knowledge, general knowledge, and inference—but we do suggest potential elements of it in the analysis that follows.

First, the hearer knows that the proper noun *Fresno* refers to a city. By adding to this the fact that the preposition *to* refers to a terminated linear path, here, with a city as its termination point, the hearer infers that the path's length is of geographic scale. (If the original phrase had been *to the bedroom*, the hearer would instead have combined the referents to infer a yards-scale length.)

By adding to this the fact that *bicycle* is an intransitive verb referring to linear motion, the hearer infers that the person referred to by the subject noun *John* himself moved along the long path to the city. (If this verb were replaced by *mail a package*, the inference would instead be that John remained at his original location.)

By adding to this the fact that the verb *bicycle* also refers to an Agent's propelling a vehicle through his muscle power, the hearer infers that John physically propelled himself and a vehicle over the long path to the city. (If the verb had instead been *drive*, the inference would on the contrary be the lack of muscle propulsion.)

By adding to this the fact that the temporal adverbial phrase *this morning* refers to a limited interval within a single day, the hearer infers that the whole of John's self-propelled long trip to a city took place within that interval (not, say, in short hops scattered over several days).

And to all this, the hearer may have added his knowledge about John's likely speed and starting point at a relatively distant town to infer that the trip took most of the morning (not, say, a half hour from some suburb of the city).

The illustration shows the speaker continuing on with any of three alternative utterances. Each contains the trigger *that* in a reading that provides the same core cues: the target to be sought by the hearer is a uniplex distal third-person entity or phenomenon associated with the opening utterance. In each of the three cases, further, the co-form cues indicate that the target is some portion of the conceptual complex that the hearer has constructed in association with the opening utterance. (This would not be so if,

for example, the speaker had continued by saying *That sentence was hard to enunciate.*) Across the three alternatives, though, the differing co-forms lead the hearer to carve out three different targets from the conceptual complex that, in turn, can be left unmodified or be modified.

The conceptual complex is left unmodified. If the speaker continues on as in (48a), the noun *exertion* provides the co-form cue that the target has the property of being physical activity performed with a degree of intensity above some norm. The hearer will search within the conceptual complex he has constructed for what can be construed as exertion. He will likely narrow down to a portion already clearly present in that construction—the portion consisting of a person using his muscles to propel himself and his vehicle over a long distance for a substantial time within a limited interval. This target will then not include other aspects of the conceptual complex, such as that the destination was a city and that the time was the morning.

Note that this target has its existence only within a higher-level conceptual complex—one that the hearer constructs in association with a whole utterance—and must be carved out from that. Its concept of exertion thus does not directly emerge in association with any subportion of the utterance. For example, this concept cannot be definitively associated with the pragmatics of the verb *bicycle* since it is known that many people can bicycle for some distance without exertion. The concept also does not arise from the pragmatics of the prepositional phrase *to Fresno* indicating a long trip since, if the verb had been *drive*, the hearer would have inferred a long trip without exertion. Rather, the concept of exertion here subsists only within the overall conceptual complex as constructed.

The conceptual complex is modified. In the preceding example, it was feasible to assume that the hearer constructed a conceptual complex solely in association with the speaker's opening utterance, and that the target he settled on existed in that complex. In general, though, the lexical cues provided by the speaker's follow-up utterance, the one containing the trigger, lead the hearer to modify his initial conceptual complex, with an effect on the target he will settle on. We here consider two types of such modification, shifting and augmentation. Such modification seemingly tends to be "graceful," that is, to occur without radical jumps. For example, if details are added, they relate fairly closely to the original ones, without introducing unconnected ideas.

—Shifting. To illustrate the first type of modification, the hearer might perform a shift with respect to salience levels if our speaker had continued on as in (48b). Here, the noun *route* provides the co-form cue that the target is a geographic-scale path formed by a particular selection of connecting roads among alternatives. Suppose that, as the hearer constructed a conceptual complex in association with the opening utterance,

he had reached into his general knowledge enough to include the concept that John's trip followed a particular route. But at that point, this concept would have been of relatively low salience—compared, say, with the high-salience image of someone pedaling a bicycle. However, the new co-form cue from the word *route* increases the salience of the route-taking concept, while perhaps decreasing the salience of other aspects of the initial conceptual complex.

Within this now attentionally modified conceptual complex, the hearer narrows down to the route portion for his target. By contrast with the exertion case, this targeted portion now omits a different set of aspects of the full conceptual complex. Among these omitted aspects now are John's use of muscle power to propel himself, the limit-*edness* of the temporal interval, and the time of day.

The word *route* can thus be regarded as doing double duty here. For one thing, it provides a co-form cue to help guide the hearer toward the intended target. But it also helps him modify the salience distribution within his conceptual complex so that he can better find that target there.

—Augmentation. Instead of salience redistribution, the modification may have consisted of augmentation if the speaker had continued as in (48c). Here, the co-form cue from the noun *scenery* prompts the hearer to find a portion of his initial conceptual complex with the property of being scenery, so as to target it. But now suppose that, when the hearer formed his initial complex, he was not especially thinking in terms of the view from the cyclist's perspective. The concept of scenery may have been virtually absent from his initial conceptual complex. In this case, the word *scenery* would lead the hearer to augment his initial conceptual complex—whether by increasing its scope or enriching its detail—so that it now includes the scenery concept. Again, the word might be thought to be doing double duty. It both leads him to augment his initial conceptual complex so as to include scenery and directs him to target that scenery now included there.

Target differences on and off the speech-internal scale Through the preceding series of examples, the target has progressed ever further rightward into the conceptual end of the proposed scale. But if a target proceeds still further rightward so as to consist of a pure concept unassociated with speech, it will depart from the scale at its right end. For a target to be speech-internal, it must occur in association with actual speech by one of the collocutors.

Now, a trigger does have the capacity to target a concept unrelated to speech. For example, within an otherwise ongoing dialog, one speaker might say (49) to her collocutor, who has just been keeping silent. The target of the speaker's trigger *that* is a speechless concept, namely, the idea inferred to be in the collocutor's mind through

observation of his behavior. This concept is thus outside the speech-internal scale. It might be imagined as located just off the scale's right end, since it is related to the otherwise ongoing speech.

(49) That idea I can see forming in your head will only get us in trouble.

The “stomach rumbling” target of (34) that began this section was also outside the speech-internal scale because it was a sound in the environment not associated with the collocutor's speech. It was imagined as located just off the scale's left end, though, since it occurred near and during that speech. The earlier physical target and the present conceptual one can thus be imagined as bookending the scale, one outside it just to the left and the other just to the right. But however close to the scale these targets might be imagined to be, they are in fact fully speech-external and thus in the domain treated next.

1.6.2 The Open Ontology of Speech-External Targets

Speech-external targets have an openness of ontology comparable to that just seen for speech-internal targets. They can even be comparably arrayed along a scale from the most physical—specifically, from the most sensorily perceivable—to the most conceptual aspects of nonspeech phenomena, as is done in this section. However, the shape-concept association of speech-internal constituents, foundational to language, readily accorded with such a scale. Our placement of speech-external targets along such a scale here is instead more heuristic.

Target differences from the physical to the conceptual We next survey this heuristic sequence of target types from the physical to the conceptual along the proposed speech-external scale.

The target as a perceived physical entity. We begin with cases where what the speaker intends to target can be understood as basically physical and where the hearer determines this target mainly through sensory perception alone. In (50a), (50b), and (50c), the targets of the trigger *that* are physical entities perceived respectively through sight, hearing, and smell—perhaps encountered respectively in a museum, a canyon, and near a bog.

(50) a. That's a medieval mace. b. That's just an echo. c. That's swamp gas.

Comparably, the target is open to being not just a physical entity or phenomenon, as in the preceding, but also a physical action, whether an unbounded activity like that seen on TV in (51a) or a bounded event like that seen at an aerobics show in (51b).

(51) a. That's sumo wrestling. b. That's a plane executing a loop-the-loop.

The target as one aspect of a perceived physical entity. Somewhat rightward along the speech-external scale are cases where the hearer still must perceive some phenomenon, but where the target is only a particular aspect of that phenomenon, not the whole of it. That aspect commonly does not pop out perceptually but requires processing by the hearer to abstract it out of the perceptual complex. This abstraction process rests on certain conceptual criteria, generally provided by core, co-form, or other cues. Thus, the target here may be thought to incorporate an increment of conception in addition to purely perceptual characteristics.

The full physical phenomenon from which an aspect is abstracted out can again be an entity or an action. To illustrate the former case, the speaker in (52a) wants the hearer to conceptually abstract out as the intended target the height of, say, a tree she is pointing at and, in (52b) the color of, say, a car she is looking at. For the latter case, the speaker in (52c) wants the hearer to conceptually abstract out as the target the manner in which a team member she is pointing at plays hockey. In such examples, a speaker who gestures has no recourse but to gesture toward the whole of the phenomenon, yet still intends only a certain aspect of it as the target.

- (52) a. Our new barn is exactly that height.
- b. That's exactly the color of the fridge I just bought.
- c. Everybody should play hockey that way.

The target as the identity of a perceived physical entity. A speech-external target can also consist of the identity of a physical entity or action that the hearer perceives. While the preceding type of target was the abstraction of something actually present in a perceived phenomenon, the identity of a phenomenon is not sensorily perceived in it, but is a concept that the hearer can cognitively associate with it. Hence, an identity target is here regarded as further rightward toward the conceptual end of the scale.

To illustrate, the speaker says (53) while pointing to something speech-external, for example, an object like a dandelion, or an activity like children playing in a playground. What the speaker intends to target with the trigger *that* is the identity of the phenomenon pointed at. The hearer infers this fact in part from the co-form cues provided by the words *write* and *essays*, which can present the identity of a phenomenon but not its physical manifestation.

- (53) Eve loves to write about that in her essays.

Note that a phenomenon's physical manifestation and its so-conceived identity can be thought to be in a particular form-identity association and that a trigger can target either member of this association. The trigger in the preceding example targeted the identity, but the reverse can also occur. Suppose, for example, that a speaker points to an object unknown to her—say, a lacrosse stick—and says (54). Her

trigger *that* now targets the form of the object pointed to, and her utterance asks for its identity.

(54) What is !-that?

This form-identity association in the speech-external domain can then be regarded as analogous to the shape-concept association that a morpheme represents in the speech-internal domain. Thus, it was seen in section 1.6.1 that a trigger could also differentially target just one member of that association—for instance, the shape as in the aluminum example of (36) or the concept as in the “funny” example of (38).⁵

The target as a location. A speech-external target can also be a spatial location. In the type of case considered here, the hearer must still see a physical scene, but the targeted location per se is by nature invisible, and no environmental cues demarcate its boundary, so the hearer must construct it conceptually. Thus, the target consists both of a physically perceived component and a conceptually constructed component, and it might accordingly be considered to belong further rightward into the conceptual region of the scale. To illustrate, a speaker might point toward a rural road some twenty yards away and say either (55a) or (55b).

- (55) a. That’s where a galloping horse lost a shoe this morning.
b. That’s where a speeding car lost a hubcap this morning.

In both cases, the hearer must imaginally construct a spatial location—probably conceptualizing it as an elongated three-dimensional volume roughly aligned with the road—within which an object sailed through the air, hit and moved along the ground, and came to rest. Though the targeted location is grounded in the viewed scene, its boundaries are constructed conceptually on the basis of information mainly from co-form and epistemic cues—here involving beliefs about the ballistic properties of different kinds of objects thrown off at different speeds. Due to this conceptual component in its makeup, the targeted location in (55a) is likely to be imagined as having a lesser width and length, the length perhaps some six yards, while that in (55b) will have a greater width and length, the length perhaps some fifty yards.

The target as a remote location. A target involving even more conceptualization, hence still further rightward on the speech-external scale, consists of a location situated in physical surroundings that cannot be directly seen. The two examples in (32) illustrated this case in fact with successively greater amounts of conceptualization.

Directed by the locative trigger *there* in the “kite” example of (32a), the hearer extrapolated from his actually seen surroundings and proceeded imaginally to the adjacent unseen targeted location through his knowledge about the contiguity properties of space and terrain. And directed by the corporal trigger *here* in the “vendors” example

of (32b), the hearer wholly generated a representation of the targeted location in imagination.

Note that the section on “inferred accessing” containing these examples addressed the nonperceivability of the targetive *cues* coming from the target. What is addressed here, though, is the nonperceivability of the target itself.

The target as a temporal interval. Another type of speech-external target, a temporal interval, can require still more imaginal processing to construct and so be still further rightward into the conceptual region of the scale. An example is the period of time targeted by the trigger *this* in (56).

(56) This is the time farmers are plowing their fields.

The moment of this trigger’s occurrence constitutes the choral cue, which the hearer determines through interoceptive accessing (see section 1.5.1). But the hearer conceptually constructs the targeted interval—its boundaries and duration as it progresses up to and past the trigger’s moment of occurrence—through whatever knowledge he has of farming methods.

The target as a concept inferred from a perceived physical entity. Since the current speech-external scale has been set up to run from the physical to the conceptual, a target consisting of a pure concept might be regarded as located toward the rightmost end. Just short of the end would then be a targeted concept whose presence must still be inferred from perception of the physical.

To illustrate this, if a chimpanzee in an experimental setup looks at two rods and then connects them to reach a banana, one researcher might say (57) to another while pointing at that behavior. Here, the target of the speaker’s trigger *that* is a pure concept, but one inferred to be in the chimp’s mind through observation of its behavior.

(57) That idea the chimp just got is a new one for him.

The target as a concept not inferred from a perceived physical entity. At the far right end of the proposed scale, then, is a concept that can be targeted wholly without hearer perception of the physical. An example of this appears in (58), where the trigger *that* targets a concept—a particular party held last week—existing in the hearer’s memory, that the hearer is directed to search for and identify. The hearer has a memory of that party either because he had attended it together with the speaker, or because the speaker had attended it alone but had later described it to the hearer. In either case, both speaker and hearer must jointly hold memories of the same targeted concept.

(58) That was a great party last week.

Diessel (1999) cites this same type of reference—calling it the “recognitional use” of a demonstrative—and cites its jointness property as well. However, he treats it as a major separate taxonomic category on a par with anaphora and “discourse deixis.” By contrast, the array of examples presented here suggests that this type of case is actually located on a continuum, differing from other cases more by degree and by a few additional properties than by a categorical boundary.

Target differences across conceptual aspects Section 1.6.1 introduced the notion that a hearer could construct a conceptual complex at the third further-knowledge level in association with a portion of discourse such as an utterance. A further notion based on this was that, for his target, a hearer could carve any of indefinitely diverse portions or aspects out of such a conceptual complex. Those notions were applied to the speech-internal domain, but they have speech-external analogs, as presented here.

A hearer can construct a conceptual complex at a further-knowledge level in association with a speech-external scene he is perceiving. And the target can be seemingly any portion or aspect of that complex. We demonstrate these notions with a speech-external analog to the speech-internal “cyclist” example in (48). In place of the earlier speaker’s opening utterance about a bicycle trip, the situation now is that the speaker and hearer, hiking through the woods, approach a back country road and see a man bicycling past them on it. Where the speaker in the earlier example then went on to utter one of three further sentences, each with its own trigger and co-forms, the speaker here utters one of three comparable sentences, shown in (59), to open the discourse.

- (59) a. That’s too much exertion he’s putting into his riding.
 b. That’s a good route he’s taking to get into the hills quickly.
 c. That’s a good view he’s got of the hilltop pavilion.

Before the speaker says anything, the hearer has viewed the scene and constructed a conceptual complex in association with it. If the speaker now says (59a), the noun *exertion*, as earlier, provides the co-form cue that the target has the property of being physical activity performed with a degree of intensity above some norm. For the target, the hearer will narrow down to that part of his conceptual complex that has this property, perhaps settling on the rider’s force and speed in pedaling. In accord with the earlier distinction, the hearer’s targeting process here will leave his original conceptual complex unmodified if that complex already included a clear concept of exertion.

Cases of modification that involve shifting or augmentation can also be found here. Thus, suppose next that, before any utterance by the speaker, the viewed scene had evoked in the hearer some concept of the route the cyclist was taking, but only at a low level of salience. If the speaker then says (59b), a co-form cue from the word *route* will first modify the hearer’s extant conceptual complex by shifting levels of salience—increasing the level of salience held by the route aspect within it while decreasing the

salience of other aspects. And it will then direct the hearer to focus in on that aspect as the intended target, thus doing double duty as in the speech-internal case.

Suppose finally that, before any utterance by the speaker, the scene as perceived by the hearer had not evoked in him any thought regarding the view from the cyclist's perspective. Then hearing utterance (59c) with its co-form from the word *view* would modify his conceptual complex through augmentation—by adding that concept to it. The concept would then be in place there for him to target it—the co-form again doing double duty.

The whole of the present section 1.6.2, in sum, shows that speech-external targets have an open ontology, much as was seen for speech-internal targets. Further, their ontological spread can be arrayed along a scale from the physical to the conceptual and can be cognitively processed in ways comparable to those seen for speech-internal targets. These parallels across the speech-internal and speech-external domains again support the proposed unity of a single targeting system.

1.7 Characterizing Space and Time

All aspects of the targeting process involve space and/or time. Some do so directly. Thus, as treated in chapter 2, some triggers specifically target a spatial or a temporal location. Chapter 5 proposes that, on viewing a speaker's gesture, a hearer cognitively generates an imaginal chain of fictive constructs that connect the gesture spatially with the target. Or again, chapters 11 and 12 describe how cues relate temporally to each other and to the target.

Rather than parcel out the particular characterizations of space and time needed for such separate aspects of targeting, it seemed best to provide an integrated characterization in this overview. The characterization that follows, then, includes the concepts of space and time that will be called on in the subsequent descriptions of targeting, though without invoking targeting itself. Spatial properties are addressed in the first section, corresponding temporal properties in the second, and unique temporal properties in the third.

1.7.1 The Conceptualization of Space

At its cognitive basis, **space** is perhaps best understood as a conceptual construct, specifically, as a matrix or framework in which entities exist. The term **entity** here refers equally to what can in turn be conceptualized as unbounded material or a bounded object. Such an entity can be either stationary or moving.

Space has three-dimensional, or volumetric, extension. It is conceptualized as being “straight,” without bends or curves; evenly distributed, without condensation or rarefaction; continuous, without gaps; and indefinitely extensive, without boundaries. As an overall containing matrix, it is conceptualized as stationary, not as moving.

The category “state of dividedness” proposed in Talmy (2000a: chapter 1) is conceptually applicable to space. Space can thus be conceptualized either as a smoothly

continuous field without intrinsic internal boundaries, or as a field composed of discrete bounded-off points of zero dimension, with some concept of “adjacency” between neighboring points. Which of the two conceptualizations is selected depends on the given circumstance.

Bounding off As a further conceptual construct, a portion of space can be imaginably bounded off from the rest, whether this portion extends over three, two, one, or zero dimensions. English words referring to a dimensionally specific bounded-off portion of space include *volume* (3-D); *area*, *plane* (2-D); *line* (1-D); and *point* (0-D). The word *region* can refer to bounded-off portions of three, two, or one dimensions.

The particular dimensionality attributed to a bounded-off portion of space can in part result from extensional and perspectival operations—among the cognitive operations described in Talmy (2000a: chapter 1). For example, a volume can undergo an operation of **reduction** to be conceptualized as a point, as from the adoption of a distal perspective. And a point can undergo an operation of **magnification** to be conceptualized as a volume, as from the adoption of a proximal perspective.

What bounds off a portion of space is a still further conceptual construct, its **boundary**, itself a bounded-off portion of space of one dimension less. Thus, the boundary of a three-dimensional volume is a two-dimensional plane; that of a two-dimensional plane is a one-dimensional line; and that of a one-dimensional line is a pair of zero-dimensional points.

A spatial location Proceeding on, a conceptual bounded-off portion of space can be treated as a yet further conceptual construct—a **spatial location** or, where contextually clear, simply a “location”—if two conditions are met. For the first condition, a physical entity did, does, or could in principle appear in the bounded-off portion. The entity here could either occur somewhere within the bounded-off portion or wholly fill it. In the case where an entity did or does appear in it, the bounded-off portion can in English be referred to as the “entity’s location.” The entity can consist of an object, objects, or material, whether stationary or moving. In Talmy’s (2000a: chapter 5) terms for the participants in a spatial relation of this kind, the entity functions as the **Figure** in relation to the bounded-off portion, which itself functions as the **Ground**.

For the second condition, the bounded-off portion in turn has particular spatial relations either to the spatial matrix as a whole or to other bounded-off portions within the matrix. These two types of spatial relations are respectively absolute and relative. Such spatial relations together constitute a second set of Figure-Ground relations. The bounded-off portion here functions as a Figure with respect to its surroundings, which function as the Ground. A location is thus at the intersection of two nested Figure-Ground relationships, functioning as the Ground in the first and as the Figure in the next.

As a conceptual construct, a location is not in itself perceivable. But due to the perception of physical objects or material that occupy it (condition 1) or surround it (condition 2), a location may at times be treated as if it were itself perceivable.

Illustrating absolute and relative locations The example in (60a) illustrates a spatial location—the subject’s place of residence—conceptualized as having an absolute relation to the spatial matrix. In this case, the matrix itself is conceptualized as consisting of adjacent points, each unique and distinct in its identity and its “address” from all the others.

- (60) a. Sam lives at 951 Blake St. in Berkeley.
b. Meg lives five miles east of Clark.

By contrast, (60b) illustrates a spatial location, again the subject’s place of residence, conceptualized as having a relative type of spatial relation to another bounded-off portion of space, someone else’s place of residence. A spatial relation of this type can be specified through certain further conceptual constructs—potentially more than one at the same time, as here.

Magnitude. One such construct is **magnitude**. In the present example, this construct comprises the metrically specific magnitude of the distance between the location and the other bounded-off portion of space, namely, five miles.

Grading and bias. Another such construct can be called **grading**. In one of its forms, this type of construct pertains to a linear dimension conceptualized as composed of adjacent points. Here, a different amount of some designated factor is manifested at each point, and the amount increases incrementally in one direction along the linear grading. This direction will be called the grading’s **bias**. Here, the biased grading is that of “eastwardness.”⁶

1.7.2 The Corresponding Conceptualization of Time

The aspects of our conceptualization of space just proposed seem largely to have counterparts in our conceptualization of time. In fact, the very wording of the foregoing description for space largely holds here for time, and much of it is retained to highlight the parallelism.

At its cognitive basis, then, **time** is perhaps best understood as a conceptual construct, specifically, as a matrix or framework along which events occur (V. Evans, 2003, also treats it as a matrix). The term **event** here refers equally to what can in turn be conceptualized as unbounded occurrence or a bounded act. Such an event can be either static (a state) or dynamic.

Time has one-dimensional, or linear, extension, and so will also be called the **time-line**. It is conceptualized as being straight, without bends or curves; evenly distributed, without condensation or rarefaction (speedups or slowdowns); continuous, without gaps; and indefinitely extensive, without boundaries. As an overall containing matrix, it is conceptualized as stationary, not as moving (though see the discussion of the “moving time metaphor” below).⁷

In terms of the “state of dividedness” category, time can be conceptualized either as a smoothly continuous line without intrinsic internal boundaries or as a line composed of discrete bounded-off points of zero dimension with some concept of “adjacency” between neighboring points. Which of the two conceptualizations is selected depends on the given circumstance.

Bounding off As a further conceptual construct, a portion of time can be imaginably bounded off from the rest, whether this portion extends over one or zero dimensions. English words referring to a dimensionally specific bounded-off portion of time include *interval*, *period* (1-D); and *instant* and *point* (0-D). The word *moment* indicates either a zero-dimensional or a brief one-dimensional bounded-off portion.

The particular dimensionality attributed to a bounded-off portion of time can in part result from extensional and perspectival operations. Thus, an interval can undergo an operation of reduction to be conceptualized as an instant, as from the adoption of a distal perspective. And an instant can undergo an operation of magnification to be conceptualized as an interval, as from the adoption of a proximal perspective.

What bounds off a portion of time is the conceptual construct of a “boundary,” itself a bounded-off portion of time of one dimension less. In particular, the boundary of a one-dimensional interval is a pair of zero-dimensional points. Time here, of course, differs from space in being dimensionally more limited, one- as against three-dimensional. Hence, bounded-off portions of time can range only from zero to one dimensions, while those of space can range from zero to three dimensions.

A temporal location To continue, a conceptual bounded-off portion of time can be treated as a yet further conceptual construct—a **temporal location**—if two conditions are met. For the first condition, an event does or could in principle occupy the bounded-off portion, whether occurring somewhere within it or wholly filling it. This event can consist of one or more bounded acts or of unbounded occurrence, whether static or dynamic. The event functions as the Figure in relation to the bounded-off portion, which itself functions as the Ground.

For the second condition, the bounded-off portion in turn has particular temporal relations either to the timeline as a whole or to other bounded-off portions along the timeline. These two types of temporal relations are respectively absolute and relative.

Such temporal relations together constitute a second set of Figure-Ground relations. The bounded-off portion here functions as a Figure with respect to its surroundings, which function as the Ground. A temporal location is thus at the intersection of two nested Figure-Ground relationships, functioning as the Ground in the first and as the Figure in the next.

Illustrating absolute and relative locations The example in (61a) illustrates a temporal location—the subject’s time of birth—conceptualized as having an absolute relation to the timeline. In this case, the timeline itself is conceptualized as consisting of adjacent points, each unique and distinct in its identity and its locus from all the others.

- (61) a. Sam was born at exactly 3:00 PM on June 1, 1980.
 b. Meg was born five years after Clark.

And (61b) illustrates a temporal location, again the subject’s time of birth, conceptualized as having a relative type of temporal relation to another bounded-off portion of time, someone else’s time of birth. A temporal relation of this type can be specified through certain further conceptual constructs—potentially more than one at the same time, as here.

Magnitude. One such construct is magnitude—here consisting of the metrically specific magnitude of the interval between the temporal location and the other bounded-off portion of time, namely, five years.

Grading and bias. Another construct is grading, here pertaining to a linear dimension conceptualized as composed of adjacent points. In this construct, the amount of some designated factor increases incrementally in one direction along the linear grading, its bias. Here, the biased grading is that of “lateness.”

Summary of properties ascribed to both space and time In sum, space and time share the following properties. Both are conceptual constructs understood as matrices that are “straight,” evenly distributed, continuous, indefinitely extensive, and stationary. In both matrices, portions of one or another dimensionality can be imaginably bounded off, where the boundaries are themselves bounded-off portions of one dimension less. Such portions can undergo conceptual processes that increase or decrease their conceived dimensionality. Both matrices can be conceptualized either as smooth or as comprised of adjacent points. In both, a Figure element that is uniplex, multiplex, or continuous can occupy a location as Ground—whether localized within it or distributed over it. This location in turn acts as a Figure in relation to its surroundings as Ground. Here, it can have either an absolute relation to the matrix as a whole, or a relative one to other bounded-off portions in the matrix, specified through such further constructs as magnitude and biased grading.

1.7.3 Properties Unique to Time

The conceptual constructs and properties cited for time in the preceding section were generally analogous to those cited for space. But we here cite properties that seem unique to the conceptualization of time.

Progression One property, here termed **progression**, is not only present for time while absent for space, but it is also unique to time among all conceptual domains. Progression may have to be treated as axiomatic, undefinable in terms of more primitive components. But the following paragraph may suggest its character, even though it necessarily includes concepts that are themselves already progressional.

Every individual point on the timeline exactly once becomes in some sense “active” or “on”—a privileged state that defines “the present” or “the now”—where this state is itself generally conceptualized as approximately point-durational. Once this state is manifested by a particular point, it is in turn manifested by the adjacent point in the direction of the timeline’s “lateness” bias, in an unbounded continuity of such shifts.

Stasis and change. Certain concepts intrinsically rely on this conception of temporal progression. **Stasis** and **change** are a complementary pair of such concepts. They pertain to an entity that manifests a certain class of properties at more than one point of time. Consider first the case of two adjacent consecutively active points on the timeline. The entity exhibits stasis with respect to that class of properties if the particular properties manifested at the two points are the same and change if they are different.

If we instead consider two nonadjacent points of time, the concept of stasis is, perhaps surprisingly, more stringent than that of change. Change is ipso facto present if the particular properties manifested by the entity are different at those two points. But if the particular properties are the same at those two points, the entity exhibits stasis only if it also manifests that property at all the intervening points, thus eliminating the possibility that it changed away from and back to the property during the interval.

The property classes that an entity can manifest in this way include its spatial location, its state of existence (existence vs. nonexistence) or, for that matter, its color. The first of these, especially when considered over multiple adjacent points of time—is associated with further familiar concepts. An entity exhibiting stasis in its spatial location—that is, having the same location at multiple adjacent temporal points—specifically displays **stationariness**. But an entity exhibiting change in its spatial location specifically displays **motion**.

Such motion has a narrower and a broader sense. In the narrower sense, the entity occupies different adjacent points of space at consecutively active adjacent points of time, so that the motion is smooth and constitutes a **path**. The broader sense also includes saltatory translocation, such as an entity’s so-conceived disappearance from a particular spatial point at one temporal point and its reappearance at a nonadjacent

spatial point at a later temporal point (for a comparable notion, see Kita, 1999; Bohne-meyer, 2010).

A crucial aspect of the preceding is that all concepts of change—and hence the concept of motion within space—rest on the property of progression in the time domain. Accordingly, motion—that is, change in spatial location—is not simply a property of space. Rather, it is a property of both space and time, in particular, of their conjunction, what we will refer to as **spacetime**.

Relating space and time metaphorically. Much work in conceptual metaphor theory relates conceptions of space and time. In particular, it largely sets up a mapping from space as source domain to time as target domain (see, e.g., Fillmore, 1997 [1971]; Clark, 1973; Lakoff and Johnson, 1980; Sweetser, 1988; Haspelmath, 1997; Casasanto and Kyle, 2012; Dancygier and Sweetser, 2014). Such a metaphoric mapping from space to time may in fact largely apply to the temporal conceptual constructs described in section 1.7.2. However, it does not apply in any direct way to metaphors of motion in time (see Moore, 2014).

As seen, literal motion can exist as a concept only within the compound domain of spacetime, the union of space and time. Any use of reference to literal motion so as to metaphorically represent aspects of time is thus not a mapping from *space* to time, but rather one from *spacetime* to time. Such a mapping might accordingly be regarded as a round trip, from time to spacetime and back to time (for a comparable notion, see Langacker, 2012). In this regard, consider the following sentences.

- (62) a. The Mars rover is moving ahead toward the crater rim.
- b. The graduation ceremony in the school auditorium
is moving ahead well.
- c. As my granddad describes it, time is moving ahead faster and faster.

The sentence in (62a) illustrates the literal spacetime concept of motion, where time first lends its unique property of progression to space. Spacetime then lends this concept of motion back to time to yield a range of “motion metaphors of time,” as Moore (2014) terms them. This range does not only include such well-known types as the moving-time metaphor (*Christmas is approaching*) and the moving-ego metaphor (*We’re approaching Christmas*). It also includes metaphors in which the unfolding of event structure is represented as moving, as in (62b), and in which time itself is represented as moving, as in (62c).

Terminology. The present analysis and that in Galton (2011) reach similar conclusions about these space-time interrelationships. In these analyses, Galton’s term “transience” corresponds to my term “progression,” which is continued here from its first use in Talmy (2000a: chapter 1) for the same purpose. The two terms have different merits.

“Transience” has the advantage of referring solely to time, as well as that of highlighting the one opportunity that any point of time has at being “now.” “Progression” has the advantage of highlighting the ongoing continuation of such opportunities for being “now.”

Intrinsic directedness The uniquely temporal property of progression entails another property that may also be unique to time. This is the property of **intrinsic directedness** along a linear dimension. The intrinsic directedness of the timeline is the pattern in which adjacent points become successively active from earlier to later.

Now, it is true that beside some constructions referring to a sweep along the timeline in its directed sense, as in (63a), a corresponding construction can refer to a sweep opposite the directed sense, as in (63b). But such a pair of constructions can be taken to represent the directions in which one’s focus of attention moves along the timeline. Talmy (2000a: chapter 1) calls these respectively the “co-sequential” and the “anti-sequential” directions of viewing. But whichever the direction of viewing, it leaves intact the timeline’s intrinsic directedness from earlier to later.⁸

- (63) a. This festival you’re witnessing dates from 1600.
b. This festival you’re witnessing dates back to 1600.

Directedness in space. By contrast with time, space evidently lacks intrinsic directedness. To be sure, we earlier did posit a property of “directional bias” along a linear spatial dimension, like that of “eastwardness” in (60b). However, such a bias is not intrinsic to that spatial dimension but, rather, is conceptually imputed to it. A conceptual bias in the opposite direction can always be imputed to it instead.

For example, for any point Q that can be conceptualized as located east of point P on some line of latitude under an eastwardness directional bias, point P can as readily be conceptualized as located west of point Q on that same line of latitude under a “westwardness” directional bias.

Fictive motion. Any seeming directedness along a linear spatial dimension may then actually arise in cognition through a process of **fictive motion** (see Talmy, 2000a: chapter 2, and chapter 5 here). Fictive motion may rest on a cognitive procedure in which spacetime is metaphorically mapped not back onto time, as seen earlier, but rather further onto space. In effect, such a mapping is not a round trip but a two-leg outbound trip: from time onto space, and, from this spacetime conjunction, again onto space.

In fictive motion, more specifically, time is first mapped onto space to yield a conceptualization of some intangible entity moving along a path. This intangible entity can be further conceptualized as having a specific geometry, such as that of a point, and a specific character, such as that of being someone’s focus of attention, among

other possibilities. As it progresses, this spacetime path is at the same time progressively mapped onto a particular object or region in space.

An illustration of these processes is shown in (64) for the “coextension path” type of fictive motion. Here, something intangible—it might be the hearer’s attentional focus—moves fictively along a spacetime path that is mapped onto the stationary linear extent of an object (the fence) located statically in space.

(64) The fence goes from the plateau down into the valley.

According to these proposals, then, any seeming directedness along an otherwise static linear spatial dimension is not intrinsic there, but ultimately derives from the intrinsic directedness of the timeline through the phenomenon of fictive motion. Thus, in a hearer of (60b), the sense of something moving from the location of Clark’s residence eastward to that of Meg’s is not due to any intrinsic directedness of eastwardness, but to the fictive motion of, say, the hearer’s imaginal focus of attention along that line of latitude, itself in turn arising from the intrinsic directedness of the timeline.

1.8 Relating This Study to Others

The present study of targeting is set within the framework of cognitive linguistics, but it bears certain relationships to prior studies of comparable phenomena in other frameworks, including those of generative linguistics, computational linguistics, linguistic anthropology, language philosophy, and semiotics. We look at some specifics of these relationships in this section, but before that we make some general observations.

1.8.1 General Approach Differences

We start with the central difference between the approach of this study and that of others. The three-stage targeting procedure proposed here seemingly has no counterpart in other approaches. In particular, seemingly no other framework has a counterpart to our first stage in which a trigger directs a hearer to search for cues to a target (i.e., where an anaphoric or deictic form directs a hearer to search for cues to an antecedent or external entity). There is further seemingly no counterpart equaling our second stage in which such cues come in ten categories, representing ten different sources of information, and in which the hearer combines them all to zero in on the target. And there is seemingly no counterpart to our third stage in which the hearer maps the concept of the target back onto the trigger (i.e., where the hearer maps the concept of the antecedent or external entity back onto the anaphoric or deictic form) for integration into its sentence.

Processing by speaker and hearer In this three-stage procedure, the particular significance of the hearer’s processing also distinguishes the present approach from others.

We examine this difference and in the rest of the present paragraph, to accommodate the traditional approach, use the terms “anaphor” and “antecedent” instead of “trigger” and “target.” The most that standard linguistics generally maintains about the relationship between the anaphor and the antecedent is that they are coreferential. But the present framework holds that that relationship has been misconceived as a static one. In our framework, when the hearer first hears the anaphor, it is solely a linguistic form with its own semantic properties and not yet coreferential with anything. The hearer must then proceed to note the anaphor’s information about the antecedent, find other cues to the antecedent, use all these cues together to determine the particular linguistic element that does constitute the antecedent, and map the concept of that antecedent back onto the anaphor. Only when this concept has been mapped back onto the anaphor is the anaphor coreferential with the antecedent.

This last case is just one instance of a more general difference between approaches. By and large, standard linguistics treats language as an autonomous domain that is abstracted away from temporal progression and from the cognitive processing of its users. In that treatment, the components of a sentence bear static syntactic and semantic relations directly to each other. Built into the present framework, by contrast, is consideration of the active cognitive processing that the collocutors must undertake through time. Among other processes, the speaker must produce or perceive linguistic and extralinguistic elements with their particular interrelations. And among other processes, the hearer must discern and integrate these elements and their interrelations.

The relation between the two domains We next cite a general approach difference involving the relation between anaphora and deixis. As Consten (2003) suggests, most approaches highlight the differences between the two domains, or simply focus on one of them. For example, Mitkov (1999) and Ariel (2014) focus on anaphora, while Diessel (1999, 2013), Levinson (2003), and Chilton (2014) focus on deixis.

To be sure, a few treatments have also highlighted the similarities or commonalities between the domains. Authors with this approach include Bühler (1934), Peirce (1955) within semiotics, Silverstein (1976) and Hanks (2011) in their treatment of indexicality within linguistic anthropology, Consten himself (who sees a fuzzy boundary, parallelism, and coordination between the two domains), and Recanati (2005) within the tradition of language philosophy. Even Halliday and Hasan’s (1976) labeling of anaphora and deixis respectively as “endophora” and “exophora”—with prefixes referring to “inside” and “outside”—suggests an awareness of the two domains’ relatedness. But this minority group generally does not develop the idea of relatedness far enough. By contrast, the main thesis of the present study is that a single linguistic/cognitive system, that of targeting, underlies both anaphora and deixis. These two domains, while maintaining certain differences, are unified in that single system.

Constructive conflict For a further general difference between approaches, the present study may be alone in theorizing and detailing a ramified system in language for the use of constructive conflict in the determination of a target. In this system, the speaker purposely sees to it that cues with certain incompatibilities are what the hearer will find, relying on the hearer's corresponding capacity to process them appropriately. In finding these incompatible cues, the hearer then carries out certain procedures (see chapter 14) to resolve them into a coherent indication of the target. It appears that, in some circumstances, constructive conflict of this sort is the only means available for designating and determining a target.

Targeting gestures A final difference—now part general, part specific—appears in the analysis of speech-accompanying gestures. This study (especially chapter 5) can here be compared with ones in the growing field of Gesture Studies, such as Kita (2003), Kendon (2004), McNeil (2005). On the one hand, there is agreement that such gestures are integral to the utterances. But the present study differs from the others in three respects. First, it recognizes a class of often obligatory “targeting gestures” that serve as cues to a target and sees this class as one cue category out of ten that a trigger directs a hearer to ascertain so that he can determine the target. Second, it shows in detail how targeting gestures constitute a prodigious system that extends well beyond the prototype of pointing. And third, it details the proposal that when a hearer sees a targeting gesture, he cognitively generates an imaginal chain of fictive constructs that connect the gesture spatially with the target. This third feature is another case of the active cognitive processing by the speaker and hearer that the present approach emphasizes.

1.8.2 Specific Approach Comparisons

We now proceed to more specific one-to-one comparisons. Targeting is first related to my own framework of cognitive semantics and then to a succession of other approaches.

Targeting and cognitive semantics Discussed here is how three aspects of targeting—the closed-class character of triggers, their relation to attentional processes in the speaker and hearer, and cognitive processing in the speaker and hearer generally—can be related to the cognitive-semantic framework.

Closed-class reference to attention. First, the cognitive-semantic framework includes the idea that the concepts expressed by closed-class forms from the world's languages together constitute a largely closed inventory. In the inventory, these basic concepts fall into a number of “conceptual categories,” and these categories in turn fall into a few extensive “schematic systems.” Four such schematic systems extensively treated in Talmy (2000a) are configurational structure, perspective point, attention, and force

dynamics (see Talmy, 2006, for an amplified overview of such schematic systems). This conceptual organization of the inventory constitutes one of the most fundamental conceptual structuring systems of language.

Now, with respect to this organization, triggers crosslinguistically are mostly closed-class. And the concepts that they represent fall mainly within the schematic system of attention. Thus, as noted, the function of a trigger inserted by a speaker into her discourse is to initiate a cognitive process in the hearer that will, through stages, direct his attention to a particular target that the speaker already has her attention on. The hearer and speaker will then have joint attention on the target at the point in her discourse at which the trigger is located. Chapter 13 provides a detailed analysis of such joint attention and its incremental buildup through interaction.

In this process, part of the hearer's attention comes to be on a certain succession of entities. Initially on the trigger, it is then on the cues, then on the target, and finally on the target concept's fit within the current sentence's content. In this respect, the present work complements Talmy (2007a). That work mainly compared the different degrees of salience exhibited by distinct linguistic elements, for example, ones occurring together in a single sentence. That is, it compared the different degrees to which they attracted attention. Here instead, we mainly examine how a linguistic element, the trigger, directs the hearer's attention to a succession of entities so that it ends by joining with the speaker's attention.

In sum, then, insofar as triggers are closed-class, they exhibit all the properties of the closed-class subsystem much analyzed in cognitive semantics. And triggers coordinate attentional processes in the speaker and hearer, where attention is itself much analyzed in cognitive semantics as one schematic system within a grid of other such systems.

Cognitive processing. The framework of cognitive semantics also emphasizes analyses of cognitive processing by a speaker and hearer. For example, chapter 6 in Talmy (2000b), "Communicative Goals and Means: Their Cognitive Interaction," examines the cognitive processes a speaker must undertake to produce an utterance. And chapter 5 there, "Semantic Conflict and Resolution," analyzes the hearer's processing in reconciling incompatibilities of meaning across linguistic elements. As noted, the present study of targeting also attends greatly to the cognitive processing of the discourse participants, an emphasis that thus fully fits within the cognitive-semantic framework. The focus here, though, is mainly on the hearer's processing in carrying out the targeting procedure. With regard to the speaker's processing, accordingly, this study mainly considers only those aspects of it that enable and facilitate the hearer's targeting procedure.

Targeting and construction grammars We next look outside cognitive semantics but still within cognitive linguistics to consider the relation of the targeting process to construction grammars, for example, Fillmore, Kay, and O'Connor (1988), Kay and

Fillmore (1999), Goldberg (1995, 2006), Croft (2001). Targeting is not in conflict with such grammars, but they may require further theoretical apparatus to accommodate it.

The kinds of constructions mainly addressed so far by such grammars have had relatively definitive syntactic characteristics. For example, current construction grammars would be well suited to delineating the Japanese predicate construction that consists syntactically of a transitive verb, a direct object NP preceding the verb, and an *o* object marker postposed to the NP. But they are less suited to delineating a construction like that of targeting with certain non-determinate characteristics.

Thus, in the speech-internal case, one difficulty for construction grammars occurs in the fact that a targeting construction includes not only the trigger, but also the linguistic element that it targets. The particular syntactic status of this element and its location in the surrounding discourse is generally not predetermined. In (65), for example, the construction that includes the trigger *her* also includes the target, the linguistic element *Joan*. But this targeting construction cannot prespecify that target's syntactic status as the head of a possessive within a direct object noun phrase, nor its discourse location as being in the immediately preceding sentence. Construction grammars would need to be augmented to handle such indeterminacies.

(65) I saw Joan's book lying on the table. I returned it to her.

Further, the idea of what a construction is would have to be greatly expanded in the speech-external case. There, it would have to include some often physical element being targeted by the trigger, situated at some location in the surrounding environment that cannot be prespecified.

In addition, construction grammars at present regularly integrate lexical, syntactic, semantic, and pragmatic features within a single construction. But they would need to be expanded to include as well the cognitive procedure of targeting—all three of its stages—that the hearer must undertake to determine the target and return its concept to the sentence.

Targeting and the “binding” of generative grammar We now specifically compare the process of targeting with that of “binding” in generative grammar for the speech-internal case (see, e.g., Buring, 2005). In the terminology of that approach, an antecedent (the binder) binds an anaphor (the bindee). The direction of this binding relation is thus from the antecedent to the anaphor. This direction, however, is basically the reverse of that in targeting, where a trigger (the anaphor) “targets” a speech-internal entity (the antecedent).

Now, each direction might be cognitively valid by being more concordant with the cognitive processing of one of the collocutors. Thus, the direction of the binding relation might be better suited to the speaker because the antecedent that she has used places constraints on the anaphor that she will soon select. Such properties as the

antecedent's gender and number may be reflected in that anaphor. But the direction of the targeting relation would then be more suited to the cognitive processing of the hearer. A hearer, after all, does not know that any instance of coreferencing is in play until he hears the trigger. As he was listening to the speaker's preceding discourse, he was not then aware that a particular constituent within it was soon to function as the target of the trigger. It is hearing the trigger that sets him on a search for the relevant earlier constituent, now in working memory, to single it out as the target.

But the organization of language itself may indicate a bias toward the targeting direction over the binding direction. Two seeming universals of language, one positive and one negative, may provide such an indication. For the positive universal, seemingly all languages have closed-class (grammatical) forms that can function as anaphors—or, equivalently here, triggers. Such anaphors are largely proforms and then mainly pronouns (though they need not be—see section 2.1.3 for exceptions).

For the negative universal, seemingly no languages have what might be called **antecedent marking**. Such marking might consist of a closed-class form optionally in construction with the constituent, where it would indicate that the constituent is an antecedent, one that an upcoming anaphor will soon refer back to. We can illustrate such antecedent marking by imagining that English had an inflection *-um* that could optionally be suffixed to the head of a noun phrase functioning as an antecedent. Then in (66), the anaphor *him* would unambiguously refer back to *Frank*, the constituent marked for functioning as an antecedent. Of course in actual English where such marking does not exist, and where the *-um* would be absent from (66), it would then be ambiguous whether *him* referred back to *Ted* or *Frank*.

- (66) Ted and Frank-um were standing on the corner.
I went up and spoke to him.

It might be argued that antecedent marking does not exist because a speaker would not know in advance which constituent she is going to refer back to with a subsequent anaphor. But two counterarguments can then be raised. First, there are surely times when a speaker, perhaps like the one in (66), would indeed know in advance that she will soon be referring back to a particular antecedent and, in such a case, could easily insert an optional antecedent marker. Second, the fact that a speaker can readily use a cataphor to refer forward to a postcedent—as in the “pen” example of (30b)—shows that a speaker can indeed know in advance that she will be making two references to the same entity and thus plan out the use of, say, a pronoun for the earlier one and a full noun phrase for the later one. The same kind of planning would then allow for antecedent marking followed by an anaphor.

We thus see that there is an apparent universal bias toward the grammatical indication of anaphors and against that of antecedents. Perhaps no general principle governs what the presence or absence of some feature in language might imply about how

language is cognitively processed. Still, this universal bias might at least indicate some linguistic alignment with a cognitive processing by the hearer that starts with the anaphor, as in targeting, rather than the processing by the speaker that starts with the antecedent, as in binding.

Targeting and indexicality We next compare targeting to the “indexicality” elaborated within linguistic anthropology, as by Silverstein (1976, 2003). Silverstein divides indexicality into two main types, referential and non-referential. His referential indexicality generally corresponds to our targeting in scope, if not in analytic particulars. Thus, in both these frameworks, to phrase it in neutral terms, a linguistic element in a speaker’s discourse directs a hearer’s attention to a particular component of the speech or nonspeech environment that is then the referent of the linguistic element. But targeting differs from referential indexicality mainly in that it inserts two extensive cognitive procedures into the hearer’s processing—the trigger-to cues and the cues-to-target stages—between when he hears the linguistic element and when he determines its referent (much as targeting differs from semiotics, as seen in the next subsection).

In non-referential indexicality, some feature of a speaker’s use of language leads a hearer to ascribe particular attributes to certain components of the speech-external environment—generally to the speaker and/or the hearer themselves. Such features of language use can consist of grammatical forms, lexical choices, discourse content, delivery style, accent, the use of hypercorrection, and so on. In turn, the attributes that such features lead the hearer to ascribe to such components as the speaker and/or hearer can include their affective state, knowledge status (e.g., from evidential markers), gender, personality type, social category, and social relationship.

To illustrate non-referential indexicality with an example of our own, the word *damn* in (67) leads the hearer to ascribe to the speaker the affective state of anger.

(67) Eat your damn food!

This anger—as well as its object—are essentially unrelated to the propositional content of the sentence and, in effect, transcend it. Thus, even though the word *damn* is in attributive construction with the noun *food*, the speaker is not necessarily angry at the food—she may even feel well disposed toward it. The addressee might be the object of the speaker’s anger. But she could also simply be angry over some outside circumstance.

Now, through a contrast of the two frameworks, our analysis of targeting may in turn help clarify some aspects of non-referential indexicality. First, much as in speech-external targeting, the hearer of a non-referential indexical feature does have to single out some component of the speech-external environment. One main difference though is that, in targeting, the component to be singled out is generally not predetermined, whereas in non-referential indexicality it may be quite determinate (see section 1.4.2

for this distinction). In the latter case, there is a seemingly constrained set of components that would ever need to be singled out, perhaps limited to the speaker, the hearer, and their relationship. In fact, by one interpretation, this “set” is limited to the speaker alone. In (67), for example, the hearer must settle on the speaker as the component to ascribe anger to.

There is a related difference. In targeting, the main goal is for the hearer to determine the component to be singled out. But in non-referential indexicality, the main goal is not the singling out of a component, since that, after all, is relatively predetermined. It is, rather, for the hearer to ascribe an attribute to that component. In accord with this difference, the information provided by the cues in targeting helps in the singling-out process. But the information provided by a non-referential indexical feature actually constitutes the attribute that will be ascribed to the component.

A still further related difference lies in the speaker’s intentionality in affording this information. In targeting, it is always the speaker’s aim that the hearer will find the information and use it to determine the target. But in non-referential indexicality, the speaker can provide information intentionally, unintentionally, or even against her intentions. Thus, the speaker in (67) produces the word *damn* with the intention that the hearer ascribe anger to her. But a speaker who, for example, exhibits the feature of hypercorrection in her speech may be unaware of the information as to her social status that it might lead a hearer to ascribe to her. And a speaker with a regional accent might, in fact, know what attributes it leads hearers to ascribe to her and wish that it did not do so.

For a final difference, targeting necessarily includes a third stage in which the hearer maps the concept of the now-determined target back onto the trigger to integrate it into the overall conception of the sentence. But in non-referential indexicality, the ascription of an attribute to the speaker or other component of the context is generally the final step (though it may in turn lead to higher-order indexical forms).

Targeting and Peircean semiotics We finally compare targeting with semiotics in the tradition of Peirce (1955). The trigger in our framework corresponds to his “symbolic indexical sign” or simply “index,” and our target corresponds to the “object” of such a sign. Peirce posits that a “somebody” or a “mind” must be present for an index to function as a sign. (The perception of the sign by the somebody leads to the formation of a corresponding “interpretant sign” in his mind).

To this extent, our approach agrees with Peirce’s. But he does little to explain the process by which the perceiver of an index in fact determines its object. In its usual formulations, the Peircean tradition says simply that a sign “stands for” or “represents” its object or that an indexical sign “points to” or “indexes” its object. But in our terms, such formulations amount to a simple static relationship between sign and object. By being little explicated, they obscure the extensive intricate processing that a hearer

must, in fact, undertake to get from perceiving a sign to cognizing its object—or, specifically, to get from a trigger to its target.

Targeting, then, can be seen as introducing an entire stratum into Peircean semiotics between an indexical sign and its object. This additional stratum comprises a system of cognitive processing that enables a mind to determine the object after perceiving the sign.

1.9 Terminology

The next two sections respectively provide justifications and alternatives for some of the terms introduced in this study. A glossary of all the new terms is provided at the end of the book.

1.9.1 Reasons for Term Choices

Some of the new terms in this study have been introduced to supersede traditional terms with comparable referents. Since the latter are in such common use, justification of the replacements is called for. Some reasons are presented next.

Speaker and hearer As used in this study, “speaker” and “hearer” are in effect technical terms referring to the producer and recipient of any linguistic communication. They were chosen to reflect the prototype case of an oral communication. But they are intended also to apply to the case of signed language (as the signer and sign viewer), as well as to that of writing (the writer and reader).

Further, the term “hearer” has been chosen over “addressee.” The reason is that “addressee” reflects the speaker’s cognition—the person toward whom the speaker intends to direct her communication—and can be used whether or not that person is attending. The term “hearer” instead reflects the recipient’s cognition—suggesting attention and processing on his part—which is more the focus of this study. Still, the hearer is usually the speaker’s addressee, rather than a bystander.

To facilitate tracking the speaker and hearer in each targeting interaction, we generally represent one of these two collocutors as “he” and the other as “she”—switching these gender assignments between (shorter or longer) portions of text.

Trigger and target The main reason for introducing the new terms “trigger” and “target” is that, by definition, they capture certain commonalities across the speech-internal and speech-external domains—a necessary step by our analysis.

A “trigger,” in particular, generalizes over two types of linguistic form, an “anaphor” and a “deictic.” These traditional terms can still serve if their distinction needs marking. Or combinations of the old and new terms such as “anaphoric trigger” and “deictic trigger” could be used.

Comparably, a “target” generalizes over two types of referent: the referent of an anaphor—that is, an antecedent—and the referent of a deictic. Since there is no standard

traditional term for the referent of a deictic, a further advantage of the term “target” is that it provides a label for it. The domain distinction can again be marked—specifically, with the terms “speech-internal target” and “speech-external target.”

It might have been suggested that the more familiar term “proform” can capture the same generalization across domains as “trigger” and can be used in its place. But some linguistic elements that perform a triggering function are in fact not proforms—for example, tense markers, certain prosodic effects, and semantic components as in the verb *come* (see section 2.1.3). The new term “trigger” includes all of these.

Comparably, it might have been suggested that the more familiar term “referent” can capture the same generalization across domains as “target” and can be used in its place. But the term “referent” can designate what is indicated by generally any morpheme, certainly by open-class morphemes such as the noun *pond* and the verb *swim*. By contrast, the new term “target” designates what is indicated only by a trigger and is preferable for this specificity. It may also be preferable for its suggestion of being something that the hearer must arrive at through active cognitive processing, while a “referent” has only a static relation to its linguistic form.

A still further advantage of the terms “trigger” and “target” is that they circumvent a certain problem of ambiguity in traditional terminology within the speech-internal domain. The traditional terms “anaphor” and “antecedent” have both broad and narrow usages. They can be used in a broad sense to refer to their respective constituents regardless of the order in which those constituents occur. Or, on the basis of the prefixes contained in them, those particular terms can be used in a narrow sense for the case where the antecedent occurs before the anaphor, then to be replaced by the terms “cataphor” and “postcedent” for the reverse order. The terms “trigger” and “target” generate no such ambiguity, and by design they refer to constituents in either order. Where the distinction does need to be marked, the terms **pre-target** and **post-target** are here used for a target occurring respectively before or after the trigger, in accord with our usage of “pre-” and “post-” generally.

As one further advantage, the term “trigger” aptly suggests its function of initiating a cognitive procedure in a hearer. This procedure, as seen, includes processes that lead the hearer toward determination of a target. The word “target” in turn is an appropriate term to pair with “trigger,” since it suggests the goal that the trigger directs the hearer toward.

This study has altogether avoided the traditional term “demonstrative” because the types of triggers that this term has been used to designate in the literature vary too widely for the finer-grained taxonomy aimed for here.

Speech-internal and speech-external As seen, our terms “speech-internal” and “speech-external” indicate that a particular entity is or is not a part of the current discourse, which is itself understood to consist both of utterances and of their conceptual content. More loosely put, the entity is inside or outside the discourse, in the speech or the nonspeech domain. The terms are centrally used to indicate the domain that

a target is in. But they can also be used to indicate the domain of other targeting elements, as in pointing out that all triggers are speech-internal and all gestural cues are speech-external. The advantage of these terms is their transparency—they are explicit about the criterion for categorization. And, apart from occasional fuzzy-boundary cases, a target can be clearly categorized as to which domain it is in.

With this terminology, for example, it is unambiguous that where a trigger targets a whole utterance, the utterance is a speech-internal target (see section 1.6.1). By contrast, reflecting indeterminacies in the traditional terms, Lyons (1977) and Levinson (1983)—respectively using the terms “textual deixis” and “discourse deixis”—feel free to treat a referenced utterance as deictic instead of anaphoric.

Or again, if a speaker says to a hearer *That was a great party last week*, the target of the trigger *that* is an actual party that, let us say, the hearer attended along with the speaker and that is therefore clearly speech-external by the criterion of this term. But, perhaps due to the indeterminacies of the traditional terms, Diessel (1999) classes such a “recognition” referent (his label) as endophoric, along with anaphora and discourse deixis.

“Determining” cues and targets In many cases, a cue or a target has the following four characteristics. It already exists when a trigger is uttered; it has its own intrinsic demarcation or boundaries; it has a known identity; and the hearer can perceive it. In addition, the hearer does not initially know its location in space, in time, or in his memory. In such cases, it is appropriate to say that the hearer must “search for” and then “find” or “discern” the cue or target.

But in some cases, a cue or target does not have all four of these characteristics. Thus, in the vendors example of (32b), the hearer would not have been able even to see, let alone to find, the corporal cue consisting of the speaker’s location, and instead he had to construct it in his mind. And in the “mist” example of (12), the hearer had to first conclude that a cue involving environmental bounding was relevant, and then settle on the outer perimeter of the lagoon as being that relevant cue. Comparably, in the “horseshoe” example of (55a), the target was a location in space whose boundaries the hearer had to approximatively construct in imagination, not find perceptually. Likewise, in the “plowing” example of (56), the hearer had to cognitively construct the temporal boundaries around the planting season, rather than discern them.

To cover cases like these as well, this study in its most generic formulation accordingly says that the hearer must “determine” or “ascertain” a cue or target, instead of “finding” or “discerning” it.

1.9.2 Alternate Terms

Some of the terms introduced in this study present issues that might be resolved by alternative terms. For one such issue, the terms used so far for the three targeting stages, though descriptive, are somewhat unwieldy. We here suggest shorter terms, used at times

in this book. The first, “trigger-to-cues stage” can be alternatively designated as the **cue-determining stage**. The second, “cues-to-target stage” can be the **target-determining stage**. And the third, “target-back-to-trigger stage” can be the **target-insertion stage**.

For another issue, our one-word terms “trigger,” “cue,” and “target” are apt within the context of this study. But they may not evoke our targeting framework if used in another linguistic context. In that case, they might be replaced by longer terms. Respectively, these could be a “targeting trigger,” a “targeting cue,” and a “trigger-based target.”

Finally, some alternatives might be preferred because they would align our terminology with that of other approaches. For example, in the traditional terminology for the speech-internal case, the process of determining the antecedent of an anaphor is often called “anaphor resolution” and sometimes “antecedent resolution.” If alignment is needed here, the process of “targeting” could alternatively be referred to as “trigger resolution” or “target resolution.” Comparably, we could here extend the terminological convention seen in “pronoun,” “proverb,” and “proform”—where “pro-” is prefixed to the name for a linguistic entity to indicate a type of constituent that can stand for that entity. For the sake of alignment, the term trigger could alternatively be designated as a “protarget.” However, the present book will not use such alternatives.

1.10 In Sum

A linguistic/cognitive system of “targeting” is proposed that unifies the traditionally distinct domains of anaphora and deixis. As a speaker communicates with a hearer, her attention can come to be on something in the environment—her “target”—that she wants the hearer’s attention to be on as well at a certain point in her discourse. This target can be located near or far in either the speech-internal (anaphoric) or the speech-external (deictic) environment. At her selected discourse point, she places a “trigger”—one of a special set of mainly closed-class forms (e.g., English *this*, *that*, *here*, *there*, *now*, *then*).

This trigger directs the hearer to perform a certain three-stage procedure. In the first, the “trigger-to-cues” stage, he seeks all available “cues” to the target. Such cues belong to ten different categories representing ten distinct sources of information. In the second, the “cues-to-target” stage, he combines the cues he has determined so as to narrow down to the speaker’s intended target. In the third, the “target-back-to-trigger” stage, he maps the concept of the target he has determined back onto the trigger and integrates it into the overall conception expressed by the sentence.

The ten cue categories fall into five groups of two categories each. These are the core and co-form cues, together in the lexical group; the gestural and corporal cues, together in the bodily group; the targetive and hearer-focus cues, together in the collateral group; the environmental and epistemic cues, together in the background group; and the chro-nal and perichronal cues, together in the temporal group.

In a given event of targeting, the available cues can be compatible, providing either corroborative or complementary information about the target, or incompatible in a way that leads the hearer to resolve the conflicts.

Certain properties characterize the three main elements in targeting: the trigger, the cues, and the target. A trigger, unlike all other linguistic forms, is lexicalized to direct the hearer to ascertain certain cues to its referent. And a trigger's referent, the target, can be at virtually any location relative to that of the trigger, hence requiring a system of cues to determine it, unlike the definitiveness of other linguistic forms that stipulate a particular constituent outside themselves.

Cues, in turn, must meet three felicity requirements. These are their adequacy in number and informativeness, their accessibility to the hearer, and the hearer's being able to access them. To ensure their adequacy, a speaker uses processes of three types: productive, perceptual, and presumptive. Cue accessibility and accessing, in turn, are of six types: perceptual, interoceptive, reflective, working-memory, storage, and inferential. In any event of targeting, each cue divides all the phenomena in the environment into two subsets, ruling in one subset as target candidates and ruling out the other. Where the cues are complementary, the subsets they rule in crosscut each other, leaving only one candidate for target status.

For their part, targets have a certain significant property: their open ontology. While it might have been thought that there would be constraints on the types of targets that a trigger could refer to, it seems that targets can instead be anything. In demonstration of this, both speech-internal and speech-external targets can be arrayed along a scale from the most physical to the most conceptual.

Relevant to targeting, space and time in language can be understood as conceptual constructs that share numerous properties—for example, they are matrices that are straight, evenly distributed, continuous, indefinitely extensive, and stationary, and that contain boundaries, bounded-off portions, and locations. Time uniquely has the properties of progression and grading.

The theoretical framework proposed here for the targeting system distinguishes itself from approaches to comparable phenomena found in construction grammar, generative linguistics, computational linguistics, linguistic anthropology, language philosophy, and semiotics. Its seemingly unique features include a trigger's initiation of a hearer's search for cues to a target, the division of such cues into ten categories, the hearer's processing in determining this target, and the unity of this processing whether the target is inside or outside speech.

Notes

1. The trigger *that* in the utterance targets the sound itself, not the bird producing it. Its syntactic pairing with the noun *loon* in an equational construction accordingly expresses a metonymic

relationship. The relationship would have been literal if the speaker had instead said, *That's a loon's call*.

2. One such exception is the trigger *this* in (i) which targets solely itself if it alone in the sentence is pronounced with creaky voice (see section 1.6.1).

(i) *T-h-i-s* is what phoneticians call creaky voice.

3. This pattern—where the hearer of a trigger has himself produced what the trigger targets—also occurs speech-externally, as in the following example. A man X breaks into a little dance step and a woman Y says *That's funny*. Here, her trigger *that* targets the movement he has just produced. The main difference is whether the target generated by the hearer of the trigger occurs in his speech or nonspeech production.

4. For simplicity, the hearer's selection of the relevant sense from a morpheme's or construction's polysemous range is placed under this first level, though it is often determined by higher levels.

5. The suggested analogy is only partial. One main difference is that the association between shape and concept in a morpheme is mostly arbitrary—hence, symbolic. But for a speech-external phenomenon, it is natural: the identity one ascribes to such a phenomenon is intimately associated with its form.

6. Spatial grading is not limited to being linear. A two-dimensional grading, “radial outwardness”—here also combined with metrically specific magnitude—is illustrated by the sentence *The yellow circle is five feet out from the red circle*.

7. In accord with the proposed properties of time as linear and straight, standard conceptualizations seemingly omit a notion of time as progressing along a zigzag line, outward or inward along a spiral line, or across a plane, among the various possibilities.

As for the proposed property of time as indefinitely extensive, both religion and science may posit a beginning or an end, but such boundary concepts can be regarded as an overlay on an otherwise abiding conceptualization of an unbounded continuum.

8. Some co-sequential constructions, like that in (ia), lack an anti-sequential counterpart, like that in (ib). It is not clear what principles might govern the occurrence or nonoccurrence of such anti-sequential constructions.

- (i) a. King Philip ruled France from 1060 to 1108.
- b. *King Philip ruled France from 1108 to 1060.

I Lexical Cue Categories

As seen in the survey of section 1.2, cues to a target can be analyzed as falling into ten categories and these in turn as falling into five groups of two categories each. Presented here in part I is the first group of two categories, the “lexical cue categories.” Their cues consist of information about the target provided by the constituents of the current discourse. The cues of the first category, the “core cues,” are provided by the trigger in the speaker’s utterance. Chapter 2 treats the core cues per se, while chapter 3 treats features of the trigger apart from that of providing cues. The cues of the second category, the “co-form cues,” are provided by constituents around the trigger, typically also in the speaker’s utterance, but potentially as well in a neighboring utterance by the current hearer. Chapter 4 treats co-form cues.

Some temporal characteristics of the lexical forms in an utterance—such as their moment of occurrence, pauses between them, and a lengthened or shortened pronunciation of them—can provide cues to the target. Such temporal characteristics might technically be treated as lexical cues. But they are here instead classed as temporal cues to the target—either choral or perichoral cues—and treated in part V.

2 Core Cues to a Target

This chapter treats the category of cues to a target that triggers provide directly—the core cues. The first section gives an overview of this cue-providing feature of triggers, along with certain related features. The next two sections together classify the cues. The main division is between cues to a target’s intrinsic properties in section 2.2 and to its contingent properties in section 2.3.

2.1 Triggers as Complex Constructions

Centrally, a trigger is any linguistic constituent that initiates targeting—that is, initiates the three-stage targeting procedure in the cognition of the hearer who hears the constituent. In addition to this central function, though, triggers also provide cues to the target (section 2.1.1), constitute a system for the conceptual structuring of target properties (section 2.1.2), and exhibit a range of formal realizations (section 2.1.3). A trigger is thus a highly complex construction, in the sense of construction grammars.

2.1.1 Core Cues

Although the trigger has the central function of signaling the hearer to undertake a targeting procedure, it seemingly never performs solely this function. For its main additional function, it is apparently always lexicalized as well to provide cues to the target, specifying particular properties that the target has. The category of cues that triggers are lexicalized to provide, as seen, are here called “core cues.” The term “core” is applied to them because the trigger’s pivotal role in targeting is taken to accord centrality to its cues.¹

A trigger is thus not only lexicalized to initiate the three-stage targeting procedure as a whole, including the first stage in which the hearer is to determine all available cues. It is also lexicalized to provide one category’s worth of those cues.

While a relatively simpler morphemic construction like *dog* or *run* specifies properties that it directly attributes to its referent, a trigger is a more complex construction that directs the hearer to find a target manifesting the properties that it specifies.

The triggers present in any given language vary in the quantity and selection of core cues that they provide. That is, they vary as to how many properties and as to which properties they ascribe to a target. One of the less specific English triggers, *that*, was first illustrated in section 1.2.1. The core cues it provided indicated that the target was uniplex, an entity, distal, and third-person. As seen, this trigger was accordingly able to target a highly diverse range of phenomena. In any given example, it was largely co-form cues that helped narrow down the potential range. They provided the hearer with many more of the cues to the target's characteristics that she needed so as to zero in on the target.

But English—like most languages—has a wealth of more specific triggers in addition to its less specific ones. These triggers are lexicalized to provide core cues in greater number or specificity that indicate more properties or more specific properties of the target. The specifications provided by any such trigger, in effect, equal the specifications of a more generic trigger combined with those of certain co-form cues. By themselves, thus, such more specific triggers help further narrow down the target's possible range. They provide more of the cues to the characteristics of the target that the hearer will need in order to zero in on it.

The target properties that triggers specify fall into two general classes, one for intrinsic target properties and one for contingent target properties. These two classes are treated respectively in sections 2.2 and 2.3. In turn, each class can be divided into a number of distinct categories of target properties, here called **property categories**. The member properties in each such category are mutually exclusive—a target could have only one of them at a time. The two sections together catalog a sizable number of such property categories and member properties. The triggers in English alone specify a substantial number of these, and the account is augmented by other languages. Still, this is only part of all the property categories to be found crosslinguistically.²

The analysis in sections 2.2 and 2.3 integrates the descriptions of triggers with targets in the speech-external domain and triggers with targets in the speech-internal domain. What we will call the **domainality** of a trigger is determined by whether its target is in one or the other of these two domains. For most of the triggers treated herein, the trigger can have both speech-external and speech-internal targets—that is, it has both types of domainality. It will then be said to have **dual domainality**. This is further evidence that deixis and anaphora are generally aspects of a single system.

2.1.2 Triggers as a Target-Structuring System

As another characteristic of their construction type, triggers form a linguistic system for the conceptual structuring of target properties. To develop this idea, though, some background is needed first.

The closed-class inventory Talmy (2000a: chapter 1) argues for the existence of a “closed-class inventory.” This inventory contains the conceptual categories and

member concepts that are expressed by closed-class forms found across languages. This inventory is not universal but universally available. That is, in any given language, the closed-class forms that occur constitute only a representative selection out of the inventory's available categories and member concepts.

In addition, the inventory is hierarchical. Some conceptual categories and member concepts may well be universally represented in the closed-class forms of all languages; some are frequent though not universal, and some are rare. As a concomitant of being hierarchical, the inventory is only “relatively” closed, not absolutely so. Its lower end can extend to ever rarer categories and concepts. One can thus expect to encounter a language here or there with a closed-class form expressing a category or concept not found elsewhere. But apart from tapering off at the bottom, the inventory represents all the concepts and conceptual categories that closed-class forms crosslinguistically can ever express.

Further, Talmy (2000a) demonstrates a functional difference between open-class forms and closed-class forms. In general, the former represent conceptual content, while the latter represent conceptual structure. Accordingly, the closed-class inventory underlies a fundamental conceptual structuring system of language.

Closed-class subinventories In a later study, Talmy (2005) argues that the “spatial closed-class forms”—those representing spatial schemas—found across languages may well represent a subset of the conceptual categories and member concepts of the overall inventory. This “spatial subinventory” itself in turn has all the characteristics just outlined for the overall inventory. It is hierarchical, relatively closed, and universally available. Through this last property, the spatial closed-class forms of each language express only a representative selection of the subinventory's contents. In addition, then, this spatial subinventory underlies part of the earlier fundamental conceptual structuring system of language—the conceptual structuring of space.

In the same way, it is proposed here that, insofar as the triggers found across languages are closed-class forms, their core cues represent another subset of the conceptual categories and member concepts of the overall inventory. This subset can be called the **core-cue subinventory**. It too is hierarchical, relatively closed, and universally available. Through this last property, the triggers of each language express only a representative selection of the subinventory's contents. Analogously, then, this core-cue subinventory underlies part of the earlier fundamental conceptual structuring system of language—the conceptual structuring of targets.

2.1.3 The Formal Realizations of Triggers

A further feature of triggers as a type of construction is that they exhibit quite a range of formal realizations. Perhaps the prototype form of a trigger is that of a single segmental morpheme—a **monomorphemic trigger**. English examples are the nominal *she*, the determiner *that* (as in *that book*), and the adverb *now*.

As these last examples show, a monomorphemic trigger can be an independent word. But it can also be a single bound morpheme within a multimorphemic word. For one possibility, it can be an affix or clitic within the word. Examples are the English past tense suffix *-ed*, as in *walked*, and the pronominal prefixes for subject and object in the Kikuyu verb. Alternatively, the bound trigger morpheme can be the root itself within a multimorphemic word. An example is the Nuuchahnulth (Nootka) root for demonstrative ‘there’ that takes affixes to form a multimorphemic verb (Marianne Mithun and Matthew Davidson, p.c.).

In the preceding cases, the term “trigger” was applied only to the single bound morpheme that performed the triggering function, not to the whole multimorphemic word that contained it. In those cases, the other morphemes in the word generally provided information unrelated to the trigger morpheme’s syntactic function. But in other cases, that bound morpheme is a root whose affixes indicate its syntactic relationships within the sentence. For example, Turkish *bun-* ‘this’ takes the nonnominative suffixes of the normal noun declension, and the Russian *tak-* ‘such’ takes all the suffixes of the adjective paradigm. Such forms are intermediate cases. The bound root morpheme could again be treated as the sole trigger within the multimorphemic word. But since the additional morphemes in such cases pertain to the targeting procedure—specifically, to the third stage of target insertion (see section 3.1.2)—the entire multimorphemic word might alternatively be regarded as the trigger.

While trigger status is only a possibility for the preceding type of multimorphemic word, it can be more strongly assigned to another type of multimorphemic word. The morphemes in this type of word have nonproductive relations with each other. In one alternative of this, their morphemes might relate to each other only in closed paradigms. Examples are *thisaway/thataway*, *hereabouts/thereabouts*, and *himself/themselves*, and so on. In another alternative, their morphemes might relate to each other idiomatically rather than compositionally. An example is *nevertheless*, whose three morphemes together mean ‘despite that’. Trigger status is perhaps best assigned to the whole of such multimorphemic words. They might be termed **multimorphemic-word triggers**.

A trigger can also be phrasal. In this case the morphemes that comprise the phrase must again relate to the overall meaning idiomatically, not compositionally. If the last example were treated not as a three-morpheme word but instead as a three-word phrase—written as *never the less*—it would be an example of a **phrasal trigger**. The sequence *all the same*, which has the same ‘despite that’ meaning as *nevertheless* but is written with its component morphemes separate, is a definite example of a phrasal trigger.

Note that expressions like *at that location* and *in that manner* and *despite that* are here regarded as fully compositional phrases, not as phrasal triggers. The actual trigger is one constituent in the phrase, the word *that*. On the other hand, the monomorphemes

there, *thus*, and *still*—whose semantic composition corresponds respectively to the three phrases just cited—are genuine triggers.

One can also posit specific **trigger constructions** in which a distinctive syntactic pattern performs a triggering function. An example is the “cleft trigger construction” (see section 2.2.7) shown in (1a), said by a speaker pointing at a spot on the sidewalk. Though this English construction in effect involves two triggers (*that* and *which*) and an additional clause, it is semantically comparable to the use of the single trigger *there* within a single clause, as in (1b).

- (1) a. That’s where (the place at which) I dropped my key.
b. I dropped my key right !-there.

The triggers seen so far consisted of segmental phonemes and together can be called **lexical triggers**. But a trigger can also consist of prosodic effects. This will be called a **prosodic trigger** and can itself constitute a morpheme. Such a trigger can indicate a subsentential choral target (see section 11.2)—that is, it can target an instant or portion of time during the utterance of a sentence. For example, a trigger of this type that consists of compressed duration and heightened stress is seen on the word *grab* in (2a), and one with stretched duration is seen on the word *buzz* in (2b).

- (2) a. See that bent can starting on the conveyor belt right there?
As it comes in front of . . . youuuu . . . GRAB it!
b. What’s that periodic faint . . . bu-u-u-u-uz I keep hearing?

The triggers seen to this point have all consisted of whole morphemes—whether singly or in combinations that form words or phrases and whether segmental or prosodic. Together, these will all be called **trigger forms**. But by the analysis adopted here, a triggering function can also be performed by a semantic component within a single morpheme, joined there by semantic components not directly related to targeting. Such a trigger can then be called a **componential trigger**.

To simplify (see section 6.8 for a finer account), one example is the component within the verbs *come* and *go* that targets the speaker. A speaker saying *come* expresses the semantic complex ‘move along a translational path directed toward me’ while, in saying *go*, the complex is ‘move along a translational path not directed toward me’. In these complexes, the component ‘me’ is the sole triggering element, while the remainder is unrelated to the targeting process. Another example of a componential trigger might be the ‘<present tense>’ component in the copula *is*, whose semantic complex also includes the components ‘be’, ‘<indicative mood>’, and ‘<agreement with third-person singular subject>.’

Finally, triggers without overt representation can also be posited to occur (see section 3.5 for discussion). A clause of certain types initiates targeting without any explicit trigger present. In such a clause, though, an appropriate trigger can generally

be supplied—either in a semantic representation of the clause or overtly in a corresponding clause, as in (3). Such **zero triggers** or **ellipsized triggers**, then, complete the range of triggers’ formal manifestations.

- (3) I remained for a while in the room and then ran out (of it).

What we analyze as the triggering function might in other analyses be equated with the function of proforms. But while all proforms may well be triggers, it can be seen from the preceding taxonomy that not all triggers are proforms. Clear exceptions are componential triggers, phrasal triggers, prosodic triggers, and tense markers in general, while bound morphemic triggers within a multimorphemic word challenge the proform designation. It might also be thought that triggers across the board are closed-class. Indeed, all the triggers treated in this section might well be regarded as such. But some triggers—for example, *current*, *previous*, *following* (see section 2.3.1)—are either borderline cases or fully open-class.

Trigger status might be extended to still further linguistic phenomena. One candidate may be a paraphrase of earlier material—where the former functions as an anaphor and the latter as an antecedent, both potentially full NPs—as suggested, for example, by Hirst (1981). Another candidate might be syntactic devices such as left-dislocation or contrastive topicalization, as suggested by Givon (1983). Future research may determine the trigger status of such phenomena, but they are not further analyzed in this study.

2.2 Intrinsic Target Properties Specified by Triggers

We turn now to the core cue system and start with cues to intrinsic target properties. A property that a trigger specifies for a target is **intrinsic** if it cannot readily change or be reconceived. The target exhibits it not only at the moment of the trigger’s occurrence but generally throughout the target’s existence. A trigger in this case thus provides a core cue to the target that is taken to be permanently valid for that target. The following sections present different categories of such intrinsic target properties.

Note that these categories can serve to illustrate the hierarchical character of the core-cue subinventory discussed in section 2.1.2. Thus, the representation of “ontology” as a property category (section 2.2.1) may well be universal in trigger specifications across languages; that of “plexity” (section 2.2.2) may be frequent but not universal; and that of “substantiality” (section 2.2.6) may be quite rare. Similarly, within the property category of ontology by itself, the subcategory of “spatial location” may be highly frequent if not universal in trigger specifications across languages; that of “quantity” may be of midlevel distribution; and that of “distance between,” at least as a trigger’s only specification, may be extremely rare and possibly unique to English.

2.2.1 Ontology

The first property category is that of **ontology**, the particular class of phenomena that a target is treated as belonging to. Sections 1.6.1 and 1.6.2 showed that a relatively non-specific trigger like *that* can point to targets across a wide ontological range. But many other triggers are lexicalized to provide a core cue that the target is instead within one or another specific ontological subcategory.

Such membership in an ontological subcategory is an intrinsic property of a target, one type of property among the many types it can have. An issue, though, is how to distinguish an ontological type of property from other types of property. For example, does Kate belong to an ontological subcategory of women, or does she belong to an ontological subcategory of people while also having the gender property of being female? Or perhaps she belongs to an ontological subcategory of animates, while also having the species property of being human and the gender property of being female. Without a resolution of this issue, the placement of target properties into named subcategories in this section is to that extent arbitrary. Still, crosslinguistic patterns of trigger lexicalizations suggest certain choices, and these are reflected here.

Entity For one ontological subcategory, a trigger can be lexicalized to provide the core cue that the target is an **entity**. The term “entity” is here meant to refer to anything conceptualized as an individuated phenomenon, no matter where it occurs along the range from the concrete to the abstract. Still, this subcategory can be taken to be radial, one whose central or prototype member is in fact a physical object. In turn, the physicality of the central member tends to lend a quality of reification to the remaining members, however abstract. Perhaps curiously, though, seemingly no trigger is lexicalized to indicate that its target is simply a nonabstract physical object, without also attributing further properties to it (see section 3.2.1 for discussion).

English triggers providing a core cue that their target is an entity include *this*, *these*, *that*, *those*, *I*, *we*, *you*, *he*, *she*, *it*, *they*, and the relative pronouns. Most of these exhibit both types of domainality. For example, the trigger *this* attributes entityhood to a speech-external target in (4a) (in fact, to three such targets successively further from the physical prototype) and to a speech-internal target in (4b).

- (4) a. I enjoy a dessert / weather / a mystery like this.
- b. Joe wanted to tear up the parking ticket. But this was just his initial desire.

Since virtually any phenomenon can be conceptually reified, phenomena classed under other ontological subcategories can generally be reconceptualized as entities and then be targeted by some of the triggers just listed. In effect, the notion of entityhood can be conceptually overlaid over a phenomenon belonging to virtually any other ontological subcategory.

Action For another ontological subcategory, a trigger can provide the core cue that the target is an **action**: a dynamic process realized through time. While the situation in other languages is unclear, English behaves differently in the speech-external and speech-internal domains. It has no trigger that specifically targets a speech-external action. English here resorts to reifying the action and targeting it with one of its entity-specifying triggers, like the *that* in (5) targeting an action of dancing that is being viewed.

- (5) That's world-class dancing.

A speech-internal action, generally represented by a verb or verb phrase, can also be reified as an entity and targeted by an entity-specifying trigger, like the *that* or *it* in (6a). But as seen in (6b), English here does have a trigger, *so*, lexicalized to target a speech-internal action specifically *as* an action (see section 2.2.8 for elaboration).

- (6) a. I hate spraying plants with pesticide, but I'll do that/it if you want.
b. I hate spraying plants with pesticide, but I'll do so if you want.

Event For a third ontological subcategory, a trigger can provide the core cue that the target is an **event**: prototypically, an entity executing an action. English here too behaves differently with respect to the two domains. This language again has no trigger that specifically targets a speech-external event. English once more reifies such an event and targets that with one of its entity-specifying triggers. An example is the *that* in (7), used to target the event taking place at a nest that the speaker is pointing up at.

- (7) That's a sparrow feeding her chicks.

But two kinds of English triggers do distinguish whether a target is a speech-internal event, itself generally represented by a clause.

It versus *that*. In one sector of their speech-internal usage, the trigger *it* can target only the entity represented by an NP but not the event represented by a clause, while the trigger *that* does exactly the reverse. Consider the three lettered entries in (8) sequenced to form a single discourse.

- (8) a. The drone was mouse-sized. b. It / *That zigzagged across the sky.
c. i. I stared at it. ii. I stared at that.

In (8b), The trigger *it* targets the entity represented by the NP *the drone* in (8a), but the trigger *that* cannot do so. In (8c), the trigger *that* in the (ii) sentence targets the event represented by the full clause in (8b), whereas the trigger *it* in sentence (i) cannot do so, but continues to target the drone entity alone. Thus both triggers are sensitive to whether a potential target is a speech-internal event—*that* positively so and *it* negatively so.

Adverbial proclauses. The triggers of a particular class—adverbial proclauses (see section 2.2.7 for their main explication)—specifically target a speech-internal event—in particular, that represented by the preceding clause. For one example here, the adverbial proclause trigger *still*, as in (9b), is semantically equivalent to the compositional phrase *despite that* seen in (9a) and can be thought to lexicalize that combination of components within itself. This trigger targets the event expressed by the preceding clause, additionally placing that event in a concessive relation to its own clause.

- (9) a. I grabbed hold of a branch, but I fell despite that.
b. I grabbed hold of a branch, but I still fell.

Spatial location For yet another ontological subcategory, a trigger can be lexicalized to provide the core cue that the target is a **spatial location**. That is, the target is a portion of space when this is conceived as something that a physical entity could occupy (see section 1.7.1). In their main readings, the English triggers *here*, *there*, and *yonder*, as well as the free relative trigger *where* (see section 2.2.7) have this specification.

We can illustrate with the trigger *there* which, like most triggers, exhibits both types of domainality. It targets a speech-external spatial location in (10a), where the speaker can be imagined as pointing to a particular portion of space. And in (10b), it targets the speech-internal spatial location expressed by a prior constituent. This trigger *there* can, with approximate semantic equivalence, be replaced by the compositional phrase shown in brackets and can be thought to lexicalize something like that combination of components within itself.

- (10) a. My horse lost his shoe there [in that location].
b. We came on a beautiful glen while hiking,
but the bugs there [in that location] were awful.

Where a physical object is so configured as to enclose a portion of space, a speaker often has the option to treat it either as an entity, to be targeted by an entity-specifying trigger, or as a location, to be targeted by a location-specifying trigger. This option is available both for a speech-external target, like the box a parent points to while saying (11a) to a child, and for a speech-internal target, like the referent of the noun *car* in (11b).³

- (11) a. Put all your toys in that. / in there. / there.
b. I put my books in the car, but they're not in it / in there / there now.

Temporal location A trigger can also be lexicalized to provide the core cue that its target is ontologically a **temporal location**. That is, it is an interval of time where this is conceived as something that an event could occupy (see section 1.7.2). The English triggers *now* and *then*, as well as the free relative trigger *when*, make this specification.

So do the componential triggers for tense (see section 2.3.1). The trigger *now* is shown targeting a speech-external temporal location in (12a) and a speech-internal one in (12b). In both, compositional phrasal counterparts are again shown in brackets.

- (12) a. You should ask for a raise now [at this time].
 b. My parents told me I couldn't have a motorbike.
 I was now [at this time] more determined than ever to get one.

Path Some languages have triggers lexicalized to provide the core cue that their target is ontologically a **path**. Specifically, such a path is a directed and oriented straight line through space that a Figure entity could move along (see section 5.5). They express roughly the same conceptual content as the compositional phrase *in this/that direction*.

Single-word triggers in English with this specification are the dialectal *thisaway* and *thataway*. Standard colloquial English instead uses *this way* and *that way*, which can be considered either phrasal triggers or compositional phrases containing a trigger.⁴

The distal forms of this set are shown targeting a speech-external path in (13a), where the speaker points in a certain direction, and a speech-internal path in (13b). The standard English triggers again exhibit dual domainality, but the dialectal triggers can apparently be used only speech-externally, not speech-internally (see section 2.2.7 for such a restriction). The fully compositional phrasal counterpart is again shown in brackets.

- (13) a. The gunman rode off thataway / that way [in that direction].
 b. The gunman rode off toward the east.
 The sheriff also rode *thataway / that way [in that direction].

Manner A particular action that occurs speech-externally or is expressed speech-internally by a given predicate is generally conceptualized as retaining its distinctive identity as long as certain criterial elements are present (apart from prototype effects). Consequently, aspects of the action not criterial to it can vary while it retains its identity. Any such variant then constitutes a **manner** in which the action can proceed or be executed.

For example, the verb *write* expresses an action with criterial elements something like: 'produce symbols representing language'. One cannot, for instance, write a picture or a smear. Outside of this, though, virtually any other factor can be varied, with the action still categorized as 'writing'. Thus, the sentence *Joyce wrote* can be extended with any of the following alternatives, where each specifies a manner in which the writing is executed: *with a quill* / *in Russian* / *backwards* / *with effort* / *furtively*.⁵

Many languages have triggers lexicalized to provide the core cue that their target is a manner, which is thus a yet further ontological subcategory. They express roughly

the same conceptual content as the compositional phrase *in this/that manner*. Monomorphemic triggers of this sort are colloquial in some languages, for example, German *so*, French *ainsi*, and Russian *tak*. English does have one colloquial monomorphemic form for manner, the free relative trigger *how*, as in *I don't know how she carved that ice statue*. Otherwise English does have the monomorphemic *thus* and *so*, but these are now almost wholly literary or obsolescent. The colloquial forms are now the phrases *this/that way* and *like this/that*.⁶

All these forms exhibit both types of domainality. Thus, the triggers in (14a) target a speech-external manner—a particular sewing maneuver—that the hearer zeroes in on mainly through targetive cues. And the example in (14b) is similar, but the target is a manner of rowing that the hearer zeroes in on mainly through gestural cues from a speaker on shore pointing at a boat in the water. The triggers in (14c), then, target a speech-internal manner. Again, the fully compositional phrasal counterpart is shown in brackets.

- (14) a. You tie the thread off thus / just . . . so / this way / like this [in this manner].
 b. An expert rows a boat thus / so / that way / like that [in that manner].
 c. A well-known memoirist wrote backwards in her journal.
 She wrote thus / so / that way / like that [in that manner] to deter the curious.

Quality We have just seen that an action could have diverse manners, and we here see that an entity can have diverse qualities. The analysis here in fact uses similar language to highlight the parallel. A particular entity that exists speech-externally or is expressed speech-internally by a given noun phrase is conceptualized as retaining its distinctive identity as long as certain criterial elements are present. Consequently, aspects of the entity not criterial to it can vary while it retains its identity. Any such variant then exhibits a certain **quality** of the entity. Such a quality consists of the particular attributes or characteristics that this variant of the entity has, or the “kind” of the entity that it constitutes.

Many languages have triggers lexicalized to provide the core cue that their target is a quality—a still further ontological subcategory. They express roughly the same conceptual content as the compositional phrases *of this/that kind* or *with these/those characteristics*. The English trigger *such* has this specification. As usual, *such* can be used both speech-externally and speech-internally, as in (15a) and (15b) respectively. The speaker in (15a), it can be imagined, is looking at the sunset while standing beside the hearer. The hearer will likely use co-form, (ocular) gestural, and targetive cues to identify the particular characteristics that the speaker wants to target.

- (15) a. I've never before seen such a sunset [a sunset with those characteristics].
 b. The sun was pink and orange on the horizon.
 I'd never before seen such a sunset [a sunset with those characteristics].

Quantity A number of languages have triggers lexicalized to provide the core cue that their target belongs to the ontological subcategory of **quantity**. They express roughly the same conceptual content as the compositional phrase *in this/that quantity*. Some of these languages may more specifically have separate triggers distinguishing between the amount of a certain mass and the number of certain count items. In that case, such forms roughly express the conceptual content of the compositional phrases *in this/that mass amount* and *in this/that number* respectively.

English has four triggers that might be thought to target quantity specifically because—though these same four forms have other trigger functions—they have distinctive syntactic properties in their quantity-targeting function. In this function, two of these triggers, *this* and *that*, are colloquial, while two, *thus* and *so*, are obsolescent.

One of the distinct syntactic properties of these four triggers is that they can only occur immediately before and modify a particular foursome of quantitative determiners: *much* and *little* for mass amount, and *many* and *few* for number. Another distinctive property is that the triggers *this* and *that*—which are singular in their other targeting functions—in fact do occur in construction with the plural determiners *many* and *few* (the use of *these* and *those* with these plural determiners is at best marginal).

These four quantity-specifying triggers all have dual domainality. Their use with *many* is illustrated for a speech-external target in (16a) and for a speech-internal target in (16b). One spouse might say (16a) to the other on visiting a friend's garden and pointing toward a cluster of six statuettes on the soil.

- (16) a. I want this / that / thus / so many gnomes [gnomes in that number]
for our garden.
b. Dan has six gnomes in his garden.
I want this / that / thus / so many gnomes [gnomes in that number]
for !-our garden.

Polish, for one language, does have a trigger with no other function than to target quantity. It is the (presently) monomorphemic form *tyle*, which covers both mass amount and number. The trigger-bearing sentences of the preceding example are given their Polish counterparts in (17a) for the speech-external case and in (17b) for the speech-internal case (Irena Herszkowicz, p.c.).

- (17) a. Ja chcę tyle krasnoludków naszym ogrodzie.
I want thus-much/many gnomes-GEN in our garden
b. Ja też chcę właśnie tyle krasnoludków.
I also want exactly thus-much/many gnomes-GEN

Degree Another ontological subcategory that a trigger can target is the particular **degree** of a certain attribute that some entity has. This attribute must be scalar and specified by a constituent in the speaker's sentence, generally by an adjective or adverb. In English,

the same four triggers just seen targeting quantity also target degree, with *this/that* again the colloquial forms and *thus/so* again the obsolescent forms. The triggers express roughly the same conceptual content as the compositional phrase *to this/that degree*.

These triggers are here in construction with an adjective or adverb, as distinguished from the quantitative determiners just addressed. On the other hand, the tight parallelism between these two cases suggests that English here actually has only one set of triggers for a single expanded ontological subcategory of “quantity-degree” and treats its quantitative determiners like adjectives. The reason then for distinguishing quantity and degree is that some languages in fact target them differently. Thus, Polish does not use its quantity trigger *tyle* to target degree. Rather, it uses the morpheme *tak* (bare when before an adverb, and either bare or inflected when before an adjective—Konrad Szczeniak, p.c.). However, like English *thus*, this same form can also target manner. It is accordingly still unclear whether any languages have triggers with no other function than to target degree.

As before, the English triggers here have both types of domainality. The colloquial triggers in (18) are first shown targeting the degree of an attribute possessed by a speech-external entity. The speaker in (18a) is, say, hefting a light stone in his hand, the one in (18b) is pointing at a particular tree, and the one in (18c) is pointing to a bicycle reflector disk. The attribute is named by adjectives in (18a) and (18b) and by an adverb in (18c).

- (18) a. The cell phone I buy will have to be this light [light to this degree].
- b. A tyrannosaur was that tall [tall to that degree].
- c. The disk I put on my bike fender should shine that brightly
[brightly to that degree].

The trigger in (19) in turn targets the degree of an attribute possessed by a speech-internal entity. This entity is the one conceptually associated with the preceding direct-object nominal.

- (19) Pam bought a four-foot Christmas tree. I want one that tall [tall to that degree] too.

Note that the use of a degree-targeting trigger involves a particular type of analogy. What the trigger targets is the degree of an attribute exhibited by an initial reference object. Once the hearer determines what this degree is, she is to apply it to the same attribute in a different object. This latter object is the one of concern. The second object can be different in kind from the reference object, as the cell phone is from the stone and as the tyrannosaur is from the tree. Or it can be of the same kind, as the reflector disk is to be bought is, relative to the disk being pointed at.

Note further that if the speaker uses a gestural cue in the speech-external case, his intended target is not the physical object that the gesture may at first seem to indicate

(see section 1.6.2). The target, rather, is the degree to which some attribute of that object is manifested. A degree-targeting trigger here thus requires additional cognitive processing by the hearer. The hearer must abstract out the relevant attribute from her perception of the object and assess its degree. Thus, she must assess the weight of the stone and the height of the tree in the earlier examples. Likewise, if a speaker uses a gesture to help target a speech-external manner, quality, or quantity, the hearer may need to perform this same type of abstractive processing on the gestural cue.

Distance between In example (19b), the trigger targeted the degree of a certain linear dimension of a reference object—the height of a tree being pointed at—which was then to be applied to another object of concern, the height of a tyrannosaur. The linear dimension there extended through the bulk of the reference object. Now, the degree of a linear dimension can also be represented by the distance between two separated reference objects. The same degree-targeting triggers as before can then be used in this case as well. To illustrate, a speaker saying (20) could dynamically indicate the distance between two trees by first pointing at one and then sweeping her finger rightward to point at the other.

(20) My yacht is that long.

Where the linear dimension is short enough, the speaker can use body parts, typically a hand or hands, as one or both of the separated reference objects. For example, the speaker can place one hand, palm down, at a certain height above the ground and say (21a). Or he can space his two hands a certain distance horizontally apart, palms facing each other, and say (21b).

(21) a. My son stands this tall. b. The fish I caught was this big.

If the account ended here, there would be no reason to set up an ontological subcategory of **distance between** distinct from that of degree. But English has a trigger—*yay*—limited to targeting solely distance between. Specifically, this trigger is lexicalized to target the distance between two reference objects—one or both of them consisting of body parts of the speaker—which is then to be equated with the degree of a specified linear dimension of another specified object (see section 7.4.3 for an extended analysis). The speaker of the preceding examples can thus replace *this* with *yay*, as in (22a) and (22b). But *yay* cannot replace *this* or *that* in any of their other uses.

(22) a. My son stands yay tall. b. The fish I caught was yay big.

Reason/principle A further ontological subcategory whose members can be targeted by a trigger has two parts. One is the **reason** held in the cognition of a sentient agent that motivates him (leads to his electing) to enact a particular behavior. The other part is the **principle** underlying a particular natural condition or process. It is not clear

whether any languages have triggers that distinguish these two parts, hence there are targets in two distinct ontological subcategories.

Though lacking them for the speech-external case, English does have triggers specifically indicating a speech-internal target of this ontological subcategory. The free relative trigger *why* can target both a reason, as in (23a), and a principle, as in (23b). And the adverbial proclause triggers *so* and *therefore* can be interpreted as having the same targeting properties (see section 2.2.7).

- (23) a. I don't know why [the reason for which] Flo quit teaching in mid-semester.
b. I understand why [the principle by which] oil floats on water.

It is not clear whether any language has a trigger specifically lexicalized for a speech-external target of the present ontological subcategory. If English had one, it would replace the suggestive hyphenated form at the end of (24a), which a speaker might say to a friend while pointing toward a child spilling juice from a glass. What English *can* do is use the cleft trigger construction in (24b), which includes the free relative *why*.

- (24) a. I use sippy cups for-that-reason.
b. That's why I use sippy cups.

2.2.2 Plexity

Section 2.2.1 as a whole addressed the overall category of ontology. Its subsections addressed the ontological subcategories that a trigger could specify a target as being in. The sections that follow address other whole categories—each on par with that of ontology overall. Each has its own subcategories, though sometimes only two of them in a two-way opposition.

The first new category, then, is that of **plexity**—the state of a target's articulation into equivalent elements (see Talmy, 2000a: chapter 1, for this term). English triggers can provide the core cue that a target belongs to either of two subcategories under this category. the target is **uniplex** if it consists of just one element, and **multiplex** if it consists of two or more elements. We use the terms plexity, uniplex, and multiplex only with reference to targets. The corresponding terms “number,” “singular,” and “plural” are reserved for reference to grammatical properties of linguistic forms.

Matched triggers English has several trigger sets whose members indicate targets comparable except for their plexity. Respectively indicating uniplex and multiplex targets, these set members are *this/these*, *that/those*, *I/we* and their paradigm mates, *yourself/yourselves*, and *he-she-it/they* and their paradigm mates.

All the third-person triggers in this group have both types of domainality. Thus, the trigger *those* has a speech-external target in (25a)—where the collocutors are, say, watching a particular boy and girl playing—and a speech-internal target in (25b).

- (25) a. Bob loves those kids.
 b. Bob's sister has a son and a daughter. Bob loves those kids.

Unmatched triggers English lacks plexity-matched triggers in the three following cases.

Intrinsically uniplex targets. Some triggers refer to targets that are—or are construed as being—intrinsically uniplex and that accordingly lack a multiplex counterpart. For one case, the prosodic trigger seen in the “grab” example of (2a) targets just the one instant at which the trigger occurs.

And the trigger *now*, whose target is supersentential (see section 11.2), targets a longer interval extending through the current instant. But this interval is construed as unitary, even where the action occurring during it is composed of multiplex units, as in (26).

- (26) The pile driver is pounding again now.

Lack of a multiplex trigger. The targets in some ontological subcategories can readily exist in either uniplex or multiplex forms. But it can happen that the trigger a language has for such a subcategory refers only to the uniplex form. The language simply lacks a matched trigger for referring to the multiplex form and instead must use a compositional phrase.

For example, the English trigger *then*, which specifies a target in the ontological subcategory of temporal location, can refer only to a single such temporal location. If the target consists of multiple temporal locations, as in (27), the trigger *then* cannot be used, and a compositional phrase like *at those times* must be used instead.

- (27) Maude traveled abroad in 2000, 2003, and 2008.
 She was feeling especially adventurous *then / at those times.

Comparably, the trigger *there*, which specifies a target in the ontological subcategory of spatial location, can—at least in its speech-external use—also refer only to a single such spatial location. For example, suppose that a speaker in a room simultaneously points the forefinger of each hand at two opposite corners. As seen in (28a), she cannot use the trigger *there* to target those locations but must use a compositional phrase like the one shown. To use the simplex trigger, she must first point to one location and then to the other, each gesture accompanied by a separate utterance of *there*, as in (28b).

- (28) a. Put the roach traps *there / in those (two) places.
 b. Put the roach traps there . . . and there.

When the multiplex locative target is speech-internal, as in (29), the monomorphemic trigger *there* may gain some acceptability. But the compositional phrase is still preferable.

- (29) X: I left roach traps in the bedroom, in the bathroom, and in the kitchen.
 Y: You shouldn't have put them ?there / in those places.

Plexity-neutral triggers. Other triggers are neutral to plexity and are able to refer to either a uniplex or a multiplex target. This holds for the relative pronouns *who/which/that* (see section 2.2.7 for relative pronouns as triggers), as illustrated in (30).⁷

- (30) I like a person / people who can talk sports with me.

In my judgment, further, a TV chef could even say (31a) as he proceeds to demonstrate in quick succession the two actions of radish slicing and pancake flipping. If so, his trigger *thus*, with targets in the ontological subcategory of manner, here targets two separate manners. Likewise, a speaker could say (31b) while quickly moving her hands three times progressively further apart. Thus, her trigger *yay*, with targets in the ontological subcategory of “distance between,” here targets three different distances between her hands.

- (31) a. You slice a radish and flip a pancake thus.
 b. The three fish Jack caught were respectively yay big.

Finally, the pronominal adverbs of older English (see section 2.2.3) were apparently neutral to plexity so that, for example, *thereon* could be used equally for modern English *on that* and *on those*.

2.2.3 Animacy/Sapience

Of the triggers that target physical objects, many also specify their targets' status with respect to two further categories that often interact. These are **animacy**, an entity's state of aliveness, and **sapience**, the degree to which an animate entity exhibits higher-level cognitive faculties.

Triggers that mark these categories generally seem to treat them as dichotomies, indicating that a target belongs to either of two subcategories under each category. Such triggers thus tend to indicate that an entity is either animate or inanimate, or that an animate entity is either sapient or nonsapient. Where such triggers differ across languages mainly involves, for each category, which entities belong to which subcategory.⁸

For English triggers, the animate subcategory includes entities in the animal kingdom, while the inanimate subcategory covers everything else, including live plants. And the sapient subcategory includes humans beyond infancy, while the nonsapient subcategory covers everything else. However, some gradience does permit an extension of sapience to infants, as well as to animals that the speaker feels close to or regards as being similar to humans—or through anthropomorphization in general.

Triggers for each subcategory A trigger could by its nature be lexicalized to indicate that its target belongs at once to a particular subcategory under each of the two main categories, animacy and sapience. Such triggers presumably occur in some languages.

Seemingly, though, the relevant English triggers are lexicalized to indicate only that their target belongs to one subcategory under one of the main categories, regardless of where it would be assigned under the other main category. The four possible subcategory indications are each addressed next.⁹

Triggers requiring only that the target is sapient. To begin with, certain English triggers require only that the target is sapient. These triggers are the first- and second-person pronouns *I*, *we*, and *you* (as well as their paradigm mates) and the relative pronoun *who* (as well as the accusative *whom*). The requirement for sapience is clear for singular *I* since its target must be able to speak, as well as for singular *you*, since its target must be able to understand speech (though this can get stretched through anthropomorphization). This requirement for sapience can also be seen to apply to all the target components of plural *we* and plural *you*. Thus, if a man stands at a hotel clerk's counter with a large trunk beside him, he cannot say (32a) nor can the clerk say (32b) targeting the nonsapient trunk along with the man.¹⁰

- (32) a. *Can we have a room? b. *You can both have room 123.

Triggers requiring only that the target is nonsapient. English triggers requiring only that the target is nonsapient are the pronoun *it* and the relative pronoun *which*. They can accordingly target a nonsapient animate entity as well as any inanimate entity generally. This requirement difference between the two relative pronoun triggers *who* and *which* is seen in (33). The *who* accepts the sapient manager as a target and rejects the nonsapient crocodile, while *which* does the opposite.

- (33) a. Our farm has a manager *who*/**which* is mild-mannered.
b. Our farm has a crocodile **who*/*which* is mild-mannered.

The English triggers traditionally termed “pronominal adverbs” that include *hereon*, *thereon*, *herewith*, and *therewith* apparently also require only that their target is nonsapient. These triggers generally consist of an otherwise normal preposition postposed to a proximal form *here* or a distal form *there*. Such triggers are obsolescent in modern English, expressed instead by a phrase consisting of the preposition and one of certain triggers. For example, *thereon* would now be replaced by *on that/those* or—disregarding degree of spatial remove—by *on it/them*. But older English texts suggest (David Denison, p.c.) that such pronominal-adverb triggers require only that their targets are nonsapient, thus applying to inanimate entities as well as nonsapient animals, but not to humans.

Triggers requiring only that the target is animate. English triggers requiring only that the target is animate are the pronouns *he* and *she*. Their animate target can accordingly be either sapient or nonsapient. These triggers do have an additional requirement, though, that the target be of an animal species with male/female sex differentiation

(see section 2.2.4). The trigger *she*, for example, can accordingly not target a female plant because it is not an animal, nor an amoeba because it lacks sexual differentiation.

The requirement difference between the two triggers *it* and *she* is illustrated in (34). The requirement of *it* for a nonsapient target allows a windmill or a plant as target, while rejecting a woman. The requirement of *she* for an animate target that is also female allows it to accept the woman as a target while rejecting the windmill and the plant, even where the latter is female.

- (34) a. Our farm has a windmill. It / *She is located at the boundary.
 b. Our farm has a female kiwi plant. It / *She is located at the boundary.
 c. Our farm has a forewoman. *It / She is stationed near the boundary.

The fact that *it* requires a nonsapient target and that *he* and *she* require an animate target (with sex differentiation) means that there is a class of entities that either of these trigger types can target. This is the class of nonsapient animates (with sex differentiation). Thus, as seen in (35), both *it* and *she* can target a female crocodile.¹¹

- (35) Our farm has a crocodile. It / she is mild-mannered.

Triggers requiring only that the target is inanimate. Finally, an English trigger requiring only that the target is inanimate is the free relative *what*. It can thus be used as in (36a) to target an inanimate entity such as a particular kind of golf club that Tess has come to a sports store to look for. But it could not be used (at least in the judgment of some speakers) to target an animate entity such as a particular species of python that Tess has come to a herpetarium to look for. Instead, a sequence like *the snake that*, as in (36b), would have to be used. The target range of the free relative *what* thus corresponds to the inanimate portion of the *it/which* target range, but not to the nonsapient animate portion.

- (36) a. I led Tess over to what she was searching for.
 b. I led Tess over to *what / the snake that she was searching for.

Triggers neutral to animacy/sapience Of the triggers that can target a physical entity, some are neutral to animacy and sapience and are able to target entities of any standing in these categories. This is the case for the third personal pronoun *they*, as seen in (37a), and the relative pronouns *that* and *whose*, as in (37b). For contrast, the sapience-sensitive relatives *who* and *which* are shown in (37c) and (37d), each selecting only one of the alternative targets.

- (37) a. Those are my children / Maseratis. They have led me to bankruptcy.
 b. It's my children / Maseratis
 that have led / whose upkeep has led me to bankruptcy.
 c. It's my children who/*which have led me to bankruptcy.
 d. It's my Maseratis which/*who have led me to bankruptcy.

The triggers *this/these/that/those* are also sapience-neutral in some constructions, as in (38a) when initial before a copula or in (38b) when functioning as a determiner. But in other constructions—for example, when functioning as an oblique pronoun, as in (38c)—they behave like *it*, targeting only nonsapient entities.

- (38) <the speaker in all cases is pointing to the target>
 a. That's an altar. / That's a hungry crocodile. / That's a hungry boy.
 b. Cover that altar with food. / Give that crocodile some food. /
 Give that boy some food.
 c. Cover that with food. / Give that some food. / Give *that / him some food.

Subcategory-specific triggers with dual domainality Most of the triggers just discussed that require a particular subcategory of animacy or sapience for their target also require that the target be specifically either speech-external or speech-internal (see section 2.2.7 on domainality-specific triggers). But three of these triggers—*he*, *she*, and *it*—can be used for targets of either type. To illustrate with the animacy-requiring trigger *she*, it is shown targeting a speech-external entity in (39a), where the speaker gesturally indicates a nearby woman, and a speech-internal entity in (39b).

- (39) a. She looks unhappy. b. I just saw Grace. She looked unhappy.

The obsolescent pronominal adverbs of English apparently also had dual domainality, as can be inferred from older texts (David Denison, p.c.). Thus, to construct illustrative examples, a speaker evidently could, in speech-external targeting, point at a tray while saying the older English counterpart of *Place your glass thereon*, and, in speech-internal targeting, say the counterpart of *I found a tray and placed my glass thereon*.

2.2.4 Sex

In a number of languages, among triggers that can target (previously, currently, or eventually) living entities, some triggers specify the status of these targets with respect to the category of **sex**. To a perhaps large crosslinguistic extent, this category is applied only to the animal kingdom—specifically, to species with sexual differentiation—and has the two subcategories “male” and “female.” It is distinguished from the category of “gender” (see section 2.2.5)—in particular, where that category has the member notions “masculine” and “feminine”—which pertains to a target’s grammatical properties.

The only English triggers specifying a target’s sex are *he* and *she*. Following the general case, these triggers, as seen, can target only humans and sexually differentiated animals. They cannot be used to distinguish male and female individuals in plant species that have this distinction. And, as just seen in the “unhappy” example of (39), these triggers can exhibit both types of domainality.

2.2.5 Gender

In some languages, a category of **gender** is an intrinsic grammatical property of nouns, and each noun is associated with a particular gender. This statement, it can be noted, reflects the traditional use of the term “gender” to apply both to the whole category and to its particular subcategories. In different languages, such subcategories can represent distinctions of different types, such as “noun classes” or a masculine/feminine/neuter kind of distinction. Each such language generally has triggers lexicalized to specify the specific genders of the nouns they target. In addition to targeting speech-internal nouns, such triggers can generally also target speech-external entities. But as will be seen, the latter case requires different processing.

The target is speech-internal To be more specific about the speech-internal case, where the target is a noun phrase with its associated concept, then a gender-specific trigger referring to that target must specify the particular gender of the head noun. In German, for example, if a trigger is to target a prior noun phrase headed by the intrinsically masculine noun *Stuhl* ‘chair’, the trigger (e.g., *er*) must “be masculine.” That is, it must have lexicalized within it the core cue that the head noun portion of the target is masculine.

If several earlier noun phrases are candidates for the target and have different head noun genders, then the gender core cue provided by the trigger will help the hearer select among them. This device works even where the intended target is the concept associated with the nominal, not the nominal itself.

The target is speech-external Consider now the case where the target is speech-external and no noun referring to it has yet appeared in the discourse, thus eliminating speech-internal targeting as an issue. The question is, which of a language’s gender-relevant triggers can be used to point to that target. Perhaps most languages with gender systems here offer two options. The **gender-transcending** option involves the use of a special trigger largely neutral to gender or the special gender-transcending use of an otherwise gender-specific trigger. The speaker takes this option if the target is unfamiliar to him or if he wants to treat a familiar object at a superordinate level as a generic object instead of as a member of the category that a gendered noun would represent.

For example, the demonstratives in Spanish include not only masculine and feminine forms for the two genders its nouns can have, but also neutral forms—*esto* ‘this entity’, *eso* ‘that entity’ and *aquello* ‘yon entity’—for this gender-transcending function (Teresa McFarland, p.c.). The Bantu language Luganda—whose gender-marking demonstratives specify noun classes—uses demonstratives marked for classes 7/8 for the gender-transcending function, provided that the target is not obviously human (classes 1/2) or animal (classes 9/10) (Francis Katamba, p.c.). And in German, when it points to a speech-external target, the otherwise neuter demonstrative trigger *das* ‘this/that’ can also be used to transcend gender.

The alternative to the gender-transcending option is the **gender-ascribing** option. It uses the gender-specific trigger corresponding to a particular noun that could be used to refer to the target entity. Generally a range of nouns can refer to any given entity. But certain principles understood by both speaker and hearer seem to be at work guiding the selection. One principle may be to favor a basic-level noun for the entity over a hypernym or hyponym. If several such nouns exist in the lexicon, another principle may be to favor the most colloquial or frequently used one. The complex processing in this procedure is examined in section 3.4.1. The speaker takes the gender-ascribing option if the target is familiar to him and he wants to treat it as an instance of the category represented by the noun.

Where the target is a speech-internal nominal, gender is an intrinsic property of its head noun. But where the target is a speech-external entity, any grammatical gender ascribed to it by a gender-specific trigger is only a contingent property arising from a noun that happens to be associated with it. It is treated in this section on intrinsic properties, though, so as not to divide up the description of gender.

A German example (Martina and Günther Lampert, p.c.) can illustrate both options. A speaker in front of a shop window can point to an object there that, among alternatives of categorization, could be classed as a chair. He can say (40) using either *das*, neuter, or *der*, masculine, as the trigger meaning ‘this/that’.

(40) Woran erinnert das/der dich?

on-what reminds that-NEUT / that-MASC you: What does that remind you of?

If the gender-transcending *das* is used, the sentence asks the hearer for her conceptual association with the target as a general object. But the masculine *der* evokes the masculine noun *Stuhl* ‘chair’ so that the sentence now asks about the target qua chair.¹²

2.2.6 Substantiality

In some languages, certain triggers that target a perceivable physical entity or phenomenon also mark a category of **substantiality**, specifying that the target is either substantial or insubstantial. For example, in Yucatec Maya (John Lucy and William Hanks, p.c.), the trigger *b’e’* indicates that its target is an insubstantial physical phenomenon—one that in addition must be perceived in a sensory modality other than the visual. Thus, it can target a heard sound such as an echo, a smelled odor as from a fire, and a tactile experience like that from wind felt on one’s face or a vibration felt through the feet. Different triggers would be used if a physical target is visible, even if it is insubstantial, like smoke, or if it can be tactilely felt as a solid or liquid, that is, as substantial, even if it is not seen.

The Yucatec trigger *b’e’* has the additional constraint that its target must be speech-external and perceived currently. Thus, it could not be used to target a sound referred

to speech-internally and heard previously, as in a sentence like *John crashed his car last night; that-sound woke us*.

A number of other languages are reported to have triggers targeting a sound, or a sound or smell (Imai, 2009). Perhaps further probing would reveal that they too target insubstantial phenomena more generally. And perhaps some of them lack the constraint of the Yucatec form.

2.2.7 Domainality (the Target as External or Internal to Speech)

The term “domainality” has so far been applied only to a trigger. A trigger’s (type of) domainality consists of whether its target is speech-internal or speech-external. The term is now extended to apply as well to a target itself. A target’s (type of) domainality consists of whether it is speech-internal or speech-external—that is, whether it is in the speech domain or in the nonspeech domain.

A target’s domainality is here regarded as an intrinsic property of that target, and so it is included here in section 2.2 among other intrinsic properties. Consider, for example, that if a speaker points to George standing nearby and uses the trigger *he* while saying (41a) to a hearer, the speech-external target is a tangible person directly perceivable. But if the speaker is alone with the hearer and uses the trigger *he* while saying (41b), the speech-internal target is only a conception—the one associated with the lexical form *George*. This distinction between the target’s being a perceived object and a word-associated concept seems intrinsic to the target. Still, a target’s domainality could also be treated as a contingent property. In that case, the target George would be understood as a more abstract entity with the contingent property of being either perceived physically or conceived lexically.

- (41) a. He has a cold now.
- b. George went out in the rain last week. He has a cold now.

As was seen above and is to be seen below, most English triggers can refer to targets with either type of domainality. Such triggers were earlier said to exhibit dual domainality. Alternatively, they can be regarded as being **domainality neutral**. We reillustrate this here with a previously seen type of example. The trigger *that* has a speech-external target in (42a), which might be said by a speaker pointing to a watch, and has a speech-internal target in (42b). Majority forms like this are a substantial part of the argument for treating deixis and anaphora as a single system.

- (42) a. You should pawn that.
- b. Trish had just one watch, but she pawned that for money.

However, some triggers do indicate that their target is specifically speech-external or speech-internal. Such triggers are **domainality specific**. They thus provide the hearer with information as to what the target consists of and where to look for it—inside or

outside speech—and so they provide a genuine core cue that helps guide the hearer to the target.

But such a core cue to a target's domain then is simply on a par with, say, a core cue to a target's state of animacy. Hence, the major distinction that the traditional linguistic literature has held to exist between a deictic form and an anaphoric form here reduces simply to one specification among many that a trigger can make about its target—namely, a specification as to the target's domainality.

The following two sections look at domainality-specific triggers—in sequence, ones with exclusively speech-external and speech-internal targets.

Triggers with exclusively speech-external targets Several English triggers, in all their readings, refer only to speech-external targets. As was noted, two instances are the path-targeting triggers *thisaway* and *thataway*. To repeat an earlier example here, they can target a direction that the speaker points in, as in (43a), but not a direction referred to in prior speech, as in (43b). By contrast, the phrasal trigger *that way* can indicate a comparable target in either domain. These two triggers thus provide the hearer with the core cue to look for the target in the external environment.

- (43) a. The gunman rode off *thataway* / *that way*.
 b. The gunman rode off toward the east.
 The sheriff also rode **thataway* / *that way*.

Comparably, the trigger *yay* (see section 2.2.1) can target the distance between two objects where one or both of these objects are body parts of the speaker, as in (44a) where the speaker holds her hands a certain distance apart. But it cannot target the distance between two such objects referred to in speech, as in (44b). By contrast, the triggers *this/that* can indicate a comparable target in either domain. The trigger *yay* thus gives a hearer the core cue to look for the target in the external environment.

- (44) a. The fish he caught was *yay* / *this big*.
 b. The angler held his hands two feet apart.
 The fish he'd caught was **yay* / *that big*.

Also exclusively speech-external are the English first- and second-person singular pronouns *I* and *you*, as well as all their paradigm mates except the reflexive forms—a pattern that perhaps holds crosslinguistically. (For the plural counterparts, see section 3.3.4.) Thus, a first-person singular trigger is clearly speech-external, not speech-internal, because it targets the speaker herself, not her speech.

We argue further that if a clause contains more than one first-person singular pronoun, each occurrence initiates a fresh instance of targeting of the speaker. One occurrence does not anaphorically target another. As evidence, consider first the sentence in (45a), which contains only one occurrence of a first-person singular trigger, *my*. This

trigger thus initiates the only—and hence independent—targeting of the speaker. The same independence can then be claimed for the *my* in (45b). There is no reason to hold that it anaphorically targets the speech-internal *I* that now also appears in the sentence (but see “co-targeting” in section 3.3.4).

- (45) a. Pete dropped my book. b. I dropped my book.

Triggers with exclusively speech-internal targets Certain other triggers, on the other hand, point exclusively to speech-internal targets.

Relative pronouns. One group of such triggers consists of the relative pronouns within a relative clause. The forms of this kind in English are *who*, *whom*, *whose*, *which*, and *that* (in their relative readings). They all target a noun phrase within the preceding clause. Thus, *the man* is the target of *who* or *that* in (46a), while *the sapling* is the target of *which* or *that* in (46b). The occurrence pattern of these triggers accords with the fact that *who* requires a sapient target, *which* requires a nonsapient target and *that* is neutral to this distinction (see section 2.2.3).

- (46) a. The story is about a man who/that/*which stood five feet tall.
b. The story is about a sapling which/that/*who stood five feet tall.

These relative pronouns are generally not treated as anaphors, nor the earlier noun phrases as antecedents, in traditional syntax. But these elements are regarded respectively as triggers and targets in the framework here because they do meet the criteria of the targeting system. Consider the *who* and the *which* appearing respectively in (46a) and (46b). These forms behave like triggers that initiate the three-stage targeting procedure. In the first, the trigger-to-cues stage, they provide the hearer with the core cues that the target is respectively a sapient and a nonsapient entity represented by a noun phrase in the immediately preceding clause. In the second, the cues-to-target stage, these cues help guide the hearer to the intended target. Thus, the sapience cue provided by the *who* in (47a) helps the hearer zero in on the concept represented by *the man* and rule out that represented by *the sapling* as the target, while the nonsapience cue provided by the *which* in (47b) does the reverse. And in the third, the target-back-to-trigger stage, the concept of the man or of the sapling is respectively mapped back onto the *who* or the *which* to function as the subject Patient of its clause.

- (47) a. I saw a man near a sapling who was five feet tall.
b. I saw a man near a sapling which was five feet tall.

The relative counterparts of pronominal adverbs (see section 2.2.3)—forms like *whereon* and *whereby*—also function as exclusively speech-internal triggers. Thus, the *whereby* in (48) targets the concept represented by the noun phrase *the sequence of steps*.

- (48) She explained the sequence of steps whereby she had resolved the conundrum.

Adverbial proclauses. There is another group of triggers with exclusively speech-internal targets. Talmy (2000a: chapter 6) calls them **adverbial proclauses**. Apart from that study, which describes such forms systematically, this extensive group is a little recognized lexical category. Characterizing this group might best begin by considering the set of paired sentences in (49). The lower entry in each pair contains the adverbial proclause, followed in brackets by a semantically equivalent compositional phrase.¹³

- (49) complex sentence and compound sentence counterparts
- a. posteriority
 - She went home after she stopped at the store.
 - She stopped at the store and then [after that] she went home.
 - b. anteriority
 - She stopped at the store before she went home.
 - She went home, but she first [before that] stopped at the store.
 - c. concurrence
 - She sang while she worked.
 - She worked, and she sang the while [during that].
 - (alternative adverbial proclause: at the same time)
 - d. subsequence
 - He has been spotted once since he escaped.
 - He escaped, but he has since [since that] been spotted once.
 - e. reason
 - They stayed home because they were feeling tired.
 - They were feeling tired, (and) so [because of that] they stayed home.
 - (alternative adverbial proclause: therefore)
 - f. concession
 - They went out although / even though they were feeling tired.
 - They were feeling tired, but they still [despite that] went out.
 - (alternative adverbial proclauses: yet, anyway, nevertheless)
 - g. conditionality
 - My wife will be with me if I come.
 - I may come, but then [in case of that / in that case] my wife will be with me.
 - h. additionality
 - He works at a side line in addition to holding down a regular job.
 - He holds down a regular job,
 - and he also [in addition to that] works at a side line.
 - (alternative adverbial proclauses: too, as well, to boot)

i. substitution

It flew straight instead of circling back. [speaking of a boomerang]

It didn't circle back, but rather (instead of that) it flew straight.

In each pair, the upper entry is a complex sentence, consisting of a main clause and an adverbial clause. The latter in turn consists of a subordinated clause and a subordinator that expresses its temporal, causal, or other relation to the main clause. The lower entry in each pair in turn is a compound sentence that serves as a counterpart to the complex sentence. It typically consists of three parts. The first part is an initial clause that corresponds to the original subordinated clause. The second part, sometimes absent, is a conjunction typically consisting of an *and* or a *but*. The third part is a final clause, one that corresponds to the original main clause.

That third part is what contains the adverbial proclause. This is a proform corresponding to the entire adverbial clause of the original complex sentence. Take, for example, the adverbial proclause *still* in (49f). It is a near semantic equivalent of the compositional phrase *despite that* and may have that combination of components lexicalized within itself. In this phrase, the *despite* corresponds to the original subordinator (*although*) representing the interclause relation. And the trigger *that* targets the initial clause, itself the same as the original subordinated clause. The adverbial proclause is lexicalized to incorporate this triggering function and is thus itself a trigger form.

Free relatives. There is a third group of triggers with solely speech-internal targets. Its forms, among other terms, have been called “free relatives” (e.g., Bresnan and Grimshaw, 1978). An example is the *where* in (50a). This form is a near semantic equivalent of the compositional phrase *to the place(s) to which*, which is substituted for it in (50b). The simplex form can be thought to have the corresponding semantic components lexicalized within it.

- (50) a. I'll go where you go. b. I'll go to the place(s) to which you go.

Like adverbial proclauses, these forms are lexicalized to include a triggering function and so are themselves trigger forms. The specifically triggering component within it functions like the relative pronoun *which* in the corresponding compositional phrase of (50b). But what is special about these forms is that they also have the target itself lexicalized within them. In the corresponding compositional phrase, this was represented as the noun phrase *the place(s)*. Thus, each free relative conflates within itself both the trigger and the target that the trigger refers to—or, in traditional terms, both the anaphor and its antecedent. This is a little recognized linguistic phenomenon.

Other free relatives with this type of conflation pattern (not an exhaustive list) are shown in (51), each with a different noun phrase to represent its incorporated target.¹⁴ For each free relative, a certain range of prepositions can occur with the target and a certain range with the trigger but, for simplicity, (51) selects just one option from these ranges.¹⁵

- (51) a. what: the thing that; I don't know what Jill wrote.
 b. who: the person that; I don't know who wrote the letter.
 c. where: the place/location at which; I don't know where Jill wrote the letter.
 d. when: the time at which; I don't know when Jill wrote the letter.
 e. how: the manner in which; I don't know how Jill wrote the letter.
 f. why: the reason for which; I don't know why Jill wrote the letter.

A free relative is also one of the three parts that constitute what might be called a **cleft trigger construction**. In English, this construction can often more colloquially stand in lieu of a simplex trigger. The construction consists of a trigger such as *this* or *that*, a copula, and a free relative. And it exhibits both types of domainality. The trigger that constitutes the first part of the construction is what refers outside itself to a speech-external or speech-internal target, while the free relative initiates a self-contained act of targeting.

A speech-external and a speech-internal illustration are shown respectively in (52a) and (52b). Each illustration consists of a pair of sentences with approximately the same meaning, where the upper sentence has the simplex trigger, while the lower sentence has the corresponding cleft trigger construction.¹⁶

- (52) a. The accident occurred !-there [at that location].
 !-That's where [the location at which] the accident occurred.
 b. The clock struck midnight. Floyd saw an apparition then [at that time].
 The clock struck midnight.
 That's when [the time at which] Floyd saw an apparition.

Reflexives. A fourth group of triggers that can be interpreted as having only speech-internal targets are reflexive pronouns. In English, these are *myself*, *ourselves*, *yourself*, *yourselves*, *himself*, *herself*, *itself*, and *themselves* in their reflexive reading (not, say, emphatic reading). These triggers cannot occur as a subject nominal but instead, to simplify the fuller account, can be taken to target the subject nominal in their clause. But the question can be raised whether the first- and second-person reflexives do genuinely target the subject nominal—a question examined in detail in section 3.3.4.

Further forms. In addition to these groups of triggers, the individual trigger *so* has an exclusively speech-internal target when it targets a whole action, not the manner of an action, as treated in the next section. And several further specifically speech-external or speech-internal triggers are treated under “degree of temporal remove” in section 2.3.1.

Domainality-matched triggers The triggers cited in the previous two subsections had targets with one type of domainality, but there were no triggers corresponding to them with targets of the other type of domainality. But consider the triggers in

section 2.3.1 that indicate degree of spatial or temporal remove and exhibit “cross-domain parallelism.” In many cases, two such triggers expressing similar content can function as a matched pair in which one trigger has a speech-external target while the other has a speech-internal target. One such pair is *tomorrow* and *the next day*. These are illustrated in (53), an example taken from that section to give a sense of the matter here.

- (53) a. I’ll wash the car tomorrow.
 b. I fixed the drier on Monday. I washed the car the next day (*tomorrow).

The triggers indicating degree of remove also include ones exhibiting the majority domainality-neutral pattern, having either speech-external or speech-internal targets. An example indicating degree of spatial remove is *nearby* and one indicating degree of temporal remove is *soon*.

2.2.8 Constituent Type

As seen, a speech-internal target always includes a linguistic constituent, even where the component of interest is the concept associated with that constituent. Now, when certain triggers refer to a speech-internal target, they also specify that the linguistic constituent of that target be of a particular syntactic type. Such a specification is then a further core cue that the hearer can use to narrow down to the intended target. We next consider in order triggers that, when used speech-internally, specifically target a clause, a verb phrase, a noun phrase, and perhaps an adjective phrase, ending with a look at the semantic correlate of a constituent type.

Clause The target of some triggers is a clause, specifically either an independent or an embedded clause. To begin with, all the adverbial proclause triggers (see section 2.2.7) are lexicalized to target an independent clause—specifically, the clause immediately preceding the one containing the trigger. Thus, in (54), the adverbial proclause *then* targets the initial clause *She stopped at the store*. Within the compositional phrase approximately equivalent to *then*, shown in brackets, the triggers *that* and *this* can also target the initial clause. But those triggers can target a wide range of entity types—they are not limited to such a clause. By contrast, an adverbial proclause can target only such an initial clause. It thus provides the hearer with the core cue to consider only clauses for the target and rule out nonclauses. (Its additional cue that the target clause is the immediately preceding one is addressed in section 2.3.5).

- (54) She stopped at the store and then [after that/this] she went home.

In two of its readings, the trigger *so* is also lexicalized to target a preceding clause. In one reading, it targets an independent clause, like the whole of X’s utterance in (55a). In the other reading, it targets an embedded clause, as seen in (55b). The triggers *that*,

this, and *it* can in various instances serve as alternatives to *so* but, then, they have a wide range of target types. By contrast, *so* here is restricted and thus provides a core cue for the hearer to look for a prior clause as the target.

- (55) a. X: Brent had a bad fall yesterday.
 Y: I thought so/that when I saw him today.
 b. Liz thinks that empathy evolved, and I believe so / that / this too.

Verb phrase Certain triggers in one clause can target the whole or part of a verb phrase in the preceding clause. The portion of the verb phrase that comprises the target is determined by assessing how the two clauses align structurally. As seen in (56), the triggers *that*, *this*, *it*, and *so*—now in a new reading—can perform such verb phrase targeting. They here target the verb phrase *get the ball right into the basket on the first try*. Of these triggers, only *so* in its current reading is specifically lexicalized for such targeting. Hence, it provides the hearer with the core cue that she should look for (part of) a verb phrase in the preceding clause as her target. The other triggers do not provide such a cue since they can indicate targets of diverse types.¹⁷

- (56) I got the ball right into the basket on the first try,
 but I couldn't do that / this / it / so again.

The target just seen was a speech-internal verb phrase, but we can consider whether there can be a corresponding speech-external target consisting of an action. This does seem to be the case in (57), which could be said, say, by one child getting tickled by another. The tickling is a speech-external action, one not represented internally within the child's speech, and the triggers *that* and *this* can indeed still target it. However, the trigger *so* cannot be used here. This shows that *so* is limited to speech-internal targets and confirms its listing with other such triggers in section 2.2.7.

- (57) Stop doing that / this / *so.

Noun phrase When their target is speech-internal—that is, when used anaphorically—the English gender-specific triggers *he* and *she* always target a noun phrase. The triggers *this*, *that*, and *it* (as well perhaps as their plural counterparts) are not included in this set because they can also target verb phrases or clauses. Reflexive triggers of at least the third person also require NP targets. And the relative pronoun triggers *who* and *whom* always require NP targets, while *which* and *whose* usually do. These constrained triggers thus provide the hearer with the core cue to look for an earlier noun phrase as the target.

Adjective phrase? The earlier section on “quality” discussed the trigger *such* when accompanying a noun. In previous anaphora studies, this form was treated as an anaphor

requiring an adjectival antecedent, as by Postal (1969), who called it “prorelative,” and by Hirst (1981), who called it “proadjectival.” But this proves to be incorrect. The trigger actually targets any constituent whose associated concept includes qualities of the accompanied noun’s referent. In (58), for example, the trigger *such* targets the compound verb phrase and the qualities that it attributes to the plant referred to. So this is not a case of a trigger requiring a specifically adjectival target. It is not clear whether any language has such a trigger—hence, whether a core cue exists directing the hearer to search for a specifically adjectival constituent.

- (58) This one succulent in the nursery was red, had horizontal ribs, and trapped flies.
I’d never seen such a plant before.

The semantic type associated with a constituent type In general, every syntactically characterizable constituent type is prototypically associated with a certain generic concept or semantic type. Thus, a clause is prototypically associated with an event, a verb phrase with an action, a noun phrase with an entity, and an adjective phrase with a quality. Each trigger discussed so far in section 2.2.8 that provides a core cue to the target’s constituent type then also provides a corresponding cue to its semantic type. This additional cue can also help the hearer. As the hearer constructs an overall conception in association with the speaker’s utterance, the cue can guide him to a particular portion of the overall conception that is of the specified semantic type. For example, while the trigger *so* in its third reading has the hearer search for a verb phrase within the preceding linguistic material, it also has him on the lookout for an “action” included within the overall conceptual complex associated with that material. The two cues should converge on a single constituent-concept association and thus reinforce each other in guiding the hearer to the target.

2.3 Contingent Target Properties Specified by Triggers

A property that a trigger specifies for a target is **contingent** if it depends on the target’s current circumstances or on the target’s conceptualization by the speaker. The target exhibits it at the moment of the trigger’s occurrence, but not necessarily at other times. A trigger in this case thus provides a core cue to the target assumed to be valid only for the present. Different categories of such contingent target properties appear under the following headers.

2.3.1 Degree of Remove

A trigger can be lexicalized to indicate a target’s **degree of remove** from a particular reference point (or Ground). The first two degrees of remove involve contact—the **contactive** degrees. A target at the first degree of remove from a reference point is

coincident with it and at the second degree is adjacent to it. Further degrees of remove involve separation—the **separative** degrees. The number of distinctions marked within this separation varies according to the language and the semantic area—the terminology varies as well—but it generally amounts to some subset of the target’s being hyperproximal, proximal, medial, distal, or hyperdistal/remote with respect to the reference point. If a language has triggers that distinguish, say, the proximal, the distal, and the hyperdistal, they will be said to indicate that the target is at a third, fourth, and fifth degree of remove from the reference point, respectively.

There are seemingly only four entities that can perform a reference-point function. These are the speaker, the hearer, the trigger, and the **base**—the referent of a particular speech-internal nontrigger constituent. These entities include, but encompass more than, what has often been referred to in the literature as the “deictic center” (e.g., Zubin and Hewitt, 1995).

The actual reference point is then a certain aspect of such an entity. Specifically, the reference point can be the spatial location or certain other aspects of the speaker or hearer, the temporal location of the trigger, or the spatial or temporal location of the base.

In their speech-external application, these finer distinctions are meant to supersede the traditional linguistic notion of “deictic center” or “origo” (see, e.g., Zubin and Hewitt, 1995). The traditional notion is sometimes vague about where the center is located within the pair of collocutors. But our finding is that a trigger here is mainly either speaker-centered or hearer-centered—regardless of where the other collocutor is located—or else is anchored along the corridor between the two, as seen in section 6.7.1. (For the only currently reported potential exception, see section 6.7.4.) As for temporal anchoring, furthermore, the traditional notion commonly refers comparatively broadly to the time of the speaker’s and hearer’s communication, while our distinctions narrow this down specifically to the moment at which the speaker’s trigger occurs.

Further, a trigger can be lexicalized to indicate that the remove occurs in a particular referential realm. Five main realms are the spatial, the temporal, the personal, the social, and the experiential—treated in the following sections in that order. The experiential realm is in turn divided into four subrealms—the memorial, the attentional, the recognitional, and the affective/perspectival. This last subrealm is here treated in conjunction with the first four realms since it interacts with them.

A target’s degree of remove from some reference point is generally not an intrinsic property of the target but a contingent property, one rooted in the current circumstances and able to have different values at other times without any effect on the target’s nature.

Degree of spatial remove The first realm relates two locations in space. Specifically at issue is the **degree of spatial remove** that a targeted or target-occupied location has from a reference-point location.

Speech-external degree of spatial remove. Perhaps all languages have triggers that can target or indicate a speech-external location in space and specify its degree of spatial remove from the location of the speaker as reference point. English has two series of such triggers. One series consists of the adverbial triggers *here*, *there*, and *yonder* that target speech-external locations at increasing degrees of remove. The other series consists of the determiner or pronominal triggers *this/these*, *that/those*, and *yon* that target speech-external entities occupying locations at increasing degrees of remove.

The initial members of both these series can be used to indicate that the target is at either of the contactive degrees of spatial remove. Thus, the trigger *here* in (59a) indicates that the targeted location is at the first, or coincident, degree of remove as the speaker—a patient in a hospital—points toward her stomach inside her abdomen and, in (59b) that it is at the second, or adjacent, degree of remove as she points toward the surface of her belly.

- (59) a. It hurts here. b. Put the ice pack here.
 c. Put the pitcher of water here. d. Put the chair for the nurse there.
 e. Their cattle ranch is yonder past the hills.

The same initial members can also indicate that the target is at the smallest of the separative degrees of remove. Thus, the same trigger *here* in (59c) can indicate that the targeted location is at the third, or proximal, degree of spatial remove from the speaker as she points to her bedside table while lying on the bed. The middle member of each series indicates that a target is at a distal degree of spatial remove from the speaker—the fourth degree and the next larger of the separative degrees—as the trigger *there* does in (59d), where the speaker points toward a spot across the room from herself. And the dialectal or obsolescent final member of each series indicates that a target is at a hyperdistal degree of spatial remove from the speaker—the fifth degree and the largest of the separative degrees—as the trigger *yonder* does in (59e), where the speaker points out the window toward a scene distant from herself.

In all the preceding examples, what functions as the reference point is the location of the speaker in space—that is, the corporal cue (see section 1.2.2). In the semantic formulations that follow, such a speaker's spatial location will be represented by the capitalized word "Here." The semantic components constituting the triggers *here*, *there*, and *yonder* in the usages just seen can then be represented as in (60).

- (60) Triggers targeting a speech-external location at particular degrees
 of spatial remove
 a. *here*: 'at a location with a coincident/adjacent/proximal degree
 of spatial remove from Here'
 b. *there*: 'at a location with a distal degree of spatial remove from Here'
 c. *yonder*: 'at a location with a hyperdistal degree of spatial remove from Here'

Where examples like these indicate a location, an entity referred to in the discourse that did, does, or might occupy that location will be called the Figure. The constituent referring to that entity is then the Figure constituent. Thus in (59d), the Figure is a chair and the Figure constituent is the NP *a chair*.

—The directive/nondirective distinction. It will be relevant here to introduce a particular distinction. In addition to the corporal cue as reference point, utterances like those in (59) that largely allow the two full series of triggers generally also require a gestural, targetive, or hearer-focus cue. When a hearer perceives a cue of a certain type—one mainly from these three categories—it characteristically directs his attention on from itself toward the target. Such cues as well as triggers that rely on them will be called **directive**. For example, a speaker who points and says *That's my new laptop* expects the hearer, on seeing her gesture, to attentionally follow its indicated pathway toward the target. Here, the gestural pointing cue and the trigger *that* are directive.

In contrast, the corporal cue—that is, the speaker's location—by itself is generally **nondirective**. Likewise, when the trigger *here* is not used directly, as in *Put the ice pack here*, but is used in its corporal sense that targets the region around the speaker's location, it is generally nondirective. This cue and trigger thus tend not to direct the hearer's attention on toward this targeted region. This is clearly the case where the cue and the targeted region are not perceivable but must be imagined, as when a pilot radios back the message in (61a). But it is generally also the case even where the location of the speaker can be perceived by the hearer, as when a speaker at a fair booth says (61b). The hearer in this case is not expected to direct his gaze at the targeted region around the speaker—here, at the booth and the area surrounding it. The corporal trigger and cue *here*, rather, are mainly informative. They serve simply to inform the hearer that a region is being targeted and that it surrounds the speaker.

- (61) a. There are only clouds here. b. Fred was here earlier.

This corporal trigger *here* can be semantically represented more analytically as in (62a). Or using the word *contain* as a shorthand to indicate the merger of coincidence, adjacency, and proximity, it can be represented as in (62b).

- (62) A corporal trigger targeting a speech-external spatial location nondirectively
 a. (corporal) here: 'nondirectively in a region
 with coincident-adjacent-proximal degrees of spatial remove from Here'
 b. (corporal) here: 'nondirectively in a region containing Here'

Other triggers than corporal *here* can be nondirective. One is corporal *this* (see section 6.5). And another is the adverb *nearby* which, unlike the corporal triggers, indicates a purely separative degree of spatial remove. This trigger can be represented

semantically as in (63a) and exemplified as in (63b), an utterance that a speaker might say to a companion in a group touring through a town.

- (63) Another trigger targeting a speech-external spatial location nondirectively
 a. nearby: 'nondirectively at a location
 with a proximal degree of spatial remove from Here'
 b. The mayor is standing nearby.

The trigger *nearby* in (63b) targets a location that is occupied by a Figure, the mayor, and that is at a proximal degree of spatial remove from the speaker's location. With this nondirective trigger, the utterance is mainly informational with regard to location and Figure—the speaker does not require that the hearer try to determine the targeted locus and spot the mayor. English has few such nondirective triggers for spatial remove, but has many for temporal remove (see the Degree of temporal remove section).

Speech-internal degree of spatial remove. In general, when the target is speech-internal, directive cues are unrealizable. For example, if a discourse refers to a speech-internal speaker and hearer, it is impossible for the speech-external hearer to see the speech-internal speaker pointing at a target or the speech-internal hearer gazing at a target. The speech-external hearer can thus not perceive gestural or hearer-focus cues that he could attentionally follow to the target. The two series of directive triggers accordingly have no speech-internal use. The whole directive system by which they indicate different degrees of spatial remove collapses speech-internally.

What can be used, rather, are nondirective cues and triggers. The two directive series of triggers, in particular, are respectively replaced by the speech-internal counterparts of nondirective corporal *here* and *this*. These replacements are the speech-internal nondirective corporal triggers *there* and *that*.

English here has selected the distal forms of the directive triggers for use as the speech-internal nondirective triggers, even though the latter do not express degrees of spatial remove. This choice may reflect a metaphor in which the speech-internal is more distal than the speech-external. In any case, some languages, for example, French (see the Speech-external intrusion section), have not made the same selection.

For illustration, consider the following speech-internal counterparts of (59b) and (59d). Instead of the earlier two triggers *here* and *there* that directly distinguished degrees of spatial remove, there is now the single trigger *there* marking no such distinction.

- (64) a. The patient touched her belly and wanted an ice pack there.
 b. The patient pointed to a spot across the room and wanted a chair there.

The reference-point function is here performed not by the speaker, as before, but by the base, that is, by the referent of the relevant nontrigger constituent. In (64a), this base is

the belly referred to by the constituent *her belly* and, in (64b), it is the spot referred to by the constituent *a spot*. The specific reference point here is the spatial location of this base—here, the location respectively of her belly and the spot. We will call this reference point the **base location**. It is the corporal cue in the speech-internal domain, the counterpart of the speaker's location in the speech-external domain. The single trigger *there* then targets a region around the base location. Other constituents indicate that a Figure object—here, respectively, an ice pack and a chair—is in that targeted region. The trigger *there* is nondirective because it only informs the hearer of a surrounding region and of a likely Figure somewhere within it, without requiring that he try to perceive them.¹⁸

In analogy with representing the speaker's spatial location by the capitalized word "Here," we now represent the base's spatial location by the capitalized word "There." Then the semantic components making up the speech-internal trigger *there* can be represented more analytically as in (65a) and with a shorthand as in (65b).

- (65) A corporal trigger targeting a speech-internal spatial location nondirectively
 a. there: 'nondirectively in a region with coincident-adjacent-proximal degrees of spatial remove from There'
 b. there: 'nondirectively in a region containing There'

The nondirective speech-external trigger *nearby* also has a speech-internal counterpart with the same morphemic form, as seen in (66).

- (66) A flagpole flew the town banner. The mayor was standing nearby.

Here, the base is the referent of the constituent *a flagpole*. The specific reference point and corporal cue, then, is the location of this flagpole in the space that the hearer conceptualizes on the basis of the discourse content. The trigger *nearby* targets a location at a proximal degree of remove from the reference-point location. And that targeted location is occupied by a Figure—the referent of the constituent *the mayor*. In the hearer's conceptualization of discourse-evoked space, thus, the mayor is near the flagpole. The nondirective trigger informs the hearer of these relationships without requiring that he try to perceive the targeted location or mayor occupying it. The semantic components of this speech-internal trigger can then be represented as in (67).

- (67) Another trigger targeting a speech-internal spatial location nondirectively nearby: 'nondirectively at a location with a proximal degree of spatial remove from There'

—Cross-domain parallelism. As can be seen, the preceding two semantic representations of speech-external triggers parallel their earlier speech-external counterparts, differing only in that the reference point is "There" instead of "Here." This cross-domain

parallelism is foregrounded in the following table, where a slash is used to separate speech-external from speech-internal forms.

- (68) Triggers targeting a spatial location nondirectively
- a. corporal here / there:
 - i. ‘nondirectively in a region with coincident-adjacent-proximal degrees of spatial remove from Here / There’
 - ii. ‘nondirectively in a region containing Here / There’
 - b. nearby / nearby: ‘nondirectively at a location with a proximal degree of spatial remove from Here / There’

Factors governing the separative degrees of spatial remove. Among directive triggers, the separative degrees of spatial remove in standard English generally amount to a two-way distinction between proximal and distal, as indicated by the trigger distinctions between *here* and *there* and between *this/these* and *that/those*. But what then determines the choice between the two alternatives? We propose four factors that have a role in this selection.

—Target distance. The first factor of **target distance** pertains to the actual distance of a targeted location or Figure from the speaker’s location. But this factor accords with the principle in Talmy (2000a: chapter 1) that closed-class representation of spatial or temporal structure can only be relational or topological, not absolute or Euclidean. Thus, a speaker’s choice between a proximal and a distal trigger to target an object does not depend on the object’s absolute distance from the speaker, but rather on such relational characteristics as the object’s size relative to its distance and the locations of any comparable objects. The distance of the transition point between proximal and distal (a fuzzy, not sharp, transition) still needs to be determined for various values of these characteristics. But in a situation where, as in (69), the speaker points to and verbally targets a solo carton either a foot or fifty yards away from herself, she will most likely choose a proximal trigger for the former case and a distal trigger for the latter.

- (69) This/That box of baseballs is for the kids at the school.

—Contrastive target distance. The second factor of **contrastive target distance** applies where there are two targets at different distances from the speaker’s location. This factor also accords with the just-cited relational character of closed-class reference but, in addition, abstracts away from such issues as the target’s size-distance ratio. It simply assigns a proximal trigger to the closer target and a distal trigger to the farther target, as assessed relatively rather than absolutely.

To illustrate, a speaker can point in turn to two specks centimeters apart, first to the closer one and then to the farther one relative to herself as reference point. At the same time, she distinguishes them verbally as in (70a) by using first the proximal member

and then the distal member of the trigger pairs *this/that* or *here/there*. But she can also use the same pairs of triggers in saying (70b), while now pointing first to the ground at her feet and then to Venus in the sky—the two targets now being millions of miles apart.

- (70) a. This speck is larger than that speck. /
 The speck here is larger than the speck there.
 b. This planet is larger than that planet. /
 The planet here is larger than the planet there.

This second factor may also play a role speech-internally. To illustrate, perhaps most speakers will agree that the trigger *that* in (71a) targets the referent of the NP *a vice* while the trigger *this* targets the referent of the NP *a hammer*, while the reverse use of these triggers in (71b) is infelicitous.

- (71) Roz got a vice from the garage. Then she got a hammer from the shed.
 a. She used !-that tool to straighten the stake
 and !-this tool to pound it into the soil.
 b. *She used !-this tool to straighten the stake
 and !-that tool to pound it into the soil.

This pattern may at first seem to contradict the speech-internal block against directive triggers. However, the contrastive usage here cannot be based on any difference in target distance within the space represented speech-internally by the discourse. This is because the discourse stipulates no distances between entities and, even if the speaker believed that the garage was closer than the shed to, say, Roz's final location in the garden, he could still not say (71b).

The contrastive trigger usage may rather rest on a particular metaphoric construal. In this construal, the discourse is conceptualized as a linear entity extending through space, where the NPs and the trigger occupy locations at points along that linear extent. Then the two NPs are at different degrees of spatial remove from the trigger's location. In this construal, then, the reference-point function is performed by the trigger (one of the originally cited four options), and the specific reference point is the metaphoric spatial location of the trigger.

This interpretation, then, preserves the proposed restriction against directive triggers representing different degrees of spatial remove within speech-internal reference. But it posits that such differences in spatial remove can be applied to a metaphorical treatment of discourse as spatial.

—Speech-external intrusion. The third factor of **speech-external intrusion** applies only where the target is speech-internal and, again, seems at first to contradict the speech-internal block against directive triggers. This factor can be seen at work in the Lyons (1977) examples shown in (72).

- (72) a. I was born in London, and I have lived here/there all my life.
 b. I was born in London, and this/that is where I have lived all my life.

The triggers here all have the same speech-internal target, the referent of the noun *London* (treated as either a location or an entity). But the proximal and distal degrees of spatial remove indicated by the members of the trigger pairs *here/there* and *this/that* are not cues that help guide the hearer to that speech-internal target. Rather, they provide information extrinsic to the utterance's main proposition about the speaker's birth and residence location. Specifically, they provide speech-external information that the speaker has about the spatial distance of himself from London at the time of speaking. Here, then, the triggers introduce speech-external information into otherwise purely speech-internal content (see section 3.3.3 for more on this intrusion process).

In fact, if English is to target a speech-internal location at all, it has no recourse but to introduce this type of speech-external information about the speaker's current distance from that location. Though obscured there, this fact holds as well for the "belly/chair" examples in (64), where the use of the trigger *there* indicates that the speaker of the sentences is not herself currently located at the spot at her belly or across the room that she had pointed to.

Note that speech-external intrusion of this kind is absent in some languages. Thus, in a sentence corresponding to (72a), French can use only its exclusively anaphoric locative trigger *y*, which might be glossed as 'at/to the location just mentioned'. This is a purely speech-internal trigger—employed regardless of the speaker's current physical relation to the cited location. It is distinct from the speech-external locative triggers *ici* 'here' and *là* 'there'. Filling out the anaphoric locative paradigm in French is the trigger *en* which, in one of its senses, can be glossed as 'from the location just mentioned' (Annette Herskovits, p.c.).

—Degree of affective/perspectival remove. The fourth factor is the target's **degree of affective/perspectival remove** from the speaker, which is itself a type of experiential remove (see the Degree of experiential remove section). It does not in fact pertain to literal space. But it can co-opt the triggers basically lexicalized to distinguish degrees of spatial remove so as to mark its own distinctions of remove (compare Enfield, 2003).

Our label for this type of remove places together the phenomena of affect and perspective because they behave comparably, but each of these phenomena does have its own characteristics. To consider affective remove first, it can in turn be ranked for either quantity or quality. Triggers with a proximal/distal distinction can indicate whether the speaker wants to involve a target more or less greatly in some affective state she has toward it (quantity), or whether her affective state toward it is positive or negative

(quality). As for perspectival remove, the trigger distinction can indicate whether the speaker wants to imagine herself as regarding the target from close up or from a distance. All these distinctions can be conceptually associated with a spatial distinction: the speaker wants to experience the distance between herself and the target as little or as great. This association is perhaps what accounts for the representation of an experiential distinction by spatial triggers.

To illustrate first the case where the target is speech-external, a speaker can answer an unrecognized phone caller as in (73a), using the conventional proximal trigger *this*. But if awakened by the call and hence feeling irritated, he can use the distal trigger *that* to indicate negative affect toward the target (the caller).

- (73) a. Who is this/that? b. This/That bicycle has classical handlebars.

And in (73b), the speaker can be imagined as looking at a bicycle some eight feet away. Under the first factor by itself, this distance might count as being medial—on the cusp between proximal and distal—and so not call strongly for either a *this* or a *that* trigger. But by the fourth factor, she might tend to select the proximal or distal trigger respectively to express her having a positive or negative attitude toward the bike or to represent herself as viewing the bike from closer up or further away.

The factor of degree of affective/perspectival remove can also apply to a speech-internal target. For example, the speaker saying (74) can use either *that* or *this* to target the referent of the speech-internal constituent *a chisel*. Affectively, the distal trigger suggests that the speaker feels more impersonally about the tool, while the proximal trigger suggests an emotional involvement with the use of the tool in the speaker's work. Perspectivally, the two triggers invite the hearer to imaginably view the work respectively from a distance or from close up.

- (74) In the tool shed, Vern handed me a chisel.
I used that / this chisel to shape the marble bowl.

Degree of temporal remove The second realm relates two locations in time. At basic issue is the **degree of temporal remove** that a targeted temporal location has from a reference-point temporal location. The following treatment of this temporal realm builds from simpler observations to larger systems.

Speech-external degree of temporal remove. Perhaps all languages have triggers that can target a speech-external location in time and specify its degree of temporal remove from the location of a temporal reference point. It is always the trigger that here performs the reference-point function. The specific reference point is the moment at which the trigger occurs—that is, is uttered by the speaker. This will be called the **trigger moment** and will be represented by the capitalized form “Now.” It is the chronal cue in the speech-external domain.

In turn, the temporal location that the trigger targets is a unit of time, such as a moment or interval. As before, this targeted location is occupied by a Figure, referred to by a Figure constituent in the utterance. But now, the Figure is an event.

—A coincident degree. Triggers that relate their target directly to the trigger moment indicate different degrees of temporal remove from that moment. Starting with the minimal degree of remove, the subsentential prosodic triggers (see section 11.2) indicate that their targeted unit of time is coincident with the trigger moment. This coincidence applies both where the target is a point of time copunctual with the trigger, itself just an instant, and where it is an interval coextensive with the trigger, itself now having a short duration. Both these cases were respectively illustrated by the “grab” and “buzz” examples of (2) in section 2.1.3. The semantic components making up such triggers can be represented as in (75).

- (75) Prosodic triggers targeting a speech-external temporal location
 at a particular degree of temporal remove
 <compressed prosodic trigger>: ‘at a moment
 with a coincident degree of temporal remove from Now’
 <stretched prosodic trigger>: ‘through an interval
 with a coincident degree of temporal remove from Now’

—A coincident-adjacent-proximal degree. Next, when applied speech-externally, the trigger *now* targets a supersentential interval of time and indicates that it has the three properties together of being jointly coincident with, adjacent to, and proximal to the trigger’s moment of occurrence. This trigger thus indicates that the temporal location it targets spans the first three degrees of temporal remove—surrounding and passing through the trigger moment. The semantic complex lexicalized within the trigger *now* can then be represented most analytically as in (76a). Or using the word *contain* as a shorthand to indicate the merger of coincidence, adjacency, and proximity, it can be represented as in (76b).

- (76) Trigger targeting a speech-external temporal location
 at a particular degree of temporal remove
 a. now: ‘through an interval with coincident-adjacent-proximal degrees
 of temporal remove from Now’
 b. now: ‘through an interval containing Now’

These relationships are illustrated in (77), an utterance that the speaker might say over a cell phone.

- (77) I’m washing the car now.

Here, the trigger *now* targets a speech-external temporal location that consists of an interval. This interval contains the trigger moment—that is, it extends through the

moment at which the trigger *now* is uttered. It thus spans three degrees of temporal remove from the reference point. The targeted interval is occupied by a Figure—the car-washing event. This event is represented by the Figure constituent *I'm washing the car*.

The present tense—in English, a componential trigger—basically targets the same combined coincident-adjacent-proximal interval that *now* does (see section 11.2 for how the two triggers do differ). Hence, the following example (78) containing the present tense but not the word *now* has the same temporal targeting as (77) did with both triggers present.

- (78) <PRESENT>: 'through an interval containing Now'
I'm washing the car.

The present tense and *now*, which will be called “chronal triggers” (see chapter 11), greatly parallel the corporal trigger *here* and, like it, are nondirective. They inform the hearer of a Figure-occupied interval passing through the trigger moment, but do not require that the hearer try to perceive it.

The temporal realm in fact generally appears to lack directive triggers that might mark a proximal/distal contrast. The reason for this lack is presumably that, unlike in the spatial case, a speaker has little in the way of cues to directly indicate a nonpresent speech-external time. She cannot, for example, point to a past event. Thus, while she can point to where Ken is distally eating his pizza with the trigger *there*, as in (79a), she cannot point to when he was distally eating it with the trigger *then*, as in (79b) (that is, where the discourse contains no reference to an earlier time).

- (79) a. Ken is eating a pizza !-there. b. *Ken was eating a pizza !-then.

A distal speech-external use of *then* does become viable only in the rare case where a directive cue, such as gestural pointing, is feasible. An example might be where a speaker touches a fingertip to a past date on a printed calendar and says (80).

- (80) The big takeover of our company took place !-then.

—A noncoincident degree with tense triggers. There are also speech-external temporal triggers analogous to the speech-external spatial trigger *nearby* that nondirectively indicate a noncoincident degree of remove. They are nondirective because they simply inform a hearer of a target's particular noncoincident degree of temporal remove without requiring any observation of it. But unlike the spatial case, such temporal triggers are numerous and often semantically significant. We can begin with the triggers for past and future tense. These—the *-ed* and *will* in (81a) and (81b)—respectively target a speech-external temporal location that is noncoincident with the trigger's moment of occurrence.

- (81) a. I washed the car. b. I will wash the car.

These triggers indicate that the targeted time is simply noncoincident with the trigger moment—and could equally well be at an adjacent, proximal, distal, or hyperdistal degree of temporal remove from it. The targeted temporal location itself is a bounded interval that can be of any duration from small to great. But since it is regarded from the perspective point of the trigger moment, from which it is distinct, it can undergo conceptual reduction to a point-like moment itself. The semantic components of the two triggers can thus be represented as in (82) with the word *moment* for the targeted temporal location. The words *before* and *after* in these formulations reflect the target's "direction of remove" from the trigger moment (see section 2.3.2).

- (82) Triggers targeting a speech-external moment
 at a noncoincident degree of temporal remove from Now
 a. <PAST>: 'at a moment with a noncoincident degree
 of temporal remove before Now'
 b. <FUTURE>: 'at a moment with a noncoincident degree
 of temporal remove after Now'

Many Bantu languages have inflectional triggers in the verb that distinguish degrees of noncoincident remove from the trigger moment, both into the past and into the future. Most of these languages mark only a two-way distinction in the past. But, though its full set is disputed, Yombe (for one language) has been reported to distinguish five past tenses (Nurse, 2008; Thera Crane, p.c.). Its triggers in a verb indicate that the action referred to by the verb occurred at a moment, respectively, just now, today, yesterday, some time ago, and in the remote past. They would thus indicate degrees of temporal remove from the hyperproximal to the hyperdistal.

—A noncoincident degree with nontense triggers. While the English tense triggers, unlike the Bantu ones, do not indicate degrees of noncoincident remove, other non-directive triggers can do so. For example, the *just* in (83) indicates what can be regarded as a hyperproximal degree of remove from the trigger moment into the past. This form is here analyzed as a trigger lexicalized with the semantic complex shown in (83) that targets an earlier moment very near the trigger moment. The Figure event—*my washing the car*—is then temporally colocated with that targeted earlier moment.

- (83) just: 'at a moment with a hyperproximal degree of temporal remove before Now'
 I just washed the car.

Speech-internal degree of temporal remove. We now shift to triggers indicating temporal remove in the speech-internal domain. The reference-point function is now performed not by the trigger but by a base, that is, by the referent of a nontrigger constituent. This referent is an event occurring in time. The specific reference point, then, is now not the time at which the trigger occurs, but the time at which the base referent occurs. The

trigger's time of occurrence, represented by the capitalized form "Now," was called the "trigger moment" because a trigger, consisting at most of a phrase, has a short duration. The referent event acting as the base can, however, vary in length. But where its duration is short or can be conceptually reduced, the specific reference point will be called the **base moment** and will be represented by the capitalized form "Then." Such a base moment is the choral cue in the speech-internal domain.

The trigger in turn targets another temporal location and indicates its degree of temporal remove from the base moment. That second temporal location is occupied by a Figure event, one that another constituent in the utterance refers to.

The indication of temporal remove in our two domains involves different timelines. In the speech-external domain, where the reference point is the trigger moment, all the temporal locations and relations are assessed with respect to the speech-external timeline. Thus, the time of the trigger moment, the time of the targeted temporal location, and the degree of temporal remove that the latter has from the former are all speech-external. But where the reference point is the base moment, the temporal locations and relations are assessed with respect to a timeline established conceptually by the discourse—what we will call the **speech-internal timeline**. This is the timeline of what, among other terms, has been called the "narrative world" or "story world" (e.g., Bruder et al., 1995). Thus, within a discourse, the time of the base moment, the time of the targeted temporal location, and the degree of temporal remove that the latter has from the former are all speech-internal.

—A hyperproximal degree. The use of the base moment as the reference point can first be illustrated with the same form *just* seen in (83), as in (84), whose two sentences in sequence form a single discourse.

- (84) a. I fixed the drier. b. I had just washed the car.

The base in this example is the event referred to by the whole clause in (84a). Its time of occurrence is the base moment, a temporal location on the speech-internal timeline serving as the reference point. (The duration of the drier-fixing event is treated as only a moment through conceptual reduction). In turn, the *just* in (84b) is a trigger that targets another temporal location, a particular speech-internal moment before and hyperproximally near the base moment. This targeted temporal location is occupied by a Figure event—*my washing the car*—which is referred to by the whole clause in (84b) minus the trigger *just*. The trigger thus places the Figure event of car washing at a time immediately preceding the time of the base event, the drier-fixing (itself functioning as the reference point, or Ground).

The semantic complex lexicalized in this speech-internal trigger *just* can be represented as in (85).

- (85) *just*: 'at a moment with a hyperproximal degree of temporal remove before Then'

This representation differs from the earlier one for speech-external *just* only in that “Then” replaces “Now.” That is, the form representing the base moment replaces that for the trigger moment. These two uses of the temporal trigger *just* thus exhibit the same cross-domain parallelism seen in (68b) for the spatial trigger *nearby* and can be represented in the same tabular format, as shown in (86).

- (86) Triggers targeting a temporal location at a particular degree of temporal remove
 just/just: ‘at a moment with a hyperproximal degree of temporal remove before
 Now/Then’

Note that the same speech-internal trigger *just* seen used with the past tense in the “fix” example (84) can also be used in the future-tense counterpart in (87). There, lexicalized with the same semantic complex as before, it also indicates that the targeted Figure event location is hyperproximally before the base moment.

- (87) a. I’ll fix the drier. b. I’ll have just washed the car.

—Speech-external intrusion. In the two preceding “fix-wash” examples ((84) and (87)), the (a) sentences directly represented their events’ time of occurrence relative to the speech-external timeline through markers for past and future tense. But the time of occurrence of the (b) sentences’ events was basically a speech-internal matter—they occurred a short time before the (a) sentences’ events, a relation represented by the trigger *just*.

Nevertheless, English requires that such (b) sentences additionally represent their event’s time of occurrence relative to the speech-external timeline, again through the same markers for past and future tense as for the (a) sentences. This is again a case of speech-external intrusion. Now, though, this case indicates temporal remove from the trigger moment—not spatial remove from the speaker’s location, as in the “London” examples of (72). The (b) sentences thus relate the temporal location of the Figure event both to the base moment and to the trigger moment.

Temporal cross-domain parallelism. The speech-external/speech-internal pair of *just* triggers shown in the tabular format is only one part of a relatively extensive system of triggers in English that indicate degree of temporal remove and exhibit cross-domain parallelism.

—A separative degree. The table in (88) shows six such pairs, lettered “a” through “f,” all directly targeting a moment at a separative degree of remove.

In each lettered entry, the slash separates the speech-external member of the trigger pair from the speech-internal member, in that order. These are lexically the same in some cases and different in others. Correspondingly, each lettered entry provides two examples, the (i) example for the speech-external case and the (ii) example for the speech-internal case. The speech-external examples have been put in the past tense,

but they all have future-tense counterparts. Commas and sometimes pipes separate alternatives pertaining either to the one or to the other side of the slash.

The six entries are in turn arranged in three doublets: a-b, c-d, and e-f. The targeted moment is before the reference point in the upper entry of each doublet and is after it in the lower entry (see section 2.3.2 for this “direction of temporal remove”).

The triggers in the first two doublets specify successively greater degrees of temporal remove, from the hyperproximal to the proximal. English lacks triggers lexicalized to specify a distal degree of temporal remove (as, for example, Russian has with its trigger *davno* ‘long ago’). Instead, it uses triggers like those in (88e) and (88f) that require a separate indication of duration and marks that duration as great, as in *long ago*.¹⁹

- (88) Triggers directly targeting a moment at a separative degree of temporal remove
 T = a lexically specified time duration
- a. just / just: ‘at a moment with a hyperproximal degree of temporal remove before Now / Then’
 - i. I just washed the car
 - ii. I fixed the drier. I had just washed the car.
 - b. immediately, right away / immediately: ‘at a moment with a hyperproximal degree of temporal remove after Now / Then’
 - i. I’ll wash the car immediately | right away.
 - ii. I fixed the drier and I immediately washed the car. (*and I washed the car right away.)
 - c. recently / recently: ‘at a moment with a proximal degree of temporal remove before Now / Then’
 - i. I recently washed the car.
 - ii. I fixed the drier. I had recently washed the car.
 - d. soon / soon: ‘at a moment with a proximal degree of temporal remove after Now / Then’
 - i. I’ll soon wash the car.
 - ii. I said I was done with tasks for that day, but I soon washed the car.
 - e. T ago / T before, earlier: ‘at a moment with a T degree of temporal remove before Now / Then’
 - i. I washed the car an hour ago.
 - ii. I fixed the drier. I had washed the car an hour before (*ago).
 - f. in T / T later: ‘at a moment with a T degree of temporal remove after Now / Then’
 - i. I’ll wash the car in an hour.
 - ii. I fixed the drier. I washed the car an hour later (*in an hour).

—A separative-adjacent degree. The triggers in the preceding table targeted a portion of time that could be conceptually reduced to a moment, a moment occupied

punctually by the Figure event. This moment was located at a separative degree of temporal remove from the reference point. But a trigger can also target a conceptually irreducible interval occupied throughout by the Figure event. The triggers in (89a) specifically then indicate that the targeted interval extends from a separative to an adjacent degree of temporal remove from the reference point, that is, extends up to and stops at the reference point, while the triggers in (89b) indicate the reverse sequence, adjacent to separative, where the interval starts at the reference point and continues on.²⁰

- (89) Triggers directly targeting an interval
with an adjacent-separative degree of temporal remove
- a. so far / theretofore: ‘through an interval with a separative-adjacent degree of temporal remove before Now/Then’
 - i. I’ve been an easy grader so far.
 - ii. The third midterm exam was over. I’d been an easy grader theretofore [up to then] (*so far).
 - b. hereafter, henceforth / thereafter, thenceforth: ‘through an interval with an adjacent-separative degree of temporal remove after Now/Then’
 - i. I’ll be a hard grader hereafter | henceforth [from now on].
 - ii. The third midterm exam was over. I was a hard grader thereafter | henceforth [from then on].

—A coincident-adjacent-proximal degree. The speech-external trigger *now* discussed early in this section can now also be brought into comparison with its speech-internal counterpart, the trigger *then*, both shown in (89) in the same tabular format as in (88). In accordance with the general pattern, this speech-internal *then* has a base moment as its reference point. This is the moment when the referent of the base constituent (the first clause in (90ii) occurred, that is, the time last year when *I dropped by the monastery*. The trigger’s target is the interval during which the Figure event occurred—here, the monastery’s *renovation*. And the trigger specifies this interval’s degree of temporal remove from the base moment—here, it is coincident-adjacent-proximal with it—that is, in the earlier shorthand, it contains it.

- (90) Triggers directly targeting an interval
with a coincident-adjacent-proximal degree of temporal remove
now/then: ‘through an interval with coincident-adjacent-proximal degrees of temporal remove from Now/Then’
or: ‘through an interval containing Now / Then’
- i. The main chapel of the monastery is under renovation now.
 - ii. I dropped by the monastery for an hour last year.
The main chapel was under renovation then.

With this last example, the word *then* has by now been seen to have five different uses as a trigger in English. For clarity, we enumerate them here. In (49a) and (49g), section 2.2.7, *then* was seen to have two different trigger functions as adverbial proclauses. Respectively representing posteriority and conditionality, their semantic composition might be represented as ‘after that event’ and ‘in case of that event’. It was also seen earlier in this section that *then* can in the right circumstances, as in the “calendar” example of (80), act as a speech-external directive trigger with the semantic representation ‘at the moment with a separative degree of temporal remove from Now that I am (gesturally) indicating’. And the immediately preceding example shows that *then* can serve as a speech-internal trigger whose meaning can be represented as ‘through an interval containing the moment in reference’. Finally, all of these differ from the linguistic construct “Then,” which is intended to have the semantic representation ‘the moment at which the base referent occurs’.

—A noncoincident degree. Also early in this section, the English past and future tense triggers were discussed as indicating that their targeted moment is at a noncoincident degree of remove from the reference point. The only reference point mentioned then, though, was the speech-external trigger moment. But those tense triggers can now also be shown alongside their counterparts with a speech-internal base moment. In (91), all these triggers are shown in the same format as for the preceding tables. Those tables for simplicity omitted speech-internal future examples, but such examples can aid the new demonstration here and so are included (and are also numbered “ii” since they too are speech-internal). As can be seen, the use of the English perfect construction with both the past and the future to indicate a speech-internal target fits naturally into the pattern of semantic interrelationships shown by the table’s format.

(91) Triggers directly targeting a moment at a noncoincident degree of temporal remove

a. <PAST> / have -EN (before, beforehand, earlier):

‘at a moment with a noncoincident degree of temporal remove
before Now / Then’

- i. I washed the car.
- ii. I fixed the drier. I had washed the car (before | beforehand | earlier).
- ii. I will fix the drier. I will have washed the car (beforehand | earlier).

b. <FUTURE> / afterwards, later:

‘at a moment with a noncoincident degree of temporal remove
after Now / Then’

- i. I’ll wash the car.
- ii. I fixed the drier. I washed the car afterwards.
- ii. I’ll fix the drier. I’ll wash the car afterwards.

Triggers specifying time units of remove. In the initial cross-domain table in (88) the target was a moment, and the triggers represented its separative degree of remove as a simple length of time measured directly from the reference point. But triggers can also represent such a target's degree of remove from a reference point in terms of certain overlaid temporal structures. The structures treated here are equal units of time—that is, bounded intervals of a specific duration—located adjacently in sequence on the timeline. Such time units will be said to be **adjacently sequential**. The target in effect is then not at a certain degree of temporal remove from the reference point, but at a certain time unit or increment of temporal remove.

—A day as time unit. The table in (92) shows the triggers that English has where the unit of time is a day. It displays the same set of distinctions in the same format as the table (88).²¹

- (92) Triggers targeting a moment at day increments of temporal remove
- a. today / that day: 'at a moment during the day containing Now / Then'
 - i. I washed the car today.
 - ii. I was off work on Monday. I washed the car that day (*today).
 - b. yesterday / the day before, the previous|preceding|prior day:
 - 'at a moment during the day
 - with an adjacent increment of temporal remove
 - before the day containing Now / Then'
 - i. I washed the car yesterday.
 - ii. I fixed the drier on Monday. I had washed the car the day before. |
the previous day. (*yesterday.).
 - c. tomorrow / the day after, the next/following day:
 - 'at a moment during the day
 - with an adjacent increment of temporal remove
 - after the day containing Now / Then'
 - i. I'll wash the car tomorrow.
 - ii. I fixed the drier on Monday. I washed the car the day after. | the next day.
(*tomorrow.)

The semantic formulations in (92b) and (92c) in effect include two representations of temporal remove. One is in the word *containing* that, as before, is short for: 'with a coincident-adjacent-proximal degree of temporal remove from'. The day bearing this temporal relationship to the reference point "Now/Then" can then be regarded as a new reference point. In turn, the representation shows the targeted day's temporal remove from this new reference point. This pattern can accordingly be thought to manifest a **nesting of remove**.

—A non-day span as time unit. A similar but partly different set of triggers is used when the adjacently sequential unit of time is other than a day, such as a week, month, year, or century, as shown in (93).

- (93) Triggers targeting a moment at non-day increments of temporal remove
 N=a nominal referring to an adjacently sequential time unit
 other than a day
- a. this N / that N: ‘at a moment during the N containing Now / Then’
 - i. Life has been hard this year.
 - ii. I was out of work when Deb had our first child. Life was hard that year.
 - b. last N / the N before, the previous|preceding|prior N:

‘at a moment during the N
 with an adjacent increment of temporal remove
 before the N containing Now / Then’

 - i. I wrote a thriller last year.
 - ii. I wrote a memoir when I was 50.
 I had written a thriller the year before. | the previous year. (*last year.).
 - c. next N / the N after, the next|following N: ‘at a moment during the N
 with an adjacent increment of temporal remove
 after the N containing Now / Then’
 - i. I’ll write a thriller next year.
 - ii. I wrote a memoir when I was 50.
 I wrote a thriller the year after. | the next year.

—A term as time unit. A comparable but again partly different set of triggers participates in a certain NP construction. The referent of the NP’s head has a role that is in effect only for a particular bounded duration. We will call this its **term**. Like the previously seen time units, this term can be adjacently sequential. The table in (94) illustrates this with a mayor’s term of office.

- (94) Triggers targeting an entity whose term is at increments of temporal remove
 N=a nominal referring to an entity with a role during a bounded term
- a. the current N, the present N / the current N, the then-current N,
 the then-N, the N then: ‘the N whose term contains Now/Then’
 - i. The current mayor of our city is ineffective.
 - ii. Our city had a major fire in 2000.
 The then-current mayor was ineffective.
 - b. the last|previous N / the previous|preceding|prior N:

‘the N whose term has an adjacent increment of temporal remove before the
 term of the N containing Now/Then’

- i. The last mayor of our city was ineffective.
- ii. The mayor in 2004 improved our city.
The previous (*last) mayor had been ineffective.
- c. the next N / the next|following N:
'the N2 whose term has an adjacent increment of temporal remove after the term of the N1 containing Now/Then'
- i. Our next mayor will be ineffective, I'm sure.
- ii. The mayor in 2004 improved our city. The next|following mayor was ineffective.

The triggers in (95) respectively parallel those in (94b) and (94c), but indicate that their targeted entity's term is simply at a noncoincident degree of remove from the term containing the reference point, not specifically adjacent to it. With varying degrees of felicity, some of these new triggers can also be used with the earlier day and non-day time units.

(95) Triggers targeting an entity whose term is at noncoincident increments of temporal remove

- a. an earlier|previous|prior N / an earlier|previous|prior N:
'an N whose term has a noncoincident increment of temporal remove before the term of the N containing Now/Then'
- i. An earlier mayor of our city was corrupt.
- ii. The mayor in 2004 was honest. An earlier mayor had been corrupt.
- b. a future|upcoming N / a later|subsequent N:
'an N whose term has a noncoincident increment of temporal remove after the term of the N containing Now/Then'
- i. A future mayor of our city will be corrupt, I'm sure.
- ii. The mayor in 2000 was honest. A later (*future) mayor was corrupt.

—A nonadjacent time unit. All the time units so far in this section—whether a day, a year, or a term of office—are adjacently successive on the timeline. But many of the triggers just seen modifying the nominal *mayor* can also modify nominals involving nonadjacent time units, such as *Easter* and *water bill*. Thus, one can say *last Easter* and *a prior Easter*, as well as *my last water bill* and *a prior water bill*. These expressions are valid even where the reference-point “Now” or “Then” is located between two occurrences of the time unit. The integration of such trigger constructions into the foregoing ones will require adjustments to the semantic representations in the preceding tables.

Temporal remove interacting with affective/perspectival remove. Having no separate indication of its own, degree of affective/perspectival remove can co-opt temporal triggers, much as it was seen to do with spatial triggers. In English, specifically, the triggers

targeting an interval that contains the trigger moment can replace other temporal triggers to indicate a proximal degree of affective/perspectival remove.

This process is illustrated for the speech-internal case in (96). The trigger *then* would normally be used here to target an interval containing the base time of Picasso's being age thirty, and to indicate that the Figure event of Picasso's being in the midst of his cubist phase occurred during that interval. But the trigger *now*—normally used to target an interval containing the trigger moment—can be used instead to indicate the speaker's greater affective involvement with that cubist phase, as well as a closer perspective point from which to consider it.

- (96) At age 30, Picasso had already acquired a following.
He was then/now in the midst of his cubist phase.

For a speech-external case, we can in a similar way account for the historical present, where a speaker recounts a past event with the present tense, as in (97). The past tense, specifying a noncoincident degree of temporal remove, is expected here because the event is before the trigger moment on the speech-external timeline. But its use is overriden by the use of the present tense—normally used to target an interval containing the trigger moment—that here indicates a proximal degree of affective-perspectival remove. Affectively, the event is now more vivid and immediate and, perspectively, the hearer is now imaginably placed on the scene.

- (97) Yesterday on the street, this guy comes up to me and asks for a cigarette.

Degree of personal remove=person We here turn to the category of “person,” but some initial observations are called for.

First and second person. First, the “speaker” in a linguistic context may be best characterized with certain added conditions such as the entity that is currently speaking and whose speech is at issue. The addition of “currently” and “at issue” is needed because the same entity can speak on more than one occasion, and more than one entity in a given locale can speak at the same time. The word “entity” here refers prototypically to a person, but this generic term is used to allow for anthropomorphic usage.

Now, the English trigger *I* could simply be said to target the speaker as just characterized. But we will say more specifically that the morpheme *I* is a trigger lexicalized to provide a certain distinctive core cue to the target: the target is the entity that *produces* this trigger.

When the hearer in turn hears the trigger *I*, he receives the core cue that the target is the entity producing the trigger, and this cue helps guide him toward the speaker as the target. But this core cue is here analyzed as insufficient by itself. The hearer must combine it with a targetive cue—his visual and auditory perception of an entity speaking—to fully determine the target. This may seem overanalytic if the hearer is alone with the speaker. But just such a cue combination is clearly needed if the hearer is in a group of

collocutors. On hearing the trigger *I* uttered, the hearer must search for targetive cues to single out the particular person among all those present who is speaking. Note that while targetive cues can be necessary, gestural cues generally are not. The speaker saying *I* need not point to herself for the hearer to ascertain that the speaker herself is the target of the trigger *I*.

There is a certain asymmetry between speaker and hearer involving dependency. A speaker can generate speech purely as such without anyone else around. Typically, though, she directs it at another entity. In that case, this entity is—or is treated by the speaker as being—sentient and able to understand the speech. This entity is the speaker's addressee, what this book refers to as "the hearer." The concept of the speaker is thus autonomous—a speaker can speak without a hearer. But the concept of the hearer is dependent—without a speaker addressing him, there is no hearer. On the basis of this dependency relation, the speaker is primary and the hearer secondary. There is a further asymmetry. If speech is metaphorically conceptualized as a moving Figure, then the speaker, its originator, can be taken as its Source and the hearer as its Goal.

This dependency relation and metaphoric motion then share a common suggestion of directionality, one oriented from the speaker to the hearer. This directionality promotes the conceptualization of a new degree-of-remove parameter—"person"—that has the speaker as its reference point. The new parameter will then be said to involve **degree of personal remove**. Where the speaker herself is the target of a trigger such as *I*, that target can be considered as being at a coincident degree of personal remove from the speaker as reference point. And where the hearer is the target of a trigger like *you*, it can be taken to be at a proximal degree of personal remove from the speaker as reference point.

We can now look more specifically at this new trigger *you*. It is lexicalized to provide another distinctive core cue. This core cue is that the target is the entity addressed by the entity producing the trigger. On hearing the trigger, the hearer receives this core cue, which helps guide him toward himself as the target. But as before, this cue is analyzed as insufficient by itself. Consider the two circumstances in which the speaker and hearer are alone or with others.

If the hearer is alone with the speaker, the additionally required information is not provided by a targetive cue: the hearer does not need to perceive himself sensorily to help him determine that he is himself the target. The main cue, rather, is epistemic—the hearer's metacognitive awareness of his own presence (discussed as "hearer salience" in section 6.4).

If the speaker is together with two or more potential addressees—for example, a professor with students—categories of additional cues other than the epistemic category are needed to determine what the intended target of the trigger *you* is. For example, if a law professor before a class says (98a), a gestural cue from her—her looking and perhaps also pointing at one of the students—helps that student single himself out as the intended target of the trigger *you*.

- (98) a. What do !-you think about the case?
 b. How would you justify that conclusion?

Comparably, consider the situation in which a particular student has just spoken and the professor says (98b). Here, the perichronal cue that that student was the last to speak plus the co-form cues consisting of the noncontrastive stress on the trigger *you* and the apparent continuity of topic—add enough additional information for the student to determine that the target of the *you* is himself.

Targets at a coincident or proximal degree of personal remove, that is, the speaker or hearer—as well as the triggers targeting them—of course exhibit the traditional grammatical distinction of “first person” and “second person,” respectively. But since personal remove has no gradience, perhaps the term “degree” in this formulation is inappropriate. The whole parameter might instead be called “increments of personal remove” on the model of the “increments of temporal remove.” as seen first in (92).

Third person. Given our additional specifications for the traditional first and second person, how should the traditional third person be characterized? Perhaps best is to say that it is any target a trigger might indicate that is *not* the first or second person. For example, if a speaker uses the trigger *he* in talking to a hearer, its target is a male entity that must be other than that speaker or hearer. By one interpretation, then, the reference point is no longer the speaker alone, but rather the combination of the speaker and hearer. A third-person target is then at one degree or increment of remove from that combination. This pattern would then be another instance of the nesting of remove seen above for the temporal case.

As the basis for another interpretation, however, there is some evidence that the remove of a third-person target can be conceptualized directly with respect to the speaker, and that it is distal—at a further degree or increment of remove than the hearer—thus back into accord with the main pattern seen so far. For example, in some Japanese dialects, the locative triggers *koko*, *soko*, and *asoko* indicate locations respectively near the speaker, near the hearer, or near neither of these, thus following the nested pattern. But in other dialects, these same triggers instead, or additionally, indicate locations at a proximal, medial, or distal degree of spatial remove from the speaker, thus following the degrees-of-remove pattern (Yo Matsumoto, p.c.).

Fourth person. The phenomenon of “obviation” may augment the degrees or increments of personal remove, as well as involving them with the category of affective/perspectival remove. In some languages, a sentence that expresses one third-person entity acting on another one necessarily engages the obviation system and the affective/perspectival parameter.

An example is Ojibwe (Rhodes, 1990), whose pattern we here simplify and interpret in accord with our framework. The hearer’s processing is directed by grammatical

indications provided by the verb and the nominals representing the entities. The hearer conceptually places his perspective point proximally near or coincidently within one of the entities—the “proximate” referent. From there, he regards the other entity—the “obviative” referent—as being at a further degree of remove. If we can say that a proximate third-person trigger indicates that its target is at a distal degree of remove from the speaker, then an obviative trigger indicates that its target is still further out, perhaps at a hyperdistal degree of remove. By this interpretation, the obviative indicates the “fourth person,” as it is indeed often characterized.

Perhaps surprisingly, Yiddish also has an obviative trigger, *yener*, though it is not obligatory. Apart from a few special usages, *yener* can be used only in conjunction with a reference to a first entity, and then it targets a second entity affectively and perspectively further out. For example, a speaker might say the Yiddish counterpart of either the sentence “My brother walked up to a (male) stranger on the street” or the sentence “A (male) stranger walked up to my brother on the street.” Then in subsequent anaphoric references to the two men, as in (99), *yener* would always target the stranger, while *er* ‘he’ would target the brother, regardless of their subject/object roles. The comparable pattern exhibited in English by the use of *the guy* as distinguished from *he* might be examined for its own possible marking of obviation.

- (99) Er hot yenem bagrist. / Yener hot im bagrist.
He greeted the guy. / The guy greeted him.

Person as a contingent property. The classification of person so far as a contingent property can now be analyzed more finely. The property ascribed to a target by the trigger *I* or *you*—that it is the entity currently producing speech or listening to that speech—is clearly contingent since at other times, the same entity could be in the other or neither role.

The property ascribed to a target by any third-person trigger—that it is an entity not here and now producing speech or (addressed by and) listening to that speech—is also contingent, provided that that entity is capable of producing or listening to speech on another occasion. However, if that entity is nonsapient, unable to speak or listen, it can only ever be a third-person target, never a first- or second-person target. For such entities, third-person status—a distal degree of personal remove—is then an intrinsic property. This status could accordingly have been included among the other intrinsic properties listed in section 2.2. But it is included here simply to consolidate the description of person.

Person triggers indicating type of domainality. Triggers that indicate a target’s degree of personal remove can also indicate the target’s type of domainality. Singular first- and second-person triggers have exclusively speech-external targets. Third-person triggers can generally refer to either a speech-external or a speech-internal target. And plural first- and second-person triggers can have targets with both speech-external and speech-internal components (see section 3.4.3).

In the last case, the distinct components of the target can also be of different degrees of personal remove from the speaker. Consider, for example, a speaker who is addressing one hearer while discussing a visiting relative and who uses the trigger *we* in saying (100). This speaker at once targets herself at a coincident degree of personal remove, the hearer at a proximal degree of personal remove, and the visiting relative at a distal degree of personal remove.

(100) We should all three go to the opera.

Degree of social remove In a number of languages, the triggers used by the speaker to target the hearer—that is, whose target (as second person) is at a proximal degree of personal remove from the speaker—are lexicalized as well to indicate the hearer's **degree of social remove** from the speaker. Some South American dialects of Spanish distinguish three degrees of progressively greater social remove, perhaps best designated as the hyperproximal, proximal, and distal. With only approximate usages indicated, the forms are *vos* for an intimate, *tú* for a nonintimate friend, and *usted* for a nonfriend (Teresa McFarland, p.c.).

Where a language's triggers in this way mark distinctions in a hearer's social relation to the speaker, these distinctions may, if taken by themselves alone, seem simply to amount to categories that divide up the social realm. Some additional basis would be needed to array such distinctions along a single parameter, and then to align that parameter with the degrees-of-remove parameter. But there may well be a psychological basis for this. A speaker seemingly wants to experience the distance between herself and the target as lesser or as greater in accord with the degree of her feelings of social intimacy with the target. This same basis would then underlie metaphoric usages like those in *a close friend* and *a distant acquaintance*.

If the speaker is alone with the hearer and uses a singular second-person trigger, any degree of social remove indicated by the trigger is at most a corroborative cue providing no help in singling out the target. The reason is that the hearer already knows from the second-person cue from the trigger that he himself is the target, and any information about social remove merely reconfirms an epistemic element—what he already knows about his social relation to the speaker.

However, if more than one potential addressee is with the speaker, each with a different degree of social remove, then if the speaker uses a singular second-person trigger, it does provide a core cue to the intended target, namely, to just one of the potential addressees.

We can illustrate with Mexican Spanish (Miriam Maya, p.c.), which has a two-way proximal/distal distinction for second-person singular. Suppose that a speaker is at a sideboard—not looking at her young son and an adult guest in the dining room with her—and says (101) to have them help set the table. The *tú* indicating a proximal

degree of social remove targets the son, while the *usted* indicating a distal degree of social remove targets the guest. These triggers here distinguish between addressees much as *he* and *she* can distinguish between referents, differing as to sex, as when used to target either the man or the woman of a couple standing across a room.

- (101) Tú puedes traer los platos, y usted puede traer el vino.
 you.sg.familiar can bring the dishes, and you.sg.formal can bring the wine

Perhaps curiously, degree of affective/perspectival remove seems not to interact with degree of social remove as it did with degree of spatial or temporal remove. If there were an interaction, one might expect that a speaker would have greater freedom in the choice of which second-person pronoun—a more proximal or more distal one—to address her hearer with in accord with her current feelings toward him. What happens instead is that a particular hearer is taken to have a particular category of social relation to the speaker, one that remains stable except for a rare shift in circumstances.

Degree of experiential remove Finally, the triggers of a language can indicate a target's **degree of experiential remove** from a reference point. The reference point here is always the speaker and/or hearer—specifically, a particular aspect of his or her cognition. The term “experiential” is here intended to cover four relatively distinguishable types of cognition at work in different sectors of trigger usage. Three of these types—those of memorial, attentional, and recognitional remove—are addressed next in turn. The fourth type of experiential remove—*affective/perspectival remove*—was already separated out and treated previously in terms of its interaction with other categories of remove.

Degree of memorial remove. The first type of experiential remove can be called the **degree of memorial remove**. In this type, both the speaker and hearer have jointly perceived some entity in the course of their current interaction. At a certain point, the speaker uses a trigger to target that entity. To select the appropriate trigger, he must judge how strongly the hearer remembers the entity at that point. In this type, then, it is the hearer that exhibits the reference-point function, and the specific reference point is the hearer's full memory of the entity that the speaker wants to target. The weaker that target is in the hearer's memory, the greater its degree of memorial remove.

Perhaps two factors figure most in the speaker's judgment of how strong the memory of the entity is in the hearer. One factor is how recently the entity last appeared and was perceived. The other is how salient the entity is. This second factor in turn depends on such issues as how little competition for attention there has been from events other than the targeted one and how persistently the targeted entity has otherwise appeared.

A target's greater degree of memorial remove can be understood as having characteristics beyond its simply being weaker in the hearer's memory. In addition, it is lower in

the hearer's attention, it is less activated in the hearer's cognition, and the hearer must undertake a more effortful search to locate it in her memory.

—Speech-internal memorial remove. Triggers can indicate degree of memorial remove for targets of either domainality. One formulation of this parameter for speech-internal targets is Givon's (1983) "degree of topic accessibility." The target of the speaker's trigger here is the most recent occurrence of a particular constituent—together with its associated meaning—perceived jointly as the speaker produced it and the hearer heard it. Accordingly, the hearer's attention is focally on the target twice—once when she hears its utterance and again when she hears the trigger referring to it. The trigger in the Givon scale can thus be said to cause the hearer to **reattend** to the target.

In Givon's analysis, English has grammatical coding devices to distinguish ten degrees along the topic accessibility scale. Five of these are illustrated in (102) using Givon's own examples. To use our (insufficient number of) degree terms, a target that might be considered to be at a hyperproximal degree of memorial remove is indicated by zero anaphora—a zero trigger—as seen in (102a). A target at perhaps a proximal degree of memorial remove is indicated by an unstressed/bound pronoun or by grammatical agreement, like the trigger *he* in (102b). Targets at a medial, distal, and hyperdistal degree of memorial remove are then indicated respectively by a stressed/independent pronoun, by a definite NP, and by a left-dislocated NP (accompanied by an unstressed pronoun)—as seen respectively in (102c), (102d), and (102e).

- (102) a. . . . (he came in) and sat down. [zero anaphora]
 b. . . . (he came in;) he then sat down. [unstressed pronoun]
 c. . . . (she came in;) then HE joined her. [stressed pronoun]
 d. . . . (the woman came in;) then the man joined her. [definite NP]
 e. . . . now the man, he never joined. [left-dislocated NP]

To particularize one of these examples, the stressed pronoun *HE* in (102c) is a trigger referring to a target whose most recent manifestation was a speech-internal constituent, referring to a male, that occurred earlier than the cited sentence in the speaker-hearer interaction. The speaker judges that this target's last occurrence was at a degree of memorial remove—at a level of attention and activation in the hearer's cognition—that requires a trigger specifying a medial degree of effort in memory search to determine it. Both speaker and hearer had attended to the constituent at its prior occurrence and, on processing the trigger, the hearer now reattends to it as the target.

Although Givon seems to have applied his scale only to (reified) entities, we can note that it applies as well to targets in other ontological subcategories. Thus, the target can be a spatial location indicated at a proximal degree of memorial remove by the unstressed adverbial trigger *there* or at a distal degree of memorial remove by an

adverbial prepositional phrase like *in the room*. The same holds for a temporal location as target, indicated either by unstressed *then* or by, say, *during the concert*.

—Speech-external memorial remove. Triggers can also indicate degree of memorial remove for a speech-external target, one whose occurrence is perceived through any sense modality in the course of the speaker-hearer interaction. This occurrence need not precede the trigger, as in the speech-internal case, but can now coincide with it. To avoid a confound with attentional remove as treated next, we will assume that the hearer has independently noticed the target and shows signs of her attention on it that the speaker can observe—that is, that she provides a hearer-focus cue.

English can represent four degrees of memorial remove for a speech-external target. We can illustrate with a speaker and hearer outdoors hearing a loon calling. A coincident degree of memorial remove is shown in (103a), where the loon is ongoingly calling; the hearer is concurrently attending to the sound; the speaker observes her attending (e.g., seeing her tilt her head to listen); and the speaker targets that sound with the unstressed trigger *it*.

- (103) a. It's a loon. b. That's a loon. c. That was a loon.
 d. That sound you heard a while back was a loon.

In the remaining examples, the target is noncoincident with the trigger. In (103b), the speaker uses the trigger *that* in conjunction with the componential present-tense trigger in *is*. This combination can refer to the same situation as in (103a). But it can also be used where the loon's call occurred and ended just prior to the trigger moment. In the latter case, the trigger can be thought to indicate a hyperproximal degree of memorial remove—the hearer can no longer perceive the target directly, but she can effortlessly find its trace in immediate working memory. In (103c), the trigger *that* in conjunction with the componential past tense trigger in *was* indicates that the target is at a proximal degree of memorial remove. The loon's call was shortly before—neither immediately nor long before—the trigger moment, hence still within the hearer's working memory. And in (103d), a definite full noun phrase is needed to refer to a target at a distal degree of memorial remove, one that the hearer might need to strain to recall from mid-term memory.

A certain variant form of memorial remove can be posited. It would apply under a particular alternative interpretation of the Bantu past tense triggers outlined earlier in this section. This interpretation is alternatively where the speaker has directly experienced the target event he reports in his sentence, rather than having learned of it from another source. The triggers would then indicate degrees not of temporal remove but of experiential remove based on the speaker's memory and states of consciousness. This variant—which might be dubbed **degree of conscious remove**—differs from memorial remove in that the reference point is the speaker, not the hearer, and that the target can

occur anywhere within the speaker's life up to the present, not just during the speaker's interaction with the hearer.

By this interpretation, the occurrence of an event "just now" would be in working memory. An event's occurrence earlier "today"—a unit of time that in these languages generally begins when people go to sleep—would be in the period since the last loss of consciousness. An occurrence "yesterday" would be in the period just before the last loss of consciousness. An occurrence "some time ago" would be in long-term memory. And an occurrence "in the distant past" might be in a memory one would need to strain to retrieve. As for the present tense trigger, it might similarly be interpreted as indicating that the target is in the speaker's current consciousness at a coincident degree of remove. If so, it would join the past tense triggers—which place the target at a noncoincident degree of conscious remove—to form a single sweep across degrees of conscious remove.

Degree of attentional remove. Another type of experiential remove is the **degree of attentional remove**. The speaker here has her attention on a certain entity and wants to target it at a particular moment. But to select the appropriate trigger, she must judge the state of the hearer's attention on that entity at that moment. It is again the hearer that exhibits the reference-point function, and the specific reference point is the hearer's direct attention on the target at the trigger moment. If the target is in the hearer's direct attention at the trigger moment, it is at a coincident degree of attentional remove. But the target is at a separative degree of attentional remove if it is not in the hearer's attention at the trigger moment, and the hearer's attention first comes to be on it only after being directed to it by the trigger.

Triggers specifically lexicalized for these two cases occur systematically in some languages, for example, Turkish, as seen in section 13.5.3. That section also shows that, for triggers of these two types, the hearer's attention at the trigger moment respectively is and is not on the target in common with that of the speaker, and so calls them respectively "commonality triggers" and "noncommonality triggers."

To some extent, English triggers also mark this distinction. Thus, unstressed *it* and *they* generally are commonality triggers indicating that, at the point of their occurrence, the hearer's attention is already on the target at the coincident degree of attentional remove, in common with that of the speaker. This is the case both speech-externally and speech-internally.

—The speech-external case. Consider first a speech-external case in which the target is a uniplex third-person entity without sex differentiation. A speaker can use unstressed *it* as a trigger indicating this target only if she judges that the hearer's attention, through perception, is on the target as she utters the trigger. By contrast, she can use *that* as a trigger for this target regardless of the hearer's current attentional focus.

There are two main bases for the judgment that the hearer's attention is already on the target.

For one basis, she can assess the target as being so sensorily salient that it would necessarily attract the hearer's attention (see section 13.5.2 for such "intrusive targets"). For example, in talking to a visitor in a school building, the speaker in (104a) can use the trigger *it*—as well as *that*—to target a loud clanging that at that moment is filling the halls.

- (104) a. It's / That's a fire alarm. b. It's / That's a robo-broom.
 c. *It's / That's a robo-broom.

The other main basis on which a speaker might judge that the hearer's attention is already on the target is where the hearer exhibits a bodily action suggesting such attention—hence, where the speaker can use a hearer-focus cue. Thus, if the speaker in (104b) sees a guest in her house staring at a contraption sweeping her carpet, she can again use the trigger *it*—as well as *that*—to target that contraption.

However, if the same contraption has been stationary in a corner unnoticed by the hearer, the speaker cannot now direct the hearer's attention to it for the first time by pointing to it and using unstressed *it* as a trigger, as attempted in (104c). She can still use *that*, though, since this trigger serves for both coincident and separative degrees of attentional remove.

Note that the coincident degree of attentional remove just seen in (104a) and (104b) is equivalent to the coincident degree of memorial remove, seen earlier in the (103a) "loon" example. Why then distinguish the two parameters? One reason is that, in the memorial case, a target at a separative degree of remove has to have occurred earlier and then be absent at the trigger moment. In the attentional case, however, it is present at the trigger moment but simply without the hearer's attention on it, like the robo-broom in the corner in (104c). A further reason is that, again where the target is at a separative degree of remove, the hearer's attention has to have been on the target at its earlier occurrence in the memorial case but must not be on it at first in the attentional case.

—The speech-internal case. To illustrate the speech-internal case, suppose that a speaker who has said the utterance in (105a) now wants to target that utterance's noun *Mars* and its referent. She can again, as in (105b), use unstressed *it* as a trigger to target it if she judges that the attention that the hearer placed on that referent at its initial mention has been continuous to the moment of that trigger. The basis for the use of *it* as a trigger here is thus the same as for its speech-external use: this trigger indicates that, at the moment of its utterance, the hearer's attention is already on the target.

- (105) a. Mars is visible now. b. It's low in the sky.

In an alternative discourse, though, the constituent *Mars* can appear at an earlier point before the trigger, with more intervening linguistic material. The speaker might then judge that the hearer's attention is no longer directly on the constituent at the point at which she wants to target it. In that case, attentional remove coalesces with memorial remove, and the degree can be indicated in accord with Givon's scale. The unstressed *it* of (105b) would then be replaced by some entry further along that scale, for example, by the noun phrase *that planet*.

Degree of recognitional remove. Yet another division of experiential remove can be called the **degree of recognitional remove**. We here specifically address only "type recognition"—the recognition of a category of phenomena.²² Either the speaker or the hearer can here exhibit the reference-point function, and the specific reference point is then that collocutor's recognition of the target. The speaker's trigger indicates that the target is at a coincident degree of recognitional remove if she recognizes the type of thing that it is or judges that the hearer can do so—that is, if it is a category of phenomena already known to her or the hearer. Otherwise, the trigger indicates that the target is at a separative degree of recognitional remove. To mark this new distinction, English can use the same *it/that* trigger opposition seen for degree of attentional remove, though seemingly only for the speech-internal case. Speech-internally, the unstressed trigger *it* can indicate the coincident degree of recognitional remove, while the trigger *that* can indicate the separative degree.

Consider the speech-internal discourse in (106), with an opening utterance by speaker X, followed either by another utterance from X in (106a) or an utterance by Y in (106b). In (106a), speaker X judges that her hearer Y will recognize the term *scrum* and its referent, and so she preferentially uses *it* as the trigger. In (106b), speaker Y knows that he recognizes that term and its referent, and so he also preferentially uses *it* as the trigger. The trigger *it* indicates in both cases that the target is at a coincident degree of recognitional remove, but that the reference-point entity is the hearer in the former case and the speaker in the latter case.

(106) X: The players formed a scrum.

a. X: Some new students were in it / ?that. b. Y: Who was in it / ?that?

But consider the same opening utterance now followed by either (107a) or (107b). In (107a), speaker X judges that hearer Y would not recognize the term *scrum* and its referent. She now cannot use *it* as the trigger and uses *that* instead. Comparably in (107b), speaker Y knows that he does not recognize the term and its referent, and so he also uses *that* instead of *it* as the trigger. Here, the trigger *that* indicates in both cases that the target is at a separative degree of recognitional remove but that, as in the preceding example, the reference-point entity is the hearer in the former case and the speaker in the latter case.

(107) X: The players formed a scrum.

a. X: You may not know what that / *it is. b. Y: What is !-that / *it?

2.3.2 Direction of Remove

Consider again triggers with core cues indicating that their target is at a noncoincident degree of remove from a reference point. Such triggers may also have core cues indicating the direction of that target's remove from the reference point relative to a particular grid of directional distinctions. This **direction of remove** is indicated most extensively in the temporal realm and next most in the spatial realm, treated in that order.

Direction of temporal remove As seen, a trigger can indicate the degree of its target's temporal remove from either of two reference points, the trigger moment where the target is speech-external and the base moment where it is speech-internal. But the temporal realm, as also seen, is generally conceptualized as a linear timeline with a unidirectional bias from earlier to later, which in turn affords a directional grid. On the basis of this grid, a trigger, then, can additionally indicate its target's **direction of temporal remove**—specifically, whether its target is before or after the reference point. It thereby provides an extra core cue that further helps the hearer zero in on the target. In the next two subsections, this target is a temporal location consisting of a portion of time. In the third subsection, the target is a Figure event occupying such a location.

Static direction of a targeted location. We first consider a trigger's indication that the temporal location it targets is statically before or after the reference point. All the English triggers seen earlier that indicated a noncoincident degree of temporal remove except one—*today*—were also lexicalized to specify the before or after direction of that remove.

Specifically, the triggers that targeted a portion of time occurring before the reference-point moment were PAST, *have -EN, before, beforehand, earlier, just, recently, ago, so far, yesterday, last, preceding, previous, and prior.*

And the triggers that targeted a portion of time occurring after the reference-point moment were FUTURE, *after, afterward, later, immediately, soon, in T (amount of time), henceforth, thenceforth, tomorrow, next, following, upcoming, subsequent, and future.*²³

Dynamic direction of a targeted location. Some temporal triggers not only indicate that their target has a particular static site before or after the reference point, but also suggest that fictive motion is associated with that site. This fictive motion could be of the site-arrival type, where the target had imaginably previously moved to its site, or of the access-path type, where the hearer's focus of attention imaginably moves along the timeline to the site. Triggers suggesting such fictivity can accept certain scalar expressions in construction with them (see sections 6.4 and 11.1.7 for an extensive treatment of the acceptance or rejection of scalar expressions).

In (108), two of the temporal triggers treated earlier are seen accepting scalar expressions—comparative expressions are shown here. The triggers are the respectively past- and future-oriented (T) *ago* and *in* (T) that require a separate indication of the degree of temporal remove.

- (108) a. I left my job (two years) longer ago than Jan did.
 b. I'll probably leave my job in a greater amount of time (from now) than Jan will.

These two triggers seem to suggest that the temporal locations they target are not simply situated statically at particular sites on the timeline, but have arrived there through fictive motion directed away from the trigger moment. Fictive motion of this sort will be called **centrifugal**. Accordingly, my job departure is earlier than Jan's with *ago* in (108a) but is later than it with *in* in (108b).

The original semantic representations of these two triggers in their speech-external use—seen in (88e) and (88f) and repeated here as (109a)—depicted their targets as statically situated. But the fictive dynamism of these targets can be captured by adding the word “centrifugally” to the semantic representations, as in (109b). We might note that the original static semantic representations might have alternatively appeared as in (109c) with the static expressions *in the past* and *in the future*. But then the indication of the centrifugal component that we now also propose for these triggers can be captured as in (109d) using the dynamic expressions *into the past* and *into the future*.

- (109) Semantic representations of “T ago” / “in T”
 a. ‘at a moment with a T degree of temporal remove before/after Now’
 b. ‘at a moment with a T degree of temporal remove centrifugally before/after Now’
 c. ‘at a moment with a T degree of temporal remove in the past/future from Now’
 d. ‘at a moment with a T degree of temporal remove into the past/future from Now’

We see in (110) that two more of the earlier triggers also accept comparative scalar expressions. They are the respectively past- and future-oriented forms *recently* and *soon* that target locations at a proximal degree of temporal remove.

- (110) a. I left my job (two months) more recently than Jan did.
 b. I'll leave my job (two months) sooner than Jan will.

These triggers also suggest a fictive arrival at the temporal locations they target. But this time, the fictive motion is directed toward the trigger moment—it is **centripetal**. Accordingly, the relative locations are now the opposite of those for the previous two triggers. Thus, my job departure is now later than Jan's with *recently* in (109a) but is earlier than it with *soon* in (109b). The originally static semantic representations seen

in (88c) and (88d) for these two triggers can now acquire fictive dynamism through the addition of the term “centripetally,” as in (111).

- (111) Semantic representations of *recently* / *soon*
 ‘at a moment with a proximal degree of temporal remove centripetally
 before/after Now’

Unlike the preceding cases, scalar expressions are rejected by two more of the earlier triggers—the respectively past- and future-oriented forms *just* and *right away* that target locations at a hyperproximal degree of temporal remove—as seen in (112).

- (112) a. *I more just turned on the radio than I turned on the TV.
 b. *I’ll turn on the radio more right away than I’ll turn on the TV.

If these triggers did indicate, say, centripetal fictive motion, then both sentences would mean that the moment of turning on the radio is closer to the trigger moment than that of turning on the TV—after it in the case of *just* and before it in the case of *right away*. But both these sentences are failed attempts at such meanings.

Our framework at present does not account for the differences seen so far in syntactic and semantic behavior. Specifically, it is not clear why triggers requiring separate expression of the degree of temporal remove accept scalar forms with a centrifugal interpretation; why ones indicating a proximal degree of temporal remove accept scalar forms with a centripetal interpretation; and why ones indicating a hyperproximal degree of temporal remove reject scalar forms.

Static direction of a targeted figure event. The above-mentioned triggers all targeted a temporal location that was occupied by a Figure event. But other triggers can target a Figure event directly, rather than the temporal location that it occupies. If that Figure event is noncoincident with the trigger moment, some of these triggers are lexicalized to indicate the event’s direction of temporal remove as well. In English, if the event occurs before the trigger moment, it can be targeted by either the trigger *this* or the trigger *that*, as seen in (113a). But if the event follows the trigger moment, only the trigger *this* can target it, as seen in (113b). This pattern holds both where the event is speech-external, like the sounding of a sharply bounded one-second electronically produced tone in the (i) examples, and where it is speech-internal, like the occurrence of a question in the (ii) examples.

- (113) Triggers targeting a noncoincident temporally bounded Figure event
 a. the Figure event is before Now
 i. <a tone starts and ends> This/That is an F sharp.
 ii. When’s your birthday? Is it okay if I ask you this/that?
 b. the Figure event is after Now
 i. This/*That is an F sharp. <a tone starts and ends>
 ii. Is it okay if I ask this/*that? When’s your birthday?

This asymmetric pattern indicates that the trigger *this* does not provide a core cue indicating direction of temporal remove—that is, the temporal direction a hearer should search in to find a temporally separated target—but that the trigger *that* does do so. Specifically, this core cue is that the target—if noncoincident and bounded—precedes the trigger moment.²⁴

We can expand on the speech-external use of *this* as against *that* for a prior target. If the tone ends one second before the utterance in (113ai) begins, the use of *this* seems felicitous. But as the interval between tone and utterance increases, or if the present tense is changed to the past (here, if *is* becomes *was*), then the trigger *that* seems to become the more or the only felicitous choice.²⁵

Direction of spatial remove Analogously with temporal remove, as seen, a trigger can indicate the degree of its target's spatial remove from either of two reference points: the speaker's location where the target is speech-external and the base's location where it is speech-internal. And the spatial realm is like the temporal realm in that, as it is structured in our conception, certain possibilities for a directional grid are available. These include an earth-based grid that distinguishes, say, up versus down or north versus south from the speaker's location, or a speaker-based grid that distinguishes, say, in front of versus behind the speaker's location. On the basis of such grids, a trigger might then indicate its target's **direction of spatial remove** in addition to degree of spatial remove. But unlike the before/after directional distinction in time, none of these directional distinctions in space has the same conceptual distinctiveness that would lead to its recurrent, often obligatory, marking in triggers across languages.

Still, some languages do have some triggers that indicate one or another direction of spatial remove. English, for example, has the trigger *overhead*, which is like the adverbial nondirective trigger *nearby* described earlier, except that it specifies a direction, in addition to a degree, of spatial remove. And like *nearby*, it has both a speech-external and a speech-internal use, as seen respectively in (114a) and (114b). In both utterances, the Figure is the referent of the constituent *a flock of birds*. And in (114a), the reference point is the location of the speaker while, in (114b), it is the location of the base, namely, the referent of *the promontory*.

- (114) a. There's a flock of birds overhead.
- b. The promontory was rugged. There was a flock of birds overhead.

The semantic representation of this trigger in both these uses is presented in (115).

- (115) Nondirective triggers targeting a location
 - at a particular degree and direction of spatial remove
 - overhead / overhead: 'at a location with a separative degree
 - of spatial remove above Here / There'

In English, though, and perhaps more widely, a trigger is rarely lexicalized to indicate a targeted location's direction of spatial remove. In English, such direction of remove is instead generally indicated by the system of "path specifiers" outside a trigger (see section 6.4.3).

2.3.3 Perceivability

In some languages, certain triggers target an entity that can intrinsically be perceived, but mark a contingent category of **perceivability** that distinguishes whether the speaker and hearer can currently perceive it—that is, are in a circumstance enabling them to perceive it. This category is mostly treated with respect to vision, which is addressed here first.

Thus, in some languages, triggers targeting an intrinsically visible object mark an additional category of **visibility**: whether the object is currently visible or nonvisible to the speaker and hearer. Such languages are generally reported to divide this category in accord with one or the other of two criteria: distance or obscuration. By the distance criterion, the trigger indicates that the target object is nonvisible if it is too far away to be seen and visible if close enough to be seen. By the obscuration criterion, the trigger indicates that the object is nonvisible if it is occluded or enclosed and visible otherwise.

However, accounts of such languages are not always clear on how these two criteria interact. For example, in the distance-based type, if a trigger indicates that the target falls into the visible category because it is not too distant, would the same trigger also be used for an obscured object that is nearby? And in the obscuration-based type, if a trigger indicates that a nearby target falls into the visible category because it is unobscured, would the same trigger also be used for a distant unseen object if that object was known to be unobscured?

There are further questions. In the distance-based case, would the same trigger that specifies a nonvisible object and that could be applied to a house a mile away also be applied to an ant yards away, where nonvisibility thus rests on a size/distance ratio? And in the obscuration-based case, would the visibility trigger be used for an unobscured but insubstantial entity such as a sound or smell (see the "substantiality" header above)? Only further data will clarify this visibility category.

Perhaps surprisingly, some English triggers mark their targets for perceivability. When targeting an intrinsically visible object, the trigger *that* requires that the object be currently visible to the hearer. For example, a speaker could say (116a) to a friend on the street only if the targeted coffeehouse is visible from their location, perhaps while pointing at it. But the speaker cannot say (116a) while pointing in the direction of the coffeehouse if it is obscured by other buildings in front of it or if it is simply too distant to see even if unobscured.

- (116) a. That's the new coffeehouse.
- b. The new coffeehouse is over there.

By contrast, the locative trigger *there* is neutral to the category of visibility for the target. While pointing, the speaker can use it as in (116b) to target the location of the coffeehouse, whether that location and the coffeehouse in it are visible or are nonvisible due to obscurity or distance.

This example accords with that in (1:31)²⁶ where a wife pointed out the window at a neighbor's new car and used either the trigger *that* or *there* in speaking to her husband who was either standing beside her at the window or lying on a couch across the room. Both triggers required that the hearer, the husband, have visual access to her gesture. But only the trigger *that* required that he also have visual access to the target, the car. The trigger *there* did not require this.

Roughly the same distinction between the two triggers is not limited to the visual modality, but it holds across perception. For example, a speaker might say either (117a) or (117b) to a blind hearer.

- (117) a. That's the new microwave. b. The new microwave is over !-there.

The speaker can use the trigger *that* in (117a) only if the hearer has physically contacted the targeted microwave and perceives it tactilely—whether the speaker has moved the hearer's hand into contact with it or simply observes him touching it. But if the speaker stands, some five feet away from the microwave and simply allows the hearer to feel her hand as she points toward it, she can now not use the trigger *that* but only the trigger *there* as in (117b).

To provide terms for this distinction, we will say that the trigger *that*—which requires that the target be perceivable to the hearer—is **ostentive**. And we will say that the trigger *there*—which is neutral to whether the target is or is not perceivable to the hearer—is **nonostentive**.

2.3.4 Compactness

In some languages, some of the triggers that target a location also specify its **state of compactness**. The triggers marking this category indicate whether the target is **compact** or **diffuse** (see Talmy, 2005). This category pertains to two- or three-dimensional regions of space. The compact concept indicates that such a region is of relatively smaller scope and is typically associated with the further concepts that the region is bounded and that the speaker's measurement of it is relatively precisional. The diffuse concept indicates that a region is of relatively larger scope and is typically associated with the further concepts that the region is unbounded and that the measurement of it is approximative. If a Figure object is located in such a region, the two member concepts often have the further associations that the object's specific location within the region is relatively certain or uncertain, respectively. And if a Figure object is to be placed in such a region, the two further associations are that the object's specific location within the region is of respectively great or little concern to the speaker.

This category is placed among contingent target properties because the targeted location—a conceptual construct without independent existence (see section 1.7.1)—is itself contingent on the speaker’s and hearer’s conceptualization of it. In addition, the particular state of compactness then ascribed to it can be contingent on a further exercise of conceptualization.

Malagasy (Imai, 2009) marks compactness with two demonstrative locative adverbs. They are distance-neutral, but if we gloss them for proximal usage, *eto* means ‘here within this bounded region’ and is typically indicated with a pointing finger, while *ety* means ‘here spread over this unbounded region’ and is typically indicated with a sweep of the hand.

In English, the locative triggers *here* and *there* are neutral to the category of compactness. But the corresponding triggers *hereabouts* and *thereabouts* indicate that their targeted locations are diffuse. The adverb *somewhere*, indicating indeterminacy as to positioning, is accordingly quite compatible with these diffuse locative triggers. The particle *right* can be added compositionally to the neutral locative triggers to indicate compactness but, as might be expected, is incompatible with the diffuse locative triggers. The present category can be marked both for a speech-external target, as in (118a)—spoken, say, in a supermarket—and for a speech-internal target, as in (118b).

- (118) a. The frozen juice should be (right) here. / (somewhere, *right) hereabouts.
 b. Go to the clocktower. You’ll find her (right) there. /
 (somewhere, *right) thereabouts.

A variant of the present category is observed by some triggers in certain languages. These triggers can now target either locations or physical entities. This category concerns the target’s “footprint” on the horizontal plane. A compact target has roughly equal extension in two dimensions, while a diffuse target has a one-dimensional linear extension. Thus, in Yupik (for a finer characterization, see Reed et al., 1977), a compact target could be a bulk object set on the ground, a linear object standing, or a set of objects grouped together, all of these either stationary or at most moving about within a confined space. A diffuse or “extended” target could be a linear object lying, a set of objects in a row, or an object moving translationally.

2.3.5 Syntactic Location

In section 2.2.8, it was seen that some triggers with a speech-internal target could specify a particular intrinsic property of that target: its constituent type. Here we see that such a trigger can also specify a particular contingent property of the target: its **syntactic location**. This syntactic location can be characterized in terms of three features. The first feature is the syntactic type of the larger constituent that the target occurs in. The second feature is that constituent’s **degree of syntactic remove** from the trigger. And the third feature is that constituent’s **direction of syntactic remove** from the

trigger. The last two features can be considered extensions of the systems respectively for degree of remove and for direction of remove seen in sections 2.3.1 and 2.3.2. These indications of syntactic location are additional core cues provided by the trigger to help guide the hearer to the target.

To illustrate, we look first at free relatives (see section 2.2.7). A free relative is overall a trigger form, but its semantic composition includes both a component specifically functioning as the trigger and a component functioning as the target. Thus, for the free relative *where* as used in (119), the semantic component ‘which’ is the trigger and the semantic component ‘the place(s)’ is the target. With regard to the first feature, the target is syntactically located within a constituent whose syntactic type is a word. As to the second feature, that constituent is at a coincident degree of syntactic remove from the trigger—that is, the trigger component is in the same word as the target component. The third feature, direction of syntactic remove, does not apply here because of the coincidence.

(119) I’ll go where [to the place(s) to which] you go.

Another case of syntactic locating involves an adjacent degree and an anterior direction of syntactic remove. Where the trigger is a relative pronoun, itself located within a relative clause, its noun phrase target is located within the clause—or the part of a clause—immediately adjacent to and before the relative clause. A relative pronoun thus provides core cues to the syntactic location of its target that help guide the hearer to that target.

Note that the cue for degree of syntactic remove here rests on clause-to-clause relations, not on direct proximity relations between the trigger and the target. Thus, in (120a), the trigger *which* and the target referring to the stage are adjacent to each other, but in (120b), the trigger *whom* and the target referring to the man both appear elsewhere in their respective clauses, thus doubly preventing adjacency.

- (120) a. The man on the stage which you sat on earlier is a new actor.
 b. The man on the stage with whom you spoke earlier is a new actor.

Another case of adjacent anteriority is shown by an adverbial proclause trigger that, as seen, targets a whole clause. For example, the adverbial proclause *anyway* in (121) targets the clause *I was tired*. What is relevant here is that this clause must be immediately adjacent to and before the clause containing the trigger. Adverbial proclause triggers thus provide the hearer with a core cue of syntactic location: to look for the clausal target just before the trigger’s clause.

(121) I was tired, but I went out anyway [despite that].

A more complex cue for syntactic location is provided by the trigger *so* in its second reading in section 2.2.8. A new example, similar to example (55b) there, appears in (122).

(122) Madge believes that we'll return to the moon soon, but I don't think so.

The target of this *so* is a clause: *we'll return to the moon soon*. But this clause—call it “clause 3”—is embedded within another clause, “clause 2”: *Madge believes that S*. And clause 2 must be immediately adjacent to and before “clause 1,” the clause containing the trigger. All this information about the target's syntactic location is provided by this trigger *so* and helps guide the hearer to the target.

2.4 In Sum

A core cue is an element of information about the target that the trigger is lexicalized to provide to the hearer. Seemingly all triggers provide such core cues in addition to their main function of initiating the three-stage targeting procedure in the hearer.

Core cues can be divided into those that specify intrinsic as against contingent properties of the target. Intrinsic properties include a target's ontological category, plexity, animacy and sapience, sex, gender, substantiality, domainality, and constituent type. Its ontological category, in turn, can be that of an entity, an action, an event, a spatial location, a temporal location, a path, a manner, a quality, a quantity, and a degree, among others.

Contingent properties of the target that triggers' core cues can specify include its degree of remove, direction of remove, perceivability, compactness, and syntactic location. A target's degree of remove from a reference point, in turn, can pertain to its spatial, temporal, personal, social, or experiential remove, while this last can in turn pertain to memorial, attentional, recognitional, or affective/perspectival remove.

Collectively across languages, the properties that the core cues of triggers ascribe to targets form a relatively closed, hierarchical, and universally available set. This “core cue subinventory” represents the fundamental conceptual structuring system in language for all potential targets.

Triggers have a range of formal realizations. The prototype trigger may be a single segmental monomorpheme. But a trigger can also be a multimorphemic word, a phrase, a more complex construction, a prosodic effect, a semantic component, or a zero form. Most triggers are closed-class, but some are open-class or on the borderline.

Notes

1. An alternative term might have been “trigger cues,” but this has been avoided because of its potential to be misleading.
2. Analyses of comparable property categories can also be found in Diessel (1999) and Imai (2009).

3. Interestingly, a website can be construed as a location, as seen in (ia), but a situation cannot, as seen in (ib).

- (i) a. I had put my papers on my website, but they're not on it / on there /
there any more.
- b. He was in a tough situation last week, but he's not in it / *in there /
*there any more.

4. They seem like phrasal triggers in that they lack the preposition expectable of a fully compositional phrase. On the other hand, the morpheme *way* in this usage regularly lacks a preposition, even absent a trigger (*He rode either toward the east or some other way*), so the phrases might be fully compositional after all.

5. It is unclear why, but choice of topic does not count as a manner. Thus, a speaker might say *Joyce wrote about wars*. But the speaker cannot refer back to that topic with a manner anaphor, as in **She wrote thus / that way / like that / in that manner because of her interest in history*.

6. Everything said in endnote 4 about the trigger versus compositional status of the phrases *this/that way* with respect to their path sense holds here as well for their manner sense. For their part, the phrases *like this/that* should be regarded as fully compositional, if the *like* in them is taken to mean 'in the manner of'.

7. When serving as the subject in their own clause, these relative pronouns govern singular vs. plural verb agreement, as seen in (i). So it might be better to say that these forms have polysemous ranges with separate singular and plural senses than that they are neutral to number.

- (i) I like a person who speaks / people who speak softly.

8. Some grammatical systems do treat these categories nondichotomously. In Navajo, for example, the way in which an Agent and a Patient are represented syntactically depends on their respective position along a hierarchy that combines dynamism, animacy, and sapience (see, e.g., Young and Morgan, 1987). But these systems do not involve targeting.

9. To be sure, if a trigger is lexicalized to indicate that its target is sapient or is inanimate, that target is necessarily also animate and nonsapient, respectively. Our interpretation, though, is that this is an entailment, not that the trigger is expressly lexicalized to indicate the additional specification.

10. If the man is instead carrying a caged canary, (32a) is slightly better—suggesting a stretch of sapience down to one's pet—though (32b) still seems infelicitous.

11. Since *it* also targets inanimate entities, its use may be favored if the co-forms refer only to aspects of the entity unrelated to animacy, as in (ia). On the other hand, since *he* and *she* target only animate sex-differentiated entities, their use may be progressively more favored to the degree that the co-forms refer to such characteristics in the entity, as in (ib) and (ic). If such tendencies hold, they may arise from a cognitive tendency to let the sum of a morpheme's range of applications affect its use for a particular application.

- (i) Our farm has a crocodile. a. It / ?She has a dark green color.
 b. ?It / She likes to be petted. c. ??It / She has laid many clutches of eggs.

12. It might at first be thought that *das* does not transcend gender but instead invokes neuter nouns that refer to a generic entity, such as *Objekt* ‘object’ or *Ding* ‘thing’. But *das* can also be used to refer generically to a mass, such as the liquid in a vat, and there is no obvious German neuter noun for such a generic mass. The conclusion is that *das* here does transcend gender.

13. The two occurrences of *then* as adverbial proclause triggers in (49a) and (49g) simply represent distinct senses within that morpheme’s polysemous range.

14. Most of the noun phrases shown as targets correspond to ontological subcategories listed in section 2.2.1. But several of those subcategories have no counterpart among English free relatives. An example is the ontological subcategory of “quality”—commonly targeted by the trigger *such*. There is no free relative form—say, **whuch*—that could be used in a sentence like **I don’t know whuch book she likes*, to mean “I don’t know what kind of book she likes.”

15. For example, depending on the context, the free relative *where* could represent a compositional phrase in which the target *the place* was preceded by *at*, *to*, or no preposition, and in which the trigger *which* was preceded again by *at*, *to*, or no preposition. Moreover, the target could be either the singular phrase *the place* or the plural phrase *the places*.

16. The first part of a cleft trigger construction is not limited to just the triggers *this* and *that*. As seen in (i), it can instead be a semantically more specific trigger that reflects the NP target within the free relative’s semantic representation.

- (i) a. There [That location] is where [the location at which] the accident occurred.
 b. Now [This time] is when [the time at which] you should ask for a raise.
 c. Thus [This manner] is how [the manner in which] we dispose of evil-doers.

17. As seen in (i), *so* in its current reading cannot occur with verbs other than *do*. By contrast, the other triggers can occur with such other verbs while still targeting the prior verb phrase. In those cases, it is clear that the prior verb phrase is targeted by the non-*so* triggers alone—the verb plays no role in this targeting. The parallel conclusion is that the verb *do* in (56) plays no role in the targeting there and simply contributes a relatively generic meaning, something like ‘achieve’. Hence, although *so* is limited to occurring with *do*, it is still the sole operative trigger. The collocation *do so* is not the trigger, as might have been thought.

- (i) I got the ball right into the basket on the first try,
 a. but I couldn’t repeat/duplicate that / this / it / *so.
 b. and I really enjoyed that / this / it / *so.

18. The hearer uses epistemic cues from his knowledge about different objects to infer that, within the surrounding region, the ice pack was to be adjacent to the location of the base (the belly) and the chair was to be coincident with, adjacent to, and proximal to the location of the base (the spot).

19. Four of the forms just treated (but not the rest)—namely, *just*, *immediately*, *soon*, and *in*—can, with greater or lesser felicity, also appear in constructions like those in (i). There, they are not themselves triggers, but behave like adverbs of temporal duration in construction with triggers such as *now* and *then*. Perhaps these forms initially had only this adverbial function but then also developed the trigger function seen in (88).

- (i) a. ?I washed the car just before now.
- b. I fixed the drier. I had washed the car just before then.
- c. I fixed the drier and I washed the car immediately after that.
- d. I said I was done with tasks for that day, but soon after that
 I washed the car.
- e. ?I'll be free in a moment from now.
- f. Florida will probably be under water in a hundred years from now.

20. The aim in this section is to present genuine trigger forms—whether a word or an idiomatic phrase—rather than compositional constructions that merely contain a trigger form. For this reason, (89aii) and (89bii) present the uncolloquial triggers *theretofore*, *thereafter*, and *thenceforth* rather than the colloquial compositional constructions shown in brackets.

21. The one exception is that the triggers in (92a) neutralize the distinction in the “direction of temporal remove”—whether the targeted moment occurs before or after the reference point. Some languages have separate triggers marking this distinction.

22. Besides the type recognition treated here, another form of recognitional remove involves “token recognition.” Such token recognition corresponds to the “unique identifiability” of Gundel et al. (1993), which is one step in a “givenness scale.” This scale seems to represent some of our distinctions in experiential remove.

23. The English temporal trigger *then* can target an interval in either the past or future, but it is not an exception because that interval contains its reference point, the base moment, rather than being noncoincident with it.

24. If the tone sounds concurrently with the utterance and trigger, then either *this* or *that* can serve as the trigger.

25. Further issues need resolution. For example, we need to explain why a guest saying goodbye to a host at the end of a party must use *this* instead of *that* in (ia), but, if calling the host afterward, must make the reverse choice, as in (ib).

- (i) a. This / *That was a great party. b. *This / That was a great party.

26. Examples in other chapters will be indicated by the chapter number, a colon, and the example number.

3 Other Trigger Features

The preceding chapter focused on one main feature of triggers—they provide cues to a target. But triggers have a number of further special features. Since triggers are the linguistic constituents specialized for the targeting process, their additional features call for analysis. This chapter analyzes those features in some detail. It treats nontarget properties specified by triggers (3.1); Properties not specified by triggers (3.2); processes that triggers are engaged in (3.3); the ellipsis of triggers (3.4); and the representation of trigger features (3.5).

3.1 Non-Target Properties Specified by Triggers

The last chapter showed that triggers are lexicalized to directly specify properties of a target by providing core cues to it. But triggers can also be lexicalized to specify that cues from certain other categories must be present—thus specifying something other than a target property. And triggers can further be lexicalized to specify how, in the third targeting stage, the concept of the target is to be integrated into the sentence. These additional two types of specification are treated in order in the next two sections.

3.1.1 Trigger Requirements for Particular Cue Categories

In its function of initiating the three-stage targeting procedure in a hearer—specifically, in the initial trigger-to-cues stage—every trigger is lexicalized to direct the hearer to determine all the cues that might be found anywhere across the ten cue categories. But a trigger can be further lexicalized to specify that the hearer should look for a particular category and expect to find a cue from it. (And in using such a trigger, the speaker beforehand had to ensure that a cue of that category was in fact present.) We next consider the simple case of such a requirement and then a more complex case.

Requiring a cue from an individual category We begin with the reductive case of the core cue category. Since seemingly every trigger in a language does not simply initiate the targeting process alone but also contributes core cues to the target, every trigger

is in effect lexicalized to direct the hearer to look for core cues. Since the trigger itself provides these cues, the hearer need not look far to find them.

The targetive cue category next enters naturally here. When a trigger provides core cues to the perceivable properties of a speech-external target, it generally also requires that the target exhibit those very properties as targetive cues. Thus, when the trigger *she* is used to refer to a speech-external target, providing the core cue that the target is a uniplex female, it generally also requires that an entity be present in the environment that visually exhibits those properties as targetive cues. A trigger can even have a negative targetive cue requirement. Thus, a trigger providing the core cue that its target is nonvisible (see section 2.3.3) requires that the target produce no targetive cues consisting of visible stimuli. On the other hand, nonostentive triggers (see the Relating this distinction to earlier ones section below) do not require targetive cues.

Perhaps the category next most required by a trigger with a speech-external target is that of corporal cues—the location in space of the speaker's or hearer's body. Thus, a trigger like *here* in its corporal reading, as in *Fred was here earlier*, requires that the hearer determine—or estimate, as in a phone exchange—the speaker's location as a cue to the target. All triggers indicating a target's degree or direction of spatial remove from the speaker or hearer (see sections 2.3.1 and 2.3.2) also alert the hearer to determine the location of that speaker or hearer.

A comparable category required by a trigger with a speech-external target is that of chronal cues—the location on the timeline of the trigger moment, that is, the trigger's own moment of occurrence. All triggers indicating a target's degree or direction of temporal remove from the trigger moment (see sections 2.3.1 and 2.3.2) also alert the hearer to determine, or note, that trigger moment. Thus, if a speaker says *The bathroom is free now*, both the componential present tense trigger and the lexical trigger *now* direct the hearer's attention to the trigger moment, indicating that the targeted interval of time (that of the bathroom's availability) extends through that moment.

The category of gestural cues is less often required by triggers. But some triggers do require the presence of a specifically gestural cue to the target (and hence require that the speaker produce one). English triggers lexicalized with this requirement are *this-away*, *thataway*, and *yay*.

The category of co-form cues is required still less often by a trigger, and then perhaps only indirectly so. When a trigger is a determiner that targets the referent of its nominal—like the *that* in *that book*—that nominal always provides a co-form cue to the target. Any trigger used solely as a determiner in this way—the only example in English may be poetic *yon*—then always requires a co-form cue.

As to the remaining four cue categories, some triggers may alert the hearer to attend to some subtle environmental, epistemic, and perichronal cues, as addressed in the respective chapters for those cue types. But perhaps no triggers are specifically lexicalized to direct a hearer's attention to her own hearer-focus cue.

Requiring a type of cue from a range of categories In the preceding, we considered individual cue-category requirements, but a trigger can also be lexicalized to require at least one cue of a particular type from a certain range of cue categories. For example, when a speaker uses the trigger *this* or *that* for a speech-external target, he must guarantee the presence of what we will call an **exhibitive** cue from the gestural, corporal, hearer-focus, or targetive cue categories. Thus, in a yard with a few different flowering shrubs dispersed in it, it is infelicitous—perhaps ungrammatical—for a speaker to say (1) without looking or pointing at the shrub in question (a gestural cue), standing near it (a corporal cue), seeing the addressee looking at it (a hearer-focus cue), or relying on its uniqueness or other form of salience (a targetive cue).

- (1) This / That is a snapdragon.

General characterization. For a general characterization, a cue is exhibitive if the hearer must perceive it speech-externally, and that percept helps guide her to the target. All gestural, targetive, and hearer-focus cues are exhibitive, while most corporal cues are. Exhibitive cues evidently do not occur outside these four cue categories. We will also call a trigger exhibitive if it requires an exhibitive cue when indicating a speech-external target.

To consider each exhibitive cue type in turn, a gestural cue such as a speaker's pointing finger is exhibitive because the hearer must see it, and it helps guide her to the target. Comparably, a targetive cue such as a yipping sound in the woods is exhibitive because the hearer must hear it, and it helps guide her to the target. Where a speaker relies on a hearer-focus cue such as one based on the hearer's staring at a Ferrari, it is exhibitive because the hearer must become aware of her own focus of attention, which then helps guide her to the target. The proviso here is that this metacognitive act of the hearer must be classed as an instance of speech-external perception, though an interior one.

When a speaker is positioned within the hearer's view, a corporal cue from his bodily position is exhibitive because the hearer sees it, and it helps guide her to the target (the region surrounding the speaker). But a corporal cue can also be **nonexhibitive**, namely, where the speaker cannot be perceived by the hearer. This is the case in the "clouds" example of (2:61) where the speaker is a pilot.

Relating this distinction to earlier ones. We might now specify how this exhibitive/non-exhibitive distinction relates to the earlier directive/nondirective distinction (see section 2.3.1). Gestural, targetive, and hearer-focus cues are not only always exhibitive, but they are also always directive. That is, their use prompts the hearer to direct her attention from the cue on to the target, whether perceiving it or imagining it (as in the "kite" example of (1:32a)). But corporal cues are generally nondirective, even when

exhibitive. Thus, as seen earlier, the hearer in the “booth” example of (2:61b) clearly perceives the corporal cue provided by the speaker’s location, but that does not prompt him to redirect his attention to the targeted region around her.

To continue in this vein, triggers that require a directive cue—“directive triggers”—also vary with respect to the earlier ostensive/nonostensive contrast (see section 2.3.3). If a directive trigger is nonostensive—like the *there* in the “coffeehouse” example of (2:116b)—the hearer can either perceive or imagine the target. But if a directive trigger is ostensive—like the *that* in (2:116a)—then the hearer must actually perceive the target.

3.1.2 Trigger Indications of Grammatical Properties

Every overt trigger has grammatical characteristics. These can be indicated either by the trigger’s form or by its syntax. Thus, they can be lexicalized within the form of the trigger—indicating, for example, its lexical category, its paradigmatic status, or its agreement properties. Or they can consist of the trigger’s syntactic relations to its clause. Either way, they do not constitute core cues to the target.

But they can have two other roles. For one role, the one looked at here, a trigger’s grammatical characteristics can help the hearer carry out the third, or target-back-to-trigger, stage of the targeting process. That is, once the hearer has determined the target, and has a concept of it in mind, they can help her integrate that concept into the overall conception represented by the clause that contains the trigger. For the other role, treated in section 4.2, the grammatical characteristics exhibited by a trigger can be considered to serve as co-form cues to the target.

More specific grammatical characteristics Some triggers are lexicalized to indicate certain relatively specific grammatical relations to their sentences. Such specificity in turn provides extra help to the hearer in integrating the target concept into the sentence’s overall conception. We present several English triggers for illustration.

The triggers I/me/my. The English triggers *I* and *me*—for example, as used in (2)—are centrally lexicalized to provide the core cue that the target is the current speaker—the person producing the trigger.

(2) I put my book down on the table when Claire addressed me.

But they are also lexicalized to provide certain grammatical indications that guide the hearer in relating this concept of the speaker to the other concepts in their clause. First, both triggers are lexicalized with the grammatical information that, for their lexical category, they are nominals, rather than, say, determiners or adjectives. As nominals, they are restricted to having certain syntactic roles in their clause—for example, subject, direct object, indirect object, prepositional object—and not such other roles as

qualifier or predicate. This syntactic role of nominal in turn tends to correlate with the trigger's referent having the semantic role of being an entity, rather than, say, a quality or action.

Second, the triggers *I* and *me* are each lexicalized with a different paradigmatic status, here referred to as the nominative and accusative case, respectively. These cases in turn tend to correlate with certain grammatical relations, the prototypes of these respectively being the subject and the direct object of a clause. And these syntactic relations in their turn tend to correlate with certain semantic roles for the referent entity, the prototypes of these respectively being the Agent and the Patient of the event expressed by the clause. In (2), in fact, the two triggers have the grammatical relations of subject and direct object in their respective clauses, and their referent entity, the speaker, has the semantic roles of Agent and Patient in the respective events expressed by those clauses.

For its part, the trigger *my* in (2) also targets the speaker. But now it is lexicalized with the lexical category of a determiner and so is in construction with a nominal—here, *book*. In correlation with this, the trigger's referent is now not an entity, but a qualification—specifically, one on the noun's referent. Also lexicalized within this trigger is yet a third paradigmatic status, here referred to as the genitive case. This case narrows down the kinds of qualifying relations that the referent speaker can have with the entity expressed by the nominal. The prototype is that of possession, and this prototype is in effect in (2). Thus, the grammatical properties of the trigger *my* here indicate to the hearer that, after she has determined that the target is the speaker, she is to map a concept of that speaker into the sentence's overall conception so that he functions as the possessor of the book.

The trigger such. For another example, consider the trigger *such* as in (3) (see section 2.2.1 under Quality and section 2.2.8). The target of this trigger is a quality that an entity can have. But like the trigger *my*, this trigger lexicalizes within itself the lexical category of being a determiner. This indicates that the hearer—once she has determined the targeted qualities—should attribute them to the referent of the nominal in construction with the trigger—here, to the *sunset*.

- (3) I've never before seen such a sunset.

The trigger there. Consider next the trigger, *there*, whose target is a spatial location. For one reading in its polysemous range, this trigger is lexicalized to have the grammatical property of being a nominal and to have a semantic composition equivalent to the noun phrase *that location*. This reading is seen in (4a) and (4b) where the trigger serves respectively as the subject and prepositional object. The speaker can be thought to be

pointing in (4a) at a clear patch of ground in a forest and, in (4b), to a gateway in the wall of a fort.¹

- (4) a. !-There [that location] is where we should set up the tent.
b. You can enter the fort through !-there [that location].

But in second and third readings, *there* is lexicalized as being an adverbial in its lexical category—specifically, the grammatical equivalent of a prepositional phrase. In its second reading, seen in (5a), the trigger has roughly the semantic content of the prepositional phrase *at that location*. And in its third reading, seen in (5b), its semantic content is roughly that of *to that location*.

- (5) a. Your parakeet is sitting over there [at that location].
b. Your parakeet flew over there [to that location].

In the semantic composition of *there* in these last two readings, the inclusion of a component equivalent to a spatial preposition is interpreted here as a grammatical property of the trigger. The reason is that it indicates how the “nominal” portion of the semantic content—‘that location’—is related to the rest of the clause. Thus, after the trigger *there* directs the hearer to determine the targeted location, the trigger’s lexicalized grammatical properties direct her to treat that location as the site of a stationary Figure in (5a), but as the Goal of a moving Figure’s path in (5b).²

Adverbial proclause triggers. A comparable account holds for adverbial proclause triggers (see section 2.2.7). For example, the semantic composition of the adverbial proclause *still* in (6) is roughly equivalent to the prepositional phrase *despite that*. Within this semantic composition of the trigger, the semantic component equivalent to *that* targets the entire initial clause. But the semantic component equivalent to *despite* is here interpreted as a grammatical indication involved in the third stage of targeting. It directs the hearer to place the initial-clause concept into a concessive relationship with the remainder of the second clause’s content.

- (6) They were feeling tired, but they still [despite that] went out.

Less specific grammatical characteristics A trigger can be lexicalized for fewer third-stage indications than in the preceding cases. For example, the only grammatical specification lexicalized in the trigger *that*—apart from a requirement for singular agreement—is that it is either a nominal or a determiner in its lexical category—and which of these two categories it is, is not specified. And unlike *I/me*, it is not lexicalized to indicate its syntactic relation to the clause, say, as subject or object. It is not trigger lexicalization, but the trigger’s syntactic relations to the rest of the sentence that determines how the target concept mapped onto the *that* is integrated into the overall conception of the clause.

3.2 Properties Not Specified by Triggers

Section 2.1.2 summarized the idea that the conceptual categories and member concepts represented by the closed-class forms found across languages constitute an inventory, the closed-class inventory. And it proposed that a portion of this inventory—the core-cue subinventory—consists of the conceptual categories and member concepts that are attributed to targets by the closed-class triggers found across languages. The full inventory and the core-cue subinventory are both universally available, hierarchical, and roughly closed. And they underlie fundamental systems of language—respectively, the concept structuring system and the target structuring system.

This characterization of the closed-class inventory has a complement. Since the inventory is hierarchical and only roughly closed, this complement is best phrased as a gradient. The lower a category or concept is on the hierarchy, the less likely it is to be expressed by a closed-class form, down to strong improbability. Talmy (2000a: chapter 1) specifically pointed to a number of categories and concepts that seem resistant to closed-class representation.

The core-cue subinventory can be surveyed from the same perspective. Such a survey is initiated here by considering conceptual categories and individual concepts that seem excluded from trigger specifications, even though they might seem to be reasonable candidates for inclusion on one basis or another. Several such bases are considered next. A goal for the future is to discern any principles governing the acceptability of triggers' ascriptions to targets, and the reasons for such principles.

3.2.1 Excluded, Even Though Related to Other Trigger Specifications

The fact that particular triggers ascribe certain properties to targets is a basis for expecting that various related properties would also be found among trigger specifications. Yet many such seem absent. Relatively generic triggers can generally be used for such properties. But we here point to a seeming absence of triggers that indicate such specific properties in particular.

Excluded ontological subcategories Section 2.2.1 presented a number of ontological subcategories that triggers can specify their targets as being in. But other ontological subcategories, apparently similar to the extant ones, seem unused.

Distance away. For example, while a monomorphemic trigger (*yay*) can indicate that a target consists of a “distance between,” seemingly none indicates that it is a “distance away.” To illustrate, perhaps no language has a monomorphemic trigger expressing the compositional phrase *this far* in (7a)—a speech-external example where the speaker points to a spot on a road—or the phrase *that far* in the speech-internal example of (7b).

- (7) a. He drove this far, but had to turn off.
 b. X: He drove to Oswego. Y: I didn't know he'd gotten that far.

Frequency. Comparably, two occurrent ontological subcategories are “quantity,” where a trigger can target the number of a Figure’s instantiations, and “temporal location,” where a trigger can target an interval of time. But seemingly no role is played by an ontological subcategory of “frequency,” where a trigger would target the average number of a Figure’s instantiations per occurrence of a certain time interval. Thus, seemingly no language has monomorphemic triggers expressing the phrase *this often* in (8a)—a speech-external example in which the speaker observes the hearer’s actions—or the phrase *that often* in the speech-internal example of (8b).

- (8) a. I didn't know you wash your hands this often.
 b. X: Gil washed his hands seven times already this morning.
 Y: I did know he washes his hands that often.

Path location. Or again, two occurrent ontological subcategories are “spatial location,” where a trigger prototypically targets a roughly equidimensional portion of space, and “path,” where a trigger targets the linear path dynamically formed by a moving object. But there is apparently no role for an ontological subcategory of “path location,” where a trigger would target the static linear spatial location that a path has traversed. Thus, there is no monomorphemic trigger equivalent to the phrase *all along that route* in (9a). The spatial location trigger *there* in (9b) can target only the equidimensional location of Fresno, not the linear location of the path to it.

- (9) John bicycled to Fresno.
 a. It was hot all along that route. b. It was hot there.

Physical object. And, perhaps curiously, seemingly no triggers specify that a target’s ontological subcategory is specifically that of a physical object. Related specifications do occur. Thus, triggers specifying that a target is visible (see section 2.3.3) entail that it is also a physical object. And English triggers specifying that the target is animate (see section 2.2.3)—namely, *I, we, you, he, she, who*—again entail that the target is also a physical object. However, these triggers do not single out their targets on the basis of being physical objects, but on the basis of being visible or animate—properties that simply entail such physical manifestation. Thus, languages seem to avoid any straightforward targeting of physicality.

Speech-external action. In the preceding cases, the missing ontological subcategory was merely similar to extant ones, but a subcategory can also be missing from one sector of trigger specifications while the same subcategory is present in another. One such case

involves the ontological subcategory of “action.” On the one hand, the trigger *so* in one of its readings specifies that its target is an action speech-internally represented by a verb phrase (see Verb phrase in section 2.2.8). Yet seemingly no trigger specifies that a target is a speech-external action. Such an action target is simply covered by more generic triggers. Thus, on seeing a dog deliberately slide across ice, a speaker might say (10a), using the relatively generic trigger *that*. But no action-specific trigger like the invented *thact* is available to a hearer to use in a sentence like (10b).

- (10) a. That’s funny. b. *Thact is funny.

Other excluded property categories We just considered what a trigger can and cannot indicate about a target’s ontology. But ontology is just one of the categories of intrinsic and contingent properties listed in sections 2.2 and 2.3 that a trigger can place a target in. The question can then again be asked: are there property categories related to these that are excluded from a trigger’s specifications about a target?

To cite just one such case, the intrinsic categories of plexity, animacy, and substantiality might seem related to just as basic a category pertaining to targeted phenomena, their “permanence.” One thus might expect separate triggers specifying that their target, like a rock, is enduring or, like a fruit, has moderate longevity or, like a flash, is evanescent. But this property category seems unrepresented.

3.2.2 Excluded, Even Though Specified by Other Cue Categories

Another basis for thinking that triggers might have core cues specifying certain target properties is that the cues of other categories do specify such properties. For example, a targetive cue can consist of a target’s salience or uniqueness relative to its current environment. But seemingly no trigger provides a core cue specifying the contingent property that the target is salient or unique. Thus, if a speaker points toward two birds sitting on a wire, one of which is brightly colored and calling loudly while the other is drab and silent, no monomorphemic trigger specifically meaning ‘that entity that stands out’ will be available for him to use to single out the former bird from the pair.

And consider the co-form cue category, whose target specifications are made by morphemes around the trigger. Of the target properties that co-form cues can potentially specify, the great majority cannot be specified by core cues. Thus, the co-form cues from the single open-class morpheme *urn* in (11a) or from the compositional phrase *urn with dots that tapers* in (11b) can join with the core cues from the trigger *that* to help guide the hearer to the target with the combined set of properties—that is, to a particular speech-external urn in the antique shop. But there is presumably no single trigger—like the invented *thurn* in (11c)—with core cues to that set of target properties.

- (11) a. That urn b. That urn with dots that tapers
c. *Thurn is my favorite antique in the shop.

This absence from trigger specifications occurs in part because co-forms are mainly open-class while triggers are mainly closed-class. As seen earlier, most open-class specifications are excluded from closed-class specifications—they are off the closed-class inventory. Still, this absence should be noted explicitly.

3.2.3 Excluded, Even Though Specified by Other Systems or Experientially Basic

A further basis for expecting the inclusion of a conceptual factor in trigger specifications is its significance in a cognitive system other than language. For example, seemingly a major role—perhaps a structuring function—is performed in vision by color, in audition by pitch, and in haptic perception by an object's hardness or softness. Yet apparently none of these factors functions as a core cue. Thus, perhaps no language has triggers like the invented *thorange* or *thindigo* to single out a target that is orange or indigo.

Finally, the fact that certain conceptual categories and member concepts are basic to or frequent in human experience might be thought to be a basis for their inclusion among trigger specifications for targets. But most of these are nevertheless excluded. Thus, to mention just a few possibilities, seemingly no triggers distinguish intrinsic properties of a target with respect to a “naturalness” category (whether it is natural or an artifact), a “life stage” category (whether an animate target is, e.g., newborn, young, middle-aged, or elderly), or an “edibility” category (whether it is food or nonfood).

Comparably, seemingly no triggers distinguish contingent properties of a target with respect to an “evaluation” category (whether it is good or bad in the speaker's view) or a “relevance” category (whether it is relevant or nonrelevant to the speaker's goals).

The absence of the naturalness category, for instance, can again be illustrated using invented triggers: *thart* to target a uniplex artifact, and *thnat* to target a uniplex natural entity. Then if a speaker points with lateral ambiguity to a rock and a knife located together, presumably no language would let him say the equivalent of *Hand me thart* or *Hand me thnat* to disambiguate which of the two objects was his intended target.

3.2.4 Principles for the Exclusion of Specifications?

As yet, no single general principle is evident governing which target properties are acceptable as trigger specifications, and which are unacceptable. But certain more specific principles can be observed. One of these pertains to type of geometry.

Perhaps all cognitive systems include both an absolute subsystem and a relative subsystem. In some perceptual modalities (visual and haptic), in motor control, and in language, these subsystems can specifically involve a geometric difference, the Euclidean versus the topological. For language in particular, Talmy (2000a: chapter 1) proposes that while the open-class subsystem can represent either type of geometry, the closed-class subsystem accepts only topological representations of geometric concepts and

excludes the Euclidean. Accordingly, closed-class triggers also exclude any attribution of Euclidean properties to their targets.

This principle of Euclidean exclusion entails that a trigger cannot specify an absolute size or specific shape (among other properties) for its target. We should thus not expect to find triggers with core cues specifying that their target is larger or smaller than a meter, or that their target is a square or a straight bounded line.

A seeming counterexample in section 2.3.4 was that a trigger can specify that a targeted location is compact or diffuse, hence smaller or larger. But this distinction is relative to the context, not absolute. And as the same section showed, a trigger can specify that a locative or physical target is diffuse along a one-dimensional extension, which suggests that it has the shape of a straight line. My surmise, though, is that its extension, though linear, need not be straight. If true, then for the Yupik triggers at issue (this needs confirmation) an otherwise linear target could have the specific shape of, say, an arc or a zigzag without effect on the choice of trigger referring to it and hence that the trigger does not specify a specific shape. If cases like these prove not to be counterexamples, then Euclidean exclusion will indeed be one of the principles—albeit a less-than-general one—governing what can and what cannot serve as a core cue.

3.3 Processes that Triggers Are Engaged In

Chapter 2 and the present chapter so far have mainly addressed features that triggers are lexicalized to specify, whether these are properties of the target, cue categories that must be present, or relations that the target concept has to the sentence's overall conception. But such trigger specifications also involve those triggers in certain types of cognitive processing within the overall targeting procedure. Some such types of processing have already been addressed. One type is the interaction of a core cue with cues of other categories to provide corroborative, complementary, or conflicting information about the target. And subsection 3.3.1 treats a particular variant of the process seen before by which targets are ruled in and out.

But the subsections from 3.3.2 on present relatively new—and increasingly elaborate—forms of cognitive processing that arise in trigger use. Such cognitive complexity is surely widespread in human psychological function, but it can be traced out with particular fineness in language use due to the detail of our understanding of language structure. The analyses that follow can thus be regarded as contributions to our understanding of cognitive intricacies at work.

3.3.1 Triggers Specifying Mutually Exclusive Properties within a Category

We here consider again the hearer's process of narrowing down from a set of target candidates to a single target. One method in this process was addressed earlier (section 1.5.2). In it, cues ascribed different but compatible properties to the target. The

hearer then selected as the target the one candidate that had all the ascribed properties. But another method is addressed here. It applies where two conditions are met. First, there is a set of triggers whose core cues would ascribe to a target certain mutually incompatible properties belonging to a single conceptual category. Second, the target candidates each exhibit just one of these properties. Then the hearer can select the intended candidate just by noting which trigger has been used. This method can be used for most of the categories of target properties treated in sections 2.2 and 2.3, some of which, in their order of appearance, are selected for the illustrations that follow.

Within the ontological category We begin with the category of a target's ontological properties (see section 2.2.1). For two mutually incompatible properties within this category, a target can be a spatial location or a temporal location, but not both. And the triggers *there* and *then* can respectively target just the one or just the other of these two types of location. Consider then the case where a speaker says (12a) and then continues by saying either (12b) or (12c), each with one of these two triggers targeting a constituent in (12a). If the pool of target candidates in (12a) is limited to just *the monastery* and *last Easter*, the referent of the former constituent can be a spatial location and that of the latter constituent a temporal location, but not the reverse. Necessarily, then, the trigger *there* in (12b) targets the former referent while the trigger *then* in (12c) targets the latter.

- (12) a. I visited the monastery last Easter. b. It was cold there.
 c. It was cold then.

Within the plexity category For a speech-internal example, the uniplexity-specifying trigger *it* in (13b) selects for its target the singular constituent *a fox* with its associated uniplex referent in (13a) and rules out the crows. But the multiplexity-specifying trigger *them* does the reverse—it selects the plural constituent *some crows* with an associated multiplex referent and rules out the fox (the contrastive stress prevents it from targeting both the fox and the crows together).

- (13) a. I saw a fox across a field from some crows.
 b. I picked !-it / !-them as the subject of my drawing.

For a speech-external example, suppose that a speaker at a shop window points with lateral ambiguity toward a display consisting of one box of unknown color X and several boxes of unknown color Y. If the speaker says (14a), its uniplexity-specifying trigger *that* targets the single box. But if she says (14b), the multiplexity-specifying trigger *those* targets the remaining boxes.

- (14) a. That box is fuchsia-colored. b. Those boxes are vermilion-colored.

Within the animacy/sapience category With respect to the triggers of section 2.2.3, the requirement of *it* and *which* for a nonsapient target, of *he/she* for an animate target, and of *who* for a sapient target can serve to select which of two candidates is the intended target. Thus in (15), where *it* or *which* is the trigger, the target is the noun phrase *the sapling*, with its reference to a nonsapient entity. Where *he* or *who* is the trigger, the target is the noun phrase *the man* (or the whole complex noun phrase) referring to an animate sapient entity.

- (15) a. I saw a man near a sapling. It / He stood 5 feet tall.
 b. I saw a man near a sapling which / who stood 5 feet tall.

Within the sex category The male and female specifications of the triggers *he* and *she*, as treated in section 2.2.4 on the category of sex, can help the hearer select the target from two candidates of opposite sex. If a speaker points toward a speech-external man and woman standing together and says (16a), his choice of trigger rules one of the pair in and the other out. His choice does the same in (16b) where the target candidates are speech-internal constituents referring to a man and woman.

- (16) a. He / She works for me.
 b. My sister and brother came running up the hill toward me.
 He / She was out of breath.

Within the constituent type category As seen in section 2.2.8, triggers can require that their speech-internal targets be of particular constituent types. If two triggers with different requirements appear in the same clause, as in (17b), they each rule in different constituents in the prior clause while ruling out each other's targeted constituent. Thus, the adverbial proclause trigger *anyway* in (17b) (which means 'despite that') targets the entire clause in (17a). But the *so* targets only the verb phrase *volunteer for the charity drive* in (17a).

- (17) a. Our friends decided not to volunteer for the charity drive,
 b. but !-we did so anyway.

Triggers failing to rule in and out within a property category In the case of some categories of properties, unlike the preceding ones, triggers that specify one of the properties for a target seem unusable for singling one target candidate out from others. Consider the state-of-compactness category of section 2.3.4, by which a location can have the property of being either compact or diffuse. These properties seem to be contrastively represented in (18a) by the locative phrases *inside the shop* and *somewhere in the parking lot*, respectively. And the locative trigger *thereabouts* in (18b) is certainly lexicalized to target a diffuse location. Nevertheless, this trigger seems unable to rule

the parking lot in and the shop out, and thus to clarify that the trigger *him* is to target the son and not the father.

- (18) a. My son is somewhere in the parking lot and my dad is inside the shop.
 b. *You'll find him thereabouts.

Perhaps the basis for this failure is that triggers specifying a target's state of compactness are treated as providing the speaker's personal perspective on the target, rather than a definitive property of it. If so, the speaker here could be regarding either the shop or the lot as diffuse.

3.3.2 Cue Codetermination

Section 2.2.5 on gender ended with example (2:40) in which a German speaker could use either the gender-ascribing masculine trigger *der* or the gender-transcending trigger *das* to target an object he was pointing at in a store window. The choice here of *der* would entail certain processing intricacies in the hearer that then call for deeper analysis.

The form *der* here has two components providing different core cues. One component, roughly equivalent to English *this/that*, provides the core cues that the target is a uniplex third-person entity. These core cues join with the speaker's gestural cue to help guide the hearer's attention to an object in front of her, the speech-external target. Targetive cues from that object in turn enable the hearer to consider categories it might belong in. She might think of it as in the category of, say, a chair, a wooden thing, a made thing, or a brown thing.

The other component of *der* provides a core cue not to the target itself but to a noun with masculine gender in the German lexicon. This noun in turn will provide an epis-temic cue to the target, an epistemic cue stored in the hearer's knowledge.

Now, by itself, the second component's cue can narrow the hearer's search down only to that roughly third of German nouns that are grammatically masculine. But then this set of masculine nouns interacts in the hearer's cognition with the set of the possible category memberships to which she might have assigned the external visible object. In this interaction, the hearer might first exclude those category assignments without a masculine noun referring to them. She might then rank the remaining category assignments, those with masculine nouns referring to them, in terms of the likelihood that the speaker had them in mind. She might also rank the masculine nouns that refer to a category assignment in terms of those nouns' frequency of use. Letting these two ranking processes interact, she will here probably emerge with the conclusion that the likeliest category for the object in view is that of a 'chair' and that the likeliest masculine-gendered noun referring to it is *Stuhl*.

There are two special processing features of note here. First, one cue has led the hearer to another cue. The trigger *der* provides the hearer with a core cue to a masculine noun in the lexicon, and that noun in turn provides the hearer with an epistemic cue to

the target. Second, the targetive cue and the epistemic cue have, through an interaction, helped determine each other. This second feature exhibits what will be called **cue codetermination**. Both these features are additions to section 1.5.2 on cue processing.

3.3.3 Trigger Assertion

Section 2.3.1 presented several cases of speech-external intrusion. In that process, a trigger provided the hearer with speech-external information that the speaker had in his knowledge store about the target, but that could not help the hearer determine the target. There, this information was introduced into the otherwise purely speech-internal content of the discourse. But here, we see that such additional information can also be introduced into speech-external content. This more general process as a whole will be called **trigger assertion** since, through the trigger, the speaker provides the hearer with new information about the target, even though this information does not help the hearer determine the target.

Trigger assertion of a target's sex The earlier cases involved the trigger assertion of a target's degree of spatial remove and of affective/perspectival remove. We begin here with the trigger assertion of a target's sex.

A speech-internal target. To illustrate first where the target is speech-internal, consider the trigger *she* in (19).

(19) I talked to the janitor today at my office building. She was angry.

Of the specifications the trigger provides, the hearer can use the following as core cues: the target is uniplex, an entity, animate, sexually differentiated, and third-person. These cues rule out most of the candidate speech-internal targets in the first sentence. Such candidates include the form-concept complexes represented by *I*, *talked*, *today*, *office building*, and the locative construction *in my office building*. The core cues can guide the hearer solely to *the janitor*. But the trigger *she* also provides the information that the target is female. This information could not have been used as a core cue helping the hearer single the target out from among candidates because none of them expresses femaleness. If *janitor* had instead been *waitress*, a word whose associated concept does include femaleness, then the female specification of *she* would indeed have been a cue helping the hearer zero in on the target. As it stands, however, what this 'female' specification of *she* does is to add to the hearer's knowledge the information that the target entity—which he has now otherwise determined to be the janitor—is in fact female.

A speech-external target. The trigger assertion of sex can next be shown where the target is speech-external. If a speaker at a dimly lit party points to what the hearer can only perceive as a human figure in the shadows and says (20a), then the 'female'

specification of the trigger *she* informs the hearer that the figure is a woman, but could not have been used as a cue helping him to narrow down to that figure as the target. Comparably, if a speaker on a farm points to one of several crocodiles and says (20b) to a visitor, the ‘male’ specification of the trigger *he* lets the hearer know that the target is male, but could not have been used by him to help narrow down to that target, since a crocodile’s sex is not visibly evident.

- (20) a. She’s my cousin. b. He’s our pet.

Trigger assertion of a target’s plexity The trigger assertion of a target’s plexity can in turn be illustrated using the noun *sheep*. Serving as either a singular or a plural, this noun does not by itself inform a hearer as to plexity. The target is speech-internal in (21a).

There, the plexity of the referent of the subject noun *sheep* in (21a) is asserted by the reflexive trigger chosen. And in (21b), the determiner trigger chosen informs the hearer of the plexity of the speech-external target. Here, say, the speaker points toward brambles enclosing one or more sheep whose number cannot be visually discerned. In both cases, the speaker knows whether the target is uniplex or multiplex and informs the hearer about it through his choice of trigger.

- (21) a. The sheep I spotted in the valley
had just snagged itself/themselves in the brambles.
b. That / Those sheep just got snagged in the brambles.

3.3.4 Joint-Domainality Triggers

With respect to the speech and nonspeech domains, most of the triggers seen so far exhibited what was called dual domainality. They could indicate either a speech-external target or a speech-internal target and indicated one of these in any given use. A minority of triggers had targets in exclusively one or the other domain and might be called **single-domainality** triggers. Both these types of triggers thus involved one domain at a time. But the triggers considered now involve both domains at once and will be said to exhibit **joint domainality**.

Some joint-domainality triggers have a target in one domain but must take the other domain into account. This pattern was already seen in speech-external intrusion, where the target itself is purely speech-internal, but speech-external information about it is also provided. This pattern is also seen in the Co-targeting subsection. In another pattern, a joint-domainality trigger has a complex target with both speech-external and speech-internal components. This pattern is seen in the Compound targets subsection.

Co-targeting Singular first- and second-person triggers in English—whether these are the reflexive or the nonreflexive pronouns—can be analyzed as having a speech-external target while, at the same time, as indicating the targeting status of another

speech-internal constituent. For simplicity, the only other constituent considered here is the subject nominal of the same sentence.

Requirements of a reflexive. Looking first at reflexives, the analysis for modern English is best framed by first considering two other types of languages. Exemplifying one type, Russian has true reflexive triggers. These are the nominal *seb'a* and the possessive adjective *svoy* (along with their declension mates). They indicate only that their target is the subject nominal and lack other specifications about it, such as its person, number, and gender, or any properties of its referent. The hearer thus must look to the subject nominal target to know what concept to map back onto the reflexive trigger for the third stage of targeting (the target-back-to-trigger stage).

At the opposite end of the spectrum was Old English, which lacked true reflexive pronouns (Elizabeth Traugott, p.c.). Thus, the modern English sentence in (22a) with the reflexive trigger *myself* has an Old English counterpart that could be glossed as in (22b) with the accusative trigger *me*. There, each of the first-person singular triggers independently targeted the speaker, with no anaphoric relation between them.

- (22) a. I accidentally cut myself. b. "I accidentally cut me."

Comparably, the modern English sentence in (23a) with the reflexive trigger *himself* has an Old English counterpart that can be glossed as in (23b) with the accusative trigger *him*. This sentence was ambiguous as to whether the person cut was Ross or another male inside or outside speech.³

- (23) a. Ross accidentally cut himself. b. "Ross accidentally cut him."

In modern English, the singular first- and second-person reflexives seem to fall between Russian and Old English. We can illustrate with the first-person trigger *myself*, as in (24a). As in Old English, and unlike Russian, this trigger by itself provides the hearer with enough specifications for her to identify the speech-external target as the speaker. There is no need for the hearer to look to the subject nominal for additional cues to this target. But this reflexive trigger does provide an additional indication. It indicates that the subject nominal is also targeting the speaker. This reflexive thus alludes to the nearby presence of a separate but equivalent instance of targeting. This phenomenon of two nearby triggers with the same target can be called **co-targeting**, and the reflexive trigger *myself* is lexicalized to indicate it. Thus, this modern English reflexive—like the Russian reflexive but unlike the Old English reflexive—takes the subject nominal into account.

- (24) a. I accidentally cut myself. b. Ross accidentally cut me.

Requirements of a nonreflexive. In a complementary way, the nonreflexive trigger *me*, as in (24b)—which also targets the speaker—further indicates that the speaker was *not*

targeted by the subject nominal. It thus also takes the subject nominal into account. It is in effect lexicalized to indicate “anti-co-targeting.”

Since both *myself* and *me* target the speech-external speaker, and at the same time take into account the targeting performed by the speech-internal subject nominal, these triggers provide specifications in both the speech and nonspeech domains, exhibiting joint domainality.

Further requirements of a reflexive. Further, though, the reflexive trigger *myself* is sensitive to the subject nominal not only with regard to its co-targeting of the speaker but also its lexical makeup. In particular, for *myself* to be grammatical, the subject nominal must specifically be the pronoun *I*. It is not enough that the subject nominal refers to the speaker. Thus, the three non-*I* subject nominals shown in (25a), all of which still refer to the speaker, preclude the occurrence of *myself* in (25b).

- (25) a. My parents' only child / The person now speaking to you /
 Yours truly just cut
 b. *myself. c. *me. d. himself/herself. e. *itself. f. *themselves.

But there is further intricacy. It might have been thought that the direct-object trigger—though now barred from being the reflexive *myself*—could instead be the accusative *me*, as in (25c). The reasons are, first, that this first-person trigger *would* indicate the correct target, the speaker and, second, it would in fact be the trigger used if the subject nominal were, say, *Ross*, as was seen earlier in (24b). Nevertheless, *me* is also barred as the trigger.

The direct-object trigger that English in fact requires in this case is a third-person reflexive, specifically one of the uniplex animate triggers *himself* or *herself*, as in (25d). English here thus does require a reflexive trigger in recognition of the fact that its target is the same as that of the subject nominal. But English treats that subject nominal as if it had a third-person referent, even though its speech-internal semantics indicates that the referent is the first-person speaker. Accordingly, the reflexive trigger must be in the third person.

Note further that the speech-internal semantics of the subject nominals in (25a) also indicate that their referent is animate and uniplex, and these specifications must also be reflected by the trigger. Accordingly, it is not enough that the trigger be third-personal. It must also indicate animacy, which rejects the trigger *itself* in (25e), as well as uniplexity, which rejects the trigger *themselves* in (25f).

But we are not yet done describing the complexities of this construction. The speech-internal semantics of the subject nominals in (25a) do not indicate the sex of their referent. Yet a choice must be made between the gender-specific triggers *himself* and *herself*. This choice rests on the speaker's knowledge about the sex of the speech-external target—which here amounts to the speaker's own sex. This is then another

case of trigger assertion, specifically of the speech-external intrusion type. And the construction is accordingly of the joint-domainality type, just as the *myself* in the original example was.

Summary. To summarize, where a direct-object trigger targets the speaker, its form is determined by two features of the subject nominal, one pertaining to its referent and one to its form. If the subject nominal does not refer to the speaker, then the direct-object trigger is *me*. If the subject nominal refers to the speaker and its form is *I*, then the direct-object trigger is *myself*. And if the subject nominal refers to the speaker and its form is not *I*, then the direct-object trigger is *himself* or *herself*. The choice rests on the speech-externally determined sex of the speaker.

Compound targets A target consisting of two or more separate components will be called a **compound target**. The plural first- and second-person pronouns are triggers with a compound target in which one component can be speech-external and the other speech-internal at the same time.

First-person plural. Consider first the English first-person plural trigger *we*, whose compound target consists of the speaker and at least one other sapient entity. Now, this compound target *can* be entirely speech-external, in particular, where all its components are physically present in the speech situation. A speaker could then utter a sentence like (26) in any of five qualitatively distinct types of this circumstance.

(26) We should go to the opera.

In the first two types of this circumstance, the speaker addresses everyone present. He can then either 1) be alone with one addressee, targeting both persons (himself and his addressee), or 2) be with two addressees targeting all three persons (himself and his plural addressees). In the remaining three types, the speaker is with one companion but addresses another person. Then he can alternatively 3) target himself and his companion, 4) himself and his addressee, or 5) all three persons.

But a component of the compound target other than the speaker can also be speech-internal—not present in the situation but only referred to. For example, the speaker could say (27), intending to include his referred-to brother in the compound target of *we*.

(27) My brother will be visiting next week. We should go to the opera.

The compound target could now be any of those in the five situations just cited, with the added inclusion of the brother. As a sixth possibility, the speaker could be alone with one addressee, targeting just himself and his brother. In all these new cases, the compound target of *we* includes both speech-external and speech-internal components.

It is not clear if any language has different first-person plural triggers that distinguish whether their target excludes or includes a speech-internal referent. The so-called inclusive/exclusive distinction that some languages make in their first-person plural pronouns—marking whether the addressee is included or not—does not address this issue.

Second-person plural. Similar observations hold for the second-person trigger *you* in its plural usage. Its compound target can be entirely speech-external, as when a speaker says (28a) while alone with two addressees, intending to target both of them and only those two. But the trigger's compound target can also include one or more sapient entities only referred to speech-internally, along with one or more addressees present in the speech situation. Thus the speaker can say (28b) while alone with one or two addressees, now targeting the addressee(s) speech-externally as well as the speech-internal sister. (Note that the *your* and the *you* in (28b) have different targets). Again, it is not clear whether any language has different second-person plural triggers that distinguish whether their target excludes or includes a speech-internal referent.

- (28) a. You should go to the opera.
 b. I understand your sister will be visiting next week.
 You should go to the opera.

3.3.5 Specification Conflict

As seen in sections 2.2 and 2.3, each category of target properties is associated with a particular set of triggers that specify the different properties in the category. But it sometimes happens in a language that two distinct property categories are both associated with the same set of triggers, which can thus specify the properties of either category. This circumstance can seemingly happen only where the two categories are analogous along some dimension, and their respective properties can be comparably ranked and hence aligned with each other. Thus, triggers A and B might each specify different but corresponding properties in categories X and Y.

Now, consider a case where both the property categories X and Y can apply to the same target. If trigger A is used to refer to the target, it will ascribe two properties to it, one from each property category. If the target in fact has both those properties, there is no problem. But there is a problem if the target has only one of the properties, say, the property that trigger X specifies for category X but not the property that that trigger specifies for category Y. If the property from category Y needed to be specified for the target, trigger B would have to be used. This will be called a **specification conflict**. In that case, certain principles govern which trigger is used. Two cases of specification conflict are considered next.

Gender versus sex When the singular third-person triggers in German target a speech-internal nominal, they specify the head noun as being masculine, feminine, or

neuter—the target properties in the category of gender. Some sets of triggers respectively specifying these genders are the pronouns *er/sie/es*, the demonstratives *der/die/das*, and the relatives *der/die/das* (along with their respective declension mates).

But the property category of sex uses the first two members of these same sets of triggers to specify a target as male or female. They can indicate the sex of a speech-external target or of the concept associated with a speech-internal gendered noun.

Why does this particular alignment occur across the properties of the categories for gender and sex? Either a historical or a cognitive account would seem to have the same main basis. Most German nouns referring to beings of the male or female sex—for example, those referring to a man, brother, or rooster, or to a woman, sister, or hen—are respectively masculine or feminine in gender. There would be little basis for the alignment if all German nouns—those with animate as well as inanimate referents—had basically arbitrary gender assignments.

If one of the abovementioned triggers targets such a noun, there is accord across the two property categories. For example, if the trigger *sie* targets the feminine noun *Schwester* and its associated female concept ‘sister’, the trigger’s specification for feminine gender accords with the lexical form, that for female sex accords with its referent, and the two accord with each other.

But a conflict occurs across the two property categories in the case of an exceptional noun like *Madchen* ‘girl’ with its neuter gender but female referent. In the contemporary German resolution to this conflict (Zubin and Koepcke, 2009), a trigger functioning as a determiner to the noun—like the *das* in (29a)—accords with the lexical form and so has the specification for neuter. But, for all but the most formal speakers, a subsequent trigger in the same clause accords with the referent and so has the specification for female, like the *ihr* ‘her’ in (29a) instead of *sein* ‘its’.

- (29) a. Das Madchen hat ihr neues Kleid angezogen.
 the/this/that-NEUT girl has her-FEM new dress put-on
 “That girl put on her new dress.”
 b. das Madchen, das ihr neues Kleid angezogen hat, . . .
 the-NEUT girl who-NEUT her-FEM new dress put-on has
 “The girl who put on her new dress, . . .”

Now, the relative pronoun in a relative clause, like the second *das* in (29b), does accord with the lexical form in 80 percent of usage and so specifies the neuter. However, the greater the amount of intervening material—as in expressing “The girl with blonde hair who put on her dress”—the greater the tendency of the relative pronoun to accord with the female referent. The governing principle seems to be that a trigger with a direct or close syntactic relation with the target tends to specify its formal gender. But as the syntactic relation loosens, the trigger tends to specify its semantic sex—that is, to focus on the conceptual level that the formal level represents.

Space versus affect/perspective The same kind of accord or conflict can occur between the subcategories, or “realms,” of a property category, such as that of “degree of remove” (see section 2.3.1). Four of its realms—the degree of spatial, temporal, personal, and social remove—each have their own distinct set of triggers, with partial alignment across the sets with respect to degree. But within a fifth realm, the degree of experiential remove, one type—the degree of affective/perspectival remove—has no distinct triggers of its own and in effect “parasitizes” the triggers of the other domains. For example, it uses the proximal/distal triggers prototypically associated with the spatial domain—*this/that* and *here/there*—to specify proximal or distal degrees of affective/perspectival remove.

One could imagine language systems without such doubling up. For example, spatial *this/that* might take suffixes for closer or farther affect—*thiski*, *thispu*, *thatki*, *thatpu*—so that both domains are individually specified. Or four distinct trigger forms might express the realms’ four separate permutations. Or the affect/perspective domain might have its own distinct triggers, and the speaker simply chooses which of the two realms to represent in a given sentence. But the English system expresses both realms at once.

If the speaker regards the target as proximal in both space and affect/perspective or regards it as distal in both, there is no problem. The problem is where the two realms differ in their degree of remove. The following principle may govern the resolution. The spatial realm is primary and generally takes precedence. The affective/perspectival realm is generally secondary, but if the speaker deems it especially important, it can override the spatial specification.

Consider the “handlebars” example (2:73). In the original setup, the bike was some eight feet away—in that context, a distance on the cusp between proximal and distal spatial remove, so the degree of affective remove could hold sway. But say the bicycle is now some fifteen feet away—a distance usually evoking a distal spatial trigger. But if the speaker’s affect toward the bike is strong enough, it can override the spatial distance and license a *this* for the trigger.

3.4 Trigger Ellipsis

It frequently happens that a clause initiates a targeting procedure in a hearer but lacks a trigger. And often, corresponding to such a clause, there is another clause with effectively the same overall meaning, and with the same constituents except that it also includes a trigger, one sometimes in construction with another closed-class form. The first clause will then be said to exhibit **trigger ellipsis**.

Syntactic theories differ on how to regard such ellipsis. By one account, the trigger is present at an early stage of cognitive representation in the speaker, it undergoes deletion in her production process leading to the actual utterance, and the hearer restores the trigger in his interpretation process. The corresponding trigger-bearing clause then

has the same origin, but without deletion having taken place. By another account, the trigger function is implicit in the clause—with the speaker producing it that way from the outset—and the hearer infers this trigger function. The corresponding trigger-bearing clause is then only a paraphrase with an independent origin, whose semantic equivalence is not built into the structure of the language.

This chapter's analysis of triggers seems neutral to these two accounts, and so offers little basis for adopting either. We do assume, though, that, on hearing a triggerless clause, the hearer is readily able to produce in his cognition the corresponding clause that includes the appropriate trigger and any accompanying closed-class form. As between these two clauses—both potentially in the hearer's cognition—we will say that the first clause has an **ellipsized trigger**, while the second clause has a **supplied trigger**.

Several types of trigger ellipsis are presented next. Each is based on a construction that represents the relationship of one element to a second element. The second element can, in the appropriate circumstances, be expressed by a trigger. But each construction also permits the ellipsis of this trigger, usually along with some accompanying closed-class form. What then appears overtly is an expression with a constituent representing the first element but without a constituent representing the second element. Generally, though, such ellipsis does not involve any irrecoverable loss of information. On encountering such an expression, the hearer can recover or infer the information and supply the missing trigger. In all the constructions treated here, the ellipsized/supplied trigger can be either deictic or anaphoric—that is, can have an either speech-external or speech-internal target—again showing the unity of the speech and nonspeech domains.

3.4.1 The Ground of a Path as the Target of an Ellipsized Trigger

In its commonest English pattern (see Talmy, 2000b: chapter 1), a clause expressing a Motion event ends with a “directional construction” consisting of two elements. The first element represents the Path, the trajectory taken by the Figure. The second element represents the Ground—a reference entity, or the location it occupies, with respect to which that Path is characterized. The first element can be compound, consisting of a satellite and a preposition. The second element is a nominal, one that can be either a full noun phrase or a trigger. Where this nominal would in fact be a trigger—either deictic or anaphoric—English has an extensive system of ellipsis by which the trigger and its preposition fail to appear, while the satellite remains. That is, the Ground of the directional is not expressed, but the basic Path is expressed. The hearer generally can infer the information not being represented and can cognitively supply the appropriate trigger and preposition.

This pattern is first illustrated for factive motion, here, a path of exiting. In (30a), the target is a speech-external location, that of a house, with the hearer and dog

inside and the speaker outside looking in. The parentheses enclose the trigger, either ellipsized or supplied, that targets the house's location, along with its accompanying preposition. In (30b), the ellipsized/supplied trigger refers to either the house or its location, now a speech-internal target.

- (30) a. Don't let the dog run out (of there).
 b. The dog was in the house and then suddenly ran out (of it/there).

This pattern also holds for fictive motion, here, a fictive "access path." In (31a), with the speaker and hearer standing in front of a bank, the ellipsized/supplied trigger *here* targets the corporally indicated speech-external location of the bank. In (31b), the ellipsized/supplied trigger refers to either the bank or its location, now a speech-internal target.

- (31) a. The bus stop is across the street (from here).
 b. My bank is on the corner.
 The bus stop is across the street [from it / there].

The Ground can be a person as well as an object or location, so that the ellipsized/supplied trigger is a personal pronoun. Such a trigger targets speech-external persons in (32a), where the speaker spots a group of friends passing by. And the trigger in (32b) targets the speech-internal constituent *my office mate* referring to a person.

- (32) a. Can I walk along (with you)?
 b. My office mate left to get some coffee,
 and I walked along (with him/her).

Talmy (2000b: chapter 1) presents a type of formula for the Path satellite-preposition combinations. In it, the portion that can be ellipsized appears within parentheses; F and G show where the Figure and Ground nominals occur in relation to the combination; and a left-pointing angle indicates a satellite in construction with the verb before it, while a right-pointing angle indicates a preposition in construction with the nominal after it. The formulas for the preceding three examples appear in (33).

- (33) F . . . <out (of>G); F . . . <across G1 (from>G2); F . . . <along (with>G)

3.4.2 The Patient of an Action as the Target of an Ellipsized Trigger

The construction considered here is a verb phrase that includes a predicate expressing an action and a direct-object nominal expressing the Patient of that action. Where the nominal would be a trigger—either deictic or anaphoric—many predicates allow its ellipsis. The construction then consists of the predicate alone without the nominal, thus expressing the action but not the Patient. As before, the hearer can generally infer the relevant Patient and supply the appropriate trigger.

An example of such a predicate is *get involved*, which allows the ellipsis of a trigger object along with the preposition *in* that it is in construction with. The trigger in (34a)

targets a speech-external Patient, where the speaker and hearer are driving past an accident. That in (34b) targets a speech-internal Patient—the constituent *an accident*.

- (34) a. Let's not get involved (in this).
 b. She was driving past an accident,
 but she didn't want to get involved (in it).

The predicate *join* again permits an ellipsized/supplied trigger to be a personal pronoun. The trigger targets speech-external people in (35a), where the speaker walks up to a table of friends, and a speech-internal constituent referring to people in (35b). Note that, for this predicate, the trigger is not in construction with any accompanying closed-class form.

- (35) a. Can I join (you)?
 b. I walked up to some friends at a table and asked if I could join (them).

3.4.3 The “Whole” that Contains a “Part” as the Target of an Ellipsized Trigger

A partitive construction—which in English generally has the form: NP1 of NP2—represents the relationship of a “part” (NP1) to a “whole” (NP2). In general, if the NP2 expressing the whole would otherwise be a trigger—either a deictic or anaphoric one—it can be ellipsized along with the *of* it is in construction with. The partitive construction is then overtly represented only by the “part” NP1, but the hearer can readily infer the “whole” and supply the trigger targeting it.

The “part” is an indefinite portion; the “whole” is a definite mass This is first illustrated where the “whole” is a continuous mass and the “part” is a portion of that mass. In (36a), the ellipsized/supplied trigger *that* targets the speech-external lemonade in a pitcher that the speaker sees the hearer holding in his hand. In (36b), the trigger *it* targets the speech-internal constituent referring to the lemonade. The NP1 here, *some* is taken to lexicalize within itself the semantic components ‘a portion’.

- (36) a. Can I have some [a portion] (of that)?
 b. X: I made a pitcher of lemonade. Y: Can I have some [a portion] (of it)?

The NP1 “part” element just seen—the form *some* with its semantic composition ‘a portion’—is just one member of a set. Other members are *none* ‘no portion’, *a bit* ‘a small portion’, *any* ‘any portion’, *a lot/much* ‘a large portion’, *most* ‘a majority portion’, and *all* ‘the entire portion’. Two of these are illustrated in (37).

- (37) a. X: Would you like some lemonade?
 Y: No, I don't want any [any portion] (of it).
 b. The earth has a lot of water. Most [a majority portion] (of it) is salty.

The “part” is an indefinite token; the “whole” is a definite multiplexity Partitive target ellipsis can also be illustrated where the “whole” is a multiplexity of discrete units and

the “part” is one or more tokens of that multiplexity. In (38a), the ellipsized/supplied trigger *those* targets the chocolates in a box that the speaker sees the hearer holding in his hand. In (38b), the trigger *them* targets the speech-internal constituent referring to the chocolates.

- (38) a. Can I have one [a token] / some [some tokens] (of those)?
 b. X: I bought a box of chocolates.
 Y: Can I have one [a token] / some [some tokens] (of them)?

The first NP1 of the two alternatives here, *one*, is taken to lexicalize within itself the semantic components ‘a token’. And the second alternative here, *some*, then has the semantic composition ‘some tokens’. This form can be written as *some-T* to distinguish it from its previously seen homophone for ‘a portion’, itself representable as *some-P*.

Like the term “portion,” the term “token” here is meant as an inherently relational noun, specifically representing one part of the whole within a partitive relationship. Where “portion” was the term for a part of a continuous mass, “token” is the corresponding term where the part is one unit out of a multiplexity of discrete units.

As before, there is a larger set of forms referring to such partitive tokens. Again using “-T” to mark the forms homophonous with portion-indicating forms, this set includes: *none-T* ‘no tokens’, *neither* ‘neither token’, *both* ‘both tokens’, *a few* ‘a few tokens’, *any-T* ‘any tokens’, *a lot-T/many* ‘many tokens’, *most-T* ‘most tokens’, and *all-T* ‘all the tokens’. Two of these are illustrated in (39).

- (39) My niece and nephew just graduated from high school.
 a. Neither [neither token] (of them) is going on to college.
 b. Both [both tokens] (of them) are going on to college.

The “part” is a definite token; the “whole” is a definite multiplexity The token-specifying forms *one* and *some-T* just seen were both indefinite. But there are corresponding token-specifying forms that are definite. The corresponding form for a definite uniplex token is *the one* or *that*. The latter form, syntactically constrained in its use, is not the trigger *that*—it cannot be replaced by *this*—but is a special morpheme specifically meaning ‘the token’. Both forms are seen in (40a) with an ellipsized/supplied trigger whose target is speech-external and consists of two washers held in the speaker’s hand and shown to the hearer. And both forms are seen in (40b), where the ellipsized/supplied trigger targets the phrase *two washers* in the prior sentence.

- (40) a. The one [the token] (of these) that’s for the faucet is red,
 and the one / that [the token] for the hose is blue.
 b. I showed him two washers.
 The one [the token] (of them) that was for the faucet was red,
 and the one / that [the token] for the hose was blue.

Comparably, the form for definite multiplex tokens is *the ones* or *those*. The latter form again is not the trigger *those*—it cannot be replaced by *these*—but a morpheme specifically meaning ‘the tokens’. Both these forms are seen in (41a) with an ellipsized/supplied trigger with a speech-external target. This target is a group of people in the second person—uttered, say, by a theater employee. And both forms are seen in (41b) with a trigger targeting a speech-internal constituent referring to a group of people in the third person.

- (41) a. The ones / Those [the tokens] (of you) who already have tickets,
please stand on the right.
b. Lots of people are coming to the play. The ones / Those [the tokens] (of them) with season tickets get their choice of seats.

The “whole” is indefinite In the preceding examples, the whole within the partitive construction was itself definite—that is, the trigger represented a definite version of the speech-external or speech-internal target. But it can also be indefinite. In this case, though, the supplied version of the trigger and accompanying material that are putatively ellipsized is not colloquial. It is closer to being a linguist’s construct. Yet this construct may suggest some representation that might still occur in the hearer’s cognition.

In the next examples, the partitive construction involves a portion of an indefinite mass in (42a), a token of an indefinite multiplexity in (42b), and tokens of an indefinite multiplexity in (42c). The supplied trigger complex here could have been (less analytically) represented as *such material/items*.

- (42) a. Do you have any ink? I need some [a portion] (of material like that).
b. Do you have any pens? I need one [a token] (of items like those).
c. Do you have any pens? I need some [some tokens]
(of items like those).

The target in the preceding examples was an unbounded quantity, whether a mass (ink) or a multiplexity (pens). But it can also be a bounded uniplexity (e.g., a pen), as seen in (43).

- (43) a. Do you have a pen? I need one [a token] (of items like that).
b. Do you have a pen? I need several [several tokens] (of items like that)
(I’ll start with yours and then find some more.)

The “part” with modifiers We now consider cases with a speech-internal target where the morpheme *one* in a partitive construction is modified. If the modifier is postposed, as in (44ai) and (44aii), then the morpheme *one* continues as before to represent the whole of the semantic composite ‘a token’ that includes the indefinite determiner ‘a’. But if the modifier is preposed, as in (44bi) and (44bii), then the morpheme *one*

represents solely the semantic element ‘token’, and an overt morpheme *a* must be added.

- (44) a. i. Do you have any pens? I need one [a token]
 (of items like those) that’s big.
 ii. I expected a cake, but I didn’t expect one [a token]
 (of items like that) so big.
 c. i. Do you have any pens? I need a big one [token]
 (of items like those).
 ii. I expected a cake, but I didn’t expect so big a one [token]
 (of items like that).

We continue with the speech-internal case where the morpheme *one* is adjoined by modifiers. But the hearer must perform special processing if the target is a nominal that is itself adjoined by modifiers or that includes them, as in (45).

- (45) Where *one* appears, read: one [(a) token](of items like that)
 a. I have a big green spoon made of wood, but now I want
 b. with one earlier modifier changed:
 i. a small one. ii. a red one. iii. one made of plastic.
 c. with two earlier modifiers changed:
 i. a small red one. ii. a small one made of plastic.
 iii. a red one made of plastic.
 d. with all three earlier modifiers changed:
 a small red one made of plastic.

The hearer must determine what the implicit trigger *that* targets in each case here. In all the alternatives, its target at least includes the referent of the noun *spoon*. In (45c), its target is solely the referent of *spoon*—all three of the original modifiers are replaced in the hearer’s conceptualization of the item now wanted. But the targets in the examples of (45b) retain one of the original modifiers while two others are altered. And the targets of the examples in (45c) retain two of the original modifiers while one is changed.

To select just two cases for illustration, the target of the implicit trigger *that* in (45biii) is the referent of *big spoon*. The item finally wanted is thus a big red spoon made of plastic—differing from the original in that its color is not green and its material is not wood. And the target in (45ai) is the referent of *green spoon made of wood*. The finally wanted item is then a small green spoon made of wood—differing from the original in that its size is not big.

To determine the target of the implicit trigger *that*, the hearer must assess incompatibilities between properties. A later mentioned property is substituted for any earlier mentioned property with which it is incompatible. Thus for (45bi), the later mentioned

property *small* is incompatible with the earlier mentioned property *big*,—they are alternative members of the same category of “size”—which it therefore replaces. But it is not incompatible with the properties *green* and *made of wood*, which it thus leaves intact.

Other analyses In other analyses (e.g., Mitkov, 1999) with the concept of “one-anaphora,” previously seen forms like *one*, *ones*, *some*, *any*, and the other members of their sets are commonly treated as anaphors referring back to an antecedent—in our terms, as triggers targeting a speech-internal constituent. But in the interpretation adopted here, such forms represent only the NP1 “part” within a partitive construction. They are not anaphors or triggers at all and so need not be included among the triggers treated in this chapter. In the partitive constructions examined here, the actual trigger—whether overtly represented or not—is the NP2 “whole” within the construction, and this trigger can have either a speech-internal or speech-external target.

3.4.4 The “Complex” that Includes a “Component” as the Target of an Ellipsized Trigger

We here treat what might be called an **inclusion construction** that, in English, generally has the form: NP1 P NP2. It consists of a “component” (NP1) that is included in a “complex” (NP2). It is distinguished from the partitive construction in section 3.4.3, in which the “whole” consisted uniformly of the same substance or units, and the “part” excerpted an otherwise undistinguished portion or token from that. Here, by contrast, the “complex” is composed of diverse elements, and the “component”—one of those elements—has its own independent identity.

Where the NP2 here is a trigger, either anaphoric or deictic, it can often be ellipsized along with its associated preposition, without loss of inferable information. Complementarily, if a hearer encounters a clause seeming to express the “component” of an inclusion construction but not the “complex” that includes it, she can generally infer the latter and cognitively supply a trigger targeting it.

Targeting a speech-internal complex This ellipsized/supplied trigger that targets an inclusion complex corresponds to what many other analyses of speech-internal processing have treated solely as an issue of general conceptual inference. Puzzlingly, these other analyses—when examining a triggerless clause—generally do not even mention the existence of a corresponding colloquial clause that includes a relevant trigger. In its targeting, such a trigger accomplishes explicitly what those analyses ascribe solely to implicit inference.

To illustrate, (46) presents examples copied directly from four other analyses. But within parentheses, it adds in the triggers and accompanying prepositions that—by our trigger ellipsis account—provide the relevant inclusion relationships. Specifically, this supplied inclusion relationship corresponds to the “inferables” of Prince (1981)

in (46a), to the conceptually based inference of Hirst (1981) in (46b), to the “indirect anaphora” of Consten (2003) in (46c), and to the “bridging” of Clark (1975) in (46d) and (46e).

- (46) a. I got on a bus yesterday and the driver (on it) was drunk.
- b. Nadia bought a DECsystem-10. The processor (in it) is a KL10B.
- c. She wanted to unlock the door of her friend’s apartment
 when she noticed that she had lost the key (to it).
- d. I walked into the room. The chandeliers (in it) sparkled brightly.
- e. I went shopping yesterday. The walk (during that / in doing so) did me good.

We can elaborate on the trigger-ellipsis interpretation for some of these examples. In (46a), the noun *bus* is associated with a conceptual complex that conventionally includes a driver, passengers, and a route—among other components at the further-knowledge level (see section 1.6.1). Suppose now that the subsequent noun phrase included a trigger—*the driver on it*—which would represent a complex noun phrase containing two full NPs: *the driver on the bus*. This noun phrase would then constitute an inclusion construction, with NP1 representing an included component and NP2 representing the inclusion complex. Here, the inclusion relationship is explicit. If the noun phrase lacks the NP2 and its preposition, as in Prince’s original, the hearer might supply it in her cognitive processing and so have a representation explicitly providing the inclusion relation of the driver component to the bus complex.

In the Consten example in (46c), the key is the “component” and the door is the “complex”, which includes such components as the framed aperture it fits into, a keyhole, and a key that fits the keyhole. This example shows that the inclusion “complex” need not physically encompass the component, as is the case in (46a), (46b), and (46d).

And the Clark example in (46e) shows that the “complex” can constitute an activity, here, that of ‘going shopping’, and that the included “component,” here a ‘walk’, can constitute one of the actions included in that activity.

Targeting a speech-external complex The other analyses regularly treat the type of inference they discuss as an anaphoric process—they provide no deictic counterparts. But the ellipsized/supplied trigger proposed here can target a speech-external inclusion “complex” as readily as one that is speech-internal. Thus, most of the examples in (47) correspond to the examples in (46), but here each ellipsized/supplied trigger targets a speech-external inclusion complex. We can imagine that the speaker and hearer are boarding a bus in (47a), standing before an apartment door in (47c), standing in a room in (47d), and going shopping in (47e). The new example in (47b) is again copied from Hirst (1981), which portrayed the speaker and hearer as standing in front of a car.

- (47) a. The driver (here / on this) is drunk.
 b. Because I'm a nostalgic horse racing fan,
 I've had the speedometer (on this) marked in furlongs per hour.
 c. I've lost the key (to this).
 d. The chandeliers (here) are sparkling brightly.
 e. I like the walk (in doing this).

3.5 Representing Trigger Features

As seen in this and the preceding chapters, a trigger, in construction grammar terms, is a complex construction involving a number of features. It is associated with a particular formal realization, with the three-stage targeting procedure, with the specification of particular target properties (its core cues), with a requirement for the accompaniment of particular cue categories, and with particular grammatical properties. This section presents a somewhat more formal **componential representation** of these constructional features of a trigger.

In this componential representation, the noun **quiddam**, one of the Latin words for 'something' is used to refer to the target as generically as possible—whether it is an entity, action, or other phenomenon, whether concrete or abstract, whether discrete or continuous, whether uniplex or multiplex, or the like. The particular properties that a trigger ascribes to its target—as well as the trigger's other target-related features—are then represented as relative clauses on this generic quiddam. Since the speaker's intended target is always a particular quiddam, the noun *quiddam* in a componential representation is always preceded by the determiner *the* to indicate that it is linguistically definite.

The formulation in (48) is present in all our componential representations of triggers and represents what we take to be centrally fundamental to triggers. In it, the bracketed relative clause—with its pronoun *I* referring to the speaker uttering the trigger, its verb (to) *target* referring to the targeting process, and its present progressive tense/aspect indicating its immediate applicability—is intended to represent the entire three-stage targeting procedure. That is, it represents the trigger's direction to the hearer to determine the available cues, to use these in combination to determine the target, and to map the concept of that target back onto the trigger. What is represented in (48), then, is the component that renders a linguistic entity a trigger. This component will be called the **deep trigger**. It is not clear whether any language has a morpheme representing this deep trigger by itself. Perhaps the triggers in all languages always include components additional to that of the deep trigger.⁴

- (48) the quiddam [I am targeting the quiddam]

The representation for any particular trigger, then, adds relative clauses to the deep trigger. For example, the English trigger *she* can be represented as in (49). Here, the target

the inclusion of the parenthesized expression (*at/to*) before the phrase *the quiddam*. If neither parenthesized preposition is included, the trigger functions syntactically like a nominal, as in the “tent/gate” examples of (4). But if either preposition is included, the trigger functions syntactically like an adverbial prepositional phrase, as in the “parakeet” examples of (5). If this notational practice is followed, then it is in the representation of the deep trigger that we specify the third targeting stage, that is, how the concept of the targeted quiddam is to be integrated into the conception expressed by the trigger’s clause.

- (51) *there: (at/to) the quiddam* [I am targeting the quiddam]
 [the quiddam is a spatial location]
 [if the quiddam is speech-external, it is generally uniplex]
 [the quiddam is at a distal degree of spatial or affective-perspectival remove]
 [if the quiddam is speech-external, an exhibitivite cue must be present
 to indicate it]

We end with the case where a trigger is a determiner in construction with a nominal. An example might be the *that* in *Give me that book*. The componential representation in this case, seen in (52), is the same as for the representation for the nominal trigger *that* seen in (50), except that it adds a relative clause, the one shown following the deep trigger. This relative clause, like the others, is then regarded as specifying a property of the targeted quiddam. Specifically, it indicates that the target is an instance of the NP’s reference—in the present example, that it is a book.

- (52) *that NP: the quiddam* [I am targeting the quiddam]
 [the quiddam is an instance of the NP’s reference]
 [the quiddam is an entity]
 et cetera

3.6 In Sum

Triggers are the linguistic constituents specialized for the targeting process, so all their features call for analysis. Their two main features—the fact that they are lexicalized to initiate the three-stage targeting procedure and to provide core cues—were respectively addressed in the prior two chapters. This chapter addresses five additional features.

First, triggers can be lexicalized to provide the hearer with further information on how to conduct the targeting procedure. They can specify that cues from certain categories must be present and hence that the hearer should specifically look for such cues. And they can specify how, in the third targeting stage, the hearer should take the concept of the target he has just determined and integrate it into the sentence’s overall conception.

Second, triggers cannot ascribe to targets any properties outside a particular universally available set, the core-cue inventory. Some properties are excluded even though they resemble acceptable properties. No single principle has been found that entirely accounts for the distinction, but less encompassive principles can be cited.

Third, the use of triggers in the targeting procedure can engage them in certain noteworthy forms of cognitive processing. For one of these, triggers that assign mutually exclusive properties to a target can be exploited to lead a hearer to just one out of a set of target candidates differing by those same properties. Further, a trigger can direct a hearer to two cues from different categories that must interact in a process of codetermination to guide the hearer to the target. In addition, in a process of trigger assertion, a trigger can provide ancillary information about the target without serving as an aid in determining that target. Moreover, a trigger with joint domainality can make specifications in both the speech-internal and the speech-external domains at once, either through a process of cotargeting or by specifying a compound target. Finally, a trigger that can specify properties of two different types to a target exhibits specification conflict if the target itself does not have both those properties.

Fourth, a trigger can often be ellipsized, without hindering the hearer from performing a targeting procedure. The ellipsized trigger can, among other possibilities, target the Ground of a Path, the Patient of an action, the whole that contains a part, or the complex that includes a component.

And fifth, all the features that any particular trigger has can be specified in a componential representation that begins with the unique deep trigger common to all triggers.

Notes

1. Several further English triggers behave like *there* in having a nominal reading beside their main adverbial readings. This is seen for gestural *here* in (ia), for corporal *here* in (ib), for choral *now* in (ic), and for speech-internal *then* in (id).

- (i) a. !-Here [this location that I am pointing at] is where to put your cup.
Put your skates in here [this location I am pointing at].
(holds up a box)
- b. Here [this location that I am standing in]
is where we should set up the tent.
Yesterday a bear walked through here
[this location that I am standing in].
- c. Now [this temporal location] is a good time to pick the berries.
- d. He got the flu last week.
He hasn't been out of bed since then [that temporal location].

2. The obsolete triggers *thither* and *hither* are specifically lexicalized to direct the hearer to treat the targeted location as the goal of a Figure's path, while *thence* and *hence* direct her to treat it as the source.

3. This ambiguity is still seen today in the modern English possessive pronouns. For example, the *his* in *Ross moved his book out of the way* can refer either to Ross or to another male inside or outside speech. There is no obligatory reflexive construction such as **himself's book*. Nor is the ambiguity resolved by the construction with *own*, as in *his own book*, since this construction is not necessarily reflexive and in any case is optional.

4. If so, then parallel to the deep trigger is what Talmy (2000b: chapter 1) calls a “deep morpheme.” An example there is the deep verb represented as MOVE, expressing the pure concept of translational motion. This deep verb may underlie the verb in clauses expressing a motion event. Yet it seems to occur crosslinguistically only with additional semantic material conflated together with it.

4 Co-Form Cues to a Target

The linguistic material around a trigger comprises its co-forms. As interpreted here, a single co-form can range in size from a single morpheme to a complex constituent, and even to a more extended portion of discourse. Relative to a given trigger, any neighboring trigger is also a co-form, and any utterance produced by the hearer of the current trigger in the neighboring discourse also comprises one or more co-forms.

A “co-form cue,” then, consists of any information provided by a co-form that helps the hearer determine the target of a given trigger. The further a portion of linguistic material is from a given trigger, the less likely it is to provide a co-form cue relevant to that trigger, and the less it would be regarded as a co-form to that trigger.

Though requiring further investigation, a certain generalization may well hold here. It is possible that co-form cues are provided only by the semantics of co-forms, rather than by their formal characteristics, such as their phonological or grammatical properties. Consider the example in (1) said by one audience member to another as they look toward a stage with a ballet dancer spinning on her toes. While the core cue from the trigger *that* might pertain to virtually any phenomenon in front of them, the co-form cue from the linguistic form *pirouette* narrows the choice of target down to the spinning action, instead of all other candidate phenomena, such as the dancer or an item of scenery. But this cue to an action comes from the meaning of *pirouette*, not from its phonology or from its grammatical properties of being a noun, the head of a noun phrase, or a predicate nominal.

- (1) That’s a beautiful pirouette.

The semantics of a co-form, further, can lie at any of the three conceptual levels outlined in section 1.6.1, from the literal-semantic, to the immediate-pragmatic, to the further-knowledge level. In fact, the three sections that follow, in which co-form cues are illustrated and further analyzed, are respectively based on these three conceptual levels. In addition, co-form cues can help guide a hearer equally to either a speech-external or a speech-internal target. Examples of each type will be presented side-by-side throughout as further evidence of a single system underlying both deixis and anaphora.

Co-form cue reassignments The definition of co-form cues as just stated above would in principle cover certain types of information that we here instead, on the basis of analogy, treat as exceptions and assign to other cue categories.

Speech-internal reassignments. Where a target is speech-external, a range of different cue categories—for example, the environmental and targetive categories—provide different types of information to help determine it. But where the target is speech-internal, most of the information for determining it is provided by co-forms. We could indeed then simply designate all such information as being in the category of co-form cues.

However, where types of information—though technically provided by the co-form cue category—in fact resemble and can be analogized to information from other cue categories for a speech-external target, we will instead treat them as belonging to those other cue categories as well. Specifically treated this way will be information analogous to that of environmental and targetive cues.

Perichronal reassignments. Co-forms can exhibit certain temporal effects, as where they are pronounced with pauses, compressions, and stretches so as to provide a lead-up to a trigger and to help determine a copunctual target. But we treat such temporal effects as perichronal cues (see section 12.2), rather than as co-form cues.

Co-form cues as an open class It was proposed in section 2.1.2 that the core cues provided by closed-class triggers across languages constitute a relatively closed inventory (itself a subset of the overall closed-class inventory). This inventory contains all the attributes and categories of attributes that such triggers can ever ascribe to a target. By contrast, co-form cues are provided by formally unrestricted co-forms, and so do not constitute a relatively closed inventory. Instead, co-form cues can range over the entire spectrum of concepts that a language can represent. Any such concept might, in the relevant circumstances, serve as information to help a hearer narrow down to a target.

The category of co-form cues in this respect thus does not constitute a distinctive structured system that calls for specific analysis, but rather functions in all the ways generally characteristic of language. Accordingly, less space is devoted here to characterizing it.

4.1 Co-Forms Providing Literal-Semantic Cues to a Target

The most direct type of cue to a target that a co-form can provide is at the literal-semantic level. That is, the cue comes from the concept most basically associated with the co-form in its conventional form-meaning relationship. This concept can consist of the target's identity or of certain of its non-identity characteristics, each case treated next in turn.

4.1.1 Co-Form Cues to a Target's Identity

Co-form cues to a target's identity were already illustrated for the speech-external case in the earlier "parrot" example (1:2) and "tractor" example (1:7). We present new examples here that highlight the parallelism of this with the speech-internal case.

To begin with a speech-external example, a teenager stands with a friend before a pen with a number of lambs and piglets and points with lateral ambiguity toward one lamb and piglet playing together while saying (2).

(2) That's the lamb I won at the fair.

Here, the core cues from the trigger *that* narrow the target down to being a uniplex distal third-person entity, though this could apply to any farther single object in the scene outside the speaker and the hearer. The gestural cue from the pointing finger narrows the target down to being located within the imaginal cone that here encloses the two playful animals, though without distinguishing between them. Of relevance here is that the co-form cue from the word *lamb* narrows the target down to being an entity with the identity of a lamb, though this property could still apply to any one of the lambs in the pen. But together, these cues narrow the target down to being the one of the two animals distally within the spatial cone with the identity of a lamb. Finally, the appearance of a lamb that one of the two animals manifests provides the targetive feature cue that directs the hearer to conclusively zero in on it as the target.

This example is homologous with the "new here" example in (1:1a). The difference is that, there, it was the core cue from the trigger *she* that enabled the hearer to distinguish between the final two candidates for target status, whereas here it is the co-form cue from the word *lamb*.

A speech-internal counterpart to the preceding example is shown in (3).

- (3) a. One lamb and one piglet were playing together among others in the pen.
b. That was the lamb I'd won at the fair.

Here, the trigger *that* in (3b) provides core cues suggesting a speech-internal target in the sentence of (3a), but it does not further narrow down to whether that target is to be one of the formal constituents there or the meaning of such a constituent. Additionally, though, the word *lamb* in (3b) provides the co-form cue that the target has the identity of being a lamb. This cue then rules out the formal constituents from the pool of possible target candidates and, within the remaining pool of semantic candidates, further narrows that pool down to one of (3a)'s semantic indications of lambs in the pen. These semantic indications include both the reference to a lamb by the word *lamb* and a reference to lambs by the word *others*.

But the referent of *lamb* is more salient than that of *others* along two parameters. Along a parameter of isolability (see section 7.2.3), it has greater isolability salience, given that it pertains to an isolated lamb by itself, rather than to a lamb amid a group.

And along a parameter of explicitness (see section 7.6.2), it has greater explicitness salience, since its constituent refers to the ‘lamb’ concept specifically, whereas the word *others* refers to the concept only implicitly. These two higher salience rankings constitute targetive salience cues that favor the referent of *lamb* over that of *others* in (3a) as the speaker’s intended target. In helping further narrow down the pool of candidates, these targetive cues function like the gestural cue in the speech-external example.

Finally, the direct reference to a lamb by the co-form *lamb* in (3a) provides what we here interpret as a targetive feature cue, one that directs the hearer conclusively to zero in on that referent as the target.

4.1.2 Co-Form Cues to a Target’s Non-Identity Characteristics

Instead of providing cues to a target’s identity, as just illustrated, co-forms can provide cues to characteristics of a target other than its identity. We illustrate this process here with verb and adjective co-forms.

To start again with a speech-external example, the speaker points toward a small table holding a bell and a cloth napkin and says either (4a) or (4b) to the butler.

- (4) a. Could you please ring that to call the guests to dinner? /
- b. Could you please wrap that around the champagne bottle?

The core cues from the trigger *that*, the lateral ambiguity of the gestural cue, and the role of the targetive feature cues are here the same as in the speech-external “lamb” example in (3). But here, the verbs *ring* in (4a) and *wrap* in (4b) provide co-form cues to characteristics of their respective targets. Transitive *ring* indicates that its object is designed to produce a sound when swung or struck and so narrows the hearer’s search down to the bell, which has those characteristics. And *wrap* indicates that its object consists of linear or planar flexible material and so narrows the search down to the napkin, which has *those* characteristics.

A speech-internal counterpart example is shown in (5). The co-form cues from the corresponding verbs help direct the hearer respectively to the bell and the napkin referred to in the initial sentence, much as they did where the targets were physical speech-external objects.

- (5) The table held a bell and a cloth napkin.
- a. I asked the butler to ring it to call the guests to dinner. /
- b. I asked the butler to wrap it around the champagne bottle.

An example from Mitkov (1999), copied in (6), illustrates the same speech-internal phenomenon where, in traditional terms, a verb’s selectional requirements for its arguments determine the antecedent of an anaphor. Mitkov ascribes this phenomenon to “semantic consistency” between the verb’s semantic requirements and the antecedent’s semantic characteristics. This consistency yields the coreference indicated by the “i”

subscripts. In our terminology, the literal semantics of the verb provides a co-form cue that a particular constituent's referent has the specified non-identity characteristics, and this, together with other cues, helps direct the hearer to select that referent as the target.

- (6) a. Vincent removed the diskette from the computer_i
and then disconnected it_i.
- b. Vincent removed the diskette_i from the computer and then copied it_i.

A certain classical example from the anaphora literature fits in at this point in our analysis as well. The earliest version, perhaps attributable to Hirst (1981) has led to the variant shown in (7).

- (7) a. The monkeys ate the bananas because
- b. they were hungry. / c. they were ripe.

Analyzing this within our framework, we first consider the (7b) alternative for ending the sentence. The trigger *they* provides the core cues that the target is multiplex and third-person, while the adjective *hungry* provides the co-form cue that the target has the characteristic of being hungry. In the (7a) clause, the targetive feature cues provided by both the *monkeys* and the *bananas* constituents indicate that their referents are multiplex third-person entities and so are equally candidates for target status based on the core cues. But those targetive cues also indicate that their referents have the identities of being respectively monkeys and bananas, and only the former of these can have the characteristic of being hungry—hence, the hearer narrows down to it as the intended target. Much the same holds for the (7c) alternative, except that the co-form cue from the adjective *ripe* has the corresponding relation to the referent of *bananas*.

We can note, finally, that a single verb with different semantic requirements for two of its arguments can provide co-form cues for two different targets at once. Consider the example in (8).

- (8) a. The elephants could reach the apples, /
- b. The apples were within the elephants' reach,
- c. so they ate them.

In (8c), the verb *ate* requires for its subject an animate creature capable of ingesting and, for its object, an entity capable of being ingested by that creature. The subject trigger *they* thus ends up targeting the speech-internal referent of *elephants*, while the object trigger *them* targets the speech-internal referent of *apples*. This targeting of the referents stays the same even where the referents' constituents occur with different syntactic roles in different sentence locations, as in (8a) and (8b). This fact demonstrates that the targeting is guided by the semantic characteristics of the referents, not by the formal properties of their constituents.

4.2 Co-Forms Providing Immediate-Pragmatic Cues to a Target

In the preceding cases, the hearer was able to use the literal meanings of linguistic forms around a trigger directly as co-form cues to the target. But in other cases, she must parlay such meanings up to a second conceptual level so as to obtain co-form cues at the immediate-pragmatic level. To do this, she consults her general knowledge to find certain immediately associable concepts, or to produce certain immediately derivable inferences, from the face-value content of the forms and their context. This enables her to emerge with a plausible conception that helps guide her to the target.

We first illustrate this circumstance speech-externally. At a reception, as they stand near a table with drinks, a husband says (9) to his wife while pointing with lateral ambiguity toward two men some fifteen feet away, one of them holding a glass while the other's hands are empty.

(9) You could give him a drink.

The trigger *him* provides the core cues that the target is a uniplex male third-person entity. The combination of these cues with the gestural cue from the speaker's pointing finger narrows the candidate pool down to the two men, but it does not distinguish between them. The hearer's perception that drinks are near her and that one man has a glass while the other lacks one provides environmental content cues, but these by themselves are simply facts that do not single out the target.

Certain additionally needed information, then, comes from co-form cues, here provided by co-forms ranging in type from lexical to grammatical and from morphemic to constructional. One such co-form here is the open-class verb *give*. In the prototypical literal semantics of this verb, an Agent holding a physical object moves the object into the grasp of a recipient. The verb is here part of a construction in which the Agent is represented by a subject NP, the recipient by an indirect object NP, and the physical object by a direct object NP.

Further relevant co-forms here are closed-class, or grammatical, in type. These are the syntactic role of the pronoun *you* as subject, so that it represents the transferring Agent; the oblique case form of the pronoun *him* and its syntactic role as indirect object, so that it represents the recipient; and the syntactic role of the noun phrase *a drink* as direct object, so that it represents the transferred object. All these open- and closed-class co-form cues are at the literal-semantic level and, together, simply indicate that the target—that is, the referent of *him*—could be the recipient of a drink transferred by the hearer as Agent.

But all these core, gestural, and literal co-form cues are still not enough information for the hearer to narrow down to which of the two men the trigger *him* might target. She must add further co-form (and epistemic) cues from what the co-forms activate within her general knowledge store in order to raise the utterance to the immediate-pragmatic

level. Such cues might consist of the knowledge that a person without a drink visibly in hand or nearby probably lacks a drink and that a person already with such a drink usually does not need a second one. By combining the new cues with the old, the hearer concludes that the only man of the two who could reasonably be the recipient of a drink, and hence the target, is the one with empty hands.

A speech-internal counterpart to the preceding example appears in (10).

- (10) a. Rick was sipping from a glass while Todd's hands were empty.
 b. We were near a table with refreshments,
 so I said to my wife that she could give him a drink.

The hearer's process here for determining what the trigger *him* targets is analogous to that in the speech-external case. One main difference is that the two men in the candidate pool are the referents of two nouns in the prior sentence, rather than visible physical entities being pointed at. What remains the same, though, is the hearer's use of co-forms to activate aspects of her knowledge store, thus raising the utterance to the immediate-pragmatic level and allowing her to single out the man with empty hands, Todd, as the target.

We can note that the order of the clauses in (10a) plays no role in the targeting process since they can be reversed, as in (11), without effect on singling out the man with empty hands. This fact shows that the hearer's process of zeroing in on the target here rests on that semantic target's fit within the plausible conception at the immediate-pragmatic level, not on the syntactic sequencing of the constituent representing it.

- (11) Todd's hands were empty while Rick was sipping from a glass.

4.3 Co-Forms Providing Further-Knowledge Cues to a Target

In the preceding two sections, the hearer derived co-form cues to the target either from the literal meanings of co-forms around the trigger, or from pragmatic concepts immediately associable with those literal meanings. In the cases looked at here, though, the hearer derives co-form cues to the target by processing the co-form meanings up to a third conceptual level, the further-knowledge level. She does this through processes of inference and reasoning, sometimes complex ones, based on more distantly associable aspects of her general knowledge.

4.3.1 For a Speech-External Target

To begin with a speech-external illustration, the speaker says (12) to his coworker as they look in on a conference room in which his firm's new clients are standing, all of them striking him as overweight.

- (12) That's why I'm going to the gym right after work.

The trigger *that* provides the core cues that the target is a uniplex distal third-person entity or phenomenon. The direction of the speaker's gaze provides the gestural cue that the target is located in the room before him. And the hearer's perceptions of the room provide her with environmental content cues to the target. But to zero in on the intended target of the trigger *that*, the hearer must derive co-form cues at the further-knowledge level from the other linguistic forms in the sentence.

First, the free relative *why*, which can be taken to represent the sequence “the reason for which” (see section 2.2.7), indicates that the target must be a circumstance, rather than, say, an object. This circumstance must motivate the subject of the following clause to undertake the action expressed in that clause—here, the speaker's going to the gym right after work.

Then, reaching into her general knowledge store, the hearer reasons as follows. The speaker will not simply go to the gym but, once there, will exercise. A person generally exercises to remain or become fit in physical condition and/or trim in weight. The speaker's seeming immediate need or desire to realize these goals must have been triggered by the target: some circumstance now perceivable in front of him. The likeliest such circumstance might be either an exemplar of those goals that inspires imitation or, contrarily, an anti-exemplar of those goals that inspires anxiety. Checking through the scene before her, the hearer finds the latter type of circumstance in the clients' being overweight and singles it out as the target. She thus rejects other candidate circumstances, such as that of there being a number of people talking to each other in the room or that of their standing in the vicinity of a conference table. Her selection among the candidate circumstances may be abetted by a targetive salience cue, with the chosen circumstance being more salient than the others.

The point here is that, while co-form cues from the speaker's sentence are essential for the hearer to determine the target, these cues do not arise from the literal meanings of the co-forms or even from concepts immediately associable with those meanings. They arise, rather, from a web of inference based on those meanings and rooted in extended knowledge.

4.3.2 For a Speech-Internal Target

A speech-internal counterpart to this example appears in (13).

- (13) a. My firm's new clients arrived, all looking overweight to me.
- b. I saw them standing in the conference room.
- c. That's why I went to the gym right after work.

The trigger *that* in (13c) provides the same core cues as in the previous section. The propositional content of the sentences in (13a) and (13b) can be treated as providing environmental content cues corresponding to their perceptual counterparts in the previous section. And, relying on almost the same co-forms in (13c) as in the previous

section, the hearer uses the same web of inference to derive co-form cues at a further-knowledge level that singles out the same circumstance as the target. This circumstance is the clients' condition of being overweight. This web of inference, together with the targetive salience cue provided by the comparative salience of the overweight condition, has helped the hearer reject from target status the other reported circumstances, the clients' arrival in (13a) and their standing in the conference room in (13b).

Note that the overweight circumstance, reported in (13a), is selected over the circumstance of the clients' standing in the conference room, which is reported in (13b) and is closer to the trigger in (13c). This fact demonstrates that the determination of the target here is based on a conceptual fit with the inference process, not on any formal property of proximity or adjacency.

4.4 In Sum

The linguistic material around a trigger comprises its co-forms. A co-form cue consists of any information provided by a co-form that helps the hearer determine the target of that trigger. Speculatively, co-form cues are provided only by the semantics of co-forms, not by their formal characteristics. Co-form semantics can lie at any of the three conceptual levels, from the literal-semantic, to the immediate-pragmatic, to the further-knowledge level.

II Bodily Cue Categories

Presented here in part II is the second group of two cue categories, the “bodily cue categories.” This group consists of the category of gestural cues and the category of corporal cues, treated respectively in the next two chapters.

As the general source of information common to both these categories, the body of one of the speech participants provides the cues to the target. But each category represents a more specific source of information. Cues of the gestural category consist of movements or configurations of parts of the speaker’s body produced volitionally. But cues of the corporal category consist simply of the location of the speaker’s or hearer’s whole body.

Both the bodily cue categories are more elaborate where the target is speech-external. Accordingly, analysis of their use for speech-external targets begins and occupies most of the next two chapters, while analysis of their use for speech-internal targets follows more briefly.

5 Gestural Cues to a Target

Apart from the use of the mouth for speaking, any movement and/or configuration that a speaker volitionally produces with her body to communicate to a hearer is here considered a “gesture.” A gesture that a speaker produces in association with a trigger specifically in order to provide a cue to a target is then called a **targeting gesture**. And the cue that such a targeting gesture provides is a **gestural cue**. As seen, such gestural cues collectively comprise one of this study’s ten cue categories, and one of its two bodily cue categories.

The initial section 5.1 lays out the foundations of our analysis of gestures. Then our direct analysis of targeting gestures starts with section 5.2. Following the present chapter, further major analyses of the role of gestures in targeting appear in sections 7.4, 9.1.1 (see A region from gestural cues subsection), 12.1.3 (see The gestural cue category subsection), 12.2.2, and 14.3.2.

5.1 Foundations of the Analysis

In this initial section, we narrow down to the class of gestures to be examined and, as this chapter’s main theoretical proposal, outline the cognitive system that this class rests on.

5.1.1 Distinguishing Classes of Gestures

Targeting gestures can be divided into two classes. The smaller class is that of **self-targeting gestures**, in which the gesture’s movement or configuration itself constitutes the target. Examples are a speaker’s moving her fingertip along an oval path while saying *This is an ellipse* or configuring her thumbs and forefingers into the shape of a parallelogram while saying *This is a parallelogram*. This class is treated in the chapter on targetive cues in section 7.4.

The major class in turn is that of **outward-targeting gestures**. In these, the gesture is at a spatial location distinct from that of its target, so its indications proceed outwardly—away from itself to the target. The prototype here may be a speaker’s

extended finger pointing at a physical target, as while saying *That's my horse*. But the full range of such gestures is actually prodigious, as seen in the sections that follow.¹

Targeting gestures overall can then be distinguished from a third class, that of **non-targeting gestures**, which do not indicate a target, and have no requirement to occur in association with a trigger. This class includes all the nontargeting types of speech-accompanying gestures taxonomized and analyzed, for example, by Kendon (2004) and McNeill (2005). The present study on targeting naturally does not deal much with nontargeting gestures. But certain of the properties proposed here for targeting gestures may well apply in addition to nontargeting gestures.

Targeting gestures are further distinguished from the sheer presence and location of the speaker's body in space, which can instead serve as a corporal cue (see chapter 6). But gestural cues do partner with corporal cues to make up the two categories of "bodily cues" to a target.

5.1.2 Comparing the Classes of Gestures

The gesture classes just distinguished show differences along certain parameters. Specifically, we look next at their obligatoriness and salience during an utterance.

Obligatoriness Given a certain condition described next, a targeting gesture must accompany the trigger of an utterance. Its presence is then obligatory for the utterance to be well-formed—or perhaps even to be regarded as grammatical—as well as for the utterance's meaning to be complete and integral.

The condition has two parts. For the first part, the trigger must be of the type that requires an exhibitiv cue—that is, a gestural, corporal, targetive, or hearer-focus cue (see section 3.1.1). The second part is that none of the last three kinds of exhibitiv cues are present. A gestural cue must accordingly be present, thus enabling the hearer to determine the target.

To illustrate this for outward-targeting gestures, first, consider a child's use of the exhibitiv trigger *this* in saying (1) while sitting before a scatter of mechanical toys. If her body is not located closest to one of the toys (a corporal cue), if the hearer is not peering at one of them (a hearer-focus cue), and if one of them is not particularly salient, as by flashing its lights (a targetive cue), then the child must produce an outward-targeting gesture such as pointing or looking at one of the toys. Without such a gesture, the utterance is ill-formed.

(1) This one is !-my toy.

Under the same two-part condition, a self-targeting gesture is also obligatory, for example, where the speaker says (2). This utterance would be ill-formed if the speaker makes no gesture and if no parallelogram is otherwise in view. But it is well-formed if the speaker gestures by placing her thumbs and forefingers into the shape of a parallelogram.

(2) This is a parallelogram.

By contrast, there is generally no necessity for a nontargeting gesture to accompany an utterance. Evidence for such lack of obligatoriness is the fact that a phone conversation without video is largely viable. An exchange over the phone may be poorer for the lack of nontargeting gesturing, but it is not a failed communication. But a phone exchange would in fact fail wherever exhibitiv triggers occurred, and speakers may accordingly avoid them (compare the findings of Emmorey and Casey, 2001).

Salience With regard to salience, we begin with a commonality. Gestures of all types have some degree of what might be called **gesture salience**. They attract some measure of hearer attention to themselves through at least three factors. First, they diverge in a sufficient amount and manner from other bodily movements and configurations exhibited by the speaker. Second, humans may have an evolved predisposition to direct more attention to motions that are made by other humans and intended for communication than to other forms of motion. Thus, a hearer is likely to attend more to the communicative gestures and facial expressions of a person addressing him than, say, to that person's shift of weight from one foot onto the other or to the waving branches of a bush that person is standing near. And third, the speaker already has "speaker salience" (see section 6.3.1), which may in turn confer salience on the gestures she forms.

Note that a gesture attracts a hearer's attention only through these forms of salience that it intrinsically has. No separate special indication exists to signal that a particular bodily movement or configuration is in fact functioning as a gesture to which attention should be directed. One can imagine an evolutionary scenario in which just such a special indicator might have arisen in humans as the sole means for signaling the presence of a gesture. Let us say that this indicator consisted of a hand shape in which the fingers are clenched and the thumb is extended, with the thumb pointing at the gesture. Then if a speaker were to produce a gesture with her right hand, she would aim the extended thumb of her left hand toward her right hand while the latter traced out an ellipse, pointed at a horse, or simply waved good-bye. The hearer in turn would recognize the speaker's right hand as producing a gesture only because of her left-hand thumb pointing at it. Of course nothing of the sort evolved. Gestures draw a hearer's attention through their own salience. And this salience occurs in different degrees, which is the issue we now proceed to.

Salience differences for the speaker. Differences in gestural salience can be considered first from the speaker's perspective. As seen, under a certain condition, a speaker must produce a targeting gesture during her utterance, so as to provide cue adequacy for the hearer to determine the target. This obligation to produce a targeting gesture may

generally render such a gesture more salient to her than a nontargeting gesture she produces optionally. The principle at work here may relate to Slobin's (e.g. 2003) idea of "thinking for speaking": A speaker of a particular language must attend to certain aspects of a situation that she is speaking about if the language has obligatory grammatical representation of them. This necessity that the speaker attend to such aspects may then make them more salient to her than ones with only optional representation. Such salience of both obligatory gesturing and obligatory grammatical marking may then be due to their shared requirement for action—what might be called **task salience**. That is, something gains task salience in an agent's cognition because it obligates her to take action, as by gesturing or by attending.

Further, a speaker may experience a salience difference between the two classes of targeting gestures. Self-targeting gestures will be more salient than outward-targeting gestures on the following account. On the one hand, a speaker must produce a gesture of either class so as to provide an indication of the target, thus according an increment of task salience to that gesture. But unlike the case of the outward-targeting gesture, where the target exists independently, a speaker, in producing a self-targeting gesture, must also take action to actually create the target. An additional increment of task salience may then accrue to a self-targeting gesture, but not to an outward-targeting gesture.

Salience differences for the hearer. From the hearer's perspective, targeting gestures may also be generally more salient than nontargeting gestures are. One basis for this is that, in many cases, the hearer must attend to the targeting gesture for the cue it provides if he is to determine the target. But he can largely disattend to nontargeting gestures without criterial loss to the communication. This need to attend to targeting gestures again accords task salience to them—this time, for the hearer.

And the class of self-targeting gestures may have greater salience for the hearer than that of outward-targeting gestures, much as it did for the speaker. The reason now, though, is different. On hearing a trigger, a hearer's aim is to determine its target and to place his attention on that target jointly with the speaker's. A self-targeting gesture itself constitutes the target, so that, in discerning the gesture, the hearer's attention is already on the goal. Chapter 7 invokes the notion of "target salience," and the self-targeting gesture here itself has such target salience. By contrast, an outward-targeting gesture is only a way station for the hearer's attention that redirects it to the target. It itself lacks target salience.

An additional reason for a salience difference can be proposed. We can adduce a further attentional principle of **communicative salience**. By this principle, a factor that is communicatively more significant than another factor has an increment of greater salience on that basis. In the present case, a speaker's intended target is communicatively more significant to a hearer than a means for directing him to it.

With these two reasons combined, self-targeting gestures are generally more salient to a hearer than outward-targeting gestures because, by intrinsically manifesting the target, they both have target salience and have greater communicative salience in comparison with outward-targeting gestures.

A salience hierarchy for the three gesture classes. Combining all these factors then yields a salience hierarchy across the three gesture classes. In order, generally decreasing salience for both speaker and hearer is shown by self-targeting gestures, outward-targeting gestures, and nontargeting gestures.

Specifically, a self-targeting gesture that a speaker must make both to indicate the target and to generate it, and that a hearer must look for and then focus his attention on as the target, is at the high end of the salience hierarchy for both speaker and hearer. An outward-targeting gesture that the speaker must make to indicate the target, and that a hearer must look for as a way station to the target, has an intermediate level of salience for both speaker and hearer. And nontargeting gestures that the speaker need not produce and that the hearer need not observe—given that utterances generally include nothing that requires them and are viable without them—are at the low end of salience for both speaker and hearer.

Cognitive correlates of the salience hierarchy. The strength of three other cognitive capacities in the speaker and hearer may correlate with the salience hierarchy for the three gesture classes. First, the greater the salience of a gesture's class, the greater the metacognitive access that the speaker or hearer may have to the gesture, enabling a more detached observation or examination of it. The speaker would have greater metacognitive access to her own production of the gesture, while the hearer would have greater metacognitive access to his perception of the gesture. Second, the greater the salience of a gesture's class, the greater the voluntary motor control that the speaker may have over its production. And third, the greater the salience of a gesture's class, the more likely and strongly that the gesture may be stored in the speaker's and hearer's memory and be retrievable from it.

5.1.3 Outward-Targeting Gestures and Fictivity

As noted regarding the three gestural classes just distinguished, nontargeting gestures are addressed only incidentally in this book.

Self-targeting gestures are treated in section 7.4 in the chapter on targetive cues. And outward-targeting gestures are treated in the rest of the present chapter, where they can hence be referred to simply as "targeting gestures."

Of these three gestural classes, outward-targeting gestures uniquely have a distinctive characteristic. A speaker's targeting gesture is always at a spatial location different from that of her target. A hearer perceiving the gesture thus must have some means for

spatially associating it with that target. Such an associative process differs from what is evident in, say, a cat that, perhaps at most, just continues looking at the gesture. We propose that a particular cognitive system produces this association. Such a system is the main theoretical proposal of this chapter.

In this cognitive system, the hearer imaginably generates a fictive spatial connection from the gesture to the target. This connection in turn consists of distinguishable **fictive constructs** linked in a chain and will itself be called a **fictive chain**. The fictive constructs that, in sequence, compose the chain in turn consist of fictive structures and operations. The fictive structures are generally schematic, even geometric, in character, and the fictive operations imaginably produce or move such structures. Any single fictive construct can consist of a structure or an operation alone or of the two combined. Numerous constructs are proposed here, such as, structures like a projection, a transect, and a trace, and operations like intersecting, gap crossing, and target filling.

Terminologically, **fictive** is contrasted with **factive** in referring to a conception or perception that an individual has and assesses as being respectively nonveridical or veridical (see Talmy, 2000a: chapter 2). Thus, a hearer will likely treat a targeting gesture and its target as factive, but treat as fictive the connecting chain of constructs that he may experience between them. In turn, **imaginal** is here used interchangeably with “fictive,” while the verb **imagine** simply means ‘have within one’s mental imagery’.

With respect to the targeting process, a fictive chain that a hearer imaginably extends from a gesture to a target can be regarded as a particularly elaborate formation in the second, or cues-to-target, stage in his cognitive processing. For the speaker’s part, in accord with the need to provide cue adequacy for the hearer, she must in advance generate a comparable fictive chain in order to produce a satisfactory gesture.

Three characteristics of fictive chains A fictive chain that a hearer generates in his imaginal system to connect a gesture with a target generally appears to have three particular characteristics. It seemingly tends to be gapless, advancive, and causal.

Gapless. For the first characteristic, a fictive chain is conceptualized as being fully connective without gaps. That is, the hearer imagines fictive constructs in an unbroken sequence from the gesture to the target.

If so, this characteristic may arise through analogy with the properties of mechanical systems as these are represented in cognition. One such property may be that, cognitively, there is no action at a distance. That is, one element cannot affect a separate element in a mechanical system without a so-conceived continuity of effects between them. Perhaps in a similar way, a hearer cannot see a gesture as “targeting at a distance”—that is, as indicating a separate object without a continuity of effects between them.

Advancive. For the second characteristic, a fictive chain is conceptualized as advancing from the gesture to the target. This advancement in turn rests on three properties. First, the chain is dynamic, not static—it is not conceptualized as appearing in place all at once. Second, the chain is sequential, proceeding by adjacent increments—individual constructs are not conceptualized as appearing one by one in random order until the full chain is filled in. And third, the chain is outwardly directional—it is conceptualized as proceeding sequentially from the gesture to the target, not from the target to the gesture. While the constructs would end up in the same sequence under all these cited possibilities, the second characteristic holds that the chain forms dynamically in sequence from the proximal to the distal end.²

Such advancement may again reflect a comparable characteristic conceptualized for mechanical systems, in which effects may be thought to progress dynamically in sequence from a beginning point to a terminal point.

Causal. For the third characteristic, a fictive chain is conceptualized as being formed causally in the direction of its progression. A targeting gesture would then seem to give rise to the first construct, the first construct to give rise to the second, and so on. The targeting gesture would thus not be experienced as simply suggesting the chain, but as initiating and engendering it.

This characteristic may once more reflect a comparable characteristic conceptualized for mechanical systems, namely, that each effect causes the next.

In nonprogressive and progressive gestures. By this analysis, then, a targeting gesture evokes in an observing hearer the conceptualization of a fictive chain that consists of an unbroken causal sequence of imaginal constructs from the gesture to the target (for a comparable analysis, arrived at independently, see Hassemer, 2016). In the simpler case of a nonprogressive gesture (see section 5.2.2), this fictive chain has a single form. But in the more complex case of a progressive gesture, which evolves over a certain duration, the fictive chain shifts correspondingly. However, it retains its unbroken causal sequentiality throughout.

An inventory of fictive constructs The fictive constructs that hearers use to build chains may well belong to an approximately closed inventory. Such an inventory would have some similarities to the proposed inventory of closed-class concepts—in particular, to the spatial subinventory within the overall inventory (see section 2.1.2). For one such similarity, the fictive constructs are topologically schematic abstractions, as are the elements of the spatial subinventory. They all acquire particulars of magnitude and shape when applied to a specific context.

But there are also certain differences between the closed-class spatial subinventory and the inventory of fictive constructs. First, the spatial subinventory is hierarchical,

with some elements used by all spoken languages in their closed-class spatial morphemes, some by many but not all languages and some only rarely. By contrast, the proposed inventory of fictive constructs may well be nearly the same in gestural targeting across languages and cultures.

Second, each spoken language has a fixed group of closed-class spatial morphemes that mark only a particular set of spatial distinctions, where this set differs across languages. By contrast, a hearer draws the fictive constructs he needs for a particular fictive chain from the universally available inventory, not from some subinventory that his language makes available.³

Where then do languages and cultures differ in their gestural targeting? The main difference seems to be in the kind of targeting gesture that a speaker tends to produce in a given type of spatial situation and the fictive chain that it correspondingly evokes in a hearer. Examples of such differences will be cited periodically in this chapter. What is to be noted here, though, is that, within the fictive chains thus generated by the hearers of such examples, the fictive constructs will still be drawn from the same inventory.

Fictive chaining as a combinatorial system The cognitive process of forming fictive chains—**fictive chaining**—further appears to be a combinatorial system (see Talmy, 2017). In this respect, it is comparable to syntax. This comparison seems to hold even though the former is produced by the hearer and the latter by the speaker. In both cases, there is an approximately closed inventory of basic elements—fictive constructs in the one case and lexicon entries in the other. In both cases, a selection process draws a particular subset of elements from the inventory for a specific usage. In both cases, well-formedness principles govern how the elements in the subset are assembled in an arrangement. And in both cases, this arrangement is largely sequential. From this perspective, a fictive chain is analogous to a linguistic expression.

The salience and metacognitive accessibility of fictive chains We can consider the degrees of salience and metacognitive accessibility that different types of fictive constructs or chains have to a hearer viewing a targeting gesture, much as was considered regarding gesture classes. We might suppose, for example, that such types might differ in vividness—the degree to which they are experienced by a hearer as having the strength of full mental imagery versus being faint. Or they might differ in their definedness, ranging from clear-cut to vague. Thus, the fictive projection from a prototype pointing gesture might be at the top of these ranges, with the hearer having a vivid clear-cut sense of a straight line emerging from the speaker's fingertip. But the proposed fictive operation of “target filling” (see section 5.2.2) might be low on these ranges. The hearer's phenomenology regarding fictive chaining will need experimental investigation.

5.1.4 The Analysis

In the analysis that follows, targeting gestures—or, more specifically, outward-targeting gestures with a speech-external target—are divided into ten categories, treated separately in sections 5.2 through 5.11. This categorization is based on the type of fictive construct within the fictive chain initiated by a gesture that is most determinative in singling the target out. The fact that our analysis divides targeting gestures into ten categories is unrelated to our division of cues into ten categories.

Following this categorization, sections 5.12 and 5.13 present the parameters of “engagement” and of “precision” that pertain to all the preceding categories. And, while the presentation beforehand treated gestures with only speech-external targets, section 5.14 treats gestures with speech-internal targets. Finally, section 5.15 suggests a larger theoretical context for the fictivity at work in targeting gestures.

Perceptual access to targeting gestures is typically visual—the hearer is thus also the viewer—and all the examples presented are in fact based on the visual modality. But the modality can also be haptic, as when a doctor touches a spot on a patient’s back and says *Does it hurt here?* Or it can even be auditory as when, in total darkness, the hearer aurally discerns the direction of a speaker’s voice saying *Let’s go this way*.

Apart from the cases that will be noted, the targeting gestures presented for illustration are constructed examples intended to represent the gestural practices of U.S. English speakers, each checked with other such speakers. With regard to their being constructed, they are on a par with the constructed examples of phrases and sentences that have constituted the main data on which some linguistic approaches—including those of generative and cognitive linguistics—have traditionally relied. The methodological justification is the same both for these two traditional approaches and for the current approach—speakers and gesturers have relatively great metacognitive access to the well-formedness of the phenomena under investigation. These phenomena include syntactic structures, as metacognitively assessed through grammaticality judgments, and targeting gestures, as metacognitively assessed through judgments of gestural well-formedness.

Empirical methods need to be, and increasingly have been, applied to the analysis of syntactic and gestural systems. Thus, among other empirical methods, the use of corpora with transcriptions of spontaneous speech has abetted the metacognitive analysis of syntactic structure. And the use of audiovisual recordings of spontaneous speech accompanied by gestures has abetted the metacognitive analysis of gestural structure. The analysis of targeting gestures presented here constitutes a working framework that comparably invites empirical research. Such research may then support or challenge the results of the metacognitive method used here (see Talmy, 2007b, for a comparison of these methodologies).

Meanwhile, though, while the analysis of gestures here is based mainly on metacognitive observation, it does already include other observations that tend to corroborate,

or at least correspond to, aspects of the analysis. These additional observations—which will be noted in the presentation at their points of relevance—are based mainly on fictive motion in linguistics and on perceptual organization in vision science. (I am indebted to the perception psychologist Stephen Palmer for discussions on possible correspondences between certain properties of perception and certain aspects of gestural targeting.)

5.2 Target-Intersecting Gestures

Of the ten proposed categories of targeting gestures, the first presented here is perhaps the prototype category—the remaining categories in their turn will be contrasted with it. In this first category, a gesture's configuration or movement imaginably suggests to a hearer that, from what is interpretable as its front, it sends forth a fictive line, plane, or volume that then moves along a path through space, more or less perpendicularly intersects with the surface of a distal object, and stops. The fictive construct that is imaginably sent forth is here called a **projection**. If a speaker has in this way aimed a gestural projection to intersect with the surface of an object as an indication to single out that object as his intended target, then he has produced a **target-intersecting gesture**. Simple pointing is an instance of such target-intersecting gestures, but so are many other gesture types. This section thus addresses the range of fictive chains in which such target intersection is the fictive construct most criterial in singling out the target.

The target of an intersecting gesture can belong to most of the ontological categories listed in section 2.2.1. Thus, in order, it can be a physical entity, as when a speaker says (3a) while pointing to a horse. It can be an action, as when saying (3b) while pointing to a horse as it runs. It can be a whole event, as when saying (3c) while pointing toward a particular scene with its objects and actions. It can be a spatial location, as when saying (3d) while pointing to a particular place. It can be a path, as when saying (3e) while pointing at a man some thirty yards away walking in a campground. The man might be moving along a trail pitched at a forty-five-degree angle to the collocutors that leads to the toilets. It can be a manner, as when saying (3f) while pointing at an expert rowing. It can be a quality, as when saying (3g) while pointing to a car of the desired type. It can be quantity, as when saying (3h) while pointing at a group of six garden gnomes. It can be a degree, as when saying (3i) while pointing at a tree of the desired height. It can be distance between, as when saying (3j) while pointing toward the hands of a woman holding them two feet apart in front of herself. And it can be reason, as when saying (3k) while pointing toward a child spilling juice from a glass. On the other hand, an ontological category not readily exhibited by the target of an intersecting gesture is temporal location.

- (3) a. That's my horse. b. That's a gallop / galloping.
 c. That's a horse unlocking her own stall.
 d. My horse lost his shoe right there.
 e. You go in that direction for the toilets.
 f. That's how you row a boat.
 g. That's the kind of car I'd like.
 h. I want that many gnomes in my garden.
 i. I want a Christmas tree that tall.
 j. The fish I caught was that big.
 k. That's why I use sippy cups.

5.2.1 Prototype Pointing

We begin with a triply nested prototype. Among the ten categories of targeting gestures, that of target-intersecting gestures seems to be the prototype. Within this category, the seeming prototype across many cultures (Kita, 2003) is what English refers to as “pointing.” And within the range of pointing is what we will call **prototype pointing**, which is characterized next. Following common practice, we use the term **articulator** for the portion of the body most directly engaged in forming a gesture.

In prototype pointing, then, the speaker holds one digit—prototypically the dominant forefinger—extended statically at a particular angle. In her processing of this, the hearer first imaginally **schematizes** the bulk form of the articulator into a fictive geometric abstraction. Specifically here, she imaginally reduces the finger's straight bulk form to a directed linear axis, where the endpoint of this axis, corresponding to the fingertip, is interpreted as its front. From this front point, a fictive line progresses coaxially forward—that is, away from the finger—through space.

In the conceptualization adopted here, this line is progressively generated at the fingertip (or, alternatively, begins within the finger along its axis and emerges from the fingertip). At any instant during its generation, the line as a whole consists of the previously formed portions at the lead end of the line, followed by the portions newly forming at (or emerging from) the fingertip. The line as a whole moves forward until the line's leading point hits the target at a point on the target's surface. At that moment, the line stops being generated and moving.⁴ The fictive line—the projection—will be said to **intersect** with the target and to **terminate** at the point of its intersection.

The fictive line in this conceptualization has several further characteristics. It moves along its own axis. Its directional sense is away from the finger's front, the point of its emergence (thus, the fictive line is not imagined as starting at the fingertip and then proceeding back through the finger to emerge at the knuckle). Its speed of motion is fast. It is straight. And its angle relative to its surroundings—which determines its path through them—is the same as for the axis of the schematized straightened finger. Its

axis is in fact coaxial with that of the schematized finger. As for its part in this prototype case, the target is a single nonextended stationary object.

To illustrate, a speaker might hold his straightened forefinger pointing at one horse among several before him, while saying (4) to a hearer. On viewing this factive gesture, the hearer, it is posited, will imaginally construct a particular fictive chain. In this chain, a fictive linear projection aligned with the finger's axis shoots forth from the fingertip, speeds straight through the intervening space, and hits one horse out of those present, marking it as the speaker's intended target.

(4) That's my horse.

Further properties of a prototype fictive projection In a hearer's cognitive processing of it, the prototype fictive projection that she imagines as emerging from an articulator has two still further characteristics. First, a fictive line of this sort passes through any solid objects between the speaker and the target. Moreover, this fictive line does not follow any route that the hearer would otherwise need to take if heading bodily for the target. The speaker forms his gesture to correspond to these penetrative and route-ignoring interpretations of the hearer. Thus, suppose I am asked where downtown Buffalo is while I am in my office on the suburban campus. While saying (5), I will not snake my pointing finger around through elaborate loops and switchbacks to indicate the corridors and stairways the hearer must first pass along to begin a trip downtown. Rather, I will point directly toward downtown, with the fictive projection passing through walls and other obstacles.

(5) Downtown is there.

The second additional characteristic in a hearer's cognitive processing of prototype fictive projection involves attention. A fictive line, though intangible, can in effect be more salient to the hearer than the perceivable physical objects it passes through. More generally, in cases where a trigger is accompanied by a pointing gesture construed to project a fictive line, and the target is obscured by intervening objects, the invisible line and the non-visible target—both as parts of a schematic spatial pattern imaginally visualized in the hearer's consciousness—can be more salient than the visible objects that intervene.

Correlates in linguistics and perceptual organization Certain aspects of prototype pointing have linguistic and psychological counterparts.

Linguistic counterpart of projection. The projection emitted by prototype pointing corresponds to a particular type of linguistic fictive motion. This is the "demonstrative paths" type within the "emanation" category, illustrated in (6). Both evoke the image of an intangible line projected coaxially from the front tip of a linear form—here,

the finger or the arrow—and progressing in a straight path through space. In the cognitive representation evoked by the present example, the hearer will assess all the static elements of the represented scene—including the road sign, arrow, village, and the spatial relations among them—as factive. But she will assess the intangible moving line that emerges from the arrow's front—evoked in her mental imagery by the motion-specifying preposition *to* (or *past* or *away from*) as fictive.

(6) The arrow on the road sign points to (past / away from) the village.

Note that beside the similarity here between the two fictivity subsystems (see section 5.15), the linguistic and the gestural, a difference can be observed. The linguistic subsystem in English permits the fictive line of motion to proceed along diverse paths relative to the Ground object (here, the village) including paths not ending in contact. But in the gestural subsystem, the fictive line can follow only a path leading to contact—that is, intersection—with the target (with the exceptions cited in section 5.2.4). This path corresponds solely to the *to* preposition of (6).⁵

Linguistic counterpart of schematization. The proposed process of schematization within prototype pointing—as where the hearer imagines the bulk of an extended finger as an abstracted straight line—corresponds to another linguistic feature. This is that the referents of spatial closed-class forms are generally “bulk neutral” (Talmy, 2000a: chapter 1). That is, the delineations of a closed-class spatial schema represent geometric idealizations abstracted away from the bulk of bodies in space. Or, alternatively conceived, such bulk becomes cognitively reduced, or “boiled down,” to points, lines, planes, and the like. Thus, the schema of the English preposition *along* pertains only to a path moving parallel to and next to a line and is indifferent to the bulk character of that line. This property is evident in the fact that *along* can be used with equal felicity in reference to linear objects with quite different radial extensions, as seen in (7).

(7) The caterpillar crawled up along the filament / the tree trunk.

Perceptual counterpart of schematization. Prototype pointing may relate to aspects of perceptual organization as well. For one such instance, the process of schematization just discussed also largely corresponds to what is covered in perception psychology by the terms “skeletal structure” and “topological skeleton.” Particular formulations of this include Marr's (1982) axes of symmetry, Feldman and Singh's (2006) medial axis transforms, and Petitot's (2011) morphological skeletonizing.

Perceptual counterpart of coaxiality. Additionally, the alignment of the straight linear projection with the schematic axis of the pointing finger is consistent with the Gestalt principle of “good continuation” or “colinearity” (Wertheimer, 1923).

5.2.2 Divergence from the Prototype Starting at the Emission Phase

Target-intersecting gestures can diverge from prototype pointing in various respects. Such divergence can start at the emission, the midcourse, or the termination phase of their fictive projection. In the first two of these cases, the effect of the divergence continues through to the end. We look first at the emission phase and, in the following subsections, present nine forms of divergence that begin there.

Other emitters Much as with the prototype pointing finger, a fictive linear projection can be imagined as emerging from virtually any other bodily gesture capable of being interpreted as pointing. Examples are the chin jutting forward with the head up-tilted at an appropriate angle, a protruded lip, and the forehead inclined forward with the head tilted slightly downward (cf. Clark, 1996; Enfield, 2009). Research is needed on how the geometry and orientation of these body parts conduce to the relevant perception—a perception in which their bulk form is schematized as a directed linear axis with a front point.

The eye as articulator in target sighting. The eye can also be schematized as a linear articulator, one in which the pupil is the front point. A speaker can then also produce a targeting gesture with his eyes, interpretable as sending forward a fictive linear projection. In this case, the linear projection might also be referred to as the “line of sight.” By fixing his gaze on a target, the speaker then imaginably directs his fictive line of sight at it. Such **target sighting** can serve alone as a targeting gesture, or else can, and perhaps usually does, accompany any other targeting gesture, including prototype pointing (cf. Clark, 1996; Hassemer, 2009).

Thus, a speaker who says *That’s my horse* can doubly gesture by concurrently pointing a finger at the horse and looking at it. Here, the two gestures converge on the same object, acting as redoubled cues to the hearer to single the object out as the target. In this case, then, these two cues corroborate each other.

Interaction among different gestural cues. A central issue in this study is the interaction of cues. While such interaction is examined mostly across cue categories, it can also occur within a single category. Thus, within the gestural cue category, cues from the hands and the eyes were just seen corroborating each other. They can also be seen complementing each other in the “wilderness” example of (47). And cues from the torso and the hands can be seen to complement each other in the “Allahabad” example of (50). Such distinguishable cues within a single gestural complex are seemingly always produced by different articulators.

Linguistic counterpart of target sighting. Like prototype finger pointing, target sighting also has a counterpart within linguistic fictive motion. This is the “sensory paths” type,

also within the emanation category, as illustrated in (6). Again, the linguistic form permits the fictive line of motion to proceed along diverse paths relative to the Ground object (here, the bell tower). But in the gestural form, the fictive line can follow only a path leading to contact with the target—a path corresponding solely to the *at* preposition of (8).

(8) I looked at (past / away from) the bell tower.

Mobilizing the emission As prototype projection was characterized, the axial motion of the fictive line arises from a stationary gesture, simply emerging from the schematized front endpoint of the articulator's axis and continuing until it intersects with the target. But the speaker can in addition move his articulator in two ways that may seem to accentuate the projection's intersection with the target.

Thrust and launch. In one of the two patterns, the articulator—sometimes after first retracting somewhat—makes a sharp short movement in the direction of the projection's motion. This will be called a **thrust**. Such a thrust may be perceived as **launching** (or providing additional impetus to) the fictive projection. That is, it imparts (extra) motion to it at its origin so that, after continuing forward, it (more intensely) intersects with the target.

Where an articulator moves along its own schematized axis, its thrust can be dubbed a **jabbing thrust** or just a **jab**. Employing such a jab, a speaker could, say, sharply poke his pointing finger forward, protrude his chin, or nod his forehead toward the target.

Swing and sweep. In a thrust, an articulator moves forward to indicate forward motion coaxially along the fictive projection. But an articulator can also pivot laterally to indicate lateral motion of the projection. The articulator in this case must be schematizable as a straight linear axis pivoting about an anchor point—for example, a straightened finger about the knuckle, an extended hand about the wrist, or a forearm about the elbow. The articulator then moves—we will say that it **swings**—through an arc about the anchor point, as if tracing out a fan shape. The fictive linear projection that emerges axially from the articulator then itself moves laterally—we will say that it **sweeps**—through space. Such a swing and sweep will be seen to function widely in gestural targeting, but here we consider in particular their role in accentuating a projection's intersection with a target.

Onsweep. Instead of aiming an articulator at his target at the outset, a speaker can first aim it to one side and then swing the articulator until it aims directly at the target. A hearer might conceptualize the ensuing fictive chain in three main ways. The fictive projection might emerge at the outset, thus shooting past the target, and then sweep toward the target until it intersects with it. Or the projection might emerge progressively

during the swing until it reaches and intersects with the target at the end of the swing. Or the projection might first emerge and intersect with the target only at the end of the swing. We will devise a special term, an **onsweep**, to cover all three conceptualizations, though we will assume the first conceptualization in later analyses. Like a launch, an onsweep is then another way to mobilize a projection to accentuate its intersection with the target.

To illustrate, if a speaker as before wants to target one horse out of several before him and says *That's my horse*, he might now gesture by first aiming his pointing finger above his horse and then quickly swinging his extended hand downward at the wrist until the finger aims at the horse. In the hearer's imaginal processing, the fictive projection emanating axially from the speaker's finger first shoots through the air above the horse and then sweeps laterally downward to a level at which it intersects with the horse, thus onsweeping onto the horse.

Where a speaker uses his eyes as the articulator, it seems generally infeasible for him to deploy them in a thrust that launches their fictive projection toward the target, but he still can deploy them in an onsweep. Thus, as already seen in target sighting, the eye can be schematized as a linear articulator with the pupil as the front point. If the eye rotates, its linear axis can in turn be taken to swing about in a specific direction. Its fictive projection—his line of sight—is then imagined as sweeping about in the same direction. For example, a speaker might say (9) to a friend beside him at a party and, while keeping his face turned toward the friend, quickly swivel his eyes leftward toward a woman who had recently entered the room and then swivel them back. The fictive projection from his eyes thus onsweeps onto the woman to target her.

(9) That's my boss.

Linguistic counterpart of an ocular sweep. The “sensory paths” type of fictive motion within the emanation category includes the linguistic representation of lateral motion by a line of sight. Such fictive motion corresponds to the sweep—or the onsweep—of a fictive projection from moving eyes when used as a targeting gesture. This visual sweep is represented by the expression *slowly down* in (10), which overall represents a sequence where I first project my line of sight horizontally forward, then sweep it slowly downward until it is aimed at the well, and then project it into the well.

(10) I slowly looked down into the well.

Adjusting the emission for the target's distance We can here add a property to the earlier list of those associated with the prototype pointing gesture. While pointing, the speaker holds his hand in normal proximity to the body. And the gesture is neutral to the target's distance from the speaker. The projection it emits is simply imagined as proceeding as far as it must to intersect with the target.

Outstretch. In divergence from the prototype, though, the hand held proximally to the body can be alternatively interpreted as indicating that the target is relatively close. And the arm can be stretched out by different amounts in the direction of the target to indicate that the target is correspondingly further away from the speaker (cf. Wilkins, 2003). Such a movement by an extendable articulator will be referred to as an **outstretch** and what it indicates as **target distance**.

A speaker can opt for this gestural indication of distance for a single target, as when saying (11a) while stretching his arm and pointed finger upward toward the blimp. Or he can use it to contrast targets at different distances as in (11b). Here, showing a visitor the view from his fifth-floor apartment, the speaker first holds his hand proximally, then stretches it forward somewhat, and finally holds his arm fully outstretched.

- (11) a. That's a blimp way up there.
 b. This is my local church's steeple.
 That further away is the Anglican church's steeple.
 And that in the distance is the cathedral's steeple.

Scale shift. Such gestures involve several new elements of processing. First, in outstretching, the articulator's increasing distance from the body is a matter of inches, but this can correspond to even miles of increasing distance that the projection must travel to reach a further target. This will be called a **scale shift**. In general, a process of scale shifting occurs where the magnitude of the path an articulator moves through, or the distance away from the body it is held at, indicates a different magnitude in the fictive construct it generates. In particular here, the articulator's outstretch evokes a scale increase for the projection's length.

Causality in scale shift. Another issue is the kind of cognitive processing by which a factive increase in the outstretch of an articulator translates into a fictive increase in the length of a projection. Simply to say that the former "represents" or is "iconic of" the latter seems inadequate because it does not capture the posited conceptualization of fictive chaining as being an at least partly causal system (see section 5.1.3). We might accordingly say that stretching an articulator out further "sends" its projection out further.

A hearer's sense of such causality may be vague, without a clear notion of a mechanism for its realization. But if clearer, the notion might, for example, be that stretching an articulator away from its unmarked position requires effort that imparts greater energy to the projection to travel further. Or it might be that the articulator's movement is somehow mechanically multiplied in the projection's movement.

Elongation. However a projection's lengthening is analyzed, we will label it so as to fill in our terminological grid. Much as an articulator's swing brings about a "sweep" in its projection, so an articulator's outstretch brings about an **elongation** in its projection.

Perceptual counterpart of a scale shift. Scale shifting may relate to aspects of perceptual organization. In particular, it may relate to Palmer's (1982, 1999) "transformation by dilation," also termed "metric scaling." This is one of four transformations by which one figure can be related to another, the others involving translation, rotation, and reflection.

Adjusting the emission for a compound target Suppose that a speaker's target is compound, consisting of two or more separate components. Gestures that, like prototype pointing, axially project a straight line directly into a target can then diverge at the fictive emission phase in three different ways that enable them to intersect with such a compound target.

Concurrent projections. In one of the three ways, the speaker deploys two or more distinct articulators concurrently and in parallel, with each pointing at one of the component objects making up the compound target. Such **composite gesturing** here produces concurrent projections. It thus represents a divergence from the prototype's single articulator and projection that intersects with a single-object target.

For example, a speaker can extend two fingers in a "V" shape, with each finger separately pointing at one of two candles on a coffee table while saying (12a). Or, while saying (12b), he can extend three fingers, with each pointing to its own respective candle, and hold his fingers, say, in a straight row or in a triangular pattern so that they aim at a corresponding arrangement of the three candles.

- (12) a. Both those candles were made by hand.
- b. Those three candles were all made by hand.

Successive projections. A compound target can alternatively be indicated with a single articulator that makes a succession of pointing gestures, each aimed at a different component of the target. Such **serial gesturing** here produces successive projections. This is thus also a divergence from the one-time gesture and projection of the prototype.

In one form of serial gesturing, a speaker iterates a gesture in place while aiming at the same object, as for emphasis. But here, the serial gestures are given a progressive lateral displacement to point at different target components in turn. Further, they are produced at a rate and with a fluidity of connection great enough to be interpreted as comprising a single gestural complex, instead of as distinct acts of gesturing.

Such serial gesturing could have instead been used for the preceding examples with two or three candles, whatever their spatial arrangement. Or, to introduce a new

example, it can be used for a slightly larger number of objects aligned in a row, say, five candles along the back edge of a stove. In this case, the speaker might say (13) and, while swinging his forearm rightward, point separately at each successive candle in order from left to right. His pointing gestures are forward thrusts, and each pair of thrusts is linked laterally by a quick short up-and-down arc.

(13) Those candles come from different yard sales.

—“Disregard” jumps. Such a gestural complex requires a number of elements in the hearer’s cognitive processing. First, the hearer may perceive equally the two types of movement in it—the speaker’s finger 1) pointing forward in thrusts and 2) jumping sideways in arcs. But—although both movement types occupy space and time comparably—through a process of **selective attention**, the former type is foregrounded while the latter type is backgrounded. More specifically, only the forward thrusts are taken as significant, indicating the targeted objects, while the sideways arcs are discounted, corresponding to the interstices between the objects. In fact, in gesturing generally, quick saltations like these arcs may be a “disregard” signal indicating that the location or path the articulator is passing through has no spatial import and is just a transit between ones with spatial import.⁶

—Sequentiality. Another element of processing is that the pointing jabs made by the articulator are seen to progress in sequence from one end to the other along the row of candles. The speaker will not produce jabs that make a succession of right and left jumps of different lengths to aim at candles out of order (whether in a random or systematic pattern). This requirement of **sequentiality** in serial gesturing along a linear compound target is one principle among those in the spatiotemporal patterning that complex gestures may exhibit.

—Target sample. Suppose now that the compound target consists of a still larger number of aligned objects, say, ten candles along a mantelpiece—what we will refer to as the “mantelpiece” example—where the speaker now says (14).

(14) Those candles all come from different countries.

The speaker here is unlikely to point separately at all ten candles. If he starts as before by pointing at the leftmost candle, he might instead point in order at just three or four more candles. We assume here that his gesturing ends at this point (and consider a further gesture he might make in the A so-forth subsection). The hearer here will understand that the particular objects actually pointed at are only a representative sample out of the full array of ten objects intended by the speaker as the complete target. This will be called a **target sample**.

—Target filling. If the speaker's gestural complex ends by pointing at, say, the fourth candle from the left, it has directly guided the hearer's attention along the row only to that point. But then her attention must expand from the gesturally indicated sample to the remainder of the target so as to encompass all of the target. Specifically here, her attention must extend rightward to the rightmost candle. The cognitive operation by which a hearer's attention expands from a target sample to the whole of the target is here called **target filling**. It is accomplished by perhaps only two imaginal processes, one for progressive gestures, treated here, and the other for nonprogressive gestures (see section 5.2.5).

—Sequel formation. In the current example of a progressive gesture, target filling is realized by a cognitive process of imagining a sequel to the articulator's movement. This process will be called **sequel formation**. In this process generally, an articulator halts after moving along a particular path, but then this movement is imagined to continue, maintaining such characteristics as its direction, curvature, or seriality. For its part, the imaginal construct left by this process of sequel formation can be called the **articulator-movement sequel** or, for short, simply the **sequel**.

In the present example, then, the linear progression of successive finger thrusts and intersecting projections up to the fourth candle is imagined as continuing to the tenth candle. This sequel formation thus fills out the target, that is, realizes the process of target filling.

—Sequel cessation. By an obligatory process of fictive **sequel cessation**, sequel formation must stop—and the corresponding fictive sequel must have its end—at some spatial point. A certain range of factors can determine this cessation point. In the mantelpiece example, the factor is that of exhaustion. The objects of the kind being targeted—candles—run out at the tenth candle, and no like objects appear in line after that point.

—Perceptual counterpart of sequel formation. The process of sequel formation within gestural fictivity may relate to a process in perceptual organization generally known as “forward simulation” (Battaglia et al., 2013; Smith et al., 2013). In this perceptual process, a viewer imagines the trajectory that a static object would take on the basis of its current disposition or that an already moving object will take on the basis of its current motion. What is common to the processes in the two domains is that the factive perception of an object leads to the imagining of a fictive path extending from the object.

But two differences can also be cited. The fictive path can proceed from either a static or a moving object in forward simulation, but only from a moving object (a moving articulator) in sequel formation. And in forward simulation, the object itself is

expected to execute the fictive path, but, in sequel formation, the object (the articulator) halts its motion and only the fictive path proceeds from that point.

—A so-forth gesture. By definition, sequel formation is imagined by a hearer as the fictive continuation of a movement an articulator has just made, and it is not itself directly indicated gesturally. But a certain additional gesture by the speaker can in fact specifically indicate such a fictive continuation of a movement.

In the present example, instead of stopping his articulator's movement at the fourth candle, the speaker can advance the articulator beyond that point. But he now swings it smoothly rightward without thrusts, sweeping its projection evenly along the remainder of the row of candles until it points at the tenth candle. Such a smooth swing will be called a **so-forth gesture**. In general, a gesture of this type indicates that the immediately preceding gestural pattern is to be imagined as continuing through the additional stretch of the swing. Here, the hearer would imagine more rightward-heading arc-separated pointing thrusts aimed at the remaining candles.⁷

Further, though, a so-forth gesture need not go all the way to the final component of the compound target but can stop earlier. In what might be the likeliest gesture for the mantelpiece example, after four thrusts, the speaker's pointing finger might swing smoothly across, say, just three further candles, to end by aiming at the seventh. The hearer then imagines that this so-forth gesture itself proceeds further until the tenth candle. This last imaginal step is again one of sequel formation, but now it is one that continues the so-forth gesture.

Suppose now that there is a longer row of, say, twenty candles along a ledge. The speaker's gestural complex in this case might initially equal the preceding one, consisting of four thrusts and a so-forth gesture up to the seventh candle. But now a still further gesture might be added at the end of the complex. When the speaker's forearm stops its rightward motion and his finger points at the seventh candle, his hand then swings sharply rightward at the wrist so that his pointing finger flips further rightward through a short horizontal arc. Such a flipping gesture would indicate that the extension of the initial thrusting pattern is itself to be prolonged beyond the end of the so-forth gesture. The finger flip can be regarded as an augment on the so-forth gesture. Or it can be regarded as a new gesture indicating that the so-forth gesture is itself to be imaginally continued. Either way, it imaginally extends the fictive sequel further onward.

A sweeping projection. A linear array of multiple objects, like the candles along the mantelpiece, can be targeted by yet a third form of gesturing. The speaker here swings his pointing finger and sweeps its projection in a continuous smooth lateral motion—without jabs or arcs—from the leftmost candle along the row to the rightmost candle.

A new element of cognitive processing is needed for this continuous sweep along separate objects. Unlike the previous serial gesturing, with its distinct thrusts and intervening arcs, the smooth sweep of the projection does not overtly distinguish between the significant and the nonsignificant elements along the mantelpiece. Instead, the hearer herself must add in a discrimination: attend to the palpable objects (the candles) and disregard the interstitial spaces. Here, then, the hearer provides selective attention on her own without input from the gesture.

Successive versus sweeping projections. It has just been seen that the same row of ten candles can be targeted either by serial projections (with or without a so-forth gesture) or by a sweeping projection. This shows that the same target can be selected out by different gestural complexes and the different fictive chains that they suggest. Such alternative options for gesturing are analogous to paraphrases in language. In both cases, alternative representations have effectively the same import—they lead the hearer/viewer to settle on basically the same referent. And both cases instantiate a cognitive capacity that Talmy (2000a: introduction; 2011) calls “conceptual alternativity.”

Despite this commonality, though, the differences across such alternatives do have some cognitive consequences, including ones pertaining to attention (see Talmy, 2007a). Each alternative will foreground and background different aspects of the referent.

The two present gestural examples may reflect this. The serial thrusts and projections of the earlier gesture—providing separate intersections with individual candles—might be iconically more consonant with a message aimed at differentiating the candles, like that in (14) reporting their different country origins. But the smooth sweep of the present example’s gesture and projection might be iconically more consonant with a message reporting the candles’ similarity to each other. It might thus be preferentially used with an utterance like that in (15), reporting their common composition.

(15) Those candles are all made of beeswax.

Adjusting the emission for an extended target Building on the terminology of section 2.3.4, we will here say that a target with a comparable magnitude in all three dimensions is “nonextended,” while a target with substantially greater magnitude in one dimension is “extended” in that dimension. The prototypical target of a prototype intersecting gesture—like the car pointed at while saying *That’s my car*—is nonextended. Diverging from this prototype, though, the compound target of the preceding “candle” examples, with its components arrayed in a row, was extended along a horizontal line.

Now, while a compound extended target forms a linear extent through its separated components, an extended target can also consist of a single object that covers a linear extent continuously. An example is the fence targeted in (16). The speaker here can

gesture with the same swing of a pointing finger and sweep of its projection along the target as for the compound target of the preceding subsection. In her processing of this gesture, the hearer for her part would not need to attend selectively to separated components while disregarding the gaps between them, but she would foreground the full continuity. She would now interpret the gesture's continuity as iconic with the target's continuity.

(16) That fence separates the neighbor's farm from ours.

A fictive transect. A new fictive element may enter in the hearer's processing here. Where a projection intersects with a target more extensive than itself, the cross-sectional outline of the projection on the target's surface may be imagined as an independent fictive construct, belonging wholly neither to the projection nor to the target. Such a construct will be called a **transect** (from the verb form meaning 'to cut transversely'). In the case of the linear projections seen so far, this transect is simply a point on the surface of the target—here, on the fence—but other shapes will be seen. Such a fictive point transect might be conceptualized somewhat like the perceived spot of light on, say, a fence from a flashlight directed at the fence.

In the present example, the point transect would be further imagined to move horizontally along the surface of the fence in pace with the articulator's horizontal swing. Such fictive motion might again be conceptualized somewhat like the perceived motion of a spot of light along a fence as a flashlight is swung horizontally. To have a term for this type of fictive movement, the transect will be said to **slide** over the target's surface. A transect is probably a more salient construct in a hearer's imaginal system when moving than when stationary.

A fictive trace. As a point transect moves along the surface of a target, it forms a fictive line in the hearer's imaginal system. This is a new type of fictive construct that will be called a **trace**, and the process that yields it will be called **trace formation**. (For comparable proposals, see, e.g., Fricke, 2002; Goodwin, 2003; Mueller, 2014; Hassemer, 2016.)

In the analysis here, a trace is always formed progressively through motion—it does not all appear at once as a complete construct—and its formation must result from the movement of an articulator. In the "fence" example of (16), in particular, the speaker's pointing finger swings rightward; this causes its projection to sweep rightward; and the projection's point of intersection with the fence, the transect, slides rightward forming the trace. As will be seen, though, traces can also be generated directly by an articulator and through fictive-chain sequences of other types.

The fictive trace posited here as forming in the wake of a moving transect may again be conceptualized somewhat like certain perceptual counterparts. In drawing, for example, a perceivable trace is left on paper by a moving pen tip or on the ground by the end of a moving stick.

Target mapping. The formation of a trace through the sweep of a projection is here more than simply the generating of a fictive line. As it forms, the trace follows a structural delineation of the target that can be perceived as the most salient in the target's overall geometry. For instance, the geometrically most salient delineation of the fence in the current example is the bounded horizontal line of its length. And the gestural trace coextends with this salient aspect of the target's geometry—the trace starts at one end of the fence, progresses along its length, and stops at its other end. In effect, the gesture and the trace it forms map out the target. This process will be called **target mapping**.

Targets can of course have other geometries that can be mapped out just as readily with a gestural trace. The most salient structural delineation of the target, for example might be helical, as with a spiral staircase. Thus, a play director at the rear of his theater, while gesturing toward such a staircase on the stage, might say (17) to a visitor. For his gesture, he might first point a finger at the base of the staircase and then sweep it upward in loops that trace out the turns of the staircase. (Through outstretch, the nearer and farther portions of the gesture's spiral correspond to those of the staircase and, through scale shift, inches in the gesture correspond to feet in the staircase.)

(17) That's the spiral staircase the victim falls off.

—Linguistic counterpart of target mapping. Such gestural target mapping largely corresponds to another category of linguistic fictive motion, "coextension paths," illustrated in (18). Here, the motion-specifying morphemes *go*, *from*, *down*, and *into* evoke a sense of fictive motion along the linear contour of the factively stationary fence. The hearer may experience this as the imaginal motion of her focus of attention along her linguistically based conception of the fence. Comparably in the gestural fence example, the hearer may experience the imaginal motion of the transect along her visually based perception of the fence.

(18) The fence goes from the plateau down into the valley.

—Higher-order target mapping. Sliding a transect along a target is not the only way to map a target out. Consider again the example where the speaker uses serial gestures to indicate the compound target of candles along a mantelpiece. As the speaker swings his hand successively further rightward, he produces discrete successive projections that intersect with the individual candles and leave a static transect on each of them. No continuous trace is formed on these separated components of the target. Still, this serial gesturing and its fictive constructs (especially if the speaker points at all the candles in the row) map out the overall linear geometry of the compound target as much as in the fence case. Here, the spatial pattern formed by the successive gestures and fictive

constructs in effect generates a “second-order” trace. Such a trace is more abstract in imaginal representation than a direct trace but has the same target-mapping properties.

—Linguistic counterpart of higher-order target mapping. An abstract trace of this sort that is formed by a certain pattern of gesturing corresponds to yet another category of linguistic fictive motion—“pattern paths”—as illustrated in (19).

- (19) As I painted a stripe on the ceiling,
a line of paint spots slowly progressed across the floor.

In this example, the speaker moves his paintbrush in a straight line along the ceiling, and successive paint drops fall vertically to the floor where they remain as stationary spots. But the motion-specifying morphemes *progress* and *across* evoke an interpretation of fictive motion. In it, a fictive line grows horizontally, fictively moving in a direction perpendicular to that of the falling drops—capturing the pattern in which the spots appear on the floor. Comparably in the gesture example, the fictive projections emitted by the articulator move toward the candles. But as the articulator swings rightward, the stationary transects that it leaves on the candles are imagined as forming a line that grows in a direction perpendicular to that of the projections.

Adjusting the emission for a moving target In the examples of them so far, all the targets intersected by a gestural projection have been stationary. But a single nonextended target that moves through space can also be intersected by a projection. And this projection can occur not just at one point of the target’s passage, but it can maintain its intersection with the target throughout its course. This will be called **target tracking**.

Lateral tracking. From a speaker’s perspective point, a moving target can change its location relative to his visual field. We will say that such a target engages the **lateral organization of environmental structure**. This can be seen in a racetrack attender who says (20). Gesturally, he swings his pointing finger and sweeps its projection rightward in pace with the running horse so that the projection continues to intersect with it. This will be called **lateral tracking**.

- (20) That’s the horse I bet on.

Tracking a nonextended target that moves laterally along a path (like the running horse) has features in common with mapping out a stationary target that extends linearly (like the fence). In both, a pointing articulator swings through an arc; its projection sweeps through a corresponding arc; and the projection intersects with the target, forming a transect on it.

As for differences, though, we can first note that the speed of the sweep in mapping is at the speaker's discretion, but it is locked in with the speed of the moving target in tracking. In mapping, further, the transect slides along the target, its fictive motion delineating the geometry of the stationary target. Thus, fictive motion is used to represent factive stationariness. But in tracking, the transect is maintained at the same position on the moving target. The articulator's factive motion corresponds with the target's factive motion.

Axial tracking. From the speaker's perspective point, a target can also move in a straight line directly away from him while occupying the same spot in his visual field. We will say that such a target engages the **axial organization of environmental structure**. An example is the horse galloping away in (21). The speaker here can gesture by pointing his finger toward the horse and gradually stretching his arm further and further out in the horse's direction. This is then **axial tracking**. The term "tracking" is thus extended to this moving gesture indicating a receding target, even though the everyday sense of *tracking* would not cover it.

(21) That's my horse galloping away.

In the earlier (11b) example of steeples at different distances, the speaker's three separate gestures each had his articulator at a fixed degree of outstretch, showing discrete increases that correlated with the successively further steeples. But here, the speaker produces a single progressive gesture in which the articulator's outstretch becomes continuously greater, and this correlates with the target's continuously greater distance. Again, there is a scale shift. The inches through which the articulator moves correspond to the yards through which the horse recedes.

Progressivity of the emission Generally, it seems, a hearer attends to a gesture in different ways in accord with its motive type. In one such type, the gesture is essentially stationary. This will be called a **nonprogressive gesture**. Examples so far have been the prototype pointing gesture and a composite gesture in which two or more digits point concurrently. A hearer needs only to glance briefly at such a nonprogressive gesture to gather the cues it provides to the target, before turning her gaze away toward the target's location.

In another type, the gesture includes movement in order to single out the intended target. This will be called a **progressive gesture**. Examples seen earlier were the swinging and steadily outstretching gestures involved in serial pointing, in tracing, and in tracking. Over the duration of a progressive gesture, the articulator moves, and its cues to the target—more complex because the target is compound, extended, or in transit—accumulate in the course of its movement. Accordingly, the hearer may need to observe the gesture extendedly and compare its unfolding cues against a potential

target elsewhere in space, perhaps glancing back and forth between the gesture and the evolving target or keeping both in her field of view at the same time.

Such more extended monitoring of a gesture requires an adjustment to the notion of a gesture as a way station for the hearer's attention on its way to the target, as described in section 5.1.2. The basic notion there still holds: the hearer must first attend to the speaker's gesture to get a gestural cue as to where in space to attend next to find the target. The modification here is that the evolving gesture itself requires prolonged or repeated attention from the hearer so she can shape the pattern of her outward directed attention in order to correctly determine the intended target.

A third motive type might have been set up for a prototype gesture that has been mobilized—whether by a thrust that launches a projection or a swing that produces an onswEEP. In such gestures, on the one hand, the articulator does move but, on the other hand, this movement is not essential for singling out the target. The preference here, though, is to class such gestures together with nonprogressive gestures. For this entire larger group of nonprogressive gestures, a hearer can simply observe the gesture first and then follow the fictive chain it evokes to the target without looking back. But with progressive gestures, the hearer needs to ongoingly monitor the gesture for the succession of fictive constructs it evokes in order to carve out the relevant target from its surroundings.

Progressiveness in a targeting gesture and the adjustment that it requires in a speaker's deployment of attention can be regarded as yet further divergences from the prototype at the emission phase.

The geometry of the emission In all the examples so far, the articulator was configured and deployed in such a way that it was schematized as a straight line with a zero-dimensional point-like front and imagined as coaxially emitting a one-dimensional linear projection. But some gestures can call for different geometric schematizations.

Before considering such differences, note first that some variants do seem to preserve the abovementioned schematization. For example, one alternative to a single pointing finger is all four fingers of one hand extended straight and parallel with each other, but bunched together like a bundle of sticks, as if to form a thick cord. This configuration seemingly also coaxially emits a fictive linear projection.

The projection as a planar strip. But the straightened fingers can also be aligned one beside the next to form a plane continuous with that of the palm—a “flat hand.” The row of fingertips can then be schematized as forming a linear edge of that plane—the one-dimensional linear front of the plane. This linear edge is what here emits a fictive projection. But this projection is now two-dimensional. It is a planar strip—coplanar with the flat hand—whose edges in effect continue the lines formed by the index and pinky fingers.

To illustrate, a speaker might say (22) to target a vertical five-inch flap in a wall three feet ahead. He gestures by holding his right forearm horizontally forward with the flat hand oriented vertically, palm facing left. The hearer can imagine a vertically oriented planar strip projecting from the fingertips and intersecting with the flap. The transect she imagines is now not a zero-dimensional point, but a one-dimensional bounded vertical line coincident with the flap. The speaker might also mobilize the projection by thrusting his hand straight forward to launch it or by first aiming above the flap and then onswEEPing the projection down onto it.

(22) That flap covers the slot you slide your envelope through.

A flat hand can suggest the emission of a projection not only from the front row of fingertips, but alternatively from the edge of the hand on the pinky finger side. This projection is still a planar strip, but is understood as wider, extending from the pinky tip to the wrist. While saying (23), the preceding speaker might use this gesture instead if the flap in the wall were fifteen inches. He would now hold his forearm upright, fingers aimed upward, with the pinky edge of the flat hand toward the flap. He would then thrust that edge of the hand toward the target by swinging the hand forward at the wrist. While gestural thrusts seen earlier were of the jabbing type, this is a **swinging thrust**, and it (or a kindred movement) seems to be a required accompaniment of a pinky-edge projection.

(23) That flap covers the slot you slide your manila envelope through.

A planar-strip projection can be still wider if thrust by a “flat arm.” Here, the flat hand is held so that its long axis continues the axis of the forearm. If the forearm is sharply swung at the elbow along the plane of the flat hand with pinky in the lead, it launches a fictive strip whose width runs from pinky tip to elbow, coplanar with the plane of the flat hand. The speaker producing the “fence” utterance of (16) could have used this gesture instead. While facing the fence, he might hold his right forearm horizontally before himself, fingers pointing leftward and palm facing downward, and then sharply swing his forearm outward at the elbow, so that the line from pinky tip to elbow projects a fictive strip toward the fence. Again, this planar strip forms a bounded linear transect on the target, though now a horizontal one.

—Projection widening. In this last example, we propose that the hearer will imagine that the width of the planar strip when formed at the articulator has increased by the time it intersects with the target, so that the linear transect is largely or wholly coextensive with the linear target (the fence). Such a fictive increase is a new processing element that will be called **projection widening**. This process is here realized by the strip’s gradually fanning out at its edges as it travels.

—A planar strip in nonprogressive target mapping. In the original fence example of (16), a point transect was seen to map out a linearly extended target by moving along its length. That mapping process rested on the progressively advancing motion of the transect, itself produced by a progressive gesture that called for extended attentional monitoring. Thus, that mapping process might have been more specifically labeled as **progressive target mapping**.

But in the current examples of fictive planar strips, the front edge of a strip intersects with a linear target all at once along its whole length. Such a transect might also be thought to map out that target, since it too marks out the target's dimension of length. In this case, though, the mapping occurs at once, produced by a nonprogressive gesture requiring only initial attention. This mapping process might then be labeled as **nonprogressive target mapping**. In the progressive case, the moving transect gradually formed a linear trace that followed the target's length dimension. But in the nonprogressive case, no trace is formed—the transect remains stationary on the target where it is first produced.

—Linguistic counterpart of both target-mapping types. This distinction between two types of target mapping that can be represented in gestural targeting has an analog in linguistic representations. Nonprogressive target mapping corresponds to what Talmy (2000a: chapter 1) calls the “synoptic mode” of representing a spatial extent, illustrated in (24a). This mode directs the hearer to conceptualize the whole of a configuration at once. On the other hand, progressive target mapping corresponds to the “sequential mode,” seen in (24b). This mode directs the hearer to cognize a spatial extent in a way that builds up its configuration gradually and cumulatively. The sequential mode often, as here, rests on fictive motion of the coextension type.

- (24) a. A fiber optic line connects the dorm and the lab.
 b. A fiber optic line goes from the dorm to the lab.

—A planar strip in progressive target mapping. Planar-strip projections have just been seen with a role in nonprogressive target mapping. But they can also have a role in progressive target mapping. To illustrate, first recall the earlier example in which the speaker, by swinging her pointed finger, swept a linear projection so that its point transect slid horizontally along the length of a fence. She thus progressively mapped out this target's geometrically most prominent structural feature: its bounded horizontal length. But this target has a second-most prominent structural feature: its width as measured vertically—that is, its height.

This second aspect of its geometric structure can be gesturally represented in addition. Instead of just a single finger, the speaker now uses a flat hand oriented vertically, all four fingers pointing toward the fence. The projection from the articulator is now

not a one-dimensional line but a planar strip oriented vertically. And where it intersects with the fence, the transect is now not a point but a bounded vertical line. The planar strip may undergo projection widening, fanning out as it advances, so that the strip's two or so inches where it starts along the four adjacent fingertips yields a transect that stands several feet tall, perhaps spanning most of the fence's height.

As before, the articulator's swing proceeds horizontally rightward, and hence so do the projection's sweep, the transect's slide along the fence, and the resulting formation of a trace. Also as before, as the transect moves from the left end of the fence to the right end, the trace it forms progressively maps out the fence's length. But since the transect is now a vertical line, the trace is itself a planar strip, and since the transect spans most of the fence's height, the trace covers most of its surface.

We can posit a difference in the hearer's processing of the two fence examples. In both examples, the rightward sweep of the projection directs the hearer's attention to its mapping out of the target's horizontal length. But the planar projection in the present example also directs some hearer attention to the target's vertical width, whereas the original linear projection did not do so.

—Fictive gap filling and filler. Under the header A sweeping projection, the speaker swung a single finger and swept a linear projection horizontally rightward along a row of candles. But he could use the preceding flat hand and its planar projection for the candles as well. The horizontal sweep of the projection would, as before, map out the row's linear extent. But the projection's planarity now yields a vertical one-dimensional transect, and this transect's rightward motion forms a planar trace. Much as in the preceding fence example, the additional dimension of this planar trace increases the hearer's attention on the height of the candles.

In this case, though, we posit two additional fictive constructs. Through an operation of **gap filling**, the hearer imaginably fills in the gaps between the upright candles, so that the row of candles can be schematized as an upright planar strip, much with the shape and orientation of the previous fence. The fictive construct that manifests such gap filling will in turn be called the fictive **filler**. (Such gap filling and filler can be related to the process of "closure" in Gestalt psychology).

—The planar strip coplanar with its sweep. In these last examples of mapping out a linear target, the projected planar strip was oriented perpendicularly to the direction of the projection's sweep. But it can also be parallel. For example, suppose a speaker says (25) while standing some ten yards back from a white line. He might gesture by first aiming his extended left arm toward the left end of the line, flat hand held horizontally with the palm facing down. He then swings his whole arm rightward at the shoulder and concurrently swings his forearm rightward by bending it at the elbow while continuing to aim his fingertips at the line.

(25) That white line along the ground divides our two properties.

In the hearer's processing of this gesture, the planar strip projected from the aligned fingertips is horizontal as it shoots forward. When it first intersects with the white line, it forms a linear transect that lies on the line, coincident with it. As the arm swings and the projection sweeps rightward, this transect slides coaxially along the line. In the fence case, the perpendicular transect foregrounded the vertical width of the fence (i.e., its height). Here, the transect's being parallel with the white line foregrounds the line's narrowness. A point transect from a single pointing finger would seemingly be neutral to such additional indications, foregrounding neither the width of the fence nor the narrowness of the white line.

The projection as the planar surface of a cone. In the preceding discussion, the one-dimensional edge of an articulator produced a two-dimensional projection in the form of a planar strip. But the projection can alternatively form the surface of a cone or cylinder.

In one type of gesture that can produce a planar projection with such a curvature, the speaker holds the fingers and thumb of one hand or of both hands so that their tips are arranged roughly in a circle. This gesture is here used to illustrate progressive target mapping (see section 5.3.1 for its use in nonprogressive mapping). Thus, suppose a speaker says (26) to a visitor as they stand on a lawn some six feet back from the edge of a circular patch of bluegrass, itself some six feet across.

(26) This darker patch on the lawn is Kentucky bluegrass.

The speaker might begin his gesture by joining both hands and bunching together all ten digits (curving them where necessary), so that their tips all touch, and aiming those tips so that they point at a downward angle toward the center of the patch. He then gradually straightens and spreads all ten digits while slightly separating the formerly adjacent hands, so that the tips appear to fan radially outward while still pointing downward toward the patch.

This progressive gesture might evoke the following fictive constructs in the hearer. As the speaker's digits spread apart, the process of gap filling might suggest that a fictive plane forms between them like webbing. Or this process might suggest that a fictive line forms across their tips like a circumference. The speaker's articulator is now part fictive (the physical hands and digits) and part fictive (the webbing or circumference). This will be called a **hybrid articulator**.

Whether imagined with webbing or a circumference, this now hybrid articulator has a fictive circular edge. This edge emits a fictive planar projection in the shape of a conic surface. At the outset, this projection intersects with the lawn patch just around its center point, where it forms a transect in the shape of a circle. But as the digits fan

out, the projection's cone shape expands radially, and its transect becomes a progressively wider circle.

This expanding transect in turn forms a two-dimensional trace. This trace is a planar disk that expands radially outward until its circumference reaches the perimeter of the patch of lawn being targeted. This fictive trace thus progressively maps out that target.

The fictive constructs in this imaginal chain are all of types already seen. Some of them differ simply in their realization. For example, the gap filling seen earlier was between the components of a compound target, while here it is between the components of a compound articulator. Accordingly, as noted, the full effective articulator that results is now part factive and part fictive. The projection is still planar but instead of a strip, it is folded back on itself to form a cone. The transect is still linear but, instead of a bounded straight line, it is a circle. The trace is still planar, but instead of a rectangle, it is now a disk. And the mapping is still progressive, but instead of advancing straight ahead along the target, it expands radially outward over the target.

The projection as a volume. In the prototype gesture, the zero-dimensional front point of the articulator emitted a one-dimensional linear projection. In the incremental increase just seen, the one-dimensional linear front edge of an articulator emitted a two-dimensional planar projection. We now look at the next increment, where a two-dimensional planar front of an articulator emits a three-dimensional volumetric projection. (For such dimensional increments, see also Mandel, 1977; Hassemer, 2016).

To illustrate, a speaker in a park might say (27) while standing some fifteen feet back from and facing a vertical rectangular cement slab some twenty feet across and fifteen feet high. He might gesture by stretching both forearms horizontally toward the slab with a moderate thrust. He holds his hands flat a few inches horizontally apart from each other, with the palms facing the slab, fingers pointing upward, and hence with the two thumbs near each other.

(27) That slab is the beginning of my outdoor art installation.

By one interpretation of this gesture, the planar face of each hand separately emits a volumetric projection toward the targeted slab. Each projection fictively exhibits projection widening, much as when a projection fanned out in earlier cases. But since each projection here is volumetric, the process might be dubbed "flaring out" instead of "fanning out." The widened projections intersect with the target, forming two side-by-side planar transects, perhaps evened out to be imagined as large ovals or rectangles on the slab's surface. In themselves, these transects provide a nonprogressive target mapping. But this is only a partial mapping—it does not completely cover the target's surface. What then completes it is the fictive operation of target filling. Here, a fictive filler spreads from the perimeters of the transects out over the rest of the slab's surface.

By an alternative interpretation, preferred here, the two hands are viewed as components of a compound articulator. Fictive gap filling takes place in the space between the hands. What imaginably results is a single hybrid articulator, part factive and part fictive, schematized as a flat rectangular plane, vertically oriented, extending between the pinky edge of the left hand and that of the right hand. This articulator plane emits a volumetric projection that flares out and intersects with the slab to form a single large transect overlying most of that target's surface. As before, the remainder of that surface then undergoes target filling.

Under either interpretation, the formation of a two-dimensional transect on the target—instead of the zero-dimensional transect from a pointing gesture—increases hearer attention on the target's two-dimensional extent. This is like the preceding fence case (see the A planar strip in progressive target mapping subsection), where the formation of a one-dimensional transect from a projected planar strip increased hearer attention on the fence's vertical width.

—A flapping thrust. For another illustration, suppose that a speaker says (28a), referring to eight tarot cards lined up in a row left to right on the floor at his feet as he stands. As with the candles on the mantelpiece, he might gesture with a series of projection-launching thrusts and intervening arcs as his forearm swings rightward. Here, though, the articulator is his flat hand, palm facing downward, moving over each card in turn, and the thrust is downward instead of forward. This thrust can consist of the whole hand bending downward at the wrist or just the four fingers bending downward together at the knuckles. However, it is not a jab as in the candles case, but what we will call a **flapping thrust** or just a **flap**. In these serial gestures, each of the projections is a volumetric column that intersects with each tarot card in turn, leaving a planar transect that nonprogressively maps out the whole of the card's surface (akin to the “stamping” of Mandel, 1977).

- (28) a. Those tarot cards are all from different sets.
- b. Those coins are all from different countries.

An issue arises here, though, that might be resolved through experimental methods. Suppose that the tarot cards were replaced by coins and the speaker instead said (28b). Would the flat hand flapping gestures still be deemed appropriate? If not, then the flat hand flap is seen to emit only a volumetric projection. If deemed appropriate, though, it might indicate that the projection emitted by the front surface of the hand can be construed not only as a volumetric column, but also as a one-dimensional line coming from, say, the center of the hand's surface.

—Linguistic counterpart of a volumetric projection. This case of a projection emerging from the planar surface of an articulator largely corresponds to yet another type of

linguistic fictive motion. This type is “prospect paths” within the emanation category illustrated in (29).

- (29) The cliff wall faces toward (past / away from) the island.

In both the gestural and the linguistic cases, the projection emanates from an object's front, where this front is now planar, not the point-type front seen for prototype pointing and the demonstrative path type of linguistic fictive motion. The same difference as before, though, is seen between the gestural and the linguistic types of fictivity. The linguistic type permits the fictive projection to proceed along diverse paths relative to the Ground object (here, the island). But in the gestural type, the fictive projection can follow only a path leading to contact with the target—a path corresponding solely to the *toward* preposition of (29).⁸

Note that, as an alternative interpretation, a fictive prospect path is linear, here emerging from the center point of the cliff. This interpretation might then accord with a linear projection from a flapping thrust if this is acceptable for, say, the “coin” example in (28b).

The starting point of the emission A further respect in which the emission phase of a projection can vary is the locus in space from which the projection is interpreted as starting. In all the examples so far, this locus is simply the location of the articulator. But the locus can be imaginably placed elsewhere through a certain chaining sequence, here first illustrated and then analyzed.

Suppose two hills are aligned respectively ten and twenty miles away from a speaker on low ground, with the further hill only partly visible behind the closer one. While saying (30a), the speaker might first point directly forward at the closer hill, perhaps diverging from prototype pointing by also mobilizing the gesture or by extending his arm horizontally forward as an outstretch. Then, while saying (30b), he might extend his arm vertically upward as an outstretch and incline his pointing finger some thirty degrees downward from the horizontal.

- (30) a. That's the hill we'll cross today.
b. And that's the hill we'll cross tomorrow.

The gesture in (30b) may lead the hearer to generate the following fictive chain. She first forms a mental image or copy of the factive (physical) articulator—what we will call a **fictive articulator**—that maintains the configuration and orientation of the factive articulator and that can continue whatever movements it makes. She then imagines that the upward movement of the factive articulator is indeed continued by the fictive articulator—in fact increased by it through a scale shift. After rising, the fictive articulator stops at a locus here relatively high up. From this locus, in her estimation, the line projected by the downward-angled finger of the fictive articulator will clear the top of the closer hill and intersect directly with the further one to target it.

—A fictive articulator and repositioning. The fictive operation by which the fictive articulator moves from its original locus to its final locus will be called **repositioning**. The outstretch of the fictive articulator might be imagined as causally “sending” the fictive articulator to its repositioned locus. In the middle of the fictive chain, the fictive articulator, which has maintained the physical articulator’s directions and angles, emits its fictive projection, but this projection is now interpreted as starting at the repositioned locus. This is the kind of divergence from the prototype at issue here.

Note that the fictive chain that connects the gesture to the target here consists of two subchains that, in effect, compose the legs of a rotated “V.” The first leg is formed by the fictive articulator’s rise to a repositioned locus and the second by the projection from that locus angled downward to the farther hill. Of significance in this fictive chain is that it does not progress from the gesture to the target directly—a property that might have been expected of fictive chains. Rather, it moves over an angled indirect path, one leg of which keeps the same distance, or even increases the distance, from the target.

To specify our use of it further, the term “repositioning” is applied only to cases in which an already formed fictive construct is conceptually moved from one locus to another. Here, it is applied to the fictive image that the hearer forms of the speaker’s pointing hand. The term is thus not applied to the fictive forward motion of a projection, since this construct is formed *as* it moves—it is not already formed when its motion starts. The term is also not applied to the motion of a fictive articulator, since the latter is not a fictive construct. The term is further limited to cases where significance is held only by the initial locus and final locus of the fictive construct, not its path along the way. It would thus usually not be applied to a projection’s lateral sweep, since the path of such a sweep generally has significance. Still, in accord with the assumption of gaplessness along a fictive chain, a repositioned construct is taken to be imagined as moving through space from its initial locus to its final locus, not as just disappearing from the one and reappearing at the other.

—A waving thrust. For another illustration of a fictive chain with repositioning, consider a speaker who wants to separately target two glasses standing on a table respectively ten and eleven feet on a straight line away from him—too close together at that distance for him to use prototype pointing on each of them. The speaker might gesture by first extending his arm horizontally toward the glasses and holding his flat hand bent vertically upward at the wrist, with fingers aimed upward and palm facing himself. While keeping his fingers aligned in a plane, he bends them at the knuckles and waves them toward himself to indicate the closer glass as he says (31a). Next, while saying (31b), he rotates his flat hand to face away from himself and waves the fingers in the direction away from himself to indicate the further glass.

- (31) a. This glass is mine. b. And that glass is yours.

The hearer may process this gesture as follows. First, the outstretch of the speaker's arm suggests that a fictive version of his flat hand is repositioned to a locus midway between the two glasses. This fictive articulator is still oriented vertically but, from its repositioned location, its palm side now faces the closer glass. The fictive articulator can be schematized as a planar surface. This surface exhibits a thrust of the flapping type. Since the flap is iterated, this might be called a **waving thrust**, or just a **wave**. It launches a projection toward the closer glass. The projection is volumetric and intersects with the whole facing surface of the glass. The ensuing rotation of the physical articulator indicates that the fictive articulator also rotates away. From its fictively repositioned locus, it now faces toward the further glass. The second wave then emits a projection that intersects with that glass.

—Fictive-articulator updating and axial ambiguity. One new processing element in this example is that the subsequent movement of the fictive articulator, its rotation, signals the same movement in the fictive articulator while it is still at its repositioned locus. This process can be called **fictive-articulator updating**. This updating, further, occurs between two separate targeting gestures, each associated with a different trigger.

Also new here is a counterpart to the lateral ambiguity seen earlier. The two glasses exhibit **axial ambiguity** since they are located along a line extending from the speaker, and a prototype gesture by his pointing in that general direction would not be able to distinguish between them. The repositioning thus enables axial disambiguation.

5.2.3 Divergence from the Prototype Starting during the Midcourse Phase

In all the examples of it so far, a fictive projection has progressed along a straight path once it issues from the articulator. While some two-dimensional projections have fanned out and some three-dimensional ones have flared out, what might be regarded as the component strands of such projections have each still been straight. And while some projections have swept laterally through space during a progressive gesture, each instantiation of the projection during the sweep has again been straight. But for some target-intersecting gestures, the projection is imagined as curving. Such curving is then a divergence from the prototype during the midcourse phase of a projection, occurring after it emerges from the articulator and before it intersects with the target.

In particular, a linear projection can fictively curve to form a parabola, oriented with its concavity downward. When tilted upward, a pointed finger, head, protruded lower lip, and so on, can suggest a projected line inclined at a certain angle upward that, like something thrown, will curve back down to intersect with the target. The gesture might typically include a thrust, as if to launch the projection like a thrown object into its trajectory. The target distance associated with such a projection may always be distal

and, in English it seems, can be indicated only by a distal trigger—that is, a trigger specifying a distal degree of spatial remove, like *that* and *there*.

To illustrate, a speaker might say (32) while gesturing as follows. With his right upper arm held horizontally forward and his forearm bent upward at the elbow, he first angles his forearm some thirty degrees from the vertical back toward his shoulder. Bent at the wrist, his hand is tilted still further back toward his shoulder, and the forefinger is partially curled back, though generally aimed forward, he then swings his forearm forward at the elbow until it is angled some thirty degrees past the elbow. At that point, his hand sharply rotates still further forward at the wrist, and his forefinger snaps into full extension, angled about forty-five degrees up from horizontal, with a jabbing thrust along its axis. At the same time, he might tilt his head and eyes upward and raise his eyebrows. The hearer viewing this gesture will imaginally construct a projection that curves parabolically and intersects with a distal target.

(32) My kite landed way over !-there.

In the system of fictive chaining proposed here for connecting a gesture with a target, a number of the fictive constructs may seem not to correspond to physical phenomena as we perceive them. For example, a projection may seem to progress faster than any physical object could move, and target filling may take place in a way that no physical process does. But the present case is an exception. The parabolic projection here in fact corresponds to the perceived behavior of a thrown physical object, and this fictive phenomenon is presumably derived from the factive one.

Note that the gesture itself indicates only a straight initial launch path. The hearer's imaginal processing alone supplies the parabolic curving. In this way, this imaginal processing thus also corresponds to a physical pitch from the hand, whose initial phase is straight, reflecting nothing of the curve to ensue.

5.2.4 Divergence from the Prototype at the Termination Phase

In prototype pointing, the projection advances until it intersects with the target and terminates there. But the final phase of a projection can diverge from this prototype in several ways, five of them presented next.

In an onswEEP As seen in section 5.2.2, some of the projections that diverged from the prototype starting at the emission phase also diverged at the termination phase as a consequence. One such case was onswEEPing, reprised here for its termination-phase divergence. An example there was of a speaker saying *That's my horse* while first aiming his pointing finger above his horse and then quickly swinging his extended hand downward at the wrist until the finger aimed at the horse. In such onswEEPing, the projection first does not intersect with the target, and then it does do so; this is a two-step process.

Onsweep with a continuous transect. In a comparable example, a speaker wants to target the woman on the left in a pair of women facing toward him, but standing together far enough away as to present lateral ambiguity for any attempted prototype pointing gesture. While saying (33), the speaker can gesturally provide lateral disambiguation by gesturing as follows. He first extends his right hand forward, palm facing leftward, with straightened forefinger aimed at a point near the right edge of the woman standing on the right. He then slowly swings his hand leftward at the wrist and, at the same time, bends his forefinger so that, as the finger curls, its tip moves still further leftward. At the end of the gesture, the finger aims at a point near the left edge of the woman on the left.

(33) !-That woman is the owner of the nightclub.

The hearer may interpret this gesture as follows. The speaker's pointing finger sends out a fictive linear projection that initially intersects at a point with a nontarget object—the woman on the right—forming a transect at that point. The hearer may imagine gap filling to occur, with a fictive filler extending across the space between the women. If so, the point transect may next seem to slide leftward over a now-unbroken surface. With or without such gap filling, the transect then slides horizontally onto the target object, the woman on the left. This example thus differs from the preceding horse example in that a transect appears all along the projection's sweep.

The fact that the speaker's gesture does not stop when aimed at the first woman, but stops when aimed at the second, indicates to the hearer that the second woman, not the first, is the target. It also indicates that the gesture is progressive, requiring extended proximal attention from the hearer. In turn, the gesture guides the hearer's distal attention away from the initial fixation point and toward the intended target.

Linguistic counterpart of an onsweep with continuous transect. This type of termination-phase divergence corresponds to yet one more type of linguistic fictive motion. This is the "access path" type, where an object's location is characterized in terms of a path taken by a fictive entity—such as the hearer's attentional focus—into encounter with that object. In the illustration of it in (34), the hearer's attentional focus is directed along a path that starts at the bank, crosses the street, and ends at the bakery. The bakery here is thus the counterpart of the target in the gestural example, the woman on the left.

(34) The bakery is across the street from the bank.

In repositioning the intersection A second type of terminal phase divergence in fact starts at the terminal phase and involves repositioning. To illustrate, suppose a speaker and hearer are standing some forty yards from a creek and can see some rocks sticking up out of it that, at their viewing angle, are not separated enough to point to directly.

The speaker wants to let the hearer know which three successive rocks to step on to make it across the creek. He says (35).

- (35) You have to step on those three rocks sticking up out of the water
to get across the creek.

Though the speaker here extends his arm in the general direction of the rocks, he instead aims his pointing forefinger toward the ground only some five yards ahead of him. In succession, he then first thrusts his finger toward the initial spot on the ground, next zigs his finger three inches forward and rightward at a forty-five degree angle for a second thrust, and finally zags it four inches forward and leftward at a forty-five degree angle for a third thrust.

In the hearer's processing of this, the three finger thrusts launch projections that intersect with the ground at three transect points. To this extent, this gestural complex resembles that of the mantelpiece example in (14): serial gesturing aims at the components of a compound target. But here, what the projections intersect with is an "initial target" that the hearer must process so as to end up with the "final target" (see section 14.2). In this processing, specifically, the hearer understands that the relative distances and angles among the three transect points on the ground correspond proportionally to those of the actual rocks. She then imaginably repositions the three transect points forward in space and into coincidence with the three corresponding rocks in the creek.

In this repositioning, further, the transect points spread apart from each other so as to end up at the more greatly separated rocks, with the distances between them increasing to match those between the rocks. These diverging paths and distance increases in effect correspond to the process of projection widening seen earlier.

The divergence from the prototype at its termination phase here, then, is the repositioning that the initial intersections of the projections must undergo to touch the actual targets. While what was repositioned in earlier examples was a fictive articulator, here it is the locus of intersection—the transect—formed there.

Note that the gesture here indicates only the initial intersections. It is the hearer who imaginably supplies the terminal-phase divergence. In this respect, this repositioning example resembles the parabolic example of section 5.2.3. There, the gesture did not signal the midcourse divergence—the hearer had to provide that imaginably.

In targeting a location In this chapter so far, all the fictive projections have been aimed at targets in the ontological category of physical objects. But many of them can also be aimed at a target whose ontological category is that of a location. For example, a speaker might aim a prototypical pointing gesture into some meadowland and say (36), where the trigger *there* is intended to target a certain three-dimensional region.

- (36) I saw a group of deer eating right over there.

Self-terminating projection. Here, though, there is nothing physical for the projection to intersect with and terminate at. The hearer's fictive chaining might accommodate to this in two main ways, each requiring a new processing element. By the alternative adopted here, the hearer imagines that the fictive linear projection **self-terminates** at a particular point in space, generally in mid-air. That is, the projection comes to a stop on its own at some spatial point, without this halt being caused by intersection with some physical entity. In the other alternative, the hearer generates a fictive construct—here perhaps a bounded plane in mid-air—that can be imagined to serve as the object of the projection's intersection and termination. Such an operation might be called **intersectee insertion**. Both alternatives involve a divergence from the prototype at the projection's termination phase.

The absence of a pre-existing physical object to serve as a target requires two conceptual spatial operations. The hearer must conceptualize the location of the projection's terminal point. And she must conceptually construct a region around that point, a region that will constitute the targeted location. In the present example, she might imagine the terminal point as some twenty yards away and four feet above the ground, and the targeted region as a hemisphere resting on the ground extending some five yards out from the terminal point at its center. She can use environmental and epistemic cues in this process (as detailed in section 6.3.2).

Self-termination more generally. Projections other than the preceding linear nonprogressive one can self-terminate. For example, the projection can be a planar strip that sweeps laterally. Thus, suppose that the speaker at the meadowland now says (37). With his right hand, flat and oriented vertically, he first aims his fingers somewhat left of forward, then swings his hand rightward, and stops with the fingers aimed somewhat right of forward.

(37) There used to be a row of thick bushes there.

The hearer may interpret this gesture as mapping out a left-right elongated region of space as the target of the trigger *there*. She may imagine that the planar strip projecting from the fingertips self-terminates as a bounded vertical line in mid-air, initially at the left end of the elongated region. If the term "transect" is still applied to such a mid-air line, then this transect moves rightward forming a fictive trace, itself a planar strip in mid-air. The hearer now imaginally constructs the targeted region around this vertically oriented, horizontally stretching planar trace.

Three types of extension. The proposed new processing element of self-termination completes what can be regarded as the three **types of extension** that a projection can exhibit. In the principal type of extension, the one described for prototype pointing, the projection's leading end advances until it intersects with something physical and at that point stops.

In the type of extension next considered, the projection's leading end advances indefinitely without stopping at any definitive point. This type was seen as the initial phase of an on-sweep, where the projection shot past the target before being swept onto it. In the new type of extension, the leading end of the fictive projection advances forward a certain distance and then stops, without or before intersecting with anything regarded as physically present. These second and third types of a projection's extension—contrary to the topic of this section—thus actually do not involve intersection at all.

In targeting an abstracted property When a target is ontologically a location, as just seen, a projection cannot intersect with it because it needs to be wholly constructed. Targets in certain other ontological categories (see section 2.2.1) are also not amenable to intersection, but for a different reason. Unlike locations, they are manifested by a physical substrate, but they are only aspects of that substrate that can be abstracted out from it, not the substrate itself. In such cases, the speaker typically aims the projection at the physical substrate but relies on nongestural cues—usually lexical cues—to guide the hearer to the abstracted property intended as the target. The divergence from the prototype at the termination phase here, then, is that the projection does not—in fact, cannot—intersect specifically with the intended target but instead intersects with its physical substrate, there to await a conceptual delimitation to the relevant aspect of the substrate.

This pattern is exhibited by targets in the ontological subcategories of manner, quality, quantity, degree, and reason (see section 2.2.1). To illustrate a degree target, a speaker might point at a passerby's shirt and say (38) to a companion. The hearer can here imagine a projection that intersects with the shirt but not specifically with the brightness of its color. The intersection is thus a gestural cue to the relevant substrate that manifests the intended target, but the lexical cues then select out that specific target.

(38) I want a color that bright for my kitchen walls.

Of particular note here is the fact that the fictive chaining system lacks gestures or constructs able to specifically target a number of physical properties, including the color or weight of an object, and the manner in which an action is executed.

In the lateral use of a projection When asked about the “glass is mine/yours” example seen in (31), a Hindi-speaking Indian produced a particular gestural variant. She initially outstretched her arm forward toward where the glasses would be, holding her hand bent upward at the wrist with the palm facing herself, and held her extended forefinger upward. She then first swung the hand toward herself to indicate the closer target and next, without any left-right rotation, simply swung her hand directly back away from herself to indicate the further target.

The interpretation assumed here for this gesture starts as before with the repositioning of her hand to a point between the two glasses. But here, the extended forefinger axially projects a fictive line upward and, in pace with the hand's swing at the wrist, this line sweeps toward the speaker until its shaft seems to touch the rim of the nearer glass. As the hand then swings away, the fictive line sweeps away until seeming to touch the further glass.

Earlier we cited three types of extension that a projection can exhibit, and the linear projection here exhibits the second type, indefinite extension. It does not progress toward an intersection with either target to terminate there. Rather, its shaft contacts each glass laterally to target it. This is the **lateral use of a projection**, not its end-on use, to single out a target. This is a new processing element and yet another divergence from the prototype at the termination phase.

5.2.5 Target Filling after Intersection

In many of the examples so far in which a projection intersected with a target, target mapping was only partial—the whole of the target was not mapped out. In the nonprogressive cases, the transect covered only a sample of the target. And in the progressive cases, the multiple transects, or the trace formed by a moving transect, again covered only a sample of the target. In such cases, an imaginal operation of target filling was posited to cover the remainder of the target and thus to complete the target mapping. Since target filling follows the projection's termination phase, its treatment is placed here to end the section on target-intersecting gestures.

Target filling after progressive versus nonprogressive intersections When target filling was introduced in section 5.2.2, we proposed that it is realized by only two imaginal processes, one for progressive gestures and another for nonprogressive gestures. Only the former process—that of sequel formation—was treated there. Thus, in the progressive mantelpiece example of (14) where the speaker pointed serially only to the first four of ten aligned candles (without adding a so-forth gesture), the process of sequel formation led the hearer to imaginally extend the progressive gesture to the end of the linear target. And this target filling, when added to the gesture's tracing out of the initial portion of the row of candles, completed the target mapping.

While it seems fairly compelling to posit an imaginal operation of target filling for such progressive cases, its occurrence seems more at issue for nonprogressive cases in which the projection leaves a static transect on just part of the target. Our analysis proceeds, though, on the view that this does occur. By this analysis, accordingly, the hearer's procedure of imaginally connecting a gesture with its target does not end with a fictive construct's simply coming into contact with some part of the target but continues until an additional fictive construct covers the whole of that target.

Filler spread. We will use the same term “filler” for this type of fictive construct as was used for the type that manifested gap filling. The fictive filler here is taken to form progressively. It spreads from the intersected sample of the target—here, the static transect—over or through the remainder of the target. In addition to sequel formation, this then is the second process that can realize target filling. It will be called **filler spread**.

Filler spread radially outward from a point. Thus, consider the earlier example in which the speaker says *That's my horse* and points with a prototype gesture that emits a linear projection, intersecting the animal at just a point on its surface. By our analysis, the hearer imaginably generates a fictive filler that in this case spreads radially outward from the transect point to the horse's outer contour. The process by which the outer contour of a target is itself determined is here regarded as involving environmental cues (see section 9.2).⁹

Target filling as a representation of attentional spread As noted in section 5.2.2, target filling can be correlated with the spread of attention from the target sample to the rest of the target. There, sequel formation represented this attentional spread in progressive cases. We can now add that filler spread does the same in nonprogressive cases. That is, a progressively spreading filler correlates with—or can be taken to represent—a spread of attention. By the account adopted here, the hearer's attention is first on the point of the projection's intersection and then spreads out from there until it covers the whole target. This process then realizes the goal of the second stage of targeting—that the hearer's attention should come to be on the target as a whole, jointly with the speaker's.

Alternative conceptualizations. But, as noted, the notion of filler spread—and, correspondingly, of spreading attention—in the nonprogressive cases is less compelling. Two main alternative accounts avoid that assumption. By one alternative, the integrated structural connectedness of, say, the horse as a single object in the hearer's perception is enough for the hearer's attention to settle on the whole of the horse all at once. In that case, there is no need to posit that the hearer's attention is ever narrowly on some putative point of intersection. Instead of the pointing finger emitting a “tight beam”—a one-dimensional projection terminating at a point—he may imagine that, through the process of projection widening, the finger sends out a dispersing beam that terminates on the whole of the horse's profile. By the other alternative, the speaker's attention might initially be on the entire visual scene and then narrow down to the single object within whose contours the fictive projection from the pointing gesture lands.

Across all the alternatives, thus, a hearer's attention might deploy in any of three ways to end up on the whole of a target. His attention might spread radially outward from the spot pointed at to the containing outline, stop there, and remain directed

over the full expanse within that outline. Or his attention might become directly associated with the whole integral object at once. Or, after he has first partitioned the global environment into candidates for objecthood, his attention might contract down to the outline of the candidate object that contains the spot pointed at. Experimentation will be needed to determine whether one or more—or any—of these alternatives is in effect in a hearer's processing.

Linguistic and perceptual counterparts of filler spread. Our account, in any case, will continue with the assumption of filler spread and spreading attention. Perhaps supporting this account is the existence of a type of coextension path within linguistic fictive motion that exhibits exactly the same radially outward spread just proposed for the fictive filler. The sentence in (39) illustrates this type. In it, the four linguistic forms *spreads*, *out*, *in all directions*, and *from* all express motion, so that the factively stationary field is cognized as manifesting radially outward fictive motion.

(39) The field spreads out in all directions from the granary.

Further support for filler spread and spreading attention in fictive chaining may come from certain proposals in perceptual organization. As one of his “visual routines,” Ullman (1984) proposes that spreading activation over an area delimited by boundaries can define a continuous region. Comparably, Palmer and Rock (1994) propose a process of “uniform connectedness,” by which a viewer determines that some common visual property extends from pixel to pixel through an area surrounded by a boundary, establishing that area as an object or part of an object. And in line with these perceptual accounts is the notion in computer vision of “region growing” (Zucker, 1976) in which, starting with one patch having a particular visual characteristic, adjacent patches with the same characteristic are progressively added until a boundary is reached.

The spatial relation of the intersection to the target As seen, a speaker can direct his gesture so that a projection from it intersects with the target in various ways. Where an intersection covers only a sample of the whole target, its state of being progressive or nonprogressive was seen to determine which process of target filling occurs—namely, whether sequel formation or filler spread covers the remainder of the target.

But also significant for how target filling occurs is the spatial location that his intersected sample has relative to the whole of the target. This will be called the **sample-to-target relation**. This spatial relation helps determine the pattern of movement that the hearer will attribute to sequel formation or filler spread, and that her attention will follow.

For a progressive gesture. Consider first the case where the speaker forms the intersection progressively, as in the mantelpiece example of (14). There, the serial projections

incrementally intersected with just a sample of some four out of the target's ten candles. The speaker positioned this sample at the initial end of the row of candles relative to the direction of progression—here, at the left end. Then, through the process of sequel formation, the hearer imaginably extended the path of the progressive intersection rightward after it stopped at the fourth candle.

But there are constraints against other placements of such a progressive sample. For one such constraint, the speaker cannot position his sample at the terminal right end of the row—moving his pointing gestures rightward, say, from the seventh to the tenth candle. Accordingly, the hearer has no need of any target-filling process in which she would imagine that a preceding succession of fictive pointing gestures moves rightward in the direction of progression from the first to the sixth candle. Nor would she need a retrograde target-filling process that would move backward from the sixth to the first candle. For another constraint, the speaker cannot position his sample in the middle of the row, with the hearer then having to imagine some mix of target-filling processes fore and aft.

Thus, where a linear array is to be progressively targeted, a seeming principle of sample-to-target relating is that any sample must start at the array's beginning, relative to the direction of progression. And the inventory of imaginal processes and constructs that a hearer uses to generate a fictive chain seemingly excludes antecedent or retrograde target filling.

For a nonprogressive gesture. Consider next the case where the speaker forms an intersection nonprogressively. Where the intersected target sample is a static point, it too may have a canonical spatial relation to the whole target. This will need empirical determination, but possibilities are entertained here. In some cases, the spatial relation is perhaps set by a quantitative algorithm, one that may be innate in cognition. For example, if the earlier speaker's horse is standing broadside, does the speaker try to aim at the geometric center of the horse's full outline, or perhaps that of the main body mass? He clearly would not aim, say, at the hind leg. (If the target is a location, the endpoint of the projection does seem to be regularly conceptualized as being at the center of the volumetric region that is imaginably constructed.)

In other cases, the spatial relation might be set by qualitative convention, perhaps usually cultural. For example, suppose that the target is a person facing toward the speaker from some ten yards' distance, and the speaker says *That's my assistant* to a companion. If the speaker points, can he be required to aim at the person's mid-chest, or perhaps at the head? He again would not aim, say, at the person's left thigh.¹⁰ Wherever the transect ends up located within the target's area, the fictive filler spreads radially outward from the transect until it reaches the target's outer contour.

For another type of case, consider again the initial version of the fence example of (16), where the speaker mapped out the fence by sweeping a linear projection along

it, leaving a horizontal linear trace along its length. Though progressively formed, the final trace does represent a sample of the full target and exhibits a new spatial relation to it. The speaker most likely positioned the linear trace midway between the fence's top and bottom edges. In addition, from that linear trace, the fictive filler would have been imagined as spreading bilaterally upward and downward from the midline, rather than radially outward from a point.

—Perceptual counterpart of a midline. By way of comparison with perceptual organization, such medial positioning of a fictive line again recalls Feldman and Singh's (2006) medial axis transforms. And it may be consistent with Kovacs and Julesz's (1994) finding that a faint object is more perceivable when it appears on the medial axis of an object, suggesting some significance of this axis in perceptual processing.

Sample relations as gestural cues. Insofar as any of the sample-to-target relationships just suggested exist and are determinate, they in turn function as further gestural cues to a target. For example, if a hearer expects that serial pointing will start at the initial end of a linear target, or that a static pointing gesture will hit the geometric center of a target's area, she will have that additional information as to where to look to single out the entire target.

We can illustrate a situation in which such calculations make a difference. Suppose that a mattock is leaning upright in one corner of a toolshed. One end of its long wooden handle rests on the ground while the metal crosspiece at the top end has its pike portion extending toward the left and its adze portion extending toward the right. If an experienced worker intends to name the whole tool to a novice by saying (40a), he is likely to point toward the middle of the handle. But if he wants to identify just the adze side of the crosspiece, by saying (40b), he is likely to aim his pointing gesture at the center of the tool's top right portion.

(40) a. That's a mattock. b. That's an adze.

On seeing the nonprogressive pointing gesture, the hearer is apt to assume that its point of intersection is roughly at the geometric center of the intended target (this perhaps being the likeliest sample-to-target relation). This intersection point is at the center of the whole tool in the first case, but at the center of only the adze part in the second case, each of which then is respectively likely to be the hearer's choice of target.

5.3 Target-Enclosing Gestures

So far, the mechanism in fictive chaining criterial to singling out a target has been for a fictive construct to intersect with it. What is criterial in this section, by contrast, is for a fictive construct to **enclose** the target. This fictive **enclosure** is mainly produced

by either projection or radial expansion, treated respectively in the next two sections. The targeting gestures that give rise to such fictive enclosures will be called **target-enclosing gestures**.

5.3.1 Enclosing through Projection

With just a few exceptions at the termination phase, all the fictive projections emitted by articulators have so far intersected with the target. But a fictive projection can instead mark out a boundary that encloses an intended target as a guide toward singling it out. This boundary can be established progressively or nonprogressively.

Progressive enclosing A progressively formed boundary that encloses a target can be considered first where the target is compound. The target could, say, be a set of objects in an areal array, such as a cluster of packages on the floor under a Christmas tree—an example in which a speaker might then say (41).

(41) !-Those gifts are for !-you.

We here describe together the speaker's gestures and the fictive constructs they may evoke in the hearer. The speaker first aims her extended hand and pointing forefinger downward at an angle toward a spot just outside the area of the gifts. The fictive linear projection from her finger intersects with the floor at that spot. She then swings her hand and sweeps the projection around in a full circuit until it returns to the original spot, so that the point of intersection traces out a loop around the area of gifts. That is, a point transect here moves and progressively forms a fictive linear trace in the form of a closed loop surrounding the target. This trace is thus a fictive enclosure providing the cue that the target is what lies inside it. It singles these packages out from those lying outside.

If the components of the compound target here are separated from each other, the hearer uses selective attention to attend to the palpable objects and disregard the spaces between them, much as the hearer did when the earlier speaker used a sweeping projection to target the candles aligned along a mantelpiece.

With a surrounding margin. If the circular trace lies outside the exact perimeter of the gifts by a certain margin, as might usually be the case, additional processing by the hearer may be needed. Such processing would accord with our working assumption that the fictive chain connecting a gesture with a target is unbroken. Specifically, some process would have to lead from the circular trace inward across the margin to the perimeter of the gift array. Two candidates for this process are proposed here.

—Gap crossing. The first, once again, is the spread of fictive planar filler. But now this filler executes a new process of **gap crossing**, which we distinguish from the earlier

gap filling. In the earlier cases of gap filling—that occurring between aligned candles or spread fingers—the fictive filler may have been imagined as simply forming in place or, if it followed some path, that path was not significant. By contrast, we invoke the new process of gap crossing where the fictive filler is imagined to move in a concerted direction that gets it closer to the target from the gesture.

Once the process of gap crossing brings the filler to the outer perimeter of the target, the process of target filling can be thought to ensue. The fictive filler for this process might be imagined either as a continuation of the gap-crossing filler or as distinct. In either case, its pattern of progressive spread is new. In earlier examples, a fictive filler manifested target filling by spreading radially or bilaterally outward from an intersected sample of the target to the target's outer boundary. Here, the filler starts at the target's outer boundary and spreads radially inward.

—Radial contraction. In the alternative process for keeping the fictive chain unbroken, the original fictive trace itself imaginably shrinks inward, crossing the margin until it coincides with the outer perimeter of the packages. This is a new process that will be called **radial contraction**. This process within fictive chaining can in turn be thought to represent a corresponding attentional process, that of “attentional contraction.” This process is here realized as the contraction of the hearer's scope of attention from the full expanse enclosed by the original trace down to the perimeter of the target.

—Perceptual counterpart of attentional contraction. Such attentional contraction can in turn be related to another process proposed for perceptual organization. As described by LaBerge and Brown (1989) and Tyler and Kontsevich (1995), this is a process in which visual attention shrinks from a more global scope down to a focal scope, variously called “attentional shrink wrapping” and the “attentional shroud.”

Without a surrounding margin. The enclosing trace need not be located outside the target proper, leaving a margin as in the last example, but can instead coincide with the target's boundary. For instance, a fan in a baseball stadium might say (42) to a foreign visitor. By swinging her pointing finger, she sweeps the projection so that its point of intersection with the ground moves along the lines that constitute the perimeter of the infield. If the boundary of the infield is regarded as part of the infield, then this case would technically involve target intersection. But the fact that the trace is formed so as to surround the target would then at least place this case on the borderline between target intersecting and target enclosing.

(42) That's the infield.

—Separate traces without full enclosure. In a comparable example (suggested by Cornelia Mueller, p.c.), the target is a mahogany panel, a half yard in width, extending

horizontally along one long wall of an auditorium, about two-thirds of the way up toward the ceiling. Standing about five yards back from the panel's center, an architect might say (43) to a visitor. For her gesture, she might start by holding both hands side-by-side up in front of herself, palms angled somewhat upward to face the panel. The adjacently held fingers are above and the thumbs are below, all curved as if the hands were gripping a five-inch wide horizontal roller. The fingertips are aimed toward the panel's upper horizontal boundary line and the thumb tips toward its bottom boundary line. The speaker then moves the two previously touching hands horizontally apart, swinging the left hand leftward and the right hand rightward. She moves them until their digits aim at locations on the panel close to each end.

(43) That wood panel is just for looks—it has no structural function.

In the hearer's processing of this gesture, the thumb tips project two fictive lines that intersect with the lower boundary of the panel at its middle, and the aligned fingertips project two planar strips that intersect in alignment with the panel's upper boundary. As the hands separate, the transects from these intersections slide horizontally outward along their respective boundaries. The resulting traces—augmented by sequel formation—largely enclose the panel along its upper and lower borders to single it out as the target.

One difference here from the previous example is that, while one continuous trace enclosed the infield, effectively four separate traces—those from the left and right thumbs and fingers—enclose the panel here. Another difference is that the fictive tracing enclosed the infield completely, while here it only encloses the target's top and bottom along its long axis, perhaps relying on a process akin to Gestalt closure to imaginarily seal off the right and left ends.

Nonprogressive enclosing In certain gestures, the articulator can emit a projection whose intersection itself directly encloses the target. The projection then does not sweep to progressively form an enclosing trace, but it provides the enclosure all at once. We consider next in order such an enclosure of an areal and of a linear target.

Nonprogressively enclosing a two-dimensional target. To illustrate the case of a two-dimensional target, suppose that several fluffy clouds are painted on a theater backdrop, and that an audience member wants to point one of them out to her companion while saying (44). She could gesture by arranging her fingers and thumb as if they were gripping a softball, aiming the five digits toward the intended cloud, and then thrusting them toward it.

(44) That cloud looks like a manatee.

In the hearer's processing of this gesture, the five digits might first undergo gap filling to become a hybrid part factive part fictive articulator. As the hearer schematizes it, this articulator is shaped like one portion of a spherical shell. The edge of this shell forms a circle at the tips of the five digits. As the hand is thrust forward, this circle launches a planar projection curved to form the surface of a fictive cone (compare Hassemer's [2016] "Broad Pointing"). This projection then intersects with the backdrop to form a circular transect around the cloud. This transect thus encloses the cloud as a cue to targeting it. And it is formed all at once, not progressively like the circular trace that enclosed the Christmas gifts.

Nonprogressively enclosing a one-dimensional target. In the examples so far, the target has been two-dimensional, and the fictive enclosure has been a single closed one-dimensional line surrounding it. But the target can itself be one-dimensional—for example, schematizable as a bounded straight line. What encloses such a target, then, is a discontinuous pair of fictive constructs at either end that, in effect, "bookend" it. To illustrate, consider two students about to move out of their common flat, standing some ten feet back from their single shared bookshelf, while one of them—referring to a particular section of the books—says (45). In gesturing, the speaker might hold both flat hands in front of herself, palms oriented vertically and facing each other, with the fingers of each hand aiming toward the bookshelf and respectively angled toward the left and right ends of her section of books. She is likely to first point her hands just above the books and then swing the hands quickly down along their own planes—pinkies at the leading edge—to the level of the row of books.

(45) !-Those books are !-mine.

In the hearer's processing of this gesture, each vertically oriented hand may seem to project a planar strip that moves horizontally forward to intersect with the back of the bookshelf. If first aimed just above the level of the books, the projections are then onswept downward along their own plane until each is between two adjacent upright books.¹¹

Note that each projection here does not intersect with the targeted books but with the back wall of the bookshelf, so any transect it forms on that back wall has no role in enclosing the target. Rather, the target is enclosed by the flat sides of the two planar strips, specifically, by the last portions of them that are adjacent to the two outermost books of the targeted section. This is then another case of the lateral use of a projection.

—Degree of offset. This example permits a new observation. The distance of a fictive enclosure from its target—what can be called its **degree of offset** from the target—may function as a distinct parameter in the process of target enclosing. This parameter would seem to have just three values. In the "gifts" example of (41), which exemplifies

the first value, a margin was left between the two. The width of such a margin presumably tends to be less than the target's diameter. In the "infield" example of (42), exemplifying a second value, the enclosure and the target's boundary coincided. But in the present example, exemplifying the parameter's third value, each projected planar strip is neither separated from nor coincident with but adjacent to one of the two outer boundaries of the target (i.e., a particular section of the row of books). Note that the processes of gap crossing or radial contraction are called for only for the parameter's first value, where there is a margin.

—Nongeometric aspects of a fictive chain. It may be that the two planar strips of the current example are interpreted not simply as marking the enclosing bounds of the target but also as pressing inward on both ends of the linear target as if to hold it. In fact, in a way that promotes this interpretation, the speaker might be able to vary her gesture by slightly bending her fingers inward, instead of extending them fully flat. The hearer might then imagine that fictive copies of the articulators move forward to repositioned locations at either end of the row of books as if to grip it.

Under this interpretation, the present gesture also represents the phenomena of force dynamics (the pressing inward) and manipulation (the gripping). These phenomena are outside the more purely geometric features that the fictive chains from targeting gestures mainly represent. Targeting gestures would then exhibit the same pattern as spatial closed-class forms in language. As Talmy (2005) shows, such forms mainly represent geometric schemas. But some of them additionally include nongeometric specifications, such as ones for force dynamics, relative priority, and cognitive state.

Two-stage enclosing A two-stage fictive process may be what leads to enclosure in the following case. Suppose that a speaker wants to target a group of people that she is part of. For example, knots of people may be waiting to enter a stadium, and the speaker is amid her own huddle. She might say either (46a) or (46b) using respectively *this* or the personal pronoun *we* as the trigger.

- (46) a. !-This group gets in free. b. !-We all get in free.

In her gesture, the speaker holds her forearm, bent upward at the elbow, vertically in place in front of herself. She might extend one finger, two fingers, or all the fingers bunched together but, in any case, her hand overall can be schematized as a straight bounded line. She holds her hand so that it is angled downward from a straight-up position by some thirty degrees. By swiveling it at the wrist, the speaker swings her hand around one or two times in a circle. She maintains its thirty-degree angle outward from the vertical axis, so that the hand's motion approximately describes an upward-facing cone with apex at the wrist.

In the hearers' processing of this gesture, a linear projection emerges axially from the tips of the extended fingers and itself sweeps about in a cone. By one interpretation, this projection self-terminates just above the heads of the people, and its endpoint forms a circular trace there. Alternatively, through the process of intersectee insertion, a fictive horizontal plane is imagined to be located just over the heads of the people. The projection intersects with this plane, and the moving transect forms the same circular trace as was formed under the first interpretation. Either way, this trace formation is the first stage of the enclosing process. In the second stage, the trace is imaginably repositioned downward to surround the group of people at, say, waist level. This is then the enclosure that singles out the target.¹²

Several features of this fictive chain differ from earlier counterparts. Previously, the type of fictive construct that underwent repositioning was a fictive articulator. What is new here is that the repositioned construct is a fictive trace. And previously, what the linear trace enclosed was a fully planar target in the case of the infield and a largely planar one in the case of the gifts. What is new here is that it encloses a volumetric target.

—The enclosure-to-target relation. With respect to this volumetric target, further, the linear trace is located around the target's middle. We offer two accounts for this arrangement. For one possibility, it may be the canonical spatial relation where a linear trace encloses a volumetric target. If so, this can be called the **enclosure-to-target relation**. This relation would then correspond to the sample-to-target relation proposed earlier for target intersecting (see section 5.2.5).

Alternatively, perhaps a group of standing people can be treated as being enclosed by a linear circle around them half-way up their vertical extent—rather than, say, by a fictive cylinder around them—because the target objects have the freedom to move only horizontally, not vertically.

—Arguments for this two-stage enclosing. Some might think that a more direct fictive chain is in order here. They might suggest, say, that the speaker's circling fingertips form a circular trace that expands horizontally outward until it encloses the huddle. But we give two arguments against this view. First, if the speaker had wanted a more direct fictive chain, she could have swung her forefinger horizontally around the circle, sweeping a projection across all the people's torsos, much like the earlier projection's sweep along the row of candles.

Second, the hand's angle and the contour of its swing vary in accord with the shape and size of the target and the speaker's location within it. Thus, suppose the speaker is one of some twenty people all standing in a circle ten yards across. She might still say (46b), but now her hand would be angled downward from a straight up position by some seventy degrees, rather than by thirty degrees, and its swing around would be more of an oval extending toward the point opposite herself. Such observations suggest

that the fictive chain does include a trace just above the heads of the targeted people and shaped for their outer contour.

5.3.2 Enclosing through Radial Expansion

So far, a fictive enclosure was formed through projection and either retained its size in its final position around the target or contracted radially into that position. Here, the enclosure is formed through nonprojective processes, and it expands radially into its position around the target. The type of motion that such a fictive construct imaginably exhibits will be called **radial expansion**. This expansion can be two-dimensional or three-dimensional, treated next in that order.

Two-dimensional expansion Two-dimensional radial expansion can be illustrated by the alternative gesture that a Hungarian speaker made when asked about the “huddle” example in (46) of a group getting into a stadium free. He first held his arms forward at chest height, bent inward to form a semicircle, with fingertips touching and palms facing himself. The hands were slightly cupped, forming a shallow concavity. He then retracted his arms with medium speed so that the hands moved along a semicircle slightly wider than and just outside the semicircle first formed by his arms in their initial position. As the hands moved, he adjusted their angle so as to keep them aligned with the semicircle. He ended the motion when the hands were positioned laterally approximately a foot away from his sides.

The hearer might process this gesture first by imagining that the retracting hands leave a fictive trail. Whether taken as a planar strip or schematically as a one-dimensional line, this trail has the form of a horizontal semicircle in mid-air just outside where the arms had originally been. Since it forms along the path of an articulator’s movement, a fictive construct of this kind will be called an **articulator-movement trail**—or, for short, simply a **trail**. Such a trail is here considered to be a type of fictive trace. A trace is thus here formed directly by a moving articulator, whereas it was previously formed by the moving transect from a sweeping projection.

When the speaker’s hands halt even with his sides, the hearer might next imagine that the fictive path they had taken continues fictively. This is another instance of sequel formation, the fictive process in which the movement of a now halted articulator is imagined to continue, maintaining such characteristics as its direction, curvature, or seriality (see section 5.2.2). The fictive sequel formed in this way is considered to be a yet third type of trace. Here, fictive lines continuing from the two endpoints of the fictive semicircle in front of the speaker are imagined to curve back until they meet, thus forming a semicircle behind him.

The cessation points of the left and right fictive sequels here are determined by the encounter of their endpoints with each other, that is, by their mutual blockage. This contrasts with the mantelpiece example of (14), where the factor that determined

sequel cessation was exhaustion: the running out of targetable candles. Combining the fictive trail and the fictive sequel, the hearer has now imagined a full fictive circle as a trace horizontally around the speaker.

As the final construct in the fictive chain, this circular trace is imagined as exhibiting radial expansion until it encloses the group of people at roughly waist level to target it. Note that the penetrative property cited earlier for a projection—the conceptualization that it passes through solid objects as it progresses toward its termination point (see section 5.2.1)—has a counterpart here. As the circular trace expands, it passes through the people that it will enclose when it stops just behind them.

Radial repositioning. Features of this and earlier examples call for an elaboration of the original repositioning notion. Since the fully expanded circle in its final position in the present example results from the movement through space of the originally smaller circle in its initial position, the shift can be regarded as another case of fictive repositioning. But this case is of a type that can then be called **radial repositioning**. The case in section 5.3.1 in which a trace exhibited radial contraction accordingly also manifested radial repositioning, though in the opposite direction. In radial repositioning, then, a curved construct either expands or contracts so as to encompass or be encompassed by the original form in its initial position.

By contrast, then, the other cases of repositioning seen earlier were of a type in which the construct moved linearly away from its initial position while retaining its original size. That type can now be more specifically called **translational repositioning**.

Three-dimensional expansion The next dimensional increment, three-dimensional expansion, can be illustrated by the gesture of one hiker saying (47) to a companion. This gesture generally resembles that just seen, but in a vertical plane. Specifically, the speaker first holds her arms upward, bent inward to form a semicircle, the fingertips of each roughly flat hand contacting each other at a shallow “V” angle (or chevron) a bit above and in front of her head, palms facing downward. The hands are actually slightly cupped, forming a shallow concavity. She then gradually moves her hands apart and downward to form a vertical semicircle slightly wider than that first formed by her arms, stopping when the hands are at shoulder level. As the hands move, she slowly shifts their angle so that, by the time they reach the bottom endpoints of the semicircle, the two palms face each other and the fingers aim fully forward. Throughout this manual gesture, she directs her gaze just above the tree canopy.

(47) This is all declared a wilderness region.

As before, the hearer here may imagine that the speaker’s hands leave a fictive trail forming a semicircular trace. From the top point of this semicircle to its endpoints, the hands trace out two planar strips curving downward. Since the hands are cupped

slightly inward during their movement, each strip is slightly curled inward across its width. Unlike the earlier case, though, the hearer does not go on to imagine a fictive sequel formation that would yield a fully circular trace.

The hearer next imagines that the downward-curving semicircle formed by the planar strips is just one band of a downward curving fictive hemisphere—in effect, a hemisphere shaped and oriented like a dome. The slight inward curve across the strip's width then fits in with the overall curvature of this hemisphere.

Shape completion. The cognitive process by which the full hemispherical hull is imaginably formed on the basis of the curved band needs consideration. One possibility is to posit a general process of **shape completion** by which the whole of a geometric form is constructed on the basis of indicated parts of it, along with other available cues. A fictive construct, again to be labeled a “filler,” would then adjoin the indicated parts to complete the whole. Here, two portions of fictive filler would adjoin the edges of the semicircular band to complete the imaginal hull. A process of shape completion might in any case be needed so as to account for a broader range of cases.¹³

For the specific case at hand, alternatively, the fictive process may just be that of gap filling, but a more extreme form of it. Gap filling earlier occurred between perceivable elements, for example, the components of a compound target (candles in a row) or a compound articulator (the fingers of a spread hand). But here, it occurs between two fictive constructs, the two planar strips joined at the top to form the semicircular band. Earlier, in addition, the gap to be filled was comparatively small relative to the elements bordering it and well-defined by them. But here, the gap to be filled constitutes all but the semicircular band and may seem less well-defined by that band. Earlier, finally, the fictive planar filler that filled the gap was flat, but here it is curved.

On either account, the hemispherical shell that results is a fictive construct composed both of a trace (the semicircular band suggested by the moving hands) and a filler. Since the trace determines the position and shape of the filler, the whole hybrid will be considered to be an **augmented trace**.

Finally, the fictive hemisphere is imagined to expand radially outward—a three-dimensional expansion—to form a sizable curved planar envelope that encompasses a large volume of the surroundings. The contents of the volume enclosed in this way constitute the target.

The gestural cue from the speaker's gaze indicates that the top of this envelope is just above the tree canopy. In an earlier case with both ocular and manual gestures (the “That's my horse” example), the indications from the two gesture types converged and so corroborated each other. Here, they indicate different aspects of the target and so complement each other. The manual gesture indicates the shape of the target's boundary. The ocular gesture indicates the scale of its vertical extension and, by implication, that of its horizontal extension.

5.4 Target-Pervading Gestures

In target-intersecting gestures (that do not self-terminate), a fictive projection from an articulator hits some portion of an object's surface, and a fictive filler spreads out over or through the rest of the object to mark it as the target. Here, the projection or other fictive construct from an articulator passes through the entire substance of an entity, or space of a location, to mark it as the target—no filler spread is needed. We will say that a conceptualization of this sort is produced by a **target-pervading gesture**. Target pervasion can be effected by sweeping, penetration, or suffusion, treated next in order.

5.4.1 Sweeping Pervasion

In the first type of target-pervading gesture here, the articulator swings in a way that the projection from it sweeps along a main linear dimension of the target. At each angle along its sweep, the projection is conceptualized as extending through the full depth of the target, so that, in the course of its sweep, the projection has moved through the whole of the target. This whole target can be the entire substance of an entity or space of a location, considered next in order.

Pervading the substance of an entity To illustrate the case where the pervaded target is the substance of an entity, a farmer could say (48) while standing with a visitor at one edge of a vegetation-covered field extending left, forward, and right to the horizon. He might begin his gesture by holding his right arm horizontally at shoulder level, with the upper arm angled somewhat toward the left; with his forearm, bent at the elbow, angled still further leftward; and with his flat hand, bent at the wrist with pinky downward, angled even further leftward. He then slowly swings his arm rightward, with the back of his hand in the lead. In the process, his forearm and hand straighten out. At the end, the hand may then even bend further backward at the wrist, thus further extending the arc of the rightward swing.

(48) This is all corn.

In her processing, the hearer may conceptualize the corn as constituting a horizontal layer atop the ground. The speaker's flat hand fictively projects a planar strip, its width oriented vertically, that extends horizontally toward the horizon and indefinitely without any definitive termination. As the speaker's arm swings rightward, the planar strip sweeps through the full layer of the corn's substance to mark it as the target.

The hearer's processing may include additional factors. Through projection widening, the small span of the vertically oriented fingertips expands to the full height of the corn. Further, the use of the whole arm in the gesture—along with the hand's additional bend at the wrist, leftward at the start and rightward at the finish—may help direct the hearer to include the full horizontal extent of the crop layer in her

delineation of the target. Finally, it is the lateral use of a projection (see section 5.2.4) that effects the target pervasion.

Pervading the space of a location The full space that a location is conceptualized as occupying, marking it out, the sweep of a projection can also pervade as the target of a locative trigger like *there*. In fact, in combination with environmental cues, the cues from such a gesture can help a hearer determine the shape and scope of the targeted location.

To illustrate, the speaker is in a room sitting some eight feet back from several adjoining tables with cluttered surfaces. When asked where the car keys are, he says (49) while gesturing much as in the preceding “corn” example.

(49) They’re somewhere over there.

In the hearer’s processing, the flat hand projects a planar strip that now sweeps through a horizontal layer of space only a few inches thick and several yards across located just above the tables’ surfaces. The gesture thus pervades this spatial location to mark it as the target of the trigger *there*.

5.4.2 Penetrative Pervasion

Instead of sweeping through it, the projection from an articulator can pervade a target by remaining still and simply penetrating through its depth. A fictive chain of this sort is most readily conceptualized where the articulator provides a planar surface that emits a volumetric projection.

A gesture I noticed myself producing exemplifies this pattern. While standing outdoors in Berkeley with a friend describing a recent trip, I said (50). The entity targeted by the trigger *this* was the weather as currently manifesting in the atmosphere in Berkeley. Gesturally, I 1) turned slightly away from having directly faced my addressee, as if to direct my body toward the open space of the city; 2) puffed my chest out a bit, as if to radiate from its now convex planar front a volumetric projection that expanded conically outward as it advanced forward; 3) moved my hands slightly forward from their downward rest position with palms facing forward and slightly upturned, as if to cup the volume of space from underneath; and 4) turned with my head slightly upward and away from my addressee, as if to look into the midst of the volume of space.

(50) The weather in Allahabad was about like this.

Most relevant here in this gestural complex is component 2, where the chest is the articulator. The hearer might schematize the chest initially as a flat planar surface but, after it swells out, as a convex planar surface. As in the “slab” example of (27), this articulator plane sends a volumetric projection forward. But while the hands in that earlier example launched the projection with a jabbing thrust, the chest here, by swelling out,

launches it with another type of thrust that might be called a **swelling thrust**. And while the earlier example required a process of scale shifting for the projection to flare radially outward as it advanced, the present projection flares out intrinsically due to the convexity of the projector.

In the “slab” example, further, the target was a planar object, but here the target—the city’s atmosphere—is itself volumetric. The projection can in effect be imagined as intersecting with the targeted atmosphere throughout its volume. It is as if the projection were composed of multiple linear rays that, as they advance and spread, intersect with points of the atmosphere close and far, central and peripheral. This is then penetrative pervasion.¹⁴

The other components of my gestural complex complement the second component. Thus, the target sighting provided by the eyes as articulator is directed toward what might be imagined as the geometric center of the volumetric projection. And the cupping hands—through a process akin to Figure modeling (see section 5.10.2)—might be interpreted as representing or indicating the outer surface layer of the same targeted mass.

5.4.3 Suffusive Pervasion

In the preceding “Allahabad” example, the articulator was stationary and emitted a steady projection that penetrated a volumetric target. But an articulator can also exhibit multiple moves, emitting sweeping projections that then seem to suffuse a volumetric target.

This pattern can be exemplified by another gesture I noticed myself producing. I said (51) while arguing against a colleague’s description of cultural structure as if it existed in the space outside individuals’ cognitions.

(51) But this is all just thin air.

I started my gesture with both hands held about a foot apart, right and left of each other, at the level of my neck about a foot in front of it. The hands were half cupped to form a slight concavity, and oriented as if holding the surface of a large beach ball along its top quadrant. Each hand then produced a train of arcs or loops. The left and right trains sloped forty-five degrees respectively left and right, while also sloping forty-five degrees away from my body. Swiveling at the wrists, my hands alternated in forming each loop as they coiled along their respective trains, until each hand traced out three such loops. During this manual gesture, I turned my head and eyes somewhat to the right and then to the left, as if to look off into the mid-distance with each such glance.

In the hearer’s processing of this gesture, the back sides of my somewhat cupped hands may have been schematized as convexly curved planes that emitted volumetric projections that widened as they advanced, much as in the “Allahabad” example, where the swelled chest was the emitter. The somewhat random and irregular character

of the hands' swirling movements may have suggested that their three-dimensional flaring projections were to be imagined as dispersing everywhere throughout the volume of space around me in a pattern that can be classed as suffusion. The projections thus pervaded the air that filled the space as a cue to its being the target. Hence, my hands' movements constituted a target-pervading gesture.

5.5 Target-Coprogessing Gestures

The gestures analyzed in this chapter so far have targeted either entities or locations. But here we see that a gesture can also indicate a target in the ontological category of "path" (see section 2.2.1). Further, while a target-intersecting gesture emitted a fictive projection, the only significant aspect of that projection was its end, which intersected with the distal entity or location to mark it as the target. In its central behavior, a gesture of the present type also emits a fictive projection, but the whole of the projection is needed to single out a particular path and mark it as the target.

Each gesture of the present type involves two paths with different origins. One of these is the targeted path itself. As treated here, this is the one-dimensional directed path of a physical object—the Figure in an event of motion—moving through space in what generally is taken, or averages out to be, a straight line. This target, it can be underscored, is the path taken by the object, not the object taking it.

Second, the gesture made by the speaker is seen as generating a fictive path of its own. This will be called the **gesture-generated path**. This path is also conceptualized as a one-dimensional directed straight line. The linear progression of this gesture-generated path is coaxial and codirectional with the progression of the targeted path. We will say that these properties together make it **coprogressive** with the targeted path. Such coprogression is in fact the gestural cue to the identification of the targeted path. A gesture of this kind will thus be called a **target-coprogressing gesture**.

The time at which the Figure object takes the path to be targeted can have any of three main temporal relations to the time of the speaker's path-generating gesture. The Figure can have already taken the targeted path, be taking it, or have the potential to take it at the time of the gesture. Thus, while the gesture-generated path is coprogressive with the targeted path, it occurs at a different time from the targeted path in two out of their three temporal relations. Such non-cooccurrence is one indication that the two path types must be distinguished.

Coprogressing gestures can be subdivided on the basis of the spatial relation of the articulator—which here always has a linear conformation—to the targeted path. The articulator can be coaxial with the targeted path, oblique to it, or parallel to but not coaxial with it. These alternatives are treated in order in the three sections that follow.

As a preliminary, though, we look more theoretically at the concept of a path. In its cognitive basis, we earlier characterized space as a conceptual construct and a location

as a further conceptual construct within space (see section 1.7.1). A location was specifically characterized as a one-, two-, or three-dimensional bounded-off portion of space that a physical entity did, does, or could occupy. A path can now be characterized as another conceptual construct within space. It is a one-, two-, or three-dimensional bounded-off portion of space that a physical object did, does, or could move along or through. This general characterization of path includes the motion of plural bounded objects or unbounded material through two or three dimensions, as well as along a one-dimensional path. But as noted, the focus here will be on a single bounded object moving along a one-dimensional path.

The path construct actually permits two main conceptualizations. In the **path-following conceptualization**, the hearer imagines a fictive line already present in place along which the Figure object did, does, or could move, in effect “following” it. In the **path-forming conceptualization**, alternatively, a path is a fictive line generated by an object as it did or does move, like a trail laid down behind it. Where it is irrelevant whether a Figure follows or forms a path, this section speaks of it as “taking a path.” Like a location, a path is not an actual pre-existing entity for the hearer to find, but a conceptual construct for him to form.

5.5.1 The Articulator Is Coaxial with the Targeted Path

We first look at the case where the articulator is coaxial with the path being targeted. In this case, a further division pertains to where along the targeted path the gesture is located: its beginning, middle, or end. For all three cases, further, the targeted path can occur before, during, or after the gesture.

The targeted path occurs before the gesture We consider first the temporal relation in which the targeted path has already occurred before the gesture targeting it.

The gesture is located at the beginning of the targeted path. As one possibility, the gesture is located at or near the beginning point of the targeted path. This is the case, for example in a cowboy movie, where a bystander says (52) to the sheriff and gestures as follows. She faces in the direction of the getaway path, holding her right hand before herself. She first cocks her hand back with forefinger half curled, and then swings her hand forward at the wrist while straightening the finger and jabbing it forward away from herself in the direction of the path.

(52) The gunman rode off in that direction / that way / thataway.

In the hearer’s processing of this gesture, the speaker’s finger is imagined as launching a fictive linear projection, much as in prototype pointing. But unlike the prototype case, the property of this projection here relevant to targeting is not any intersection with a distal object and termination there as a cue to singling it out as the target. In fact, of the

three types of extension that a projection can exhibit (see section 5.2.4), the present projection is of the type in which the projection's leading end advances indefinitely.

Instead, other properties of this projection are relevant in its role as the gesture-generated path that coprogresses with the targeted path. The fact that its angle is parallel to and that its location is coincident with the path that the gunman took makes it coaxial with that path. Its directional sense away from the finger makes it codirectional with the path. Its starting point at or near the path's beginning makes it what we will simply term "coinitial" with the path. And its indefinite extension makes it coextensive with the path. Or more precisely, it is coextensive with the first portion of the path along which the gunman was still visible and might be so with the path up to the gunman's current location if he did not turn aside. Accordingly, the projection is clearly coinitial with the gunman's path, but only possibly cofinal with it. These factors together, then, are the cue to singling the gunman's path out as the target.¹⁵

The gesture is located midway along the targeted path. Only a slight adjustment in this processing is needed if the speaker's gesture is taken to be located midway along the course of the targeted path, as would be the case if the bystander instead said (53). She can in fact make the same gesture as before. Now, though, the fictive projection launched by the finger—the gesture-generated path—is coaxial and codirectional with the targeted path, but not coinitial or fully coextensive with it. An earlier portion of the targeted path leads up to the location of the gesture without coinciding with the path it generates.

(53) The gunman rode past here in that direction / that way / thataway.

The gesture is located at the end of the targeted path. If the speaker now says (54), the targeted path is taken to have originated outside the town and stopped roughly at the speaker's location, so that her gesture is located at the end of that path.

(54) The gunman came riding up in this direction / this way / thisaway.

Where the speaker in the initial "gunman" example of (52) oriented her body to face in the direction of the targeted path, she is here likely to orient her body ninety degrees rightward so that her right shoulder is in the direction of the targeted path's beginning. Her gesture can have the same general form as in the initial case. But she now first holds her cocked right hand on the right, away from her body, and she aims her finger leftward toward a spot in front of her chest. As she straightens her finger, she jabs it leftward at that spot. The gesture's movement is thus not away from herself, as in the preceding two cases, but generally toward herself—specifically, toward the spot in front of her chest.

—Fictive extraction. This gesture can be analyzed as a complement to that in the initial gunman case. There, the finger sent a fictive projection forward as the gesture-generated path. Here, we posit a fictive construct complementary to that of such projection: fictive **extraction**. Through such extraction, the finger's linear motion is imagined by the hearer as setting up some source point back in space—here, one with an indefinite location—and then drawing a fictive line out of that point that proceeds along a path ending with the finger's own motion. The finger's motion here thus does not emit this fictive line, but in effect draws it to itself.

The initial and present cases are complementary in two further ways. First, the movement of the finger in the initial “gunman” case coincided with and proceeded along the beginning portion of the full gesture-generated path. But here it coincides with and proceeds along the ending portion of that path. Second, as earlier, the gesture-generated path here is coaxial, codirectional, and coextensive with the targeted path of the gunman. Now, though, it is clearly cofinal with the targeted path, but only possibly coinital with it, since the gunman's starting point and path angle before he comes into view are uncertain.¹⁶

The imaginal process of extraction is here posited as complementary to that of projection for cases like the present ones with target-coprogessing gestures. But it may not be generally so. As seen, the process of projection is involved in a great range of imaginal constructs and of fictive chains associated with targeting gestures. But the process of extraction seems not to be available as a complement for most of the projection cases through this range. If so, this is an instance of constraint on gestural targeting.

The targeted path is concurrent with the gesture In the three target-coprogessing examples so far, the Figure object took the targeted path prior to the speaker's utterance and gesture. But as noted, the Figure can also be in the process of taking the targeted path during the utterance and gesture. We here illustrate this just for (55) about a horse in the process of galloping away (and now out of sight) while gesturing the same as in the initial example.

(55) My horse is galloping off in that direction / that way / thataway.

The targeted path occurs after the gesture Finally, the targeted path—for instance, a path that the hearer is being urged to take—can occur after the speaker's utterance and gesture. Thus, a hiker who is horizontally ahead of her companion to find the best trail, and shouts (56) back to him, is for now located at the endpoint of a future path to be taken by the companion (an endpoint that will become a midpoint of the larger trek once both continue their hike). For her gesture, she might first hold her straightened arm horizontally out toward the hearer, with the hand flat and palm up. She next swings the forearm and hand vertically upward, bending at the elbow. She finally swings the

forearm and hand back toward herself, so that her hand overall moves through an arc that rises and falls.

(56) Come this way!

As the hearer processes this arc, he abstracts out its horizontal component as the only relevant path indicator, perhaps because, in the context, only horizontal motion along the ground is feasible for the hearer. This horizontal component is what indicates the gesture-generated path. This path again is generated through the process of extraction. Its source point in this case is definitive—the hearer's own location. And its directed line is fictively drawn from that location to the beginning point of the speaker's gesture, where it is then completed by the gesture's horizontal component. This gesture-generated path is coaxial, codirectional, and coextensive with the target, namely, the path that the hearer is urged to take. In this case, it is also clearly coinital and clearly cofinal with that path.

Speculatively, the vertical component of the gesture's arc also plays a role. A fictive image of the hand may first be imagined as becoming repositioned in the region in front of the hearer. In synchrony with the vertical component of the actual hand's motion, this fictive hand is then imagined as arcing upward through and engaging that region as it begins its path back toward the speaker. Such engagement can be imagined to perform either of two functions. It might be imagined to draw a fictive line forth from that location in a process of extraction. Or it might be imagined to create a pulling force on the hearer to draw him forward—an analog of the speaker's force-dynamic urging of the hearer's motion toward herself. In support of the conjecture, this kind of arcing gesture seems not to be used to target a path already executed or in the process of execution, where neither extraction nor pulling is pertinent. Note that a beckoning gesture made with one finger—a smaller-scale counterpart of the speaker's arm motion here—can generally be analyzed in the same way.

The whole body as articulator. Fictive extraction can also be illustrated with a variant of the last example. In this variant, the speaker can again say *Come this way*, perhaps turning her head back toward her companion to direct the utterance toward him. But now, instead of arcing her hand and arm, she simply walks away from her companion. She walks along the path she wants them both to take after her companion has completed the targeted path and caught up with her. Here, the speaker's whole body is the articulator. Its initial movement along a path can be compared to the earlier movement of the hand and arm—in particular, to the horizontal path component of that movement.

As before, the articulator's movement is imagined to extract a path line from the hearer's current location to the speaker's starting location. This is the targeted path that the hearer is urged to take. But the walking gesture differs from the manual gesture in at least two ways besides the fact that the articulator is the whole body instead of the

hand. The new gesture begins at the end of the targeted path, instead of constituting its final portion. And the new gesture may act as a model for what the hearer is to do to take the targeted path—namely, walk along it.¹⁷

5.5.2 The Articulator Is Oblique to the Targeted Path

In the preceding section, each articulator with a linear configuration was coaxial with the gesture-generated path, which it directly produced, and so was already coaxial with the targeted path. But here, the linear articulator is oblique to the gesture-generated path. By swinging laterally, it will produce this path either through projection or through path cutting, treated next in order.

Through projection In the first case, the linear articulator swings laterally and emits a projection that correspondingly sweeps laterally. The endpoint of this projection forms a trace. It is this trace that now constitutes the gesture-generated path, which in turn is coprogressive with the targeted path. While the articulator moves codirectionally with this generated path, it is not coaxial with or part of it but is oblique to it.

To illustrate, consider an agent standing in a train station with a confused-looking rider located ahead of her and to her right. Located ahead of the agent and to her left is the exit that the rider needs. The agent might say (57) to the rider. In her accompanying gesture, the agent first extends her whole straightened arm toward the rider. The hand is flat, with the palm facing down, and the extended fingers point toward the rider's torso. Then, by swinging her whole arm some sixty degrees leftward at the shoulder, she moves her hand horizontally to end up aiming its extended fingers toward the exit. Using her eyes as a concurrent articulator, the agent might first look at the rider and then turn her head and sweep her line of sight leftward to end up looking at the exit.

(57) You need to go !-that way.

As for processing, the fingertips edge of the agent's flat hand may seem to project a planar strip that intersects with the rider to form a horizontal linear transect on the rider's body. This transect then moves leftward, forming a linear trace whose progression ends at the exit. This trace formation might be imagined in two ways. The projection that intersected with the rider's body may simply maintain its terminal end and move leftward in its bounded state until it reaches the exit. Or, through gap filling, a fictive vertical plane forms between the rider and the exit door, and the leftward sweeping projection continues to intersect with that construct, its transect sliding along it.

Either way, the trace that is formed is the gesture-generated path. And that, as before, is coaxial, codirectional, and coextensive with the targeted path—namely, the path that the rider is being urged to take. The swinging articulator itself here, though, is oriented obliquely with respect to the targeted path, it does not, as before, jab coaxially with it.

Through path cutting Hassemer (2016) has identified a further gesture that, in our terms, forms a gesture-generated path coprogressive with the targeted path. Like those seen in section 5.5.1, it can also occur after, during, or before the targeted path. For example, a speaker can say any of the three sentences in (58), where the trigger *that* targets a respectively past, current, or future horizontal path. For her gesture, the speaker first holds her right upper arm horizontally in front of herself and holds the forearm straight up, bent at the elbow. She holds her right hand flat, with fingers pointing up and palm facing left. With the pinky in the lead, she then swings the forearm downward, pivoting it at the elbow, until it is horizontal and coaxial with the targeted path.

(58) He went that way. / He's going that way. / go that way.

Hassemer, whose analysis largely accords with our proposal of chained fictive constructs, here finds that the gestural indication of the targeted path arises from the intersection of two planes. One is the plane described by the swinging forearm, and the other is the plane of the ground. But since this notion provides only the static positioning of the path but not its direction, a further processing element might here be added. The speaker's horizontal upper arm might be imagined as resting on a fictive horizontal plane. As the forearm swings downward, it might then be imagined that ever further points along the forearm, in a progression from the elbow to the fingertips, come into contact with the plane. These successive points of contact suggest a path that proceeds from the elbow to the fingertips and then beyond (much as with the second-order trace in section 5.2.2). This constitutes the gesture-generated path, and the gestural process producing it might be dubbed **path cutting**.¹⁸

This gesture-generated path is coprogressive with the targeted path taken or to be taken by the Figure, and thus serves as a cue to help single it out. Again, the swinging articulator is oriented obliquely with respect to the targeted path; it does not jab coaxially with it.

5.5.3 The Articulator Is Parallel but Not Coaxial with the Targeted Path

A gesture of the type here is produced the same as in the original gunman example of (52). But the articulator and its projection—which constitutes the gesture-generated path—are not coaxial with the targeted path. They are merely parallel with it while being laterally displaced from it. Other features are retained. The projection is still codirectional with the targeted path. And it does extend as far as the targeted path does, though it is not literally coextensive with it due to the lack of coaxiality.

To illustrate, a camper who has just returned to her own tent from the tent of acquaintances out of sight some distance away might say (59) to her own tent mates. As noted, her gesture is the same as in the original gunman example. But now, its fictive projection indicates only the direction taken by the other tent's occupants, not their specific path line.

(59) The other campers set off in that direction / that way / thataway.

As can be seen, unlike all the other cases in this section 5.5, the target of the gesture here is actually the Figure object's direction, not its path. The present case thus diverges from the original characterization of this section. Specifically, the ontological category of the target here is not that of a path but of a direction, and the gesture is not coprogressive with the target but only codirectional with it. Thus, this subsection could actually be taken to introduce a new category of targeting gestures, that of **target-codirectional gestures**. But it is grouped with target-coprogressing gestures since it differs from them by only one feature.

5.6 Target-Paralleling Gestures

Through its configuration and movement, a **target-parallel gesture** suggests a one- or two-dimensional fictive construct that spatially parallels a physical object of corresponding dimensionality. This paralleling alignment is an indication to single that object out as the target. Ontologically, the target must be a physical object whose form can be geometrically schematized as respectively linear or planar. In manifesting their parallelness, the fictive construct and the target can be correspondingly straight or flat, or correspondingly curved. This type of gestural targeting rests on a cognitive capacity to recognize parallelness between two spatially separated linear or planar forms. Such recognition of parallelness is a new processing element in fictive chaining, one that resembles the Gestalt principle of grouping by parallelism.

Target-parallel gestures differ from target-intersecting gestures in that the projection or other fictive construct produced by the articulator does not directly contact the target. In this respect, they resemble target-enclosing gestures, except that their relevant fictive construct does not enclose an object but parallels it to mark it as the target. Considered next in order are one- and two-dimensional paralleling.

5.6.1 One-Dimensional Paralleling

To illustrate the one-dimensional case, consider two plumbers standing ten feet away from a cluster of straight water pipes, all crisscrossing each other at different angles. One plumber can say (60) and gesture so as to single one of the pipes out as his target. He holds his hand up with forefinger extended, orienting the forefinger so that it parallels the pipe he wants to target, and moves the finger a distance of about a foot forward and backward along its own axis once or twice.

(60) This is the pipe we need to fix.

The processing of this gesture by the listening plumber includes several steps that, by one interpretation, occur in the following sequence. First, the gesture causes her to imagine a straight fictive line several feet long, coaxial with the finger and its path of

motion, and extending both forward and backward beyond the actual endpoints of the finger's path. Processes involving a trace or a projection might lead from the gesture to this fictive construct.

By the trace interpretation, the hearer might treat the oscillating finger as alternately sending forth a fictive sequel and leaving a fictive trail that, together, form a trace several feet long centered at the hand's location.

Or by the projection interpretation, the hearer might interpret the finger's oscillations as forward and backward thrusts. She would imagine that the finger in its forward thrust launches a linear projection from its tip that self-terminates a few feet ahead of the finger. In the finger's backward thrust, then, a comparable projection must emerge from the base of the finger to self-terminate a few feet behind it. This would be a new element in the imaginal processing of projections seen so far.

In the second step of the hearer's processing, she recognizes that the fictive line suggested by the articulator is parallel to just one of the pipes, which she singles out as the target on that basis. But beyond just recognizing such parallelness, the gapless property of fictive chaining calls for her to construct a link through space from the fictive line to the targeted pipe, something that would then demonstrate the parallelness.

Again, such imaginal linking could take different forms. While keeping the fictive line's orientation intact, the hearer might imaginally reposition it from its original location in space to that of the pipe. The fact that it would there coincide with the pipe would constitute a demonstration of their parallelness. Or by the process of gap crossing, the hearer might imagine that a planar fictive filler progressively extends from one side of the fictive line toward the targeted pipe, until its edge aligns with one side of the pipe. This alignment would again demonstrate parallelness.

An alternative sequence of imaginal steps is also a possibility. For instance, the hearer might first imaginally reposition a fictive copy of the speaker's finger so that it is coaxial with the one pipe parallel to it. She would then imagine that the forward-and-back motion of this fictive articulator generates a fictive line also coaxial with the pipe.

As noted, one-dimensional target paralleling is not limited to straight lines. Suppose, for example, that the plumbers now see three pipes, all aligned one behind the other and all with an overall horizontal orientation, but with one shaped like a sine curve, one like a square wave, and one like a zigzag. To target the first of these, the speaker might again say (60) but now move his extended finger along a sinusoidal path that parallels that pipe. A likely sequence in the hearer's processing would be to first imagine the finger leaving a fictive trail in the form of a sine curve and then imaginally repositioning this trace so that it coincides with the first pipe, thus targeting it.

The issue of alternative conceptualizations The "pipe" example of (60) has included more alternatives for imaginally connecting a gesture with its target than previous examples and so calls for a renewed look at such conceptual alternativity. One

possibility is that different hearers—or the same hearer on different occasions—will in fact have one or another of the specific alternatives in their imaginal system.

Another possibility is that a hearer has cognitive provision for maintaining a type of superordinate or meta-conceptualization that encompasses a certain range of more defined conceptualizations. When in effect, such a meta-conceptualization maintains a level of indeterminacy or vagueness with respect to certain factors, a level that does not resolve into more differentiated structures. Beyond their function in gestural targeting, it might in any case be necessary to posit meta-conceptualizations more generally in cognitive processing, for example, in representing early stages in an individual's understanding of a new domain.

5.6.2 Two-Dimensional Paralleling

Two-dimensional paralleling can be illustrated where two family members face one wall of a room in their house while one says (61) (example suggested by Rephah Berg, p.c.). In gesturing, the speaker holds one hand forward toward the wall, keeping his palm facing toward it, fingers pointed upward. He sweeps his hand left and right several times in a descending zigzag, where the top sweep is aimed along the upper margin of the wall, perhaps reaching its left and right edges, while the successively lower sweeps decrease in their left-right extent. As the hand sweeps left and right, it also rotates somewhat leftward and rightward so that the fingers, as it were, swing back and forth between pointing at 11 o'clock and pointing at 1 o'clock. Through all these movements, the flat hand remains within the same vertical plane.

(61) All this old paint has to be removed before putting on the new coat.

By one interpretation, the gesture first leads the hearer to imagine a flat vertical plane as a fictive construct. This is the very plane that the flat hand's physical movements remain within. The pipe example offered alternative imaginal processes—including trace formation and projection—for getting from the gesture to the first fictive construct. But here, both these processes seem to be present and act conjointly.

As for trace formation, the zigzagging flat hand leaves a fictive trail in the form of a planar strip. When summated, this trail forms a trace in the shape of a zigzag that narrows from top to bottom. Such zigzagging by an articulator may well be a conventional signal that its trace is just a representative sample of the full intended construct, and not itself the whole of that intended construct.

As for projection, the abrupt change in direction that the hand makes at the end of each zig and zag, as well as the left and right rotations of the hand between those points, may be imagined as thrusts that launch fictive planar projections out from the flat hand's edges, both from its sides and from its aligned fingertips. The somewhat random changes in direction here might in turn be a conventional signal for the projections to be imagined as spreading out in all planar directions, much as the spiraling

of the hands in the “thin air” example of (51) suggested that their projections spread out in all volumetric directions.

The outer boundary of the plane that emerges from the zigzagging hand is determined by the ceiling, floor, and side walls of the room. In the projection interpretation of the pipe example, by contrast, the endpoints of the fictive line were set imaginally through self-termination.

Once the hearer has imaginally constructed the fictive vertical plane, her next processing step resembles the repositioning option in the pipe case. The fictive vertical plane, which cuts across the room at the articulator’s location, is imagined as moving forward to be repositioned at the wall being faced. There it coincides with the wall. This is a demonstration of their parallelness and hence of the wall’s being the intended target.

An alternative sequence of imaginal steps is again a possibility and resembles the alternative sequence in the pipe case. The hearer might first imaginally reposition a fictive copy of the speaker’s flat hand so that it is coplanar with the wall parallel to it. She would then imagine that the sweeps of the flat hand occur within the plane of the wall. The fictive plane that the hand’s motion gives rise to would then also be coplanar with the wall.

Flange formation? A certain change in the preceding “paint” example may introduce a new processing element. Instead of covering one wall of a room, suppose that paint covers just one large square on a long continuous exterior wall, with unpainted portions extending left and right. A speaker could face that painted square from a distance of, say, ten feet, and produce the same utterance and gesture as in the preceding example. Now, in that example, the fictive plane imaginally formed by the gesture was bounded by the physical ceiling, floor, and side walls of the room. But here, no physical boundaries of that sort are present. Yet, the fictive plane would be imagined as stopping at boundaries corresponding to those of the painted square.

By one interpretation, this effect is due to a new imaginal process, one in which a fictive plane emerges orthogonally from the side of a linear form. This plane generally functions to block any further progression of another fictive construct—causing it to terminate there. This plane will be called a **flange** after the kind of physical augmentation the word normally refers to. Its emergence and extension may generally be imagined as progressive. The whole process will be called **flange formation**.

In the present example, the hearer may imagine that a fictive flange extends perpendicularly forward from the perimeter of the painted square toward herself—in effect forming a horizontal rectangular corridor enclosing herself and the speaker. Since the line that gives rise to the flange—the perimeter of the painted section—closes around on itself to form a square, the plane that constitutes the flange closes around on itself to form the fictive rectangular corridor. The fictive vertical plane generated by the

speaker's gesture then extends radially outward until terminated by the four sides of this corridor. As before, this newly formed fictive square plane exhibits target-parallelism, as demonstrated by the rest of the fictive chain. There, the plane first undergoes repositioning by sliding forward through the corridor and then coincides with the plane of the painted square to single that painted square out as the target.

An alternative interpretation of this example involves a different, and in fact simpler, fictive chain that wholly avoids the flange notion. Here, a fictive articulator based on the speaker's hand is first repositioned to the wall's surface. There, the flat plane of this fictive hand, this hand's motions, and the fictive plane that these generate are all coplanar with the wall. This generated fictive plane is then imagined as being terminated by the perimeter of the painted square. However, though it can require a more complex fictive chain, flange formation still seems a compelling candidate as an imaginal construct. Experimentation will be needed to determine whether it occurs in hearers' processing.

5.7 Target-Accessing Gestures

Unlike target-intersecting gestures, which yield a fictive projection as their initial fictive construct, gestures of the present category yield a fictive trace. To help highlight what is new here, we first review some of the features previously seen for traces. A trace forms progressively due to the motion of an articulator in a progressive gesture—whether directly or through an intervening construct. Through the geometry of its full linear extent, the trace then helps single out the target, as when it performed target mapping in the “spiral staircase” example of (17), target enclosing in the gifts example of (41), or target coprogressing in the “that way” example of the train agent in (57). In this last case, where the target was a path, the trace's progression, not just its resulting linear geometry, also helped the hearer by indicating the path's direction as a further cue toward singling that target out.

For the present type of gesture, the target is located just past the end of the trace. What helps single out the target here then is not only the geometry of the trace's full extent and its progression, but also the termination point of this progression. The target is generally obscured from the hearer's direct viewing, but the trace follows a route that leads to the target, in effect demonstrating to the hearer how the target might be accessed. A gesture forming such a trace will thus be called a **target-accessing gesture**.

To illustrate, suppose that two people are sitting at one end of a table looking at an apple at the other end. One of them says (62) with heightened stress on the final trigger. For her gesture, she first moves her pointing finger forward a short distance along a line aimed just above the apple. She then bends the finger's tip first downward and next back toward herself along a “J”-shaped path. The final return portion of this “J” is made with a quick jab and is timed to cooccur with the trigger.

(62) That apple has a wormhole right !-there.

The hearer will interpret the gesture to indicate that the wormhole is on the far side of the apple, unseen from his current perspective. He might process the gesture in either of two ways. In one, the speaker's hand, which moves along in inches, may seem to send forth a fictive copy of itself that, through scale shifting, moves along in feet. As it moves along, the fingertip of this fictive articulator is then imagined as leaving a fictive linear trail in mid-air. This trail-type of trace first progresses forward and then ends in the hook of the "J."

Alternatively, as it moves forward, the fingertip of the actual articulator may be imagined to generate a trace directly. However, such a trace could not result from trail formation, since it precedes the articulator, nor from sequel formation, since the articulator keeps on moving. It might instead be of a new "emissive" type. Like some linear projections, such a trace can be imagined as emanating from the fingertip and progressing coaxially with at least the last segment of that finger and its path. But unlike a projection, the trace's forward path replicates the shape of the finger's path, and it progresses in pace with the finger's path—though again moving through a greater distance due to a scale shift.

Under either interpretation, the advancing front point of the trace represents the hearer's viewpoint. The progressing trace thus in effect guides this fictive viewpoint along a route contoured to provide it access to the target. After the trace has curved around the hook of the "J," the hearer is afforded a straight-ahead fictive view of the wormhole.¹⁹

One property of a projection noted earlier (see section 5.2.1) is that, in a hearer's imaginal system, it can pass through intervening solid objects to terminate on a target. So it might be thought that the speaker in the present example would be able to say (62) while pointing directly at the apple. Her finger would then emit a fictive projection that passed through the main body of the apple to terminate on the inside at the wormhole's location and invite the hearer to imagine viewing the wormhole from inside the apple. This alternative way to gesture, though, seems improbable. The present formation of a trace that hooks around in a "J" at the end may serve instead because attending to a wormhole from the outside rather than from the inside is normative.

Linguistic counterpart of a target-accessing gesture The present gesture type—where an articulator's movement models the path that a fictive entity (the hearer's imaginal viewpoint) could take to access a target—corresponds to a type of linguistic fictive motion. This is the "access path" type, where an object's location is characterized in terms of a path that a fictive entity could follow into encounter with the object. We illustrate this type in (63) (a different version of this type was seen in section 5.2.4). The sequence of three spatial morphemes—*down*, *around*, and *behind*—suggests a

correspondingly contoured path that the hearer's imagined hand or attentional focus could follow within the scene evoked by the sentence to access the indicated object.

(63) The vacuum cleaner is down around behind the clothes hamper.

5.8 Target-Beholding Gestures

A gesture of the type treated here seems to present an object located somewhere ahead, as if inviting the hearer to behold it, so as to mark it as the target. Differing significantly from the preceding types, the new gesture type may be best introduced with an illustration.

Showing a friend around his woodworking shop, a hobbyist comes to stand some four feet back from a waist-high table on which there sits a two-foot tall circular saw and says (64). In his gesture, he holds his right upper arm at a forty-five-degree angle forward from his body. He holds his forearm bent another forty-five degrees up at the elbow so that it is horizontal and extends further forward. And he holds his hand—slightly cupped, with palm up and fingers either together or slightly separated—so that it, while aligned with the forearm, extends still further forward. Crucially, the fingers are aimed not toward the geometric center of the saw, but toward its horizontal base. In this initial version of the example, the fingers aim at the midpoint of this base.

(64) And this is my benchtop saw.

This gesture might also include either of two movements. In one of these, the hand and forearm together are thrust a short distance along their common axis toward the saw. In the other movement, the hand is first bent back toward the speaker at the wrist and then swung forward and down into its position coaxial with the forearm.

Some variations can also occur. In one variation, the extended right hand is held so that the fingers now aim toward the right corner of the saw's base, and the palm faces at a forty-five-degree angle leftward instead of straight up.

In another variation, both arms are used, again aimed toward the midpoint of the saw's base. The two forearms and hands taper horizontally toward each other until the tips of the two pinkies touch. The palms of the two hands largely face upward, except that they are slightly slanted toward each other as if to form the two sides of a "V"-shaped trough. (See Kendon [2004] for comparable forms of gestural presentation.)

Such gestures may involve a significant novel feature. They appear to diverge from the basic pattern posited for targeting gestures in which an imaginal chain of fictive constructs connects the gesture with the target. In that pattern, the first construct in a fictive chain imaginably emerges from the articulator itself. But here, the articulator seems to act more like a channel that guides or conducts the initial fictive construct. This initial construct itself seems to arise outside the articulator and then to pass along the surface of the articulator on its way to the target.

How this initial fictive construct might be conceptualized is not clear. One possibility is that it is taken to be an intangible beam or stream—or perhaps a line of sight or point of focal attention—that progresses in a straight line from the nontarget side of the articulator, past the articulator, and then into contact with the target. This imagined contact of the fictive construct with the target then is the signal to the hearer to direct her gaze toward the target to behold it.

In any case, the imaginal process at work here will be called **channeling**, and the new construct, given its indeterminacy, will be called simply the **channeled construct**. The cupped and trough-like shapes of the articulator suggest its channeling function. The fact that the articulator is aimed toward the bottom of the target is an indication that it is not functioning as a target-intersecting gesture. That is, the articulator is not emitting a projection intended to intersect with the target as a sign to single that out. Rather, the articulator acts as a conduit for the channeled construct, directing it so that now *it* arrives at the center of the target.

The term **target-beholding gesture** has here been applied to a gesture of this type to avoid a potential ambiguity. The term “target-presenting gesture” might be more apt, but it could be taken to apply as well to an articulator holding up a target for viewing, which is not intended here.

5.8.1 Eccetive Use of the Gesture

As the “benchtop saw” example showed, a target-beholding gesture can be used to present a target that a hearer had not previously known about. But a target-beholding gesture can also be used to accompany a type of trigger—like the French *voilà*—which targets a previously discussed object that has just been spotted. This type of trigger is here termed “eccetive” (see section 13.5.4 for its treatment). Using the English eccetive trigger *there*, a speaker might thus say (65) to the last guest at a party looking everywhere for her purse, when he spots it on one end of a couch. He may well use a target-beholding gesture and aim the fingers of his open hand toward the purse’s bottom.

(65) !-There’s your purse.

5.9 Target-Neighboring Gestures

Beginning with the present gesture category, the three categories in this final series differ from the preceding ones in that the distance of the articulator from the target is assessed in absolute terms and is determinative (the only earlier exception was coprogression with a coaxial articulator). Previously, the most that could be indicated was an articulator’s relative distance from a target, as by the degree of an articulator’s outstretch (see section 5.2.2). The articulator’s absolute distance was irrelevant because

the chain of fictive constructs initiated by a gesture simply extended across whatever amount of separation existed between the articulator and the target.

The present gesture category differs from the following two in that the articulator must be separated from the target, that is, not in contact with it. But the target must be within or just outside the articulator's physical reach, that is, the articulator's maximum extension away from the speaker's body. Further, within its overall range of movement, the articulator is typically in that portion of the range nearest the target. And if there are other objects within its range, the articulator must be nearest the targeted object. If a speaker holds an articulator near an object in this way, though without touching it, as an indication that that object is the target, we will say that she has produced a **target-neighboring gesture**. This process of targeting through articulator closeness is consistent with the Gestalt principle of grouping by proximity.

To illustrate, suppose that a number of ten-year-olds are lined up across a stage at the end of a singing competition, about to hear the judges' decision. The mistress of ceremonies walks in front of the line and stops at the left of one boy. Facing the audience, the woman first raises her right arm, palm facing forward, and then lowers her arm until the back of her hand is about a foot in front of the boy's chest, and says (66).

(66) And this young man is the winner of our contest.

In processing this gesture, a hearer would observe that the speaker's hand is nearest just one of the youngsters within arm's reach. This is the cue from a target-neighboring gesture that that youngster and no other is in fact the target. In accord with the unbrokenness principle of fictive chaining, the hearer might further imagine that a fictive filler progresses from the hand to the boy through the process of gap crossing.

Note that if the woman had instead walked behind the line, lowered her arm behind the boy, and given her palm a thrust forward toward the boy's back, the gesture could be processed as launching a projection that intersected with the target. The cited example thus helps isolate target neighboring as a distinct gestural type.

5.10 Target-Contacting Gestures

The present gesture category is like the other two in this final threesome in that the articulator's distance from the target is absolute and determinative. But it differs from the preceding category in that the articulator is in contact with the target rather than separated from it, and it differs from the following category in that the articulator simply contacts the target without further affecting it. More specifically, the articulator here, during at least some portion of a gesture, is in nonaffecting contact with something as a cue to marking it as the target. Gestures of this type will be called **target-contacting gestures**. They are treated here according to the target's ontological subcategory.

5.10.1 The Target Is Ontologically an Entity

Where the target is ontologically a physical entity, specifically a solid object, the articulator at some part of a contacting gesture is adjacent to the target, that is, at the second degree of spatial remove from it (see section 2.3.1). But such static contiguity by itself can be viewed as descriptively insufficient, given that, in a hearer's imaginal system, fictive chaining has been assumed to progress dynamically from the gesture to the target. We accordingly propose a dynamic process for this circumstance: **boundary crossing**. In this process, a fictive construct imaginally leaves the articulator, crosses the boundary between articulator and target, and reaches the target where the articulator touches it. After this boundary-crossing process, additionally, the process of target filling ensues, in which a fictive filler spreads from the area of contact out through the target. (See Mittelberg and Waugh [2009] for their comparable concept of "external metonymy.")

As an example, a speaker might touch a finger to the top of one wine bottle or grip it around the middle while saying (67a) and then move his hand to another bottle, perform the same gesture, and say (67b). The impingement of the finger or hand on a bottle in each of these two gestures is what makes it a target-contacting gesture. Moreover, through the process of target filling, the hearer understands that the target is not just the area of the bottle contacted by the finger or hand but the entire bottle.

(67) a. This is Bordeaux. b. And this is Chianti.

Perceptual counterpart of target contacting Such target contacting by an articulator may relate to a particular process in perceptual organization. Palmer and Rock (1994) have proposed that direct contact between objects—which they call "element connectedness"—is to be recognized as a specific visual process. One difference, though, is that they invoke this process to unify smaller adjacent objects into a single larger object, while it is used here where one object targets another.

Augmented contact In the basic form of the present gesture type, as just seen, it is the shift from the articulator's separation from an object to its being in contact with it that marks that object as the target. But in another version of the gesture that can be called **augmented contact**, the articulator is already in contact with an object, but increases its contact with it to mark it as the target.

To illustrate, suppose the previous speaker instead starts with each of his forefingers touching the top of one of the wine bottles so that both bottles are already contacted in this way. He could again say (67). But now he increases his manual contact with each bottle in succession, first with the one on the left and then the one on the right. He does this by touching it with more of his fingers or by moving his previously retracted palm into contact with it. It is this extra contact that then performs the gestural targeting.

5.10.2 The Target Is Ontologically a Location

The preceding analysis of contacting gestures may change little when the target is in certain ontological categories other than that of an entity. This seems to be the case where the target is an action, as when a speaker touches a specially designed lab oscillator and says (68a), or where it is an event, as when a speaker says (68b) while touching the snake or sloughed skin.

- (68) a. This is pulsed vibration. b. This is a snake shedding its skin.

An articulator can seemingly also be in contact with a target that is ontologically a location—as indicated by locative triggers like *here* and *there*—much as it was where the target was a path when indicated by a coaxial articulator (see section 5.5.1). However, this case does bring in special issues, addressed next.

Modeling the location versus the figure One issue that enters is what it specifically is that the articulator indicates. To illustrate, suppose that a host says (69) to a guest just arrived by motorcycle, while standing beside a wall shelf at waist height. The host holds his right hand up with palm facing forward, the digits fanned out—middle finger at the top, thumb and pinky at the sides—curved enough to suggest a sphere, and moves his hand forward into the space above one spot on the shelf.

- (69) You can stow your helmet right here.

The target here is a location, a roughly helmet-sized spherical region of space just above one spot on the shelf. By one interpretation, the speaker's hand serves to indicate this location directly. Two variants of this interpretation can in turn be proposed. In one, the hand is simply in contact with the locative region. The articulator is then imaginably adjacent to the location at the second degree of spatial remove, touching the outer surface boundary of this fictive construct. In the second variant, the hand is imagined as lying within or constituting part of the outermost layer of the locative region. The articulator is then imaginably coincident with the constructed location within that outer layer at the first degree of spatial remove. Either way, a volumetric fictive filler then imaginably spreads from the articulator throughout the targeted location by the process of target filling.

But a new process is also at work here. Where a target is a tangible object, like the wine bottle in example (67a), the articulator can contact the object to any extent and anywhere on its surface and, through target filling, fictive filler will spread throughout the same object to its perceivable outer contour to map it out as the target. But the target here is a location, which is an intangible conceptual construct. It then falls to the gesture itself to make any indication of the location's spatial extent that may be in the speaker's mind. Here, the articulator's position and fanned-out curved configuration suggest the outer contour of a roughly foot-wide spherical location just above the

shelf. This interpretation of a gesture—where the configuration as well as position of the articulator imaginably suggest the size and shape as well as position of a targeted location—will be called **location modeling**.²⁰

By an alternative interpretation, the articulator indicates not the location but the Figure object—in this case, the helmet—that is to be moved into the targeted location. This interpretation again has two variants, analogous to the preceding ones. The articulator can be imagined as adjacent to the Figure object—contacting it at the second degree of spatial remove—now as if gripping part of its outer contour. Or the articulator can be imagined as coincident with the Figure object at the first degree of spatial remove, lying within its outermost layer of material or constituting part of that layer. In either case, the process of shape completion (see section 5.3.2) then yields a fictive image of the fully fleshed out helmet. The hand in its final position thus represents the Figure object occupying its final spatial location. This interpretation of a gesture will be called **Figure modeling**. In it, the configuration as well as position and sometimes movement of the articulator imaginably suggest the size and shape as well as position and sometimes movement of a Figure object occupying the targeted location.²¹

Fictive-chain contraction in contacting a location In the preceding subsection, modeling—whether of the location or of the Figure—was seen as a new gestural process in which an articulator was in touch with a location, either adjacent to or coincident with it, to mark it out as a target. Here we observe that, in addition, most of the earlier types of targeting gestures can be adjusted so that their articulator is also in touch with a location so as to target it. Originally, the articulator in those gestures was spatially separated from the target, having to initiate a fictive chain that led to fictive contact with the target. But in the adjusted counterparts where the target is a location, the articulator itself is fictively in touch with the target. This type of adjustment, which affects both the gesture and its processing, can be called **fictive-chain contraction**. In it, some aspects of the fictive chain that originally connected a gesture with a target are eliminated while others are taken over by the articulator.

Contraction of target intersecting. We here look at the adjustable gesture types individually. For the first of these, in the “helmet” example, the speaker might still say (69) but now gesture by inserting his extended forefinger into the intended space above the spot on the shelf. The conceptual origin of this might be a target-intersecting gesture, where the distally located articulator is a pointing finger emitting a fictive projection that progresses into the midst of the targeted location. But under fictive-chain contraction, the pointing finger itself progresses into the midst of the location to target it.

Contraction of target pervading. A target-pervading gesture can be similarly adjusted. The speaker in the helmet example might now gesture by swiping his flat hand through

the intended space above the spot on the shelf. Instead of the hand projecting a planar strip that sweeps laterally through the targeted location, as the original gesture did in the “car keys” example of (49), the articulator itself is here what passes through the targeted location.

Contraction of target accessing. Comparably, a target-accessing gesture can undergo fictive-chain contraction. For instance, if the shelf in the example is broad and the helmet has to be stowed behind a box already sitting on the shelf’s front portion, the speaker can still say (69) while snaking his arm around the box and inserting his finger into the space behind it. Here, the advancing fingertip does not only demonstrate a route toward the target, as in the “wormhole” example of (62), but goes on to contact and in fact enter the target, now a location.

Contraction of target beholding. The target-beholding type of gesture can also be adjusted if the following is felicitous. The speaker would now place his right hand—slightly cupped and oriented to aim forty-five degrees left of forward and down from horizontal—into the space above the spot on the shelf. In the original version of this gesture, a distal articulator channeled a fictive construct that progressed toward the target. But here, the articulator is within the target, and the channeled construct enters directly into its midst.

Contraction of target paralleling. Finally, a target-paralleling gesture can also be adjusted, as in a new illustration where the Figure object is now a three-foot section of pipe instead of a helmet. Assume that a speaker wants a hearer to lay the pipe against the wall on a particular shelf and says *Put the pipe right here*. The speaker might gesture by moving his straightened forefinger forward and back directly within the horizontal cylindrical space adjacent to the angle formed by the shelf and the wall. This gesture resembles that of the “plumber” example in (60). But instead of being laterally displaced from the target, the articulator is here inside the target, itself now a location.

Constraints on contraction. Some of the earlier gesture categories do not allow fictive-chain contraction to target a location through the articulator’s being in touch with it. Thus, it is not allowed by target-coprogessing gestures, since their target is ontologically solely a path, nor by target-neighboring gestures, since their target by definition is just beyond touch.

And, perhaps curiously, target-enclosing gestures, at least when progressive, seem to resist adjustment. Thus, it seems unlikely that the speaker in the helmet example could gesture by moving his slightly cupped hand to trace out the outer boundary of the spherical space within which the helmet was to be located. Research is needed to clarify where a fictive chain can be contracted, and why there.

A plenary versus a support location A location that an articulator comes to be in touch with so as to target it can actually be of two different types. The type of location treated so far in this section has been a three-dimensional space that the Figure object is expected to occupy in its entirety. This can now be called a **plenary location**. The other type of location is the physical structure—typically a two-dimensional upper surface—that the Figure object is expected to rest on. This will be called a **support location**. A support location can be both referred to by a locative trigger and contacted by an articulator, which thus respectively provide a core cue and a gestural cue to it as the target.

A support location for a three-dimensional entity. A variant of the helmet example can serve for illustration. The speaker now says (70). While the previous verb *stow* tended to foreground the plenary location that the Figure would occupy, here the verb *put* tends to foreground the support location that the Figure will rest on. The speaker's hand can have the same fanned-out and concave form as before. But now the palm faces downward and the tips of the five digits are touched down onto the upper surface of the shelf.

(70) You can put your helmet right here.

We here offer three interpretations as to how this gesture targets the support location, but they all have problems. By one interpretation, the gesture exhibits location modeling. Here, the tips of the five digits are taken to mark out the perimeter of the area to serve as the support location for the helmet. They thus indicate the size, shape, and position of that targeted location. The problem here, though, is the articulator's shape: its concave configuration does not represent the flatness of the support location.

By another interpretation, the articulator models the Figure, that is, the helmet. The problem here, though, is that the hand represents only part of the helmet, not its full extent, so that now only part of the helmet is marking out the support location meant for the full helmet.

A third interpretation is that, through fictive-chain contraction, the gesture is adjusted from a nonprogressive target-enclosing gesture, one much like that in the "manatee" example of (44) where the articulator sent forth a conic projection. The problem here, though, is that the articulator has the same shape as in the original case, which suggests that it is modeling rather than projecting. For any of these interpretations to serve, some adjustment would be needed in the fictive-chain processing described so far.

A support location for a two-dimensional entity. Targeting a support location can be further examined through a related example. The speaker now says (71), substituting *gloves* for *helmet*. He now gestures by placing the inner surface of his flat hand, palm

facing downward, down onto the shelf's upper surface. The articulator there marks out a support location the size and shape of a glove as the target.

(71) You can put your gloves right here.

We can again offer three interpretations—ones now without special problems—of how the hearer processes this gesture. By a location-modeling interpretation, the speaker's hand here adopts the size and shape of the support location and is in adjacent contact with it. By a Figure-modeling interpretation, his hand represents the stacked pair of gloves and is again in adjacent contact with the support location. And by a third interpretation, based on fictive-chain contracting, the gesture is adjusted from a target-intersecting gesture much like that in the slab example of (27), where the front surface of a flat hand sends forward a volumetric projection. Here, this contracted projection immediately intersects with the upper surface of the shelf, forming a transect that statically maps out the full support location as the target.

Trigger indication of the distinction? As has been seen, gestures can distinguish between a plenary location and a support location as a target. But it is not clear whether the locative triggers in any language mark the same distinction. Certainly the English *here* and *there* do not do so, since they can be used to target both types of location. If the distinction is indeed crosslinguistically absent from triggers, this fact would highlight the difference in the kinds of information provided by the category of core cues and that of gestural cues, as well as the need for the targeting process to rely on a range of cue categories.

5.11 Target-Affecting Gestures

In all previous targeting gestures, the gesture has left the target physically unchanged. At most, an articulator has contacted the target without further perturbing it. But an articulator already in contact with an object can additionally affect it, where this effect is a cue to singling the object out as the target. We will say that an articulator in this case produces a **target-affecting gesture**.

An articulator can affect a target in two main ways, treated next in order. The articulator can maneuver it through space while leaving it bodily intact or alter its physical form. In both cases, the articulator moves together with the target, and both movements are factive, perceivable by the hearer.

Still, the hearer may imagine something of a fictive chain connecting the articulator with the target. As before with pure target-contacting gestures, this chain may begin with the processes of fictive boundary crossing from the articulator to the target and then target filling that spreads from the area of contact out through the rest of the target.

In addition here, though, the articulator causes the target to move. We can then posit a new fictive construct that the hearer will add to the fictive chain in his processing.

This is **movement transfer**, in which the articulator's movement is imagined as being transferred to the target.

5.11.1 Target Maneuvering

Where a target is ontologically a solid object, one way an articulator in contact with it can further affect it is to change its location in space without changing its form. This subtype will be called a **target-maneuvering gesture**.

To illustrate, a speaker can produce the same utterances as in the "wine bottles" example of (67) but instead gesture as follows. Already gripping one bottle in each hand, she first raises the left-hand bottle in the air while saying (67a) and then, with or without lowering that bottle back to its initial position, she raises the right-hand bottle while saying (67b). The hearer will process each lift of a bottle by an articulator as a cue to selecting that bottle out as the intended target.

As noted, the fictive processes of boundary crossing, target filling, and motion transfer can help the hearer single out the target object. But since the target in the present case moves as a whole, this singling-out function may be further served by the target's own physical integrity. This property of physical integrity consists of a target's retention of its shape as it moves, that is, its components bear the same spatial relationships to each other as they move (with certain allowances for flexible objects). This further property can then be analyzed as based on the Gestalt principle of common fate.

5.11.2 Target Altering

Where a target is ontologically a physical object, another way that an articulator in contact with it can further affect it is to alter its form. This subtype can be called a **target-altering gesture**.

To illustrate, suppose that, in each of her hands, a clown stands holding a sausage-shaped balloon around the middle. She then says (72) to the children surrounding her as she squeezes in on the balloon in her right hand.

(72) I'll bend this one to make a puppy.

In their processing, the hearers will conclude that the target of the trigger *this* in the speaker's utterance is the object concurrently undergoing a shape change as the result of one articulator's action on it through contact. Here, that is, the children will take the balloon in the clown's right hand as the target.

5.12 Degree of Engagement

The present chapter has been organized to present gesture types in a sequence that facilitates proposing a new parameter: a gesture's spatial and/or physical **degree of**

engagement with its target. This parameter is based on an articulator's proximity to, effect on, or identification with the target.

The lowest degree of engagement is shown by the gesture types that precede target-neighboring gestures. In all those gesture types (except for coprogression with a coaxial articulator), the articulator is spatially separated but at a nondeterminate distance from the target, that is, at the third or greater degree of spatial remove from it. The articulator initiates (or channels) a fictive chain that, over the course of whatever distance, reaches the target.

A greater degree of engagement is shown by target-neighboring gestures, where the articulator must be proximal to the target—at the third but no greater degree of spatial remove from it. In particular, the articulator must be (almost) within reach of the target.

A still greater degree of engagement is shown by target-contacting gestures, where the articulator must contact—that is, be adjacent to—the target at the second degree of spatial remove from it, though without further affecting it. Augmented contact—where an increase in an articulator's contact with an object marks it as the target—then shows yet further engagement.

Target-affecting gestures progress even further along the engagement parameter. Thus, in a target-maneuvering gesture, the articulator is not only in contact with the target but also causes its translational motion. And if causing a form change in an object is regarded as a greater involvement with it than causing its translational motion, then a target-altering gesture is still further along the engagement parameter.

In fact, a target-altering gesture would seem to be the outward-targeting gesture furthest along the parameter. Only self-targeting gestures are further along it (see section 7.4) because the articulator directly represents or constitutes the target.

Note that some degrees of engagement can be related to each other through certain conceptual shifts. Thus, consider an articulator at a separative degree of spatial remove from a target, emitting a fictive projection into intersection with it. Such an articulator can be conceptualized as having been retracted from direct contact with the target, in a target-contacting gesture. Conversely, consider an articulator in fact in contact with the target in a target-contacting gesture. It can be conceptualized as an articulator originally at a separative degree of spatial remove from the target, emitting a projection toward it that has gradually approached the target until the limiting case of its contact with it.

5.13 Degree of Precision

This chapter has presented ten different categories of targeting gestures. But all these categories are crosscut by a parameter here termed **degree of precision**. This parameter ranges from greater approximation to greater precision in a speaker's gestural indication

of a target. This scale typically correlates with the speaker's presentational style, ranging from a casual to a deliberate production of a gesture. And this in turn typically correlates with the gesture's physical realization, ranging from a faster execution with laxer muscles yielding looser movements, to a slower execution with tenser muscles yielding tighter movements. The parameter applies as well to ocular gesturing—ranging, say, from casually directing one's line of sight to gazing intently with facial muscles tensed and head inclined forward.

The parameter may at times further correlate with the size of the articulator chosen, from larger to smaller. And if a projection is conceptualized as emerging from the articulator, it may in correlation range from flaring out through projection widening to remaining narrow as a "tight beam."

A gesture's degree of precision can play a role in singling out or distinguishing between physical targets, as well as in determining locative targets, treated next in order.

5.13.1 With Physical Targets

Where physical objects might otherwise exhibit lateral or radial ambiguity—considered next in order—a gesture's degree of precision can help in disambiguation so that the hearer can settle on the intended target.

For lateral disambiguation To the degree that a speaker's intended target seems difficult to distinguish from entities laterally near it, he seemingly tends to execute a gesture higher along the degree-of-precision parameter. His assessment of such difficulty mainly depends on the spatial particulars—distances, angles, magnitudes, and so forth—of the elements and participants in the situation. This is illustrated next for two different gesture categories.

With a target-intersecting gesture. Suppose a father stands a few feet back from a foot-wide menorah and says (73) to his daughter.

(73) That's the candle you have to light first tonight.

He produces an otherwise prototype intersecting gesture, but uses slower tenser movements of his pointing finger to signal that the projection is being aimed more precisely to help single the correct candle out of the set of closely spaced candles. A normally produced pointing gesture would not be enough to distinguish the intended target candle from the nearby candidates. Here, the addition of precisional features to the normal gesture provides lateral disambiguation, perhaps through the tight beam conceptualization.

With a target-enclosing gesture. Increased precision for lateral disambiguation can also be illustrated for target-enclosing gestures. For example, a speaker selling books lying on the lawn at a yard sale might say (74) to a potential buyer.

(74) !-Those books are three dollars each.

He may use greater precision in swinging his pointing finger in a loop to form a fictive trace around the targeted set of books, in order to distinguish them from other cheaper books nearby.²²

For scope disambiguation In this study so far, we have seen examples of lateral and axial ambiguity, involving the lateral and axial organization of environmental structure. But we now present an example of **scope ambiguity**, involving the radial organization of environmental structure. The degree-of-precision parameter can help disambiguate such a scope ambiguity.

To illustrate, at a museum display of heraldry, a guide stands before a shield with a particular emblem located at one spot on it and wants to provide the visitors with the traditional terms for them both. While aiming his pointing finger toward the exhibit, he first gestures approximatively to target the larger-scoped containing entity while saying (75a) and then gestures precisionally to target the smaller-scoped contained entity while saying (75b). The second gesture may also include an outstretch that moves the tip of the pointing finger somewhat closer to the target (see Hassemer [2009] for a comparable observation).

(75) a. That's an escutcheon. b. And that's a saltire.

In the hearers' processing, the degree of precision exhibited by the speaker's gesture may determine the amount of projection widening that is conceptualized. The more approximative gesture of (75a) may suggest a projection that flares out more, thus intersecting with the larger-scoped entity. The more precision gesture of (75b) may then suggest a projection that flares out less—a relatively tight beam that intersects with the smaller-scoped entity. This gesture's greater proximity to the target may further suggest that the projection has less distance to travel and hence less opportunity to flare out.

Different degrees of precision here thus enable what is otherwise the same basic gesture to provide scope disambiguation between two spatially nested candidates for target. A hearer unfamiliar with the heraldic terms has no co-form cues by which to distinguish the intended targets and thus must mainly rely on these precision-based cues from the gestures.

5.13.2 With Locative Targets

In the preceding example, the two targets were perceivable physical entities, and the gesture's degree of precision distinguished between them on the basis of their radial scope. But targets can also be in the ontological category of locations. Since locations are imaginably constructed entities that are not pre-existent and available for observation, a gesture's degree of precision cannot distinguish between two of them on the

basis of their scope. But it *can* indicate the scope that a speaker intends for a single particular location he has in mind for his target.

To illustrate, a remodeler planning where to hang a painting might make an approximative pointing gesture toward a section of a wall and say (76) to his assistant, expecting her to pencil in a large “X” over that section. However, in planning where to drive the nail for the picture, he can again say (76) but now make a precisional pointing gesture and expect the assistant’s penciled-in “X” to occupy just a small spot. As in the “heraldry” example, he may here also hold his fingertip closer to the target.

(76) Use your pencil to put an “X” !-there.

5.13.3 Distinguishing Degrees of Precision

The number and the value of the settings along the degree-of-precision parameter that gestures can distinguish in a given circumstance is not clear. One possibility is that approximative gesturing is the neutral case to which precision can be added. But the interpretation adopted here is that a neutral form of gesturing exists to which can be added at least one degree either of approximation or of precision. For example, to target a house key lying on a table, a speaker might point neutrally toward the table while saying (77a), or with precision while saying (77b), or loosely and approximatively while saying (77c).

(77) a. It’s over there. b. It’s right !-there. c. It’s thereabouts.

Note that certain core and co-form cues in these sentences corroborate the gestural cues pertaining to degree of precision. These are lexical cues to a certain property of the targeted location, its state of compactness (see section 2.3.4). The *right there* of (77b) indicates that the target is compact, and the *thereabouts* of (77c) indicates that it is diffuse, while the simple *there* of (77a) is neutral to the distinction.

5.14 Gestural Cues to a Speech-Internal Target

So far, the targets of all the gestures treated have been speech-external. Further, they have all had a property in common. They were understood to occupy some portion of physical space. This was the case even where the target was nonvisible but otherwise perceived, like a sound; nonperceivable but imaginally constructed, like a location or a path; or abstracted out from an otherwise perceived substrate, like a manner, quality, quantity, or degree. Accordingly, a gesture and the fictive chain it initiated—themselves both occupying physical space—could spatially connect with speech-external targets.

This section will now show that gestural targets can also be speech-internal. However, apart from such physical aspects of speech as its sounds, an issue is that a speech-internal target does not have the property just outlined. It is understood that the nonphysical aspects of speech—from the meanings of its morphemes to the complex conceptions it can convey—do not occupy any portion of physical space but rather

exist at most within something like an “ideational space.” Thus, if a speaker intends to target such a nonphysical aspect of speech, he cannot use, say, a prototype gesture to point at and send a projection that intersects with the actual target.

Any gesturing in this case then resorts to the same device detailed in chapter 14, where direct indication of a target is either socially avoided or impossible in principle, as here. In this device, the gesture directly indicates only an “initial target.” The hearer then uses certain conceptual processes to transition from that to the “final target,” which is the actual target intended by the speaker.

In the present case, the initial target does have the property of occupying a portion of physical space. This portion of space is an imaginally constructed location in the collocutors’ vicinity. The initial target is itself a fictive conceptualization, treated as a stand-in or proxy for the final target, imagistically or metaphorically representing it.

The speaker’s gesture, then, indicates this initial target within its spatial location. The hearer’s cognizing of the initial target in the gesturally indicated location then leads her to the final target that corresponds to it within ideational space. Such speech-internal gesturing can be used for both cross-speaker and single-speaker discourse (see section 1.6), treated next in that order.

5.14.1 Cross-Speaker Targeting

The cross-speaker case can be illustrated by a gesture I noticed myself producing. I was asking a friend to recall a particular idea he had expressed on a previous occasion. He first came up with two candidates that I said “no” to. He then came up with the right one, and I said (78).

(78) !-That’s what I had in mind!

In my utterance, the trigger *that* targeted the idea that my collocutor (now my hearer) had just expressed speech-internally. For my gesture, I swung my extended forefinger sharply down from an upward to a horizontal position, marking the moment at which the desired idea was reexpressed (Efron’s [(1941) 1972] gestural “beat”). My finger was then pointing it at what I imagined to be a roughly spherical region of space some two feet wide, located a foot or so in front of him at the level of his face and chest.

Seemingly in my own and perhaps in the hearer’s processing of this, the spatial region I pointed at contained an imaginal reification of the utterance he had just produced, as if it had emerged from his mouth, expanded somewhat, and was still hovering in the air nearby. This reified utterance was then the initial target. Imaginal processing in myself and the hearer then led from that to the final target, the ideational content I had wanted him to repeat, itself without form or location.

5.14.2 Single-Speaker Targeting

Gestural indication of a speech-internal target is next illustrated in (79) for the single-speaker case. As he utters (79a), the speaker first aims his extended forefinger forty-five degrees toward his left while saying the name *Gwen*, next swings his finger upward and downward through an arc, and then aims it forty-five degrees toward his right while saying the name *Ruth*. For later analysis, we will say that he produces three gestures during (79a). Next, using precisional execution, he points his tensed forefinger in the direction he had just indicated on the right while saying (79b). He then does the same for the direction on the left while saying (79c).

- (79) a. I was at the tennis court and watched Gwen playing against Ruth.
 b. !-She served. c. And then !-she tripped trying to return the serve.

The instances of the morpheme *she* occurring in (79b) and in (79c) are triggers with speech-internal targets. The speaker intends them to target respectively the referents of *Ruth* and *Gwen*. However, purely anaphoric processes alone cannot yield these intended antecedents. No anaphoric principle would associate the first *she* with Ruth and the second with Gwen, since both the referents are female and they are targeted in the reverse order of their original mention. At the same time, no gestures could directly target the referents of *Ruth* and *Gwen*, since these are individuals whose current locations are both distant and unknown. The speaker solves this problem with the device of initial versus final targets.

To analyze this solution, we start by noting that the first and last of the three gestures that accompany (79a) are not targeting gestures, since they are not associated with triggers. They are rather a necessary precursor for subsequent targeting gestures and will be called **setup gestures**. They lead the hearer to imagine a fictive representation of a constituent's referent as occupying a particular portion of physical space. In the hearer's imaginal system here, specifically, the speaker has set up a fictive representation of the referent of the word *Gwen* in a relatively small portion of space somewhat in front and to the left of himself, and he has done the same for the referent of *Ruth* on the right. The hearer may cognize these representations as fictive but otherwise relatively realistic images of the two women dynamically in action.

These spatialized representations then serve as the initial targets of the gestures accompanying (79b) and (79c). As each spatial location is in turn intersected by a projection from the speaker's gesture, the hearer transitions in her cognition from the fictive representation of a tennis player she has imagined at that location to its corresponding referent in the speech-internal world, that is, to the final target.

Where a gestural cue is necessary for a speech-internal target In some languages, as a consequence of their syntactic and pragmatic patterns, the use of anaphora to refer uniquely back to an antecedent of a certain type is so difficult that gestural indication

of the antecedent is virtually a necessity. This phenomenon is seen in Halkomelem, a Salish language (Donna Gerdts, p.c.; Gerdts and Hukari 2003).

In this language, on the one hand, a third-person speech-internal referent is readily targeted by such triggers as a verb's third-person subject inflection. If such a referent continues as the topic over a stretch of discourse, the subject inflections of successive verbs—in the active or passive as needed—repeatedly target it.

But if the discourse introduces an additional third-person referent ancillary to the initial one—for example, by a phrase meaning 'And along came Dick's sister', appearing after 'Dick' has been the only third-person referent—targeting it later is difficult for several reasons. First, the language resists the use of a full NP to refer again to an entity already introduced into the discourse. Second, a verb's third-person inflections are neutral to gender and number and so could not serve to distinguish two referents differing in those attributes. And third, an independent pronoun, which does distinguish gender and number, is highly topical, so its use as a trigger to target an ancillary referent would be inappropriate.

What a Halkomelem speaker typically does in such a case is first, when newly introducing the additional referent, to produce a sidelong glance toward some off-center location. This use of the eyes as the articulator is the setup gesture. To target that referent later, the speaker does use the same third-person subject inflection as otherwise, but now accompanies it with another sidelong glance to the location that was previously set up. This subsequent eye movement is now a targeting gesture. The projection from the eyes intersects with its initial target, the fictive representation of the referent that occupies the location. That initial target then leads the hearer cognitively to the final target, the referent itself.

5.15 A Cognitive System of Spatial Fictivity

As seen, the central theoretical proposal in this chapter is that a speaker who produces an outward-targeting gesture, and a hearer who views it, conceptualize a chain of fictive constructs that progresses causally without gaps through space from the gesture to the target. It is now further proposed that such fictive chaining is just one subsystem among a number within an extensive cognitive system of **spatial fictivity**. This system operates at least across the cognitive domains of vision, language, and culture, perhaps having appeared first in the evolutionarily earliest of these, vision (see Talmy [2015] for the evolutionary argument).

Each subsystem of spatial fictivity seemingly is distinct to some degree in its inventory of elements and in the principles by which these elements are selected and combined for particular cases. We next outline several such subsystems as they operate in the three cognitive domains just cited. What is common across all such subsystems of spatial fictivity, though, is that they generate fictive representations with particular

shapes, locations, or movements in space. Our proposal of fictive chaining for targeting gestures, then, is here seen to fit within a larger cognitive system.

5.15.1 In Visual Perception

Perceptual organization in the modality of vision exhibits extensive spatial fictivity, here divided into four types.²³

Gestalt formations Visual fictivity is present, for instance, when a viewer perceives the virtual (i.e., fictive) whole of a figure, where only some elements of the figure are explicitly (i.e., factively) visible. This perceptual formation of a Gestalt figure can occur through the action of the Gestalt principles of grouping, such as closure and common fate (Wertheimer, 1923). For example, in the triangle case of Kanizsa (1979), where only three Pac-Man shapes are explicitly visible, a viewer instead perceives three circles partly occluded by the corners of a single triangle, which is thus composed mostly of illusory contours.

Skeletal formation Visual fictivity is also present where a viewer perceives virtual delineations within a bulk figure, whose exterior form is all that she sees explicitly (Marr, 1982; Feldman and Singh, 2006; Petitot, 2011). For example, to pick a vivid image, a viewer looking at a kneeling elephant might perceive something like a virtual skeletal structure within its explicitly seen bulk form.

Motion simulation Visual fictivity further occurs where a viewer perceives virtual motion not directly exhibited by what she sees explicitly. One example is the apparent motion that, in the phi phenomenon, can be perceived, for instance, between alternately flashing points of light (Steinman et al., 2000).

And in the process of “forward simulation,” a viewer can simulate the potential future trajectory that an object or set of objects will take on the basis of its current disposition or movement (Smith et al., 2013).

Fictive chaining To this range of spatial fictivity in vision, we here add our proposal of fictive chaining, the imaginal concatenation of fictive constructs from a gesture to its target. Though such fictive chaining can be purely visual, it is generally associated with the use of language, addressed next.

5.15.2 In Language

Language also exhibits spatial fictivity extensively. In addition to its reliance on the visual fictivity of fictive chaining, just addressed, we here outline two further forms.

Fictive motion Linguistic spatial fictivity is present where language represents fictive motion, for example, of the types seen in (80) where the representation of factively stationary objects suggests the fictive motion of an intangible line. This line forms a demonstrative path in (80a) and, as a line of sight, a sensory path in (80b).

- (80) a. The tip of the peninsula points past the island.
b. I looked past the island.

Schematization Linguistic spatial fictivity is also present where a spatial closed-class form, in its schematic representation of an object with bulk, requires the conceptualization of an abstracted delineation within that bulk. Thus, the English preposition *along* in (81) requires that the hearer schematize the twisted tree trunk down to a spiral one-dimensional line—the caterpillar’s path then parallels that line.

- (81) The caterpillar crawled up along the twisted tree trunk.

5.15.3 In Culture

Talmy (2000b, chapter 7) proposes that human cognition includes a cognitive culture system responsible for the acquisition and exercise of the structure of an individual’s surrounding culture. Such cultural structure can also include conceptualizations of spatial fictivity.

One such conception is the emanation of an intangible force that emerges from or is sent by some source, travels through space, and impinges on some distal entity that it affects. In anthropological descriptions, such force is variously characterized as magical influence, life energy, power emanation, and mana. Another such conception is that of spreading contamination, in which the touch or influence of a contaminated object taints another object.

Certain other cultural conceptions resemble linguistic fictive motion of the “sensory path” and “demonstrative path” types. For example, the Clackamas Chinook (Jacobs, 1958) tell the tale of Sun Boy, who can direct his gaze at any object and set it on fire. And in U.S. iconography, Superman’s X-ray vision projects forward from his eyes, while movie wizards battle with beams projecting from their fingertips.

5.16 In Sum

Co-speech gestures can be divided into three classes—self-targeting, outward-targeting, and nontargeting gestures—that, in the order just given, decrease in salience, obligatoriness, and metacognitive accessibility. Gestural cues to a target are provided by outward-targeting gestures, which, as this chapter’s focus, are simply referred to as targeting gestures.

The central theoretical proposal here is that, on viewing a targeting gesture, a hearer conceptually generates an imaginal chain of fictive constructs—a fictive chain—that proceeds causally, without gaps, from the gesture to its target. This proposed process of fictive chaining is part of a more general cognitive system of spatial fictivity, realized across vision, language, and culture, and in part supported by corresponding instances from those other domains.

Targeting gestures are divided into ten categories. To mark an entity as the target, a gesture can yield a fictive construct (or deploy an articulator) that intersects with it, encloses it, pervades it, coprogresses with it, parallels it, accesses it, presents it for beholding, neighbors it, contacts it, or affects it. The target of such gestures can be of almost any ontological category. It can even be speech-internal, given the use of setup gestures and initial-to-final targeting.

In initiating or conducting a fictive chain, the articulator in these ten gesture categories adopts certain types of configurations and/or movements. These include a swing, a thrust (in the form of a jab, flap, wave, or swell), an outstretch, or a channel. These types can be produced singly or concurrently in a nonprogressive gesture, extendedly in a progressive gesture, or repeatedly in a serial gesture.

The fictive constructs in the chains initiated or conducted by the gesture types include both structures and operations. Fictive structures include a projection, an extraction, a transect, a trace, a trail, a sequel, a flange, a fictive articulator, and fictive filler.

Fictive operations, in turn, include those definitional for the ten gesture categories. They further include sweeping, launching, self-termination, repositioning, shape completion, scale shifting, radial contraction, radial expansion, projection elongation, projection widening, fictive-chain contraction, sequel formation and cessation, filler spread, target filling, target mapping, gap crossing, boundary crossing, motion transfer tracking, target sampling, and Figure or location modeling.

Fictive constructs also occur in certain relationships, contrasts, and taxonomies. These include a sample-to-target relation, an enclosure-to-target relation, a plenary versus a support location, a projection's type of extension, and an enclosure's degree of offset.

In the order in which the gestures of the ten categories are presented, their articulators fall roughly along a parameter of increasing engagement with the target, based on their proximity to, effect on, or identification with it.

And crosscutting the gestures of all ten categories is a parameter of precision in the execution of the gesture, ranging from casual and approximative to deliberate and precise.

Notes

1. Our class of outward targeting gestures is apparently what Fillmore (1997 [originally 1971]) and Levinson (1983) intended to separate out as “gestural deixis.”
2. This characteristic accords with the “agent-distal object principle” of Talmy (2000a: chapter 2, section 6.2). That principle was proposed to account for the starting point and the directionality in linguistic fictive motion.
3. Talmy (2003) observes seemingly comparable differences between the spatial subinventory in spoken language and the so-called classifier subsystem in signed language, which is dedicated to representing the location or motion of objects relative to each other in space. There may thus be a cognitive connection between the overt configurations and movements of the hands in this sign language spatial subsystem and the fictive constructs of gestural targeting.
4. In an alternative conceptualization not adopted here, the fictive line is ongoingly generated at the currently leading point of that line. These ever-new leading points move forward—leaving behind a static line—until they hit the target and stop. In yet another possible conceptualization, also not adopted here, a micro-line forms at the fingertip and, with one end rooted at the fingertip, stretches along its axis until its leading point hits the target, and then it stops its expansion.
5. In some languages, however—for example, Japanese and Mandarin—the corresponding demonstrative path type of fictive motion allows only the *to* case—that is, the case of direct contact with the Ground. The linguistic fictivity subsystem of such languages is here thus more like the gestural fictivity subsystem.
6. In American Sign Language, for example, suppose that I want to sign that a particular wall was architecturally moved further out to enlarge a room. To represent the wall in its initial position, I begin the sign by holding both my flattened hands horizontally before me, with both palms facing me and the fingertips of the left hand touching those of the right. If the wall was physically moved along the floor while still standing, I move my hands horizontally away from myself with a steady deliberate movement. Here, the spatial path of my hands represents the path that the wall moved through. But if the wall were instead removed and set up again at the more distant position, the path followed by the wall was complicated and irrelevant. I must now move my hands through a quick up-and-down arc, in effect showing them “jump” from their initial position into the new more distant position. This quick arc gesture can be interpreted as signaling that one is to disregard the spatial path characteristics that the hands are seen executing and to take into consideration only the initial and final hand positions.
7. Since the smooth swing here follows several thrusts, rather than starting from the beginning of the row, it is not interpreted as the lateral swing described in the next subsection.
8. As with the demonstrative path type of fictive motion, languages such as Japanese and Mandarin can express only the *toward* case—that is, the direct impingement case—in their counterpart of the prospect path type. Here again, then, the linguistic fictivity system of some languages is like the gestural fictivity system.

9. The word *horse* in the speaker's utterance is a co-form cue to the hearer to take the full horse as the intended target. This co-form cue is now corroborated by the gestural cue, which ends with a fictive filler spreading out over the whole of the horse.

10. If the convention in some culture were to point not directly at a person but, say, at a spot on the ground just in front of her, then the hearer would need to imaginably reposition that point of intersection onto the person's body. This would be a divergence from the prototype at the termination phase (see section 5.2.4). In such a case, it is not clear where the hearer would imagine the repositioned point to be located on the person's body, and hence what pattern of spread the filler might exhibit.

11. It is unclear why it seems more natural here for the hands to swing downward so that the projections on-sweep down between the books than to start by aiming the hands directly at the level of the books and then thrust them forward to advance the projections between the books. The reason may have to do with the fact that these books can be geometrically schematized as parallel vertical planes.

12. This fictive chain resembles that proposed for the "hills" example of (30) in the following way. Both include a projection and a path of repositioning oriented at a "V" angle to each other. Here, though, the repositioning follows the projection instead of preceding it.

13. It might be needed, for example, if a speaker says *I need a plastic cube this big*, while executing the following gesture. On each hand, she extends the thumb and forefinger at a right angle to each other. With both forearms horizontally in front of herself and palms facing each other, she holds all four extended digits on the same horizontal plane. She places them as if they occupied the opposite corners of a square. The corresponding digit tips do not touch but are separated by some four inches. The hearer would perform a shape completion by first imagining the edges of the square indicated by the digits and then, directed by the cue from the co-form *cube*, imagining a cube rising up from that square.

14. A further conceptualization might be that a multitude of componential transects arises from these multiple intersections, together constituting a composite volumetric transect. This total transect then provides a nonprogressive mapping of the target.

15. As noted in section 3.1.1, the triggers *thisaway* and *thataway* must be accompanied by a targeting gesture. But these triggers may be further constrained in that this gesture must be of the target-coprogressing type. The triggers can apparently not be used if the speaker simply points to a path that someone else is taking. For example, while on a campground addressing a hearer who wants to know which way to go to find the toilets, a speaker can point to a man in the distance walking along an oblique angle and say *Go in that direction*, but not *Go thataway*.

16. This extraction process does not counter the proposal that fictive chaining proceeds from the gesture to the target. First, it is the articulator's movement that acts to imaginably draw a fictive line toward itself. Second, it is this gesture-generated line that then connects to the targeted path.

17. Since the speaker's whole body here provides the cue, it could have been treated as a corporal cue to be cited in chapter 6. It is cited here, though, because the body is used to indicate a path, not a location.

18. This gestural process might be analogized to the use of a traditional paper cutter, where a blade pivoted at its end is swung down against the edge of a flat bed, producing a lengthening cut across paper lying on the bed.

19. For an account of why the trace is timed to end at the moment of the stressed trigger, see the "collage" example in (11:36).

20. A location's size and shape can alternatively be set through environmental and other cues, as in the "lost horseshoe" example of (1:55a). The articulator there, though, did give some indication of the location's position by aiming a projection toward it.

21. Kendon (2004) distinguishes three gestural processes in which an articulator schematically shows different aspects of an object to represent it. The articulator adopts the shape of the object in "modeling," mimics its use in "enacting," and traces out its contour in "depicting." Of these three processes, his "modeling" is in fact most like our location modeling and Figure modeling since, in the latter, the articulator adopts something of the shape of the entity to represent it. The differences here are that the articulator shows only a portion of the entity's shape—one part of its outermost spherical layer—and then either coincides with that portion or contacts it.

22. In previous examples of lateral ambiguity, one object needed to be distinguished from other objects. The present example is interesting in that one grouping of objects needs to be distinguished from other groupings of the same kind of objects. This is then perhaps a second-order type of lateral ambiguity.

23. Talmy (2000a: chapter 2, sections 9–11) places visual fictivity within a larger cognitive system. It proposes uniting perception and conception along a single continuous cognitive parameter of "ception." This parameter aligns the effects of twelve component scales, including that of palpability, which runs from the most concrete to the most abstract. Visual fictivity, then, is located in the "semi-abstract" region of the overall parameter.

6 Corporal Cues to a Target

In the speech-external domain, a corporal cue is the location in space occupied by the speaker's or hearer's body. A trigger that, in its current reading, is lexicalized to require the use of a corporal cue will be called a **corporal trigger**.

The main commonality between gestural and corporal cues is that both these cue types are provided by a collocutor's body, but we call attention to three major differences. First, gestural cues are produced volitionally by the speaker in order to indicate a target. Accordingly, in terms of the speaker's cue adequacy processes (see section 1.5.1), they are of the productive type. By contrast, corporal cues are prototypically afforded by the sheer presence of a collocutor's body at a particular location at the moment that the speaker utters the trigger. The speaker here simply takes advantage of that location as a cue, using the perceptual type of cue adequacy process. She uses the productive type of process only if she volitionally moves her body to a particular location so that it will provide a desired corporal cue.

Second, gestural cues typically consist of particular configurations or movements of specific body parts and so are comparatively fine-grained, able to designate a more defined target. But corporal cues are of a coarse granularity that takes only the overall location of a collocutor's whole body into account and can thus designate only a less defined target.

And third, gestural cues are provided only by the speaker's body. While this is prototypically the case for corporal cues as well, they can also be provided by the hearer's body. That is, in the speech-external domain, a corporal cue can be either speaker-centered or hearer-centered.

The analysis of corporal cues in this chapter starts with their prototype use in English for speech-external targets, proceeds to uses outside the prototype and outside English, and ends with their application to speech-internal targets in section 6.10.

6.1 Two Corporally Based Regions

In the speech-external domain, the prototype corporal cue is the current spatial location of the speaker's body (see section 6.7 for the hearer's body). Commonly, two regions of space are based on this prototype location. One is a region adjacent to and surrounding the speaker's body. This will be called the **vicinal region**, using the existing English adjective referring to the vicinity of an object. The hearer must determine the likely shape and extent of the vicinal region that the speaker has in mind, as analyzed in section 6.3.2. But perhaps most commonly, its shape is roughly that of a hemisphere centered on the speaker, with its rim forming a circle on the ground. The second region begins at the outer boundary of the vicinal region and can extend indefinitely outward from there. It will be called the **extravincinal region**. Both of these regions will be said to be **corporally based regions**.

Where a trigger directs a hearer to determine a corporally based region, the clause generally also refers to some entity located with respect to that region. With this addition, the overall spatial arrangement actually includes three locations. The first is the location of the speaker's body. The second is the location of the vicinal region around the speaker (or the extravincinal region around that). And the third is the location of the additional entity with respect to that region. This entity itself will here simply be called the Figure.

The target indicated by a corporal cue (here, the speaker's location) is prototypically a corporally based region, which will be the focus for now. But the target can also be the Figure, as treated in section 6.5.

For now, information from a corporal cue will not be complemented by information from other exhibitivive cues—that is, from gestural, targetive, or hearer-focus cues. In this case, the target will generally be the whole of a corporally based region. This is sufficient where the communicative situation requires localizing of only coarse granularity. The addition of further exhibitivive cues will be treated in section 6.6. In that case, as will be seen, the spatial relation of the target to a corporally based region can be more precisely specified.

In English, the main triggers that respectively target the whole of the vicinal region and of the extravincinal region are *here* and *there*, as illustrated in (1a) and (1b). These sentences might be said by one boy in a group of boy scouts around a campfire in a wilderness area at night. His utterances are felicitous even though he looks only at his fellow scouts without pointing at any particular spot and no special sounds or sights have occurred.

- (1) a. I think there's a ghost here. b. I think there's a ghost out there.

The trigger *here* in (1a) targets the vicinal region, the area surrounding the speaker's location, and indicates that the Figure entity, the ghost, is located somewhere in this

region. And the trigger *there* in (1b) targets the extravincinal region, the area of wilderness that surrounds the vincinal region, and indicates that the Figure entity, the ghost, is somewhere in that region. How the boundary between the two regions might be set in the cognitive processing of speaker and hearers is examined in section 6.3.2, but it might here be located, for example, where illumination from the fire ends.

Where the corporal cue is uncomplemented by other exhibitivite cues, the extravincinal region may be too extensive to be useful as a target for the purposes of most communications. Examples like (1b) may thus be comparatively rare. The next set of examples will accordingly all target only the vincinal region.

6.2 The Figure's and Hearer's Relations to the Vincinal Region

The vincinal region targeted by the corporal trigger *here* is built solely around the location of the speaker. Accordingly, the use of this trigger is largely unaffected by differences that the Figure and hearer can exhibit in their relations to that region and remains constant across such variations. But these variations still merit examination.

6.2.1 The Figure's Varied Relations to the Region

The same corporal trigger *here* continues in use to target the vincinal region around a speaker as The Figure varies with respect to several sets of factors.

Plexity, boundedness, and extent A Figure entity can vary with respect to its plexity, boundedness, and extent—and, accordingly, with respect to the site or sites that it occupies within the vincinal region. The prototypical Figure, like the ghost in (1a), is a uniplex bounded entity, one smaller than the region, that is represented by a singular count noun. Its site then is a bounded-off volume of space—coextensive with its own dimensions—that comprises one portion of the vincinal region around the speaker.

But the Figure can also comprise a multiplexity of bounded entities, represented by a plural count noun. Their sites might be distributed through the region around the speaker. An example is the restaurants that the speaker in (2a) indicates to an out-of-town visitor she is hosting in her home. Or the Figure can be an unbounded continuous mass, represented by a mass noun. Its site might in fact occupy the whole of the region around the speaker. An example is the radiation that a pilot, flying in a cloud formation, reports in (2b) over her radio.

- (2) a. There are lots of restaurants around here.
- b. The radiation is strong everywhere here.

Tense and reality status Another variable is the tense and reality status of a Figure's appearance in a vincinal region. To expand on the example in section 1.2.2, the woman

at a fairground booth, in responding to an inquiry about Fred's whereabouts, can, without gesturing, use the same trigger *here* to refer to his location in her vicinal region, whether it is past, present, or future, as in (3a), (3b), and (3c) (speaking on her cell phone for (3b)). Or she can indicate that its reality status is potential or negative, as in (3d) and (3e).

- (3) a. Fred was here this morning. b. Fred is here now.
c. Fred will be here later. d. Fred might be here tomorrow. e. Fred isn't here.

This range shows that the location of the vicinal region in space is based on the location of the speaker at the moment that she utters her corporal trigger and is unaffected by the timing or actuality of the Figure's occurrence in relation to it. It further shows that any locatedness of the Figure in the vicinal region need only be conceptually entertainable. It need not be either current or realized—or, for that matter, even possible.

Motive state Further, the Figure's site relative to the vicinal region can vary with respect to its motive state. Thus, while the trigger *here* in the preceding examples targeted the same region around the speaker, the Figure Fred was implicitly represented as being stationary in that region in (3b), as departing from it in (3a), and as entering it in (3c).

Further, the Figure is explicitly represented as first entering and then leaving the region in (4a) and as moving about within it in (4b) (said over a cell phone).

- (4) a. Fred just passed through here.
b. Fred is walking around in front of the booth here.

Three syntactic roles of corporal *here* Finally, a Figure's particular site or path relative to a vicinal region can vary on the basis of which syntactic role is being manifested by corporal *here* out of the three in its polysemous range (see sections 3.1.2 and 3.5 for the corresponding three syntactic roles shown by *there*). The semantic representations in (5) show corporal *here* respectively as an inessive adverb, as an illative adverb, and as a nominal.

- (5) a. in the vicinal region around the speaker
b. into the vicinal region around the speaker
c. the vicinal region around the speaker

Corporal *here* is seen in its first two adverbial roles respectively in (6a) and (6b). And it is seen in its third nominal role in (6c) as the object of a preposition and in (6d) as the subject of the sentence.

- (6) a. Fred was here earlier. b. Fred came here earlier.
c. Fred passed through here earlier. d. Here is a nice place to rest.

6.2.2 The Hearer's Varied Relations to the Region

Again with the same corporal trigger *here* remaining constant in targeting the vicinal region around a speaker, the hearer's site can also vary in its location relative to the region as well as in its motive state. Thus, the site of the hearer in the "restaurants" example of (2a) started and remained inside the vicinal region. But that of the hearer in the "radiation" example of (2b) started and remained outside the vicinal region. And consider (7), said without gestures by a mother, who is standing in a playground, to her son some thirty feet away as he holds the handle of a wagon behind him. Here, the site of the hearer, the son, will transit from outside to inside the mother's vicinal region when he moves the Figure, the wagon, into that region.

(7) Pull your wagon over here.

Further, the vicinal region around the speaker varies in its perceivability to the hearer. Thus, the son in the preceding "wagon" example had the full vicinal region around his mother within his scope of visual perception. But while the visitor in the restaurants example of (2a) may have been able to view some of the surrounding region from his host's window, he could not take the full intended region into his scope of vision. And the listener to the radio report in the radiation example of (2b) could perceive none of the speaker's vicinal region.

The main point of these observations is that the vicinal region here is based on the speaker's location, and the use of the corporal trigger *here* to target it remains constant solely on that basis. Accordingly, the location, motive state, and perception of the hearer have little relevance to the trigger's use.

6.3 Three Phases in Processing a Corporal Trigger

Again using a regularized description (see section 1.3), we will say that, when a corporal trigger is heard, a hearer's cognitive processing consists of three consecutive phases—determining the location of the speaker, of the region, and of the Figure—discussed next in order.

6.3.1 Phase 1: Determining the Speaker's Location

In the first phase of this corporal targeting procedure, the hearer is directed by a corporal trigger to determine the corporal cue—here, the spatial location of the speaker's body. The use of this location as a reference point was seen represented by the capitalized form "Here" in our analysis of the degree of spatial remove (see section 2.3.1). This phase amounts to the first stage of the targeting procedure, the cue-determining stage, when applied specifically to a corporal cue.

The hearer generally understands the speaker's location in terms of its spatial relation to his own location and to the global environment. In fact, the notion of the speaker's

location overall fully fits section 1.7.1's general characterization of a spatial location as a bounded-off portion of space that meets two conditions. The first condition—that a physical entity did, does, or could occur in part or all of the bounded-off portion of space—is here met in that the speaker's body occupies the whole of the location. And the second condition—that the bounded-off portion in turn has particular spatial relations to the spatial matrix as a whole or to other bounded-off portions therein—is here met in that, as just noted, the speaker's location is understood relative to the hearer's location and to its surroundings.

A hearer's means for determining the speaker's location A hearer can use perceptual or conceptual means to determine a speaker's location. If the speaker is within the hearer's view, he can directly determine her location visually. Typically here the hearer already knows the speaker's location, as in the restaurants and wagon examples ((2a) and (7), respectively). In this case, the hearer at most merely increases attention on the speaker's location on hearing her use the corporal trigger *here*. But a visual search is otherwise an option.

Where the hearer cannot see the speaker's body but can hear her voice, he may be able to use auditory perception to determine her location. For example, a husband hearing his wife call out (8) from elsewhere in the house might be able to determine her location auditorily and, from her corporal trigger *here*, reckon that the Figure, his wallet, is located in the region immediately around her.

(8) I found your wallet. It's here.

Apropos here, it might at first be thought that the sentence *I'm here* is simply tautological because, if semantically unpacked, it would mean 'I have a location within the region that is around my location'. But it is non-tautological if the speaker intends that her voice guide the hearer in determining what her location is.

Where the hearer can hear the speaker's voice but not be able to use it to determine her location, as when on the phone, he may still know or assume her location if the context is familiar—for example, if she is calling from work. But finally, if the context is unfamiliar, as in the radiation example of (2b), such a hearer must conceptually construct the speaker's location in imagination.

The location of a moving speaker If the speaker is stationary, as in most of the previous examples, her location remains constant, and the hearer takes this fixity into account in determining her location, that is, in determining the corporal cue. But if the speaker is moving, like the pilot in the radiation example of (2b), her location undergoes change. The hearer must then determine what her location is at the moment she utters the corporal trigger *here*. Her shifting location keeps redefining where "here" is.

The speaker and hearer in fact exploit this property of the trigger in the case of **serial targeting**, where the speaker, while moving along, utters the same corporal *here* at different locations to target different regions. To illustrate, an ornithologist in the woods to record bird flight and song might, while walking along, first say (9a) at one spot, and then say (9b) at a further spot. Her two uses of the corporal trigger *here* target two non-overlapping vicinal regions around herself at different locations. The hearer in such a case must either keep updating his assessment of the speaker's location or try to project its progress.

- (9) a. Here's a good place to set up the camera. . . .
- b. And here's a good place to put the microphone.

Note that, in terms of cue adequacy processes (see section 1.5.1), the speaker in a case like this has productive control over the corporal cue. That is, although the cue provided by the speaker's location is prototypically a physical given of the observed scene, the speaker here turns this cue into a product of her own volition.

Speaker salience It can be posited that a hearer experiences a specialized form of salience as being associated with a speaker who communicatively addresses that hearer. This **speaker salience** may attract the hearer's attention to the person addressing him to a degree matched by little else in the auditory environment, such as by other nearby speakers with their own addressees or, for that matter, by the sounds of traffic or of nature. The hearer may tend attentionally to lock in on the speaker's discourse (as well as on its interaction with his own) and to block out other ambient sound.

Speculatively, a hearer's attentional attunement to speaker salience may be a feature of human cognition that co-evolved with the evolution of language. This itself may in turn have built on an already-evolved predisposition in an individual animal to direct attention strongly back to any other animate entity that has turned its attention toward that individual.

Such speaker salience is proposed in the present context because, if it exists, it would facilitate the hearer's process of determining the speaker's location in space.

6.3.2 Phase 2: Determining the Region's Location

Once the hearer has determined the location of the speaker's body, the second phase in his corporal targeting procedure is to determine the location of the vicinal region around the speaker. This region's location involves its position within space and its boundary, which in turn sets its size, dimensionality, and disposition (shape, orientation, etc.). Where this location is the target, as is the case in the present discussion, this phase amounts to the second stage of the targeting procedure, the target-determining stage.

The location of the vicinal region again fully fits section 1.7.1's general characterization of a spatial location. It meets the first condition there in that, as seen in the preceding examples, a Figure entity did, does, or could occur in part or all of the bounded-off portion of space that constitutes the region's location. And it meets the second condition in that that region's location in turn has a particular spatial relation to yet another bounded-off portion of space, namely, its circumjacency (adjacent surrounding) of the speaker's location.

In some cases (see the upcoming Environmental cues subsection) the hearer judges what the location of a vicinal region is by taking something perceivable in the environment as the region's outer boundary. But usually, there is no such physical demarcation of a boundary. The hearer must then use other targeting cues to decide where to locate the vicinal region. His process is thus one of imaginally constructing the region, not one of perceptually finding some pre-existing entity, as was typically the case with determining the location of the speaker's body. The vicinal region here is thus an intangible conceptual construct.

Three processes in constructing a vicinal region A hearer's imaginal construction of a vicinal region around a speaker's location can be analyzed as comprising three related but distinguishable cognitive processes.

In one of these processes, the hearer prepares to separate out or distinguish one portion of space—as yet nondefined—from the rest. This process will be called **excerpting**.

A second process is **centering**. In this process, the hearer positions the region so that it surrounds the speaker's location—itsself now known from phase 1. That is, he positions the region so that the speaker's location is roughly at its center. This operation of positioning rests more specifically on notions of inclusion, adjacency, and centrality: the region includes the speaker at its center and is adjacent to her.

The third process is **bounding**. In this usually imaginal process, the hearer conceptually establishes the outer boundary of the region. With the region already excerpted and centered, he now sets its size, dimensionality, and disposition—three characteristics treated next in order.

Size bounding One characteristic of a vicinal region that a hearer can set through his bounding process is its size. That is, he can decide how far out from the speaker the boundary of the region should lie. In the centering process, the sole cue category at work is that of corporal cues (the speaker's location). But the bounding process rests on a range of other cue categories, as seen next.

Co-form cues. A hearer may find cues on how far out to imaginally draw the boundary of a vicinal region from co-forms that surround the corporal trigger *here* in the current or neighboring utterances. Typically, he combines such co-form cues with epistemic cues

from his knowledge store and often also with cues from further categories. Together, these cues can raise his sense of the circumstances to the immediate-pragmatic level (see section 4.2) as an aid in the boundary placement.

Thus in the wagon example of (7), the hearer found co-form cues in the utterance's reference to a single wagon and to its motion toward the speaker. He combined these with an epistemic cue from his knowledge about a wagon's roughly one-yard length and with an environmental cue from his perception of his thirty-foot distance from the speaker in the playground. These cues led him to imaginally place the boundary of the targeted vicinal region at just a few yards out from the speaker—the scope that she presumably meant her trigger *here* to indicate.

Comparably, the hearer in example (2a) found co-form cues in the reference to multiple restaurants and their distribution, and combined them with an epistemic cue about restaurant size, as well as with the environmental cue from his being amid an urban setting. From these cues, he placed the boundary around the targeted vicinal region at a few miles out from the speaker's location.

And the hearer in the radiation example of (2b) found co-form cues in the current reference to radiation as well as in prior reference to the speaker's flying in a cloud formation and combined these with epistemic cues about the spread of radiation in open space to settle on imaginally placing the boundary around the vicinal region many miles out from the speaker's location.

—Indefinitely distant boundary. As these last three examples were sequenced, their co-form cues led the hearer to imaginally place the boundary successively further from the speaker's location, yielding successively larger vicinal regions. In fact, there is no limit here. The outer boundary of a vicinal region can, through co-form cues, be conceptualized as being indefinitely far away from the speaker. The corporal trigger *here* can thus target a region as large as, say, the local country, planet, or galaxy. For example, if the speaker of (10) is in America, the hearer will likely infer that the vicinal region targeted by the corporal trigger *here* is the whole of that country.

(10) Did your sister already relocate here from Europe?

Environmental cues. Environmental cues were just seen to help in boundary placement when combined with co-form cues. But they can play a direct role when a perceivable structural formation in the environment leads a hearer to align the boundary with that formation (section 9.2 expands on this).

Such an alignment would have been in play in the “ghost” example of (1) if, as suggested there, the hearers had imaginally treated the boundary around the vicinal region as being aligned with the perimeter of the campfire's illumination. Or, if the scouts had camped in a clearing within the woods, they might have imaginally placed the boundary around the vicinal region along the perimeter of the clearing.

Or the environmental structure cue could consist of a tangible plane shaped to enclose a volume of space, like the outer walls of a building. Such a cue could lead a hearer to imaginably superimpose the boundary on that plane, thus defining the vicinal region as the enclosed space. This might be done by a hearer standing inside a factory with a speaker who says (11), using the corporal trigger *here*.

(11) We here at Cryptotronics only use solar energy.

Perichronal cues. In the serial targeting of the “camera” example in (9), the ornithologist, while walking along, produced two successive instances of the corporal trigger *here* at different locations and at different instants. She thus targeted two different vicinal regions. But the hearer’s imaginal placement of boundaries around those regions would in part have been governed by the “no-crossing” condition of the perichronal cues arising from this seriality (see section 12.1.3). The hearer might ascribe different sizes to the two regions in accord with the distance between the speaker’s two locations, but he would likely not imagine the boundaries around the regions as overlapping.

Note that, for this nonoverlapping effect to hold, the two instances of targeting must be understood to constitute a series. Thus, suppose that the ornithologist’s second utterance had not been the earlier (9b) but rather (12), which would not be a member of a targeting series. Then the size of the vicinal region targeted by its corporal trigger *here* would not be limited by the preceding vicinal region and, in fact, would here likely encompass it.

(12) There are lots of birds here.

Core cues. In some languages, corporal triggers can provide core cues that, without specifying any absolutes of magnitude, indicate that the vicinal region is relatively smaller or larger for the given context—that is, that its boundary should be placed closer in or further out. Such triggers are monomorphemic in some languages. But English has the multimorphemic forms *right here* and *hereabouts* for these respective indications, while simplex *here* is neutral to the distinction.

For example, if I call out to you in the next room to ask if you have seen my comb and you see it in front of you on the desk, you—now as speaker—might say (13a), but would likely not say (13b). I, now as hearer, will in turn interpret the comb to be in a relatively small ambit around you. Contrarily, the host in the earlier restaurants example, thinking of a radius extending several miles out from her home, might alternatively say (13c) but is unlikely to say (13d).

- (13) a. Your comb is right here.
- b. *Your comb is hereabouts.
- c. There are countless restaurants hereabouts.
- d. *There are countless restaurants right here.

Dimension bounding Cues were just considered mainly for how they help a hearer assess the size of a vicinal region and hence the distance of its boundary from the speaker. But cues can also help a hearer assess the effective dimensionality of a vicinal region, and hence how to contour its effective boundary. A hearer thus may conceptualize a vicinal region as having just one, just two, or all three of its dimensions as salient, and hence of being effectively of that dimensionality—as illustrated next in order (see target mapping in section 5.2.2 for a comparable process). At the same time, though, he may also conceptualize the vicinal region as being volumetric overall.

Consider first (14), said by a speaker on her cell phone. The hearer derives co-form cues from words like *in line* to conclude that, in its effective geometry, the vicinal region targeted by the corporal trigger *here* is one-dimensional, with two endpoints for its boundary. At the same time, though, he may conceptualize the region as a volume of space encompassing the bodies of those behind and in front of the speaker.

(14) Sal is here in line with us, waiting for the store to open.

Recall next the earlier wagon and restaurants examples ((7) and (2a), respectively). The hearer may have conceptualized the effective geometry of the vicinal region there as a two-dimensional area, horizontal and at ground level, with a linear boundary around its edge. He would have focused on the footprints of the Figures, the wagon or restaurants, on that bounded plane (see section 5.10.2 for the comparable notion of a “support location”). Note that although Yucatec Maya has a specifically corporal trigger for ‘here’ that in principle requires no gesture, a speaker can nevertheless accompany it with what might be called a “corporal gesture,” standardized to consist of the extended forefinger jabbing straight down (William Hanks, p.c.). The hearer may interpret this gesture as pointing at the ground around the speaker, thus treating the vicinal region as effectively the two-dimensional horizontal plane at ground level. However, all these hearers may at the same time conceptualize the region as a volume of space that encompasses the volumetric Figures.

Finally, though, in the radiation example of (2b), the hearer understood that the vicinal region was fully three-dimensional in its relevant geometry, volumetrically extending in all directions out from the speaker, with a two-dimensional boundary (albeit a fuzzy one) encompassing the whole.

Disposition bounding Cues can also help a hearer imaginably settle on what we here call the “disposition” of a vicinal region, which can include its shape, orientation, ground-level relation, and clear-cutness. The boundary around the region must be set accordingly.

For instance, in the preceding “in line” and restaurants examples ((14) and (2a), respectively), the hearer may have imagined the effectively one-dimensional and two-dimensional vicinal regions as having particular values for the first three of the

dispositional factors just cited. The shapes imagined for the two regions may have been respectively a straight line and a round disk. Their orientation may have been imagined as horizontal. And their relation to the level of the ground may have been imagined as being located adjacently atop it. The boundary imagined for, say, the disk would thus have been imagined as a horizontal circle atop the ground.

Or suppose that the hearer conceptualized the vicinal region of the restaurants not as effectively two-dimensional but as volumetric. Then he might have imagined the shape of the region as that of a somewhat flattened hemisphere with a planar surface on one side. He would have imagined the region's orientation so that its planar side was horizontal and on the bottom. And he would have imagined the region's planar side as lying at the level of the ground, but he would not have imagined the region as extending below the level of the ground. He would thus have set the region's boundary as being a hemispherical shell whose circular edge rested on the ground.

With specific reference to shape, one aspect of it is a vicinal region's distribution around the speaker. In the absence of cues to the contrary, the default imaginal setting for a vicinal region may be that it extends equidistantly out from the speaker's location in all the effectively relevant dimensions. Thus, the hearer may have imagined the queue in the in line example as extending out equally on either side of the speaker; the area of restaurants in the restaurants example as extending equally in all horizontal directions radially out from the speaker; and the vicinal region in the radiation example of (2b) as extending equally in all directions spherically out from the speaker. This default distribution is equivalent to the centering process proposed in section 6.3.2.

But divergence from such default equidistance, and hence a difference in shape, can occur where cues do call for it. Thus, if the host in the restaurants example lived on the shore of a lake, the hearer would use the epistemic cue from knowledge of this to imagine the effectively two-dimensional vicinal region as extending only over the half disk away from the lake. The region's boundary would thus have been a half circle with a roughly straight line side.

Finally, with respect to clear-cutness, the description so far may have seemed to suggest that, as a hearer imaginally constructs them, the disposition of a vicinal region is precise and the boundary around it is sharp. Perhaps more commonly, though, the extent of a vicinal region is vague or indeterminate, and its boundary is fuzzy. The degree of imaginal clear-cutness can vary with the targeting cues. Thus, clear-cutness seems to decrease if we proceed in turn through the earlier "Cryptotronic" of (11), wagon of (7), restaurants, and radiation examples.

The inner boundary of a vicinal region Considered previously was the outer planar boundary of a volumetric vicinal region located around a speaker. But such a region also has an inner boundary. As it is conceptualized perhaps crosslinguistically, this inner boundary abuts the surface of the speaker's body. That is, the vicinal region

neither extends into the speaker's body nor starts at a distance from it. Accordingly, without an accompanying gesture, it is generally infelicitous for an English speaker to use the corporal trigger *here* to target the space occupied by her body. Instead, as in (15)—which the speaker says without gesturing—she must use a spatial preposition with the pronoun *me*.

- (15) I'm ready for the nurse to insert the hypodermic in me / *here.

This constraint, however, might be defeated. Consider (16), which might have been uttered by the earlier pilot. The special locution *including throughout me* can override the exclusion of the speaker's location from the vicinal region, which then instead incorporates it.

- (16) The radiation is strong everywhere here—including throughout me.

6.3.3 Phase 3: Determining the Figure's Location

In the third phase of a hearer's corporal targeting procedure, after he has determined the speaker's location and imaginally established a vicinal region around it, he uses available information to decide on the location of the Figure relative to that region. Depending on this information, establishing this spatial relation can range from being mainly observational to being purely imaginal.

The location of the Figure—here referred to as its “site”—once again fully fits section 1.7.1's general characterization of a spatial location. It meets the first condition there in that—among the range of possibilities—the Figure entity specifically occupies the whole of its site. And it meets the second condition in that this site in turn has a particular spatial relation to yet another bounded-off portion of space—here, the vicinal region.

This last spatial relation can involve the Figure's site either inside or outside the vicinal region. These two circumstances are considered next in turn.

A figure inside the vicinal region Most of the previous examples represented the Figure's site actually or potentially inside the vicinal region. The hearer then used information mainly from co-forms, the environment, and his knowledge store to decide on the Figure's specific spatial relation to the interior of that region.

For instance, in the wagon example of (7), the hearer concluded that the Figure, the wagon, was to end up occupying a roughly yard-sized site within the vicinal region extending a few yards out from the speaker. The hearer in the restaurants example of (2a) imagined that the Figure, a multiplexity of restaurants, occupied a multiplexity of store-sized sites dispersed through a vicinal region extending several miles out from the speaker. And the hearer of the radio report in the radiation example of (2b) imagined that the Figure, the radiation, occupied a site volumetrically coextensive with a vicinal region extending many miles out from the speaker.

In some cases where the Figure's site occupies just one spot within the vicinal region, as in the wagon example, its location there might have a default value, for example, in front of the speaker. Perhaps some languages even have distinct corporal triggers for such default locations, say, a trigger that could be glossed as 'here in front of me'. English *here*, however, has no such limitations. Thus, the boy with the wagon could have felicitously complied with his mother's command by pulling his wagon to one side of her or even behind her. This use of corporal *here* is thus compatible with a word like *somewhere*, indicating the irrelevance of the specific location, so that the mother in the earlier example could alternatively have said (17).

- (17) Pull your wagon over here somewhere.

A figure outside the vicinal region A Figure can have a stable, temporary, or potential location not only inside a vicinal region, as just addressed, but also outside it. It is then by definition in an extravicinal region. But its location is here characterized in terms of its spatial relation not to this extravicinal region directly—itsself targeted by the corporal trigger *there*, as in the ghost example of (1b)—but rather to the vicinal region targeted by the corporal trigger *here*.

Such a characterization can be relatively generic, as with English *elsewhere* as used, for example, in (18a). This sentence might be said by a speaker hosting a visitor at her home who wants to know where he might find a gym. As indicated by the parentheses, her utterance can include the corporal trigger *here*, or can omit it—along with its preposition—through trigger ellipsis (see section 3.4.1). A more analytic semantic representation of this spatial relation is presented in (18b).

- (18) a. The best gym is elsewhere (than here).
 b. elsewhere: 'at a location with a separative degree of spatial remove from (i.e., outside of) here'

A speaker can also more specifically represent a Figure's location outside a vicinal region by specifying its spatial relation to that region as a whole. Depending on the relative magnitude of the distances and entities involved, the vicinal region may then tend to undergo a conceptual reduction in the hearer's processing (see section 1.7.1 for such cognitive processes)—as a limiting case, potentially down to the area of the speaker's location itself. In that case, we will say that the Figure's location is represented as a spatial **displacement** from the vicinal region or the speaker's location.

To illustrate, the previous host might alternatively answer her guest as in (19a). She here specifies the Figure's spatial relation to her vicinal region with the phrase *five blocks east*, which again permits trigger ellipsis. And again, a more analytic representation of the spatial relation is provided in (19b).

- (19) a. There's a good gym five blocks east (of here).
 b. 'at a location with a five-block degree of spatial remove
 toward the east from here'

6.4 Nonscalarity of the Vicinal Region

As seen, our analysis characterizes a Figure's location in terms of a three-part schema: the spatial relation of the Figure's site to the vicinal region, and the spatial relation of that vicinal region to the speaker's location. The analysis deliberately avoids characterizing the Figure's location more simply in terms of a two-part schema: the spatial relation of the Figure's site directly to the speaker's location. There are two reasons for this. First, the actual reference of the corporal trigger *here* is to a region, which must accordingly be included in the analysis. Second, this vicinal region is not scalar, a property that excludes a whole class of spatial relations characterized directly between the Figure and the speaker. This parameter of **scalarity** may be best addressed first by looking at prepositions.

6.4.1 Prepositions and Scalarity

There appear to be two categories of spatial prepositions: scalar and nonscalar. Prepositions in these two categories respectively accept and refuse modifiers that express the scalar concept of the magnitude of distance, whether absolute, relative, or comparative. Scalar prepositions in turn fall into two categories on the basis of whether an intensifying modifier like *very* or *way* places the Figure closer to or further from the Ground. The terms "centrifugal" and "centripetal," introduced earlier for a similar purpose (see section 2.3.2), will be applied respectively to scalar prepositions of the former and of the latter type. In accord with this difference, other modifiers seem to suggest that the Figure has fictively moved respectively toward or away from the Ground to reach its cited location (see Talmy [2000a: chapter 2], for the "site arrival" type of fictive motion).

We cite two cases to illustrate the scalarity contrast, each involving a pair of prepositions whose meanings are otherwise comparable. The first contrast is between *by*, which is nonscalar, and *near*, which is scalar (and in current English is a preposition as well as an adjective). The latter form, when modified by *very*, is centripetal. It places the Figure closer to the Ground and, in general, seems to suggest that a Figure located at a point near a Ground reached that location by having moved toward the Ground, rather than by having begun at the Ground and then moved away from it. As seen in (20), a set of scalar modifiers consonant with a fictively approaching Figure can occur with *near* but not with *by*.

- (20) a. Marge is standing near the flagpole.
 Marge is standing by the flagpole.
 b. Marge is standing very near the flagpole.
 *Marge is standing very by the flagpole.
 c. Marge is standing nearer the flagpole than Ralph.
 *Marge is standing more by the flagpole than Ralph.
 d. Marge is standing 10 feet nearer the flagpole than Ralph.
 *Marge is standing 10 feet more by the flagpole than Ralph.

The second scalarity contrast is between the prepositions *over*, which is nonscalar, and *above*, which is scalar. The latter form, when modified by *way*, is centrifugal. It places the Figure farther from the Ground and, in general, seems to suggest that a Figure located at a point above a Ground reached that location by having begun at the Ground and then moved upward away from it, rather than by having moved downward toward the Ground. As seen in (21), a set of scalar modifiers consonant with such a fictively retreating Figure can occur with *above* but not with *over*.

- (21) a. The hawk was above the boulder.
 The hawk was over the boulder.
 b. The hawk was way above the boulder.
 *The hawk was way over the boulder.
 c. The hawk was 10 feet above the boulder.
 *The hawk was 10 feet over the boulder.
 d. The hawk was 10 feet further above the boulder than the sparrow.
 *The hawk was 10 feet further over the boulder than the sparrow.

6.4.2 Corporal *Here* and Scalarity

To return to the corporal trigger *here*, (22) shows that it refuses all the scalar modifiers suggesting a fictively approaching (centripetal) Figure that the preposition *near* was seen to take.

- (22) a. Your suitcase is here.
 b. *Your suitcase is very here.
 c. *Your suitcase is more here than your backpack.
 d. *Your suitcase is 10 feet more here than your backpack.

And (23) shows that corporal *here* also refuses all the scalar modifiers suggesting a fictively retreating (centrifugal) Figure that the preposition *above* was seen to take.

- (23) a. Your suitcase is here.
 b. *Your suitcase is way here.
 c. *Your suitcase is 10 feet here.
 d. *Your suitcase is 10 feet further here than your backpack.

Thus, the corporal trigger *here* shares the property of nonscalarity with the prepositions *by* and *over*. Its specification of a vicinal region can be thought to underlie this nonscalarity and to be shared by the prepositions as well. In fact, the meanings of all three forms can be represented more analytically with reference to a vicinal region, as seen in (24) for the stationary locative case. The two prepositions must be followed by a nominal representing the Ground object—above the flagpole and the boulder, respectively. But the trigger *here* can be thought to incorporate its Ground object, namely, the speaker, here represented as *me*.

- (24) a. *by*: ‘in a relatively small region adjacently around (NP)’
 b. *over*: ‘in a relatively small region adjacently above (NP)’
 c. *here*: ‘in a vicinal region adjacently around me’

Corporal *here* in fact is semantically similar to prepositional *by*. Accordingly, apart from differences in the scope of their vicinal regions, the semantics of corporal *here* can be rendered approximately as ‘by me’. This expression reflects the vicinal nonscalarity shared by the two forms. But the semantics of corporal *here* would be ill represented by ‘near me’, since this expression is scalar and lacks reference to a vicinal region. These were the reasons that this section began by representing corporal *here* as a three-part rather than a two-part schema.

6.4.3 Path Specifiers and Scalarity

Scalar modifiers in English do have the license to occur in the same syntactic phrase with the corporal trigger *here*, but what they then modify is not the trigger itself but a certain system of **path specifiers** (see Talmy, 2005, 2016). English can place such specifiers in construction with any trigger that targets—or nominal that refers to—a location. These specifiers define a path taken with respect to that location—either a factive path that a Figure did or could take, or a fictive path that the hearer can follow imaginally. We can broadly represent the syntax of the system as in (25a) and the semantics of its specifiers as in (25b). Each specifier is optional, but if two or more are selected, they occur in the order shown. A maximum of perhaps five out of the ten can be selected at once, with different combinations having different degrees of felicity. (A corresponding system exists for a temporal location.)

- (25) a. (right) (Scalar) (back) (on) (off) (up/down) (in/out) (over) (Cfml and/or P)
 (AugSub) Trigger/NP
 b. right: ‘directly (without detour), immediately (without delay)’;
 ‘exactly (without wider compass), specifically (none other than)’
 Scalar: a scalar expression, e.g., the single morphemes: way: ‘distally’;
 right, just: ‘proximally’
 back: ‘along a path progressing to a location that was previously
 departed from’;
 ‘along a path to the rear of a reference object’

on: 'in resumption or continuation of a previous path'; 'without reserve'
 off: 'along a path that starts at a reference point and progresses (obliquely) away from it'
 up/down: 'along a path progressing vertically against/with the direction of gravity'
 in/out: 'along a path progressing radially toward / away from a so-conceived center point'
 over: 'along a path progressing horizontally'
 a conformational satellite (Cfml), e.g., *in*, *out* 'along a path entering/leaving an enclosure'
 and/or a preposition (P), e.g., *to*, *from*, *of*
 a member of a certain subset of the prior augments (AugSub)
 that can appear just before the trigger or NP

To illustrate, a speaker standing on a raised terrace might shout out the utterance in (26) to his friend who had started looking on the terrace for a watch she had lost and is now doing so in a nearby field.

(26) I found your watch. It's back up over here.

The three spatial augments in the utterance indicate three aspects of a path that the hearer as Figure might take to reach the speaker's vicinal region on the terrace. The augment *back* indicates that the hearer had already been in the vicinal region and the path will return her to it. The *up* indicates that her path to the vicinal region will include a vertical move against gravity. And the *over* indicates that her path will traverse a horizontal stretch.

Or again, a parent can call out (27) to a child who had just climbed up into a tree house. The trigger *there* targets the hearer's vicinal region (see section 6.7 for the hearer's location as the corporal cue).

(27) Come right back on out from up in there.

Here, the augment *right* indicates that the hearer's path is to be direct or immediate. The *back* indicates that the hearer had previously been on the ground, to which she is to return. The *on* indicates that her upcoming path is regarded as a resumption of the path she had just taken up the tree. The *out from* comprises a conformational satellite plus preposition that together indicate a path exiting from an enclosure (here, the tree house). And the *up in* comprises two elements from a subset of the spatial augment system (an Augsub) indicating that the hearer is currently located higher than the speaker and within a structure that bounds her vicinal region.

The relevant point here is that any scalar form in such an expression modifies other spatial augments, not the nonscalar trigger. Thus in (28a) and (28b), where the speaker

shouts out respectively from high on a balcony and from afar in a baseball field, the scalar form *way* indicates that the hearer's (factive or fictive) path to the speaker's vicinal region is long. And in (28c), where the speaker is obscured among the stalks of a cornfield some distance from a farmhouse—itsself treated as a center point—the scalar form *a bit further* indicates that the hearer must somewhat extend the path she has already taken from the farmhouse radially into the surrounding field to reach the speaker's vicinal region.

- (28) a. I'm way up here. b. I'm way off over here by myself.
 c. I'm a bit further out here.

6.5 The Figure as Target

For the most part so far, the speaker's location has provided a corporal cue to the vicinal region; the corporal trigger *here* has targeted that region; and a Figure's spatial relation to that region has been indicated. This same basic pattern is maintained in (29), said by the earlier woman in the fair booth, again without pointing.

- (29) Fred was in this area earlier.

But here the corporal trigger *here* is replaced by a construction in which the trigger *this* functions as a determiner. This new trigger invokes the speaker's location as a corporal cue and targets the vicinal region much as corporal *here* does and so might be called "corporal *this*."

But in a distinct trigger function, what might still be called corporal *this* can also be used to target the Figure, rather than the vicinal region. For this new use, the Figure must be spatially distributed over the vicinal region. And in this new use, corporal *this* can be either a pronoun or a determiner. As with corporal *here*, a speaker can use this new corporal *this* without other exhibitiv cues—that is, without gestural, hearer-focus, or targetive cues. In fact, to avoid any confound from targetive cues, the corporal *this* in the illustrations that follow will only target Figures that cannot be directly perceived by the hearer.

For a first illustration, the speaker in (30) is a spelunker alone in a cave she has illuminated, radioing back to the hearer. In (30a), her corporal trigger *here* targets the vicinal region around her, and the Figure—represented by the word *everything*—is understood to be spatially distributed through that region. But (30b) has approximate semantic equivalence. As a pronoun in it, the corporal trigger *this*—in conjunction with the word *all*—directly targets the same Figure with the same spatial distribution.

- (30) a. Everything here is beautiful! b. This is all beautiful!

We can also illustrate the determiner use of the present corporal *this*. In (31a), which might be said by a host to a visitor in her house, the noun is *city*. The trigger thus targets the city as the Figure occupying the extended vicinal region surrounding the speaker. And the noun *economy* in (31b) shows that the targeted Figure can be an unperceivable phenomenon conceptualized as occupying the vicinal region, whose extent—for example, over the speaker's city or nation—is inferred from context.

- (31) a. This city is in decline. b. This economy is in decline.

As noted, a Figure's location is constrained with corporal *this*—it must be spatially distributed over the vicinal region—in contrast with its freedom with corporal *here* (see section 6.2.1). This contrast can be demonstrated by the utterance in (32), again said by the host of a visitor to her home in a city. In both sentences, the Figure is the old Bohemian neighborhood.

- (32) a. The old Bohemian neighborhood here is getting gentrified.
b. This old Bohemian neighborhood is getting gentrified.

In (32a), corporal *here* targets the vicinal region, which can consist of the whole city that the speaker lives in. The Bohemian neighborhood, as Figure, might then, as one possibility, occupy an area of the city that is outside the speaker's own area. But in (32b), corporal *this* targets the Figure, the Bohemian neighborhood. Due to the constraint, this Figure must be distributed over the whole of the speaker's vicinal region. The only interpretation is therefore that, as she speaks, the speaker is located amid that neighborhood—it cannot lie outside her own immediate area. In fact, due to the constraint on corporal *this*, we might adopt the view that its targeting of the Figure is a secondary phenomenon, derivative from an implicit prior targeting of the whole vicinal region.

Without other exhibitivive cues, as section 6.1 noted, it is rare for a corporal *there* to target a speaker's extravicinal region. Without other exhibitivive cues, comparably, we here note the seeming absence of any corporal *that* to target a Figure in a speaker's extravicinal region. Thus, without other cues (including ones from prior discourse), a spelunker could not felicitously radio back the utterance in (33a), and a host could not say (33b) to a visitor in her home.

- (33) a. *That is all beautiful! b. *That city is in decline.

6.6 The Corporal Cue Complemented by Other Exhibitivive Cues

In all the examples so far, a corporal cue (the speaker's location) has been present without any other exhibitivive cues—that is, gestural, targetive, or hearer-focus cues. In consequence, the hearer's assessment of a Figure's spatial relation to the vicinal region—based mainly on co-form, epistemic, and environmental cues—has in general been

relatively coarse-grained. And it has been even more coarse-grained for the extravincinal region. Such low granularity has sufficed in previous examples for locating, say, restaurants within a vicinal region or a ghost within an extravincinal region. But the speaker's inclusion of complementary information from other exhibitivite cues can readily help narrow the Figure's location down more precisely, including in the extravincinal region, which accordingly becomes invoked more often.

6.6.1 With a Gestural Cue Added

We first illustrate this phenomenon with the addition of gestural cues. The combination generally targets either a location or an entity, considered next in turn.

A location as target While on stage planning a scene, the director of a Shakespearean play might say (34), first pointing at a spot on the stage nearer himself while using the trigger *here*, and then pointing at a further spot while using the trigger *there*. Each clause has a separate act of targeting and could stand by itself, but the two are here considered together for the effect of their interaction.

(34) The queen can stand here, and the king can stand there.

The target of each gestural cue here is a location. This location is minimally the point at which the projection from the speaker's pointing finger intersects with the stage, but will here be taken more liberally to be the area around that point on which a person could stand (see the following Constructing an ambient area subsection) If this gesturally targeted area lies within what the speaker considers to be his vicinal region, he uses the trigger *here*. This trigger thus relies on both a corporal and a gestural cue to target a comparatively small area inside the vicinal region.

We will refer to the combination of a corporal cue with another exhibitivite cue as **biexhibitivite**. The present trigger can thus be referred to as "*biexhibitivite here*." This term distinguishes the present trigger from the previous "*corporal here*" that relied only on the corporal cue to target the whole of the vicinal region. The particular combination here of a corporal cue with a gestural cue can be more specifically referred to as "*gesturally biexhibitivite*," and the present trigger as "*gesturally biexhibitivite here*."

If the gesturally targeted area instead lies within what the speaker considers to be his extravincinal region, he uses the trigger *there*. This trigger can now be referred to as "*biexhibitivite there*," to distinguish it from the previous "*corporal there*" that targeted the whole of the extravincinal region. And since the speaker pointed, the present trigger can be called "*gesturally biexhibitivite there*."

Since the speaker in (34) uses first *here* and then *there* in his serial gesturing, he has conceptualized the boundary that separates his vicinal from his extravincinal region in such a way that it runs between the two targeted locations.

For each instance of targeting, the two cues—the gestural and the corporal—provide complementary information that the hearer in turn combines so as to narrow down to the target. The pointing gesture largely provides lateral information—its projection could have been angled laterally more to the right or left, closer or further—but instead one particular direction was selected from among these lateral possibilities. And the corporal cue, the speaker's location, provides radial information by characterizing two regions—the vicinal region immediately surrounding the speaker and the extravicinal region in turn surrounding that inner region. One of these two concentric regions is selected by the choice between *here* and *there* as the trigger.

Thus, the two cue types provide complementary geometric information on the targeted location. These two forms of information consist of a laterally selected angle and a radially selected band. Their overlap helps the hearer narrow down more precisely to that location as the intended target.

Constructing an ambient area. Once the hearer has determined the minimal location that constitutes the target—here, a spatial point—she generally must then imaginably construct an area around it to serve as the fuller locative target. This process was already seen in a hearer's construction of a locative target around the point at which a projection self-terminates (see section 5.2.5). This expanded locative target will be called the **ambient area** around the minimal locative target, to distinguish it from the vicinal region around a speaker's location.

But the processing that leads to both targeted locations seems comparable. Specifically, most of the operations seen in section 6.3.2 for constructing a vicinal region apply here as well. For example, the co-form cues from the words *queen*, *king*, and *stand* in (34), when combined with epistemic cues from the hearer's knowledge about the floor space required for an upright person, would have led her to construct an ambient area a couple of feet across.

Contrasting the corporal and the biexhibitive. The two types of locative targets also differ. We first contrast the two uses of *here*. Corporal *here* targets the potentially extensive vicinal region around the speaker. But biexhibitive *here* generally targets a comparatively small area—one commonly extending out from the point at which a fictive projection from the speaker's pointing finger terminates. This smaller area is contained within the larger vicinal region. The particular site of a Figure (whether actual or potential) within the targeted space is accordingly characterized with greater latitude or coarser granularity when corporal *here* is used, but with narrower constraint or finer granularity when biexhibitive *here* is used.

There is another difference. In the corporal case, there are two corporally based regions, the vicinal and the extravicinal. But in the biexhibitive case, there is seemingly only the one ambient area. Apparently no language has a morpheme or construction

for referring to any “extraambient area” that surrounds such an ambient area. Thus, biexhibitive *here* can target an ambient area around a spot that the speaker is pointing at within his vicinal region. However, no ready English form can target a band that immediately surrounds the ambient area but that still remains contained within the vicinal region.

For a third difference, serial corporal targeting—like that of the ornithologist in the camera example of (9a)—allows no contrast in the triggers used. They must all be corporal *here* each in turn targeting the speaker’s current vicinal region. But as seen in the “queen-king” example of (34), serial biexhibitive targeting does allow a contrast in the triggers used. In that example, where a boundary was imagined to lie between the two targets, biexhibitive *here* was contrastively followed by biexhibitive *there*.

Now, serial biexhibitive targeting can also repeat biexhibitive *here* so that, for example, the two clauses in (34) could each have had an instance of *here* if the director had conceptualized his vicinal/extravincinal boundary as lying beyond the two targeted areas. But serial biexhibitive targeting can also repeat biexhibitive *there*, so that the director could have used that trigger in each of his two clauses if he had conceptualized the boundary as lying closer to himself than the two targeted areas.

Some languages highlight these differences between the two types of triggers by having distinct morphemes for them. Thus in Yucatec Maya (Hanks, 1990, 1996), the forms corresponding to corporal *here* and *there* are respectively *waye’* and *tolo’*. But the distinct forms corresponding to biexhibitive *here* and *there* are, respectively, *té’ela’* and *té’elo’*. Thus, where English merely has two readings for the same morphemes, Yucatec Maya marks the corporal/biexhibitive distinction morphemically.

Of course, the commonality that the single English trigger *here* does then capture across its two readings is that the target involves the speaker’s vicinal region—either constituting it or lying within it. And the single trigger *there* does the same for the extravincinal region.

An entity as target 1 The addition of a gestural cue to a corporal cue also permits the use of entity-targeting triggers, with comparable results. Thus in English, biexhibitive *this* and *that* can target an entity with greater precision in either the vicinal or the extravincinal region, much as biexhibitive *here* and *there* can do for an ambient area.

We posited earlier that corporal *this* is semantically derivative from corporal *here*, since it can target only a Figure distributed over the vicinal region, and we noted that it is unmatched by any corporal *that*. But biexhibitive *this* and *that* do both occur; they target an entity directly, rather than derivatively; and the entity is unconstrained in its spatial distribution within a region. Accordingly, the entity that they target need no longer be treated as a “Figure” with respect to a corporal partitioning of space, but simply as the kind of target dealt with often before, a speech-external target in the ontological category of “entity” that, say, the speaker is pointing at.

The term **corporal target** can then be applied at this point to any target whose determination uses a corporal cue, and such a target can now be an entity or an ambient area within a corporally based region, as well as the whole of such a region.

To add another example to earlier ones, then, if there had been two thrones on the stage, the earlier director might have said (35) while pointing first to the closer one and then to the farther one. The biexhibitive *this* targets the first of these two entities, indicating that it is located within his vicinal region, while the biexhibitive *that* targets the second entity, indicating that it is located within his extravincal region.

(35) This is the queen's throne, and that's the king's throne.

Certain triggers in some languages can be used with a gestural cue to indicate a particular target, but are neutral to whether that target is in the speaker's vicinal or extravincal region. An example is English stressed personal pronouns, which can be used with a gesture to indicate an entity at any degree of spatial remove, as in *!-He's my father*. But even when the English triggers *here*, *there*, *this*, and *that* are accompanied by a targeting gesture, they have no recourse but to specify a particular corporally based region as well—they are then necessarily biexhibitive.

6.6.2 With a Hearer-Focus Cue Added

We next see that where a corporal cue is augmented by a hearer-focus cue—another exhibitive cue type—a speaker can again use the triggers *this* and *that* to inform a hearer that a targeted entity is respectively in his vicinal or extravincal region. To illustrate, a carpenter in his workshop sitting on a bench beside a novice might see her looking quizzically at a particular tool lying between them and say (36a). Later, he might see her looking at a particular tool across the room and then say (36b).

(36) a. This is a glue gun. b. That's a reamer.

Taken together as a set, these two acts of targeting indicate that the speaker on this occasion has imaginally set the boundary between his vicinal and extravincal regions somewhere between his bench and the other side of the room and that one targeted tool is within the vicinal region while the other is in the extravincal region.

6.6.3 With a Targetive Cue Added

When a hearer has a gestural or hearer-focus cue to help her determine a target, as in the preceding two sections, there may be few circumstances in which she also must have a corporal trigger indicate whether the target is in the speaker's vicinal or extravincal region. But just such a circumstance does exist when a hearer relies on a targetive cue—the last of the additional exhibitive cue types. To illustrate, a rancher walking along with a visitor while leading a horse behind him, rounds his house onto an open field with a second horse in the distance and, without gesturing or looking at either horse, says either (37a) or (37b).

- (37) a. i. The horse here is my son's. ii. This horse is my son's.
 b. i. The horse there is my wife's. ii. That horse is my wife's.

The co-form cue provided by the word *horse* leads the hearer to launch a visual search of the scene for a horse. And two entities in the scene, one nearer to and one farther from the speaker, provide the targetive cues of having the identity of a horse and are thus ruled in as target candidates. But a core cue in each trigger of (37ai) and (37aii) leads her to settle on the horse in the vicinal region immediately surrounding the speaker. By contrast, the corresponding core cues in the (37b) utterances lead her to settle on the horse in the extravicinal region farther out from the speaker. She is thus helped in narrowing down to the target by each trigger's indication as to which corporally based region is relevant. Such a case thus requires both corporal and targetive cues, and can be said to be "targetively biexhibitive."

Where the target is geometrically characterized Certain targetively biexhibitive triggers indicate a geometrically characterized target. The only such triggers known to me indicate a "side" as their target, though other possibilities may occur. Such a side is either part of an object's outer boundary or an area adjoining that part externally or internally. The triggers at issue here recognize only two such sides of an object. The sides are opposite each other, one closer to and one farther from the speaker respectively in his vicinal and extravicinal region. The target is indicated jointly, then, by the targetive cues it provides and by its being located in a particular corporally based region.

Without ocular or manual gestures, an English speaker can indicate the closer target using the usual proximal trigger *this* in construction with the noun *side*. But to indicate the farther target, he cannot use the usual distal trigger *that*. Instead, he must use one of the special constructions *the other side* or *the far side*. We illustrate all these forms in (38a) for the case where the side is part of an object's boundary, and in (38b) and (38c) where it is an area adjoining that part respectively externally and internally.¹

- (38) a. This side of the tree is mossy. The other / The far / *That side is bare.
 The other / The far / *That side of the tree is bare. This side is mossy.
 b. This side of the river is verdant. The other / The far / *That side is barren.
 c. This side of the plaza is smooth. The other / The far / *That side is rough.

In biexhibitive examples like these, the hearer combines targetive cues from one side of a specified object with corporal cues that help him determine which corporally based region the side is in. Thus, the trigger construction *the other side* in (38c) targets the half of the plaza that, at once, provides targetive cues to vision and is located in the speaker's extravicinal region. The boundary between the speaker's vicinal and extravicinal regions is accordingly conceptualized as extending crosswise midway through the plaza, dividing it into two halves, one closer to and one farther from the speaker. This account in terms of corporally based regions further explains why triggers of the type

at issue regularly target exactly two sides, not one or more than two, and why those two sides are always the one's closer to and farther from the speaker, never the left and right sides.

6.6.4 Proximal and Distal Reconsidered

In section 2.3.1, we analyzed how a core cue from a trigger could indicate a target's degree of spatial remove from the speaker's location. It was seen that, in modern standard English, triggers that target an entity or location at a separative degree of remove also indicate that it is either proximal or distal, that is, at the third or fourth degree of remove.

That analysis is again relevant for the present section (6.6). The biexhibitively indicated targets addressed here are at separative degrees of remove from the speaker's location since—unlike in prior sections where the whole of a vicinal region was targeted—these targets are both nonadjacent to the speaker and comparatively circumscribed. So the targets of this section's biexhibitive *here* and *this*—the queen's stage location, the queen's throne, the glue gun, and the nearer horse—are all proximal. And the targets of this section's biexhibitive *there* and *that*—the king's stage location, the king's throne, the reamer, and the farther horse—are all distal.

But while degree of spatial remove was cast as a two-part schema that directly related the target's location to the speaker's location, it can now be understood more accurately as a three-part schema that relates the target's location to the speaker's location in terms of corporally based regions around the speaker. Specifically, a proximal target is at a separative degree of remove from the speaker within his vicinal region, while a distal target is at a separative degree of remove from the speaker in his extravicinal region.

Since the two-part schema might also suggest scalarity in the distance between target and speaker, this reframing is further fitting in that the nonscalarity shown to be a property of the corporal trigger *here* in section 6.4 can also be seen as a property of this section's biexhibitive triggers. Thus, the biexhibitive triggers *here* and *there* reject the scalar modifiers accompanying them in (39).

- (39) a. *The king can stand more there than here.
b. *The queen can stand 5 feet further here.

An issue that arises, then, is the treatment of triggers like those of older English *yonder* that targets a location at a hyperdistal degree of spatial remove and *yon* that targets an entity at that degree of remove. A solution consistent with our nonscalar analysis is to posit the existence of a third corporally based region, a **hyperextravicinal region**, that surrounds the extravicinal region. A target of the trigger *yonder* or *yon*, then, would be in the speaker's hyperextravicinal region.

6.7 The Hearer's Location as the Corporal Cue

In the discussion so far, only the location of the speaker's body has functioned as a corporal cue. This might now be called a **speaker-centered corporal cue**. But the location of the hearer's body can also serve as a corporal cue—a **hearer-centered corporal cue**.

6.7.1 Triggers Explicitly Requiring a Hearer-Centered Corporal Cue

Perhaps all languages have triggers that rest on speaker-centered corporal cues. But some languages also have triggers specifically indicating that the corporal cue consists of the hearer's location. When the speaker uses such a trigger, the hearer understands that the location of his own body is the cue, and that the vicinal region is an excerpted and bounded portion of space adjacent to and surrounding himself as center.

In our treatment of speaker-centered corporal cues, we distinguished six types of target for which a language could have six distinct triggers (as Yucatec Maya in fact has). So, in principle, it might be expected that a language with hearer-centered corporal triggers could have distinct triggers for six corresponding types of target. Three such triggers would pertain to the vicinal region around the hearer. In particular, one would target the whole vicinal region as a location—a kind of corporal “there-by-you” without gestures or other exhibitivive cues. A second would target an ambient area as a location within the vicinal region—a kind of biexhibitivive “there-by-you” where, say, the speaker points at the area. A third would target an entity within the vicinal region—a biexhibitivive “that-by-you” with, say, the speaker pointing at the entity.

Another three triggers would pertain to an extravicinal region that surrounds the hearer's vicinal region. Here, the fourth trigger would target the whole extravicinal region as a location—a corporal “there-further-out-from-you,” unaccompanied, say, by gesturing. The fifth would target an ambient area within the extravicinal region—a biexhibitivive “there-further-out-from-you” accompanied, say, by the speaker's pointing at the area. And finally, the sixth would target an entity within the extravicinal region—a biexhibitivive “that-further-out-from-you” where, say, the speaker points at the entity.

But it seems unlikely that a language with hearer-centered corporal triggers would actually have different triggers distinguishing between the first two types of target. And it seems still more unlikely that such a language would even include a concept for a hearer's extravicinal region, let alone have triggers of the fourth, fifth, or sixth type.

Such limitations, if they prove out, accord with the traditional linguistic theory of markedness. Trigger reliance on speaker-centered corporal cues, which may be universal across languages, is unmarked—that is, basic—in contrast with trigger reliance on hearer-centered corporal cues, which is scarcer and accordingly marked. An unmarked linguistic phenomenon regularly allows the representation of more distinctions from within some relevant category than the corresponding marked phenomenon for the

same category. And this seems to be the case here where speaker-centered corporal triggers can distinguish more types of targets than hearer-centered corporal triggers can.

One language with hearer-centered corporal triggers is Japanese, which here provides illustration (Yo Matsumoto, p.c.). We here consider only the triggers that can target a whole vicinal region as a location. The triggers *koko* and *soko* target the vicinal region respectively around the speaker and around the hearer. Either trigger can be used in (40). This sentence might be said by a wife calling out to her husband in another room—neither able to see the other—in reference to their son at a third location. If *koko* is used, the son will be told to deposit the bag he is carrying—the Figure—in the vicinal region immediately surrounding the wife as speaker. If *soko* is used, he is to place it in the vicinal region immediately surrounding the husband as hearer.

- (40) musuko ni kaban o koko/soko ni oku-yooni yutte.
 son DAT bag ACC here-by-me/there-by-you LOC put-PUR tell-IMPER
 Tell your son to put the bag down over here / where you are.

In accord with this pattern, Japanese has no triggers sensitive to an extravvicinal region surrounding the speaker's vicinal region. What Japanese does have instead are triggers sensitive to the space outside both the speaker's and the hearer's vicinal regions. This might be called the **extrabivvicinal region**. Thus, the biexhibitive trigger that targets an ambient area within this region is *asoko*, which might accordingly be glossed as 'there-neither-by-me-nor-by-you'.

If the speaker's and hearer's vicinal regions are assessed as being spatially continuous, the regions apparently tend to conceptually join to form, in effect, a single corridor between the speaker and hearer, one that is then partitioned into a "koko" portion and a "soko" portion. Then *asoko* pertains to the region outside this corridor. But if the intervening space is considered noncontinuous—say, if the speaker and hearer are standing atop two different hills with a valley between them—then the speaker can call out to the hearer using *asoko* to refer to a location in that valley.

6.7.2 Triggers Implicitly Requiring a Hearer-Centered Corporal Cue

Though lacking dedicated triggers for it, English can be analyzed as having some implicit use of hearer-centered corporal cues. In addition to the example with *come* in the next section, consider the trigger *there* in (41). A speaker on the sidewalk might shout this utterance in through an open window to a hearer out of view inside a cottage. Here, the trigger targets the vicinal region around the hearer and so might be glossed as 'there-by-you'. The hearer will associate the boundary of the vicinal region with the outer walls of the cottage. He will understand that he himself as Figure is to move from the inside of this vicinal region to outside it.

- (41) There's a gas leak. Get out of there right now!

Comparably, consider the trigger *here* in (42), said by a speaker entering the house of a friend who had been expecting her.

(42) I'm here!

This is another non-tautological use of this utterance (see section 6.3.1 for the first example). It might be glossed as 'I am here-by-you' and taken to indicate that I am now in your vicinal region.

In the preceding "gas leak" example, the hearer-centered corporal trigger was glossed as 'there-by-you'. The use in this gloss of the distal trigger *there* indicated that the hearer's vicinal region was itself located within the speaker's extravincinal region. But in the present example, the hearer-centered corporal trigger has been glossed as 'here-by-you'. The use here of the proximal trigger *here* in turn indicates that the hearer's vicinal region is itself located within the speaker's vicinal region.

6.7.3 Hearer Location and Salience

It was proposed in section 6.3.1 that, if a speaker uses a speaker-centered corporal trigger, a hearer generally understands the speaker's location in terms of its spatial relation to the global environment, as well as to his own location. Here, if a speaker uses a hearer-centered corporal trigger, the hearer may also in part understand his own hearer location in terms of its spatial relation to the global environment. But he may in addition understand his location in terms of a particular fundamental concept—an experience of oneself as being at the center of spatial extension.

It was also proposed in the same earlier section that the hearer experiences a specialized form of salience in association with the person now in dialog with him—speaker salience. It can be correlatively proposed here that he experiences a specialized form of salience in association with himself as a participant in a dialog—what can be called **hearer salience**. In addition, though, he may experience hearer salience through his metacognitive awareness of and his direct experience of his own centrality to himself.

The relevance of this here is that a hearer may be helped in determining a hearer-centered corporal cue and its vicinal region by cognizing all of the following: his location relative to other entities he perceives, his sense of being at the center of spatial extension, and his salience to himself as the intended addressee of the speaker and as the center of his own experience.

6.7.4 Distance between Speaker and Hearer

So far, nothing in the use of speaker-centered or hearer-centered corporal triggers has hinged on the spatial relation of the two collocutors. But Iquito, a Zaparoan language of South America, exhibits sensitivity to this parameter (Lev Michael, p.c.). This language has both a speaker-centered and a hearer-centered corporal trigger. They are typically used with gesturing to represent a Figure—such as a pot—as being 'this/that pot relative

to me' and 'that pot by you'. The language also has certain "riverine" suffixes indicating whether a Figure is upriver, downriver, or on a line perpendicular to the river. The crucial point here is that, if a river is in the vicinity and relevant, a speaker using a corporal trigger must add a riverine suffix if the hearer is separated from him and must not use one if the hearer is nearby. Thus the language distinguishes a proximal-distal spacing between the collocutors when one of them uses a corporal trigger.

6.8 Paths toward/Not toward the Vicinal Region

The corporal triggers treated so far have had stationary targets—either a corporally based region, or an ambient area or entity located within such a region. But corporal triggers can also have a moving target, namely, a path directed with respect to such a region (see section 2.2.1 for paths as targets)—a phenomenon sometimes referred to as "directional deixis" in the linguistic literature.

In particular, many languages have a complementary pair of such triggers whose meanings can be characterized in terms of the two broad semantic representations in (43a) and (43b). The first of these has the specific semantic representation in (43ai), while the second covers the two specific semantic representations in (43bi) and (43bii). In all these representations, the capitalized form MOVE represents a deep verb that refers, in abstraction, to translational motion, whether factive or fictive (see Talmy, 2000b: chapter 1).

- (43) a. The Figure MOVEs along a path toward the speaker's vicinal region.
 - i. The Figure MOVEs along a path that originates outside
and progresses toward (and into) the vicinal region around the speaker.
- b. The Figure MOVEs along a path
other than toward the speaker's vicinal region.
 - i. The Figure MOVEs along a path that originates outside
and progresses other than toward the vicinal region around the speaker.
 - ii. The Figure MOVEs along a path that originates inside
and progresses out of the vicinal region around the speaker.

The three specific representations are alike with respect to the category of motive state—in all three, the Figure must be moving rather than stationary. But they differ with respect to the particular path formed by such motion. In (43ai), the Figure moves along a path that begins outside the speaker's vicinal region, that progresses on average along a straight line in the direction of that region (the "toward" element in the representation), and that may terminate either while still outside the region or only after entering it. In (43bi), the Figure moves along a path that begins outside the speaker's vicinal region but that progresses in a direction other than toward it—whether then

continuing on or terminating at a specific point. And in (43bii), the Figure moves along a path that begins inside the speaker's vicinal region and that progresses outside it—whether then continuing on or terminating at a specific point.

These semantic representations must end with “the vicinal region around the speaker” rather than simply with “the speaker.” For (43ai), the reason is that the Figure's path can be directed anywhere toward the full breadth of the vicinal region, not necessarily toward the speaker's specific location within it (Matsumoto et al., in press). Comparably, the Figure's path in (43bi) must avoid the full breadth of the speaker's vicinal region, not just the speaker. And the Figure's path in (43bii) can start from anywhere inside the vicinal region, not just from a point adjacent to the speaker.

Terminologically, the traditional linguistic term **ventive** refers to motion generally toward the speaker, and will here be applied to the semantic representation in (43ai). The traditional linguistic term “itive,” though, is ambiguous, referring either more narrowly to the representation in (43bii) or more broadly to both the representations under (43b).

To avoid this ambiguity, we will use the term **nonventive** for the broader reference to both the representations under (43b). The semantic category formed by these two alternatives will be called **ventity**. A language can thus be said to exhibit ventity where it marks this two-way distinction morphemically.

Certain portions of the two broader semantic representations (or of their three specific counterparts) can comprise the meanings of specialized triggers. First, in a number of languages, the portions that follow the MOVE verb are represented by the two closed-class triggers of a particular pair, each pair containing a ventive and a nonventive member. Examples are the Atsugewi verb suffixes *-ik*: and *-iw*, and perhaps the German particles *her* and *hin*.²

In many languages, further, the portions from the MOVE verb to the end are represented by the two verbs of a particular pair, each pair again containing a ventive and a nonventive member. English *come* and *go* exemplify such a ventive/nonventive pair. In these cases, the triggering function is performed by a componential trigger lexicalized within an open-class morpheme (see section 2.1.3 for componential triggers).

6.8.1 Motion toward but Not into a Vicinal Region

We will first illustrate these ventity-specific English verbs for the case where the figure with *come* moves toward the speaker's vicinal region but does not enter it. The two sentences in (44) could be said to a companion by a speaker using binoculars to watch a deer from a distance.

- (44) a. The deer is coming out of the meadow . . . and now it's bolting away.
b. The deer is going out of the meadow . . . and now it's bolting away.

In (44a), the deer (the Figure), in emerging from the meadow, moves along a stretch of path that is directed toward the speaker's vicinal region, but does not enter it. The use of the verb *come* remains felicitous over a certain range of angles that the deer's initial path might follow. The deer's path can progress along any angle within, say, a sixty-degree arc centered on the speaker (experimentation will be needed). This fact is evidence that, in the ventive case, the Figure's path is directed more generally toward the vicinal region surrounding the speaker, not necessarily straight toward the speaker in particular.

In a complementary way, the deer's path in (44b) with the nonventive verb *go* progresses along a path directed anywhere outside the sixty-degree arc.

6.8.2 Motion toward and into a Vicinal Region

We next illustrate these English ventivity-specific verbs for the case where the figure with *come* first moves toward the speaker's vicinal region while outside it and then enters it. We can picture the speaker in (45) as in a department store talking to her friend on a cell phone.

- (45) a. Ben has just come up the escalator to the third floor.
b. Ben has just gone up the escalator to the third floor.

In (45a), the ventive verb *come* specifies that the path of the Figure (Ben) was directed toward the vicinal region surrounding the speaker. From the co-form cues, the hearer may well identify this targeted vicinal region with the whole third floor—in accord with the principles for imaginably constructing such a region (see section 6.3.2)—hence taking the speaker to be on the third floor. From the utterance's semantic content, the hearer specifically concludes that the Figure's path began on the second floor outside the speaker's vicinal region, progressed toward that region, and then entered it. Within the felicitous range of this *come* verb's use, the speaker can be—and the hearer can take her to be—located anywhere on the third floor, not just at the top of the escalator. This fact is further evidence that, in the ventive case, the Figure's path is directed more generally toward the vicinal region surrounding the speaker, not necessarily straight toward the speaker specifically.

In a complementary way, the nonventive verb *go* in (45b) specifies that the Figure's path was not directed toward the speaker's vicinal region. The speaker could accordingly be located anywhere other than on the third floor, though, from the context, the hearer will probably take her to be on the second floor.

6.8.3 Motion toward a Noncurrent Vicinal Region

As seen, the ventive verb *come* refers to the vicinal region around the speaker much as does the corporal trigger *here*. But there is a major difference: it need not refer to the speaker's *current* vicinal region. As shown by (46a)—which the speaker might say when

she is not in the department store—it can instead target the vicinal region that was or will be around the speaker at the time of the event reported by the sentence. And as shown by (46b), which a speaker might say to a friend as she hands her office key to him, it can target the vicinal region around the speaker’s canonical location (Fillmore’s [(1971) 1997] “home base”).

- (46) a. Ben came / will come up the escalator to the third floor.
 b. As you come into my office, the light switch is on the left.

6.8.4 Motion toward a Hearer’s Vicinal Region

The semantic representations in (43), whose final element is “the speaker,” underlie morphemes expressing what might now more specifically be called **speaker ventivity**: Figural motion that is or is not directed toward the speaker’s vicinal region. But it is unclear if any languages have morphemes specifically expressing **hearer ventivity**. Such morphemes would be underlain by semantic representations whose final element is “the hearer” and would express Figural motion that is or is not directed toward the hearer’s vicinal region.

While English certainly lacks such dedicated morphemes, its *come* verb has certain uses—observed by Fillmore (e.g., [1971] 1997), among others—that might be interpreted as hearer-ventive, referring to motion toward (and into) the hearer’s vicinal region. Thus, the speaker might say (47) to the hearer while on the phone with him as he sits at home or even while walking with him outside his home. Her utterance indicates that she—now herself as Figure—will move toward and into the hearer’s projected future vicinal region.³

- (47) I’ll come to your party tonight.

6.9 Constraints on Corporally Based Regions

To sharpen our account so far of the properties of corporally based regions, we here suggest constraints on those properties as well as an explanation for some of them.

The triggers examined in this chapter all refer to regions of space based on the location of the speaker’s or hearer’s body. The targets of these triggers either constitute such a region or have a location or direction characterized with respect to one. A possibly universal constraint (and a striking feature) is that these regions, if idealized, are concentric spherical shells around the collocutor’s body. These idealized forms do imaginarily take on particulars of shape and size in any given case, but they then still retain their character of being nested and centered on the collocutor’s body.

In accord with such a constraint, then, languages seemingly lack triggers that refer to other types of regions. For example, perhaps no language has a trigger that targets

the corridor of space extending forward from a speaker's front. And presumably none has a trigger targeting a cubic volume separated off to one side of a speaker's body.

A related constraint pertains to the center of the concentric regions. Corporal triggers can seemingly center their regions only on a speaker or hearer, never on a third-person entity.

The speaker as center does license more corporally based regions. In fact, possibly all languages have corporal triggers that take both the vicinal and the extravicinal regions of the speaker into account and refer separately to one or the other of them. Thus, trigger recognition of the first two spherical shells out from the speaker is the prototype. Some languages in addition have triggers that mark a further spherical shell. But a presumed constraint on the number of shells around a speaker limits them to these three, or perhaps maximally to four.

There are also constraints on the nature of a trigger's target in its relation to corporally based regions. As seen, a trigger can target the whole of a corporal region. And a trigger can target an ambient area or an entity when it is within a corporally based region. But seemingly no language has a trigger indicating that an ambient area or entity straddles the boundary between the so-conceived vicinal and extravicinal regions, or a trigger that targets two entities of which one is within the vicinal region and the other is within the extravicinal region.

A trigger can also target a path directed toward or not toward a speaker's vicinal region, thus marking a two-way ventivity distinction. Some languages are reported to have triggers marking a three-way ventivity distinction for a Figure's path: toward the speaker's vicinal region, away from it, and in a direction other than these two. But perhaps no language has a trigger marking, say, a Figural path that circles around the speaker's vicinal region, or that spirals out of it, or that progresses while remaining within it.

It can be conjectured that the seeming constraint on corporal triggers to refer only to regions drawn concentrically around a person—and commonly only a vicinal and extravicinal region—is a linguistic embodiment of the distinction seen in a line of neuroscientific research (e.g., Rizzolatti and Sinigaglia, 2006) between “peripersonal space” and “extrapersonal space.” The plasticity observed for such spaces—responding, for example, to experimentally arranged limits on or extensions of an individual's reach—may in turn correspond to the linguistic variability in the conceptualized size of a region and location of its boundary.

6.10 Corporal Cues to a Speech-Internal Target

The target of a corporal cue can be not only speech-external, as treated in this chapter so far, but also speech-internal. In fact, two such speech-internal uses exist, and they are discussed next in order. The target can be an element either of the narrative world or of the discourse when metaphorically regarded as a path.

6.10.1 A Target in the Narrative World

Since corporal cues to a speech-internal target were already analyzed in section 2.3.1 (see the Speech-internal degree of spatial remove subsection), they are only outlined here. As seen for the speech-external case, the corporal cue is prototypically the location of the speaker's body. But speech-internally, the corporal cue can be the location of any entity referred to by a nontrigger constituent in the discourse. As seen, that entity is called the "base," and the corporal cue consists of the "base location." Although the term "corporal" was chosen to suggest the role of the speaker's body, it is kept for speech-internal use, where it can be thought to suggest whatever bulk extent the entity may have. The base, base location, and target are all elements of the narrative world that the discourse leads a hearer to conceptualize.

The speech-internal case resembles the speech-external case in that the target can be either a corporally based region or a Figure within such a region. But it differs in that it recognizes only one such region—the vicinal region immediately in contact with the base location—and does not separately distinguish any extravicinal region or, in earlier terms, farther degrees of spatial remove. It also differs in that it cannot involve such other exhibitivite cues as gestural and hearer-focus cues and hence cannot support any biexhibitivite triggers.

Due to both these limitations, a language may typically have only one corporal trigger to target a speech-internal region and one to target a speech-internal Figure (apart from distinct forms marking differences of, say, number, gender, and direction). The English triggers are respectively *there* and *that* (or *those*) and are morphemically the same as the corporal triggers for speech-external distal targets, but without their reference to degree of spatial remove.

Consider the example in (48). Here, the base is the statue referred to by the base constituent *the statue of a unicorn*. The base location is some spot in the city, otherwise unspecified. The corporal trigger is the final word *there*. It targets the region immediately surrounding the base location, that is, the vicinal region of the statue in reference. The Figure is the souvenir shop, whose site is somewhere within the targeted region.

(48) Tourists to our city love to visit the statue of a unicorn.

There's a large souvenir shop there.

Corporal cues can exhibit a still further difference across the two domains, one involving geometry. In the speech-external domain, the corporal cue is the location of the speaker's or hearer's body. At least in a nonfiction context, this body is always a solid that gaplessly occupies a three-dimensional volume in space, and its location coextends with that very volume. Accordingly, an adjacent vicinal region must surround that solid and that location.

Now, in the speech-internal domain, the corporal cue is the location of the base entity. But a base can have any physical configuration in space, and its location can be

regarded as the portions of space occupied by its contours. A base could, for example, have the shape of an enclosure, with its location regarded as the space occupied by the enclosing plane. In such a case, an adjacent vicinal region could be situated inside the base and its location.

An example of this circumstance is seen in (49). Here, the base is the room referred to by the constituent *her room*. Its location is the planar cubical shell occupied by the walls, floor, and ceiling. The corporal trigger is the final word *there*. As before, this trigger's speech-internal target is the vicinal region adjacent to the base's location. But this time, that vicinal region is the volume occupied by the base's location. The Figure here is the referent of the constituent *an altar*, which in turn is situated within the vicinal region.

(49) I looked into her room. There was an altar there.

6.10.2 A Target in Spatialized Discourse

The target of a corporal cue can be an element not only of the narrative world depicted by the discourse, as just treated, but of the discourse itself. This usage seems to rest on a particular metaphor. A speaker talking along in time is conceptually analogized to a speaker moving along in space, like the ornithologist in the camera example of (9). Whatever point the speaker is currently at in her discourse is analogized to the current location of the speaker moving through space. That point will be called the speaker's **discourse location** and will also be considered to constitute a corporal cue.

The time through which the discourse extends is in turn analogized to the space through which the path extends and will be called **discourse space**. In the analogy, the discourse space contains the discourse per se much as physical space can contain physical material—even though the speaker progressively generates the former and encounters the latter. In this metaphor, thus, the unfolding of discourse is spatialized, and the discourse contents are physicalized.

Accordingly, corporal triggers like *here*, *there*, *this*, and *that*—which have been seen to use a speaker's spatial location to target speech-external phenomena—can now also use a speaker's discourse location to target speech-internal phenomena. The point in the discourse at which the trigger occurs is then treated as the speaker's discourse location.⁴

On analogy with the speech-external case, the vicinal region here is the portion of discourse space that immediately surrounds the speaker's current discourse location. And as before, the hearer must imaginably settle on the size of this portion and the placement of boundaries around it. However, since discourse progresses through one-dimensional time, metaphoric discourse space is also one-dimensional, and so is best analogized to the one-dimensional speech-external case seen in the "in line" example of (14). As there, the hearer might here also imagine the linear vicinal region as extending on both sides of the speaker's discourse location.

We next present counterparts within such spatialized discourse of four phenomena seen earlier in corporal targeting. These are counterparts of the vicinal region, biexhibitively targeted areas and entities, and displacement.

Counterpart of the vicinal region Consider the cases in (50a) and (50b) where the speaker respectively has been explaining the steps to follow in case of identity theft and has just finished reading a police report aloud.

- (50) a. The overall message here is to follow the guidelines exactly.
 b. I should mention here that I didn't actually see the accident myself.

In each sentence, the location of the corporal trigger *here* is treated as the speaker's current discourse location. This trigger targets the immediately surrounding discourse space, treating it as a spatial vicinal region. The hearer uses the available cues to imaginatively set the size and boundaries of this vicinal region. In temporal terms, the vicinal region in (50a) might be several minutes in length, and the Figure, the "overall message," is equally extensive within that region.

By contrast, the vicinal region in (50b) is conceptually reduced, contracted down to mere instants around the trigger's occurrence, which is then occupied by an equally small Figure, the "mention." The reason for juxtaposing the two examples in (50) is to show that the size that a hearer ascribes to a speech-internal vicinal region can vary, much as in the speech-external case.

Counterpart of biexhibitively targeted areas Next, recall the biexhibitive *here* and *there* of section 6.6.1. Those triggers targeted a circumscribed "ambient area" located respectively within the vicinal and extravicinal region—such as the spot on which the queen or king actor in (34) was to stand—rather than the whole of the region. The hearer's process of locating the ambient area rested on combining corporal information as to which concentric shell was being invoked with information from an additional exhibitively cue, in that case a gestural cue. A speech-internal counterpart of this can now be seen in (51), said by an election campaign manager.

- (51) "It's your choice" is our candidate's new slogan.
 a. The final word here should appeal to the independents.
 b. The final word there should appeal to the independents.

The target both of the trigger, *here* in (51a) and of *there* in (51b) is the discourse space occupied by the slogan shown within quotes. For each trigger, the Figure is the final word located within that discourse space, that is, the word "choice." The slogan's site functions like an ambient area located respectively within the vicinal or extravicinal region around the speaker's discourse location, that is, where the trigger appears. The speaker uses *here* if she conceptualizes the vicinal region around the trigger as extending

widely enough to enclose the slogan's site and uses *there* if she thinks of the vicinal region as stopping short of it.

The targeting is also biexhibitive because, besides being an indication as to which corporally based region the slogan's site is in, the slogan itself provides a targetive salience cue by virtue of being the very slogan that the initial sentence refers to.

Counterpart of biexhibitively targeted entities There is also a speech-internal counterpart to the speech-external use of biexhibitive *this* and *that* (again see section 6.6.1). An example with both these triggers was already presented in (2:71), shown slightly revised here.

- (52) a. Roz got a vice from the garage. b. Then she got a hammer from the shed.
 c. She used !-that tool to straighten the stake
 and !-this tool to pound it into the soil.

Again under this section's discourse-through-space metaphor, the occurrence of each trigger in turn is treated as the speaker's current discourse location. For both acts of targeting, the discourse space is conceptually partitioned into an extravicinal region occupied by the portion of discourse in (52a), and a vicinal region—adjacent to the speaker's discourse location—occupied by the portion of discourse beginning in (52b). The trigger *that* in (52c) then targets the referent of *vice* in (52a) by relying on two exhibitive cues (together with other cue types). It relies on the corporal cue of the speaker's discourse location to refer to the speaker's extravicinal region, hence to the portion of discourse in (52a). And it relies on the targetive feature cue provided by the tool referred to in that region. The trigger *this* in (52c) correspondingly targets the referent of *hammer* in the vicinal region beginning in (52b).

Counterpart of displacement Finally, we can cite a speech-internal analog to the displacement construction that was exemplified in (19) by the sentence *There's a good gym five blocks east (of here)*. In that construction, which often allows trigger ellipsis, a Figure's location outside a speaker's vicinal region can be represented by specifying its spatial relation to that region as a whole. Then consider the speech-internal case in (53).

- (53) The plan was described above and its results will be explained below.

In a representation of this sentence's underlying meaning, the trigger *here* may, on semantic grounds, be held to immediately follow each of the spatial forms, as if the constituents were really *above here* and *below here*. However, the ellipsis of such a trigger in the overt sentence is either required or stylistically preferable.

The use of these spatial forms seems to be infelicitous in speech and to be felicitous only in a written text. This written text is then conceptualized as occupying a linear space that extends vertically, presumably on the model of the lines on a page being

ordered from top to bottom. The location of the Figure—here, respectively, the plan description and the explanation of results—is then characterized in terms of its spatial relation to the location of the trigger, understood as the writer's discourse location. The Figure's location is then respectively higher and lower than that of the trigger.

6.11 In Sum

In the speech-external domain, a corporal cue is the location in space occupied by the speaker's or hearer's body. The space immediately around that location is the vicinal region, and the space surrounding that in turn is the extravicinal region—the two main corporally based regions. The discourse generally also indicates the spatial relation of a Figure to one of these regions. A trigger that requires a corporal cue for the determination of its target is a corporal trigger.

In the simplest case, a corporal trigger targets the whole of one of these regions—prototypically the vicinal region. In this case, it needs only a corporal cue and no other exhibitivive cue, such as a gestural cue. The hearer then must determine three locations: that of the speaker, of the vicinal region, and of the Figure. Determining the second of these in turn requires the processes of excerpting, centering, and bounding. And the last of these, setting a boundary around the region, in turn requires establishing the region's size, effective dimension, and disposition (its shape, orientation, ground-level relation, and clear-cutness). The location of the Figure can be inside or outside the vicinal region and, when outside, can be specified in terms of its displacement from that region.

If a corporal trigger has only a corporal cue available, it can additionally target a Figure that occupies the whole of a vicinal region. But if it has further exhibitivive cues available, so that it is now a biexhibitivive trigger, it can target a smaller Figure, as well as a smaller ambient area, located somewhere within the vicinal or extravicinal region.

A corporal cue can also target the path of a Figure that, in the ventive case, progresses toward (and into) a vicinal region or, in the nonventive case, progresses other than toward a vicinal region.

Corporal triggers prototypically refer to the speaker's location, but some can be used—or in some languages are specifically lexicalized as—hearer-centered corporal triggers referring to the hearer's location.

Corporally based regions are topological constructs. Accordingly, scalar expressions are barred from modifying corporal triggers, though they can modify spatial augments in construction with such a trigger.

Corporal triggers can have speech-internal targets of two types. The target can be an element of the narrative world that the discourse leads the hearer to construct or of the discourse itself when metaphorized as following a path through space. In the first case, the corporal cue is the location not of the speaker but of the base—an entity in the

narrative world that a nontrigger constituent refers to. In the second case, the corporal cue is the discourse location—the point in the discourse at which the trigger appears.

Notes

1. Specialists can judge the matter more finely, but two Latin prepositions evidently represent sides closer to and farther from the speaker, and thus incorporate componential triggers. These are *cis* and *trans* glossable as 'on this side of' and 'on the other side of'.
2. Though specialists can judge, older English may have lacked such a pair. It seems that the trigger *hither* did indicate the ventive, but that *hence* indicated only the narrower itive sense of (43bii). For their part, the triggers *thither* and *thence* required the identification of a distal location, and so were not proper members of the ventivity category. The most that can be said in this regard is that *thither* was compatible with nonventive paths, while *thence* was compatible with either a ventive path or a nonventive path of the (43bi) type.
3. An alternative interpretation, however, might account for both the present and the preceding examples. In certain circumstances that will need to be worked out, English *come* permits an imaginal representation of the speaker to be projected to a location other than her current actual location. Then the ventive path is toward the vicinal region around that representation. Compare the earlier process of repositioning where a fictive copy of an articulator was imaginally projected to another location (see the "hill" example in (5:30b)).
4. The unfolding of discourse can, of course, also be treated in terms of its basic temporal character. Then a speaker's current point in a discourse is treated as a choral cue, thus licensing triggers like *now* and *then*.

III Collateral Cue Categories

Presented here in part III is the third group of two cue categories, which can be associated together on the following basis. In initiating a targeting process, an entity with the role of “speaker” in effect engenders two collateral roles. One is the role of “hearer” for the entity that she addresses to initiate the targeting process in. The other is the role of “target” for the entity in her attention that she wants the hearer to determine through the targeting process. In short, these are the entities that the speaker talks to and about. Cues provided by the entities with these engendered roles, as seen, are said to belong to a group of two “collateral cue categories.” Cues provided by the target are in the category of targetive cues, and those by the hearer are in the category of hearer-focus cues, treated respectively in the next two chapters.

The two bodily cue categories of part II and the two collateral cue categories here together constitute the exhibitiv class of cue categories (see section 3.1.1). As noted, cues of the categories in this class provide a direct physical indication of a speech-external target or of its location. Since these four cue categories have this commonality, the categories of targetive cues and of hearer-focus cues are each analyzed without invoking any other of the exhibitiv cue categories, so as to isolate just their respective properties. Thus, in the examples illustrating the targetive cues exhibited by a target, the speaker does not point or look at the target to provide a gestural cue; the speaker does not stand near the target to provide a corporal cue; and the hearer does not stare at the target providing a hearer-focus cue.

As with the bodily cue categories, the two collateral cue categories are more elaborate where the target is speech-external. Thus again, treatment of each category’s application to speech-internal targets is shorter and placed toward each chapter’s end.

7 Targetive Cues to a Target

In the other chapters treating cue categories, the cues are independent of the target that they help the hearer determine. But in this chapter, we examine how the target itself can also provide cues to its own determination. Cues of this sort, as seen, belong to a category of “targetive cues.” More specifically, targetive cues are properties exhibited by the very entity that the speaker intends as her target, and that the hearer can discern and use as information helping him then settle on that entity as the target.

Where the target is speech-external, the targetive cues are sensory stimuli that the target produces and that the hearer perceives. Where the target is speech-internal, the targetive cues are phonetic, syntactic, semantic, or pragmatic properties of the target that the hearer either perceives or apprehends and then holds in short-term memory. This chapter addresses speech-external targets up to section 7.6, which then addresses speech-internal targets.

Within speech-external targeting, then, we can note a preliminary distinction. Certain forms of such targeting do not need targetive cues to be felicitous. In one such form, seen in the (1:32) “kite” and “street vendors” examples of section 1.5.1, the targeted location is perceptually inaccessible and the hearer has to construct it inferentially. In another form, seen in the (1:58) “party” example of section 1.6.2, the hearer had previously perceived or heard about the target but can now access it only in long-term memory. But the type of targeting considered in the present chapter is felicitous only if the target produces cues that the hearer can discern.

Targetive cues that can be discerned in this way, in turn, are of three types. These are targetive feature cues, targetive salience cues, and targetive criterion cues, treated successively in the next three sections. For each type, the hearer conducts a corresponding type of search procedure. These searches are mainly guided by lexical cues in the speaker’s utterance, as well as by the targetive cues themselves. As noted, this chapter largely avoids any use of gestural cues by the speaker or of other exhibitivive cues so as to better focus on the effects of the targetive cues in these searches.

This chapter then goes on to treat three further issues. These are self-targeting gestures, where a gesture itself is the target and provides its own targetive cues (section 7.4),

the definite determiner *the* as a trigger calling for targetive cues (section 7.5), and targetive cues exhibited by speech-internal targets (section 7.6).

7.1 Targetive Feature Cues

As seen, a targetive cue in general is a sensory stimulus produced by the speaker's intended speech-external target that the hearer can perceive and use as an aid in zeroing in on that target. But such a stimulus is regarded specifically as a **targetive feature cue** if it constitutes a particular feature of the target. Such a feature is commonly an intrinsic property of the target, for example, its identity or color, but it can also be a contingent property, such as its degree of spatial remove (see sections 2.2 and 2.3 for this distinction).

Where lexical cues in the speaker's utterance indicate that the speech-external target has certain features, the actual target must sensorily exhibit enough of the corresponding features—that is, provide enough of the corresponding targetive feature cues—to help guide the hearer to it as the target. Indeed, for an instance of targeting to be felicitous, some entity must be present in the environment that matches enough of the features ascribed by the utterance to the target. The hearer's targeting procedure then includes searching for and finding that entity.

While the emphasis in part I was on features indicated by lexical cues—respectively, by core cues from the trigger (chapters 2 and 3) and by co-form cues from constituents around the trigger (chapter 4)—the emphasis here is on some of those very features being correspondingly exhibited by the target. These two emphases together thus address both ends of a feature search: the start, where the features to search for are lexically indicated, and the finish, where those features are perceptually exhibited by the target to be determined.

For immediate illustration, we here reprise, slightly modified, two of chapter 1's earliest examples. The utterance in (1) is said, without manual or ocular gestures, by a lab director to a visitor just after opening the door to a lab with a woman, a man, and several machines inside.

- (1) She's new here.

The core cues provided by the trigger *she* indicate that the target has the intrinsic features of being a uniplex, animate, female entity, and the contingent feature of being third-person. As the hearer looks over the lab, he perceives one entity, the woman, providing the visual stimuli indicating that it has all those features. The man and the machines in the lab—as well as the speaker and hearer themselves—are ruled out because they do not exhibit all those features. The match of the woman's features with those specified by the trigger leads the hearer to conclude that the woman is the speaker's intended target. In our terminology, then, those perceivable features of the

targeted woman that match the features ascribed to it by the core cues of the trigger are targetive feature cues.

For the second example, a rancher walking along with a visitor while leading his own horse behind him, rounds his house onto an open field with a second horse in the distance and, without gesturing or looking at that horse, says (2) (the two sentences shown are simply presented as alternative versions of the same single example).

- (2) a. That horse is Jane's. b. That's Jane's horse.

This example differs from the previous one in that both lexical cue categories ascribe features to the target. The trigger *that* provides the core cues that the target has the intrinsic features of being a uniplex entity and the contingent features of being distal and third-person. At the same time, the singular noun *horse* provides the co-form cues that the target has the intrinsic features of being uniplex and of being a horse in its identity. In her search of the environment, the hearer again finds only one entity—the distant horse in the field—whose perceivable features match this combination of lexically ascribed features. The horse being led along is ruled out because it is proximal, and, if a cow and a pickup truck are in the field as well, they are also ruled out because they do not have the identity of being a horse. The horse in the distance thus exhibits all the targetive feature cues lexically ascribed to the target and, since it is alone in doing so, is selected by the hearer as the speaker's intended target.

7.1.1 Felicity Requirements in Relation to Targetive Cues

Any targeting that involves targetive cues must, as is generally the case, fulfill the three cue felicity requirements discussed in section 1.5.1. These are that the cues must be adequate in number and informativeness, accessible to the hearer, and in fact accessed by the hearer. We examine a series of conditions in which these requirements are or are not met, so as to clarify how targetive cues behave.

Cue adequacy First, then, the set of cues available to the hearer must meet the cue adequacy requirement, a condition that the speaker must ensure beforehand. This occurred in both (1) and (2), where the lexical cues and the targetive feature cues exhibited by the target were sufficient in number and informativeness to enable the hearer to single the target out unambiguously.

But the requirement is not met if, together, the cues do not provide the hearer with enough information to narrow down to the speaker's intended target. This would be the case, for example, if the rancher said (2) with its reference to a single horse, but there were two or more horses in the field. Here, each of those horses perceivably produces all the features indicated by the combination of the core and co-form cues in the utterance. To restore cue adequacy in this case, an additional cue would be needed for the hearer to zero in on the particular horse intended by the speaker as the target. For

example, this addition could be a hearer-focus cue if the hearer had been gazing at the relevant horse. Or it could be a gestural cue, where the rancher points at the horse he has in mind.

If the field again contains just one horse, the cue adequacy requirement would comparably not be met if the rancher had instead produced the utterance in (3). The reason is that the features referred to by the core cues of the trigger *that*—those of being a uniplex distal third-person entity—are not specific enough. They in fact are exhibited by many entities in the scene, such as, by the cow, the pickup truck, and the garden plot, as well as by the horse. An additional cue would again be required, for example, a gestural cue where the rancher points at his intended target.

(3) That's Jane's.

No need for feature uniqueness. It can be seen from the prior example with multiple horses in the field that the features indicated by an utterance's lexical cues need not be exhibited by the target alone. Other entities in the perceivable environment can also exhibit them. Accordingly, while the relevant targetive feature cues must in fact be exhibited by the speaker's intended target as an aid in guiding the hearer to it, the target is not necessarily unique in exhibiting those features. However, where the intended target is not unique in this regard, additional cues are needed to single it out.

This principle can be extended. To do so, we first note that a target can itself be multiplex. If perceivable, this multiplexity can be a targetive feature cue indicated by lexical cues. This would be the case, for example, if two horses are in the field and the rancher now says (4).

(4) a. Those horses are Jane's. b. Those are Jane's horses.

The new trigger *those* differs in one core cue from the earlier trigger *that*. The present trigger ascribes the intrinsic feature of multiplexity to the target, and this ascription is corroborated by the additional co-form cue from the plural suffix *-es*. In her feature search, the hearer assesses the two horses in the field as a feature match and settles on them as the target.

But a case like this shows the same lack of necessity for a target to be unique in exhibiting the ascribed features. For example, the speaker could still say (4) if he intended the same two horses as his target but there were now five horses in the field. The only difference is that he would now need to provide an additional cue—say, by pointing—to narrow the selection down to the two horses actually belonging to Jane.

Cue accessibility The targetive feature cues must secondly meet the cue accessibility requirement, again a condition that the speaker must ensure beforehand. This requirement was met in both (1) and (2) since the targets there—the woman in the lab and the horse in the field—were perceivable to the hearer. But the requirement can fail to be met

in three ways—through blockage, nonemission, or absence—that render a speaker's attempt at targeting infelicitous.

For the case of blockage, if the lab director had said (1) before opening the door to the lab, or if the rancher had said (2) before rounding the house onto the field, both utterances would be infelicitous because their targets would not be perceivable due to the obscuration. Next, exemplifying both blockage and nonemission, the utterance in (2) would be infelicitous if the horse were standing behind a shed without producing any sound, even if the hearer knew the horse to be there, since she could not see or hear it. And illustrating absence, the utterances in (1) and (2) would be infelicitous if both scenes were in view, but there was no woman in the lab or horse in the field, hence no entity exhibiting the relevant features.

Further, even if a cue from another category, such as a pointing gesture, lets a hearer unambiguously single a target out, that target must still exhibit the feature cues lexically ascribed to it. That is, it must still meet the accessibility cue requirement for perceivably providing the relevant targetive feature cues. Thus, if the rancher points at an object while saying (2), that object must still look like a horse. If it instead looks, say, like a cow, the act of targeting is infelicitous.

Cue accessing Targetive feature cues must thirdly meet the cue accessing requirement. On hearing an utterance with lexical cues indicating a target with certain perceivable features, the hearer must undertake a procedure that will in fact give her perceptual access to the targeted entity exhibiting those features. We will call any procedure of this sort a **feature search**. Such a feature search can vary with respect to its ease and timing, which are discussed next in order.

Ease of a hearer's cue accessing. How a hearer in fact perceptually accesses the feature cues of a speech-external target will require experimentation. But some idea of the processes involved may be derived from feature integration theory (e.g., Treisman and Gelade, 1980) and other visual search theories proposed in perception psychology, though here generalized to cover all sensory modalities. In particular, that body of research distinguishes two kinds of search processes. One is an attentive serial, or “inefficient,” search—a process of successively checking every item in a domain until the desired one is found. The other is a pre-attentive parallel, or “efficient,” search in which the desired item “pops out” into the hearer's consciousness. We might regard these as representing two different levels of ease in searching.

With specific regard to trigger-initiated feature searches, though, we propose that, instead of a dichotomy, search processes and levels of ease fall more along a continuum—what we will call the **perceptual ease parameter**. We here select five points from the highest to lowest degree of ease on such a parameter to demonstrate it. Due to its features, including how it is situated, then, the target may: 1) be perceptually intrusive,

and so demandingly capture the hearer's attention; 2) become apparent as soon as the hearer directs her attention over its domain, say, at a single glance; 3) become apparent after the hearer conducts a swift scan across its domain; 4) be discernable only with an examination, from moderate to laborious, of its domain; and 5) be unperceivable.

To begin illustration with the first three degrees of ease, the hearer would experience the highest degree of intrusively captured attention if, when she neared the field, there occurred the sudden sight and sound of a tall jet of water shooting up with a loud rush, and the speaker then targeted that by saying (5).

(5) Don't worry—our property has a hot spring and that's the geyser.

The hearer would experience the second degree of ease if, on hearing the speaker's utterance in (2), she happened to first glance to her right and immediately saw the horse. And she would experience the third degree of ease if, after hearing the speaker's utterance in (2), she quickly scanned the field left to right and then spotted the horse on the right. Although the hearer's search processes are nonprogressive (i.e., panoptic) in the first two cases but progressive in the third, they might all be deemed to yield a pop-out-type effect in these first three degrees of ease. And utterances are generally fully felicitous if they involve any of these first three degrees of ease in a hearer's search.

But utterances involving the fourth degree of ease tend to be decreasingly felicitous as the hearer needs to exert greater effort to examine the target's domain. To illustrate the lower end of this range, suppose that a volleyball is lying in the earlier field amid weeds, where it is ultimately visible but would require some work to spot. This could include a need for the hearer to shift her viewpoint to attain perceptual access. Without accompanying gestures, then, the utterance in (6) that targets the ball would be barely felicitous, and the rancher would be unlikely to say it as the field comes into view.

(6) a. That volleyball is Jane's. b. That's Jane's volleyball.

And the speaker's utterance would be fully infelicitous if, at the fifth degree of ease, the hearer is wholly unable to access the targetive feature cues. For example, the speaker's utterance in (2) would be fully infelicitous if the horse were behind a solid wall or if the hearer were blind. As can be seen, a speaker must assess the degree of ease a hearer will have in searching for targetive feature cues before producing an utterance calling for such a search, since the utterance's felicity largely correlates with that degree.

Timing of the hearer's cue accessing. Another variable is the time at which the hearer first notices the phenomena that the speaker is treating as targetive feature cues. One possible sequence of events is that the hearer is not aware of these phenomena before the lexical cues in the utterance initiate her search for them and she then finds them. This sequence could readily be in effect for all the felicitous examples so far. But another possibility is that she has noticed those phenomena in advance. This new sequence then entails certain differences in her search procedure.

—A continuous targetive cue. Consider first the circumstance in which perceptual stimuli from the entity to be targeted are continuously available. One case of this is the visible appearance of the horse in the example in (2). On rounding the house, the hearer could have immediately seen this horse in the field and then gone on to look at other entities. The speaker's utterance would then have directed her to return her gaze to the horse. The hearer here does not need to undertake a *de novo* search of the environment. She would instead need only to return her visual attention to the location of the horse still in the periphery of her vision or in working memory.

In another continuous case, one involving the first degree of ease, sensory stimuli emitted by the target are so salient that, however the hearer's first notice of it has come about, her attention is on it before and remains on it up to the point at which the speaker first produces his utterance. An example of it is where a loud clanging starts up in the house of the rancher who, after a few seconds, says (7) to his visitor. Here, the hearer has no need to undertake a search of the environment at all. She is already perceiving and attending to the phenomenon that the speaker now targets. She need only recognize that this focus of her attention is now also the speaker's intended target.

(7) That noise is my burglar alarm—it keeps going off by itself.

—A bounded targetive cue. Another circumstance is where the stimuli from the entity that the hearer notices in advance are bounded in duration. Examples are the fleeting image of a horse running from behind one barn to behind another, or the sound of a neigh coming from the barn. Here, the stimuli may in effect persist as representations in the hearer's working memory at the point that the speaker targets them, but they are no longer perceptually accessible at that point. The speaker's utterance in such a case can initiate in the hearer neither a perceptual search of the environment nor a return of her perceptual attention to the stimulus. Conjecturally, it instead initiates a search within her working memory for the target stimulus recorded there. The elements in memory that the hearer searches for are here still classed as targetive feature cues because their source was in fact previously perceived.

Earlier, search was treated only as a perceptual process directed outward at external phenomena. In this last case, however, a counterpart process is posited as being directed inward at phenomena in memory. It remains to be determined whether this seeming parallelism between outward- and inward-directed search reflects a commonality in cognitive processing.

7.1.2 Effective Categories Guiding a Feature Search

A feature search has been discussed as if proceeding directly from a lexical cue to a targetive cue, but the hearer's processing may include an additional step. In the sequence we propose, a lexical cue first activates a conceptual category in the hearer's knowledge

store, and then epistemic cues from this category guide the search for particular target features. A category in such a sequence will be called a **feature category**.

A feature category in turn can be informationally adequate or inadequate. If adequate, the category has enough information about the target's perceptual features for the hearer, on perceiving the target, to recognize those features immediately and unambiguously as instantiating the category. A feature category with this much perceptual information—that is, at or above a critical amount for the hearer to definitively recognize an instance of it on perceiving one—will be said to be **effective**. In contrast, a feature category with inadequate information for the definitive recognition of instances of it will be said to be **subeffective**.

Whether a particular category is effective or subeffective is in general not an intrinsic property of the category per se, but rather depends on the amount of perceptual information it has in a given hearer's knowledge store. Accordingly, the present section (7.1), which rests mainly on effective categories, cites the category "horse" as one example because most hearers can definitively recognize an instance of it. By contrast, section 7.2, which rests mainly on subeffective categories, cites the category "coyote" as one example because many hearers cannot definitively recognize an instance of it.

A speaker accordingly formulates his utterance in part on the basis of a particular assessment. He assesses whether a given feature category has enough or not enough information in the cognition of his specific hearer. He may in turn base this assessment in part on his understanding of cultural norms. For example, he may assess that a hearer above a very young age is likely to have sufficient perceptual information in her category "horse" to definitively recognize a physical instance of a horse.

7.1.3 Combining Categories

In an utterance that initiates a feature search, the lexical cues activate feature categories already stored in the hearer's linguistic knowledge. But the hearer can in turn combine these categories to form a single new feature category. This **compound category** can initially be regarded as a conjunction of all these stored categories' contents. It is thus more specific to the particular targetive feature cues exhibited by the intended target than any one of the contributing categories. The contributing categories we focus on here are effective, hence the compound category itself is necessarily effective—the features it jointly indicates can be perceived definitively.¹

To illustrate, in the utterance in (4) where two horses are in the field, the morpheme *horse* provides a co-form cue that activates the hearer's stored lexical category "horse." This category is effective for definitively recognizing a single individuated horse on perceiving its appearance. In addition, the suffixal morpheme *-es* provides a co-form cue that separately activates the hearer's stored lexical category of "multiplexity" (plurality). This category is also effective in that the perception of multiplexity in the occurrence of an entity of a particular kind is generally immediate and unambiguous. But

these two categories stored in the hearer's lexicon may now combine to form a new category of "horse multiplexity." This compound category is itself effective in that the perception of a multiplexity of horses is also generally definitive.

A finer-grained analysis This same illustration can now be analyzed more finely. We will consider separately the semantic components making up the morphemes that initiate feature searches by the hearer. Each such component may be thought to provide a lexical cue that activates a distinct conceptual category in the hearer's store of linguistic knowledge.

For example, the trigger *those* in (4) has four semantic components. One of them activates the effective category of "multiplexity," in corroboration with the suffix *-es*, which activates the same category. The trigger also has a semantic component for the category "distal," but this is a subeffective category since a target's perceived degree of spatial remove is relative, not definitive.

For its part, the morpheme *horse* can now be thought to have two semantic components that activate two different effective categories. One of these categories is "horse identity" (i.e., the "identity of being a horse"), and the other is "uniplexity." We posit that the "uniplexity" component is present in *horse* because it is needed to contrast with the component of "multiplexity" that, say, the morpheme *furniture* has and requires as an attribute of its referent.

In this finer-grained analysis, further, the activated stored categories need not combine into the new compound category simply as a conjunction. They might instead bear more complex relations to each other based on their semantics or on the syntax of the original forms. Thus in (4), the "multiplexity" meaning of the morpheme *-es* cannot simply conjoin with the "uniplexity" component in *horse*, since that would be contradictory, but rather overrides it or puts it through a process of multiplexing.

7.1.4 Unified versus Nested Feature Searches

Experimentation will be needed to determine the forms of cognitive processing that actually take place in a hearer who, say, comes upon scenes and hears utterances like those in our examples. But we can here suggest two different procedures—a **unified feature search** and a **nested feature search**—that may be found to occur in such processing.

A unified search is what was described in the preceding section. In it, the hearer combines stored categories into a single compound category—whether through simple conjunction or through a more complicated operation—and it guides a single unified feature search through the whole environment.

But in a nested search, the hearer conducts a sequence of separate searches through successively smaller environments. A two-cycle nesting of this kind might proceed as follows. The hearer might first combine just some of the lexical cues into a first

compound category, and this would guide an initial search through the full environment for the set of entities with just those ascribed features. Then she combines the remaining lexical cues into a second distinct compound category, and this now guides another search just through that set—a local environment—to find the entity having the newly ascribed features. This last entity will exhibit all the same features as would be the case in the unified search procedure. A single unified feature search is thus here replaced by a recursion of partial-feature searches.

To illustrate, we return to the ranch, but now the field has five horses including one grey horse, which is the rancher's intended target. The utterance in (2) would here be infelicitous due to cue inadequacy: the combined information from the lexical cues in that utterance could pertain to any of the horses in the field and would not help the hearer zero in on the intended one. An additional cue is needed. A gestural cue would do but, since it is outside this chapter's focus, we consider the option of an extra co-form cue. The rancher thus says (8), with its added co-form cue from the new word *grey*.

(8) That grey horse is Jane's.

Consider first the cognitive processing in the hearer under the unified search procedure. The new co-form cue activates the category "grey" in her store of linguistic knowledge. This category is effective since she can definitively recognize that color on perceiving an instance of it. She forms a single compound category—also effective—that conjoins this new feature with those ascribed to the target by the trigger *that* and the noun *horse*. She then searches the full perceivable environment for an entity exhibiting that combination of features—namely, those of being a uniplex distal third-person grey entity with the identity of a horse. She selects as the intended target the one entity that does do so, while ruling out all other entities.

But now consider the nested search procedure under one version of sequencing. The hearer first conducts a feature search based only on the co-form from the noun *horse*. She surveys the global environment and finds five entities exhibiting that feature—all nonhorse entities having been ruled out. She now conducts a second feature search based on the co-forms from the trigger *that* and the adjective *grey*. She surveys just the set of five horses—which in effect now constitutes a local environment within the global environment. She finds one horse within that local environment exhibiting the remaining combination of features—that is, the features of being a uniplex distal third-person grey entity—and rules out the other four horses.

Each of her two searches thus checks for different features in first a global and then a local environment. She accordingly does not need to search for, say, the color grey throughout the global environment, but only among the horses. In the end, she settles on the same target candidate with this nested search procedure as with the unified search procedure.

Experimentation will be needed to determine any factors governing whether a unified or nested search (if either) is undertaken and, in a nested search, which sequence the features are sought in. Speculatively, though, the present hearer might sequence her searches as described because, among co-forms, a noun takes precedence over an adjective—here, *horse* over *grey*. And such a linguistic precedence might in turn rest on a possible perceptual precedence in which the perception of an entity is prior to that of a property exhibited by the entity.

7.1.5 Type of Sensory Modality

Almost all the examples presented so far have rested on visual perception: the hearer had to undertake a visual search for features whose visual appearance constituted the targetive feature cues. But such cues can also consist of features in other sensory modalities.

To illustrate the auditory case first, the earlier rancher could have produced the same utterance as in (2) if he and his guest were just then passing a barn and heard a neigh from inside it. The hearer here would find the same lexical cues in the utterance—those from the trigger *that* and the co-form *horse*, and these cues would activate the same conceptual categories stored in the hearer's linguistic knowledge as before. But the information contained in these categories is not limited to just the visual modality. Thus, for the typical hearer, the category "horse" has enough information on both the appearance and sounds of a horse for her to definitively recognize an instance of a horse either visually or auditorily and to single it out from all other entities she perceives within a visual scene or a soundscape. The category "horse" is accordingly effective for both the visual and auditory forms of targetive feature cues exhibited by a horse.

In the revised case, then, the hearer would conduct an auditory search of the sonic environment—whether during, after, before, or instead of a visual search. She would settle on the unseen producer of the neigh as the source of that auditory targetive feature cue and hence as the intended target.

Comparably for an olfactory example, the rancher might say (9) to his guest on reentering the house with the smell of brewing coffee in it. The speaker here assumes that the feature category "coffee" activated in the hearer by the co-form cue from the noun *coffee* is effective for the smell of coffee. That is, it will include enough conclusive information on its smell for her to unambiguously recognize that smell and to pick it out from any other odors within the current "smell space."

(9) We grow that coffee in our own greenhouse.

Like that of "horse," the category of "coffee" typically covers more than one sensory modality. Thus, in the linguistic knowledge of perhaps most hearers, the category "coffee" also has enough information for the definitive visual recognition of coffee in several

of its physical forms. Accordingly, the rancher could have said (9) as well if his target were a bowl of coffee beans visible on the table.

7.1.6 Size of Search Space

We will use the term **search space** for the domain or set of phenomena that a hearer presumes she must search through to find the features lexically ascribed to the target. We conjecture that the smaller the search space is, the shorter and easier is the hearer's task of finding the features (experimentation will be needed).

In most examples so far, the search space was the entire domain of phenomena sensorily available to the hearer's perception. The one type of smaller search space that we did already cite was the second search in a nested search procedure (see section 7.1.4). But this type existed only after a global search. However, a smaller search space can be present from the outset. We present two such cases.

Reduction of search space to a particular sensory modality Lexical cues can indicate that targetive feature cues are to be found in just one particular sensory modality. To illustrate, first consider (2) again. As seen, that utterance could be employed to target a horse—where it was the sole horse in the hearer's environment—whether it was visible in the field or audible in the barn. The conceptual category “horse” activated in the hearer by the noun *horse* included information on both the visual and the auditory features of a horse. The hearer might then have needed to search both visible and auditory space to find either type of feature, perhaps starting with one modality and then switching to the other if no match at first appeared. But now suppose that the speaker produces one of the utterances in (10), each of which includes an additional co-form cue specific to either the visual or the auditory modality.

- (10) a. That horse you see is Jane's. b. That horse you hear is Jane's.

The co-form cues from each of the two added phrases activate in the hearer the conceptual categories respectively of “visible entity” and “audible entity.” The visitor who hears (10a) knows to search only through the visible environment for visual feature cues and can from the outset dispense with searching through the auditory environment or that of any other perceptual modality.

Complementarily, the visitor who hears (10b) knows to search only through the auditory environment for sonic feature cues and can omit other perceptual searches.

In this latter audible case, for example, the hearer must still search for a uniplex distal third-person entity with the identity of a horse, but now she needs to search only through auditory space for the sounds that the category “horse” in her cognition informs her that a horse can make.

In each case, then, the expanded set of cues reduces the size of the search space that the hearer must check and perhaps also reduces the processing time and effort needed.

Reduction of search space to a particular spatial region The size of the search space a hearer must check through can also be reduced by lexical cues specifying the region of space that the target is located in, which can be treated as a contingent feature of the target. For illustration, consider the two utterances in (11), employed where the targeted Cessna is the only light aircraft in the hearer's environment.

- (11) a. That Cessna in the field is Jane's. b. That Cessna in the air is Jane's.

The prepositional phrase in (11a) provides the co-form cue that the target has the feature of being located on the ground. The hearer accordingly needs to search for the remaining targetive feature cues—the features of being a uniplex distal third-person entity with the identity of a Cessna—only in the physical space consisting of a horizontal layer at her own eye level. She need not look upward or downward. Complementarily, the hearer of (11b) need only search through the physical space overhead and can omit looking through the space at eye level or below. Again, each example has reduced the size of the search space, though now through lexical cues that limit physical locative space to one relevant portion.

Note that where there is only one horse or Cessna in the hearer's total perceptual environment, as has been presumed for these examples, the additional co-form cues that specify sensory modality or spatial region are not needed for the hearer to distinguish the target from other candidates. Rather, they simply help her reduce the space she must search through to find those targets.

Lexicalized reduction of search space In the previous examples, the morphemes that provided co-form cues to the target's identity—*horse*, *coffee*, and *Cessna*—did not also provide co-form cues to the target's sensory modality or (with one exception) spatial region, thus reducing search-space size for the hearer. But other morphemes are lexicalized with this additional information. That is, the conceptual categories that they activate in a hearer include information that instances of them have particular limitations on their perceptual or spatial accessibility.

Sensory modality. Thus with respect to sensory modality, the noun *image* and the adjective *grey* indicate that a hearer would be able to access their referent only visually, while the noun *song* and the verb *ping* indicate that access is purely auditory. To illustrate the latter case, if a speaker says either (12a) or (12b), the hearer would need the cited co-forms alone—without ancillary co-forms—to know to search only auditory space for the ascribed features, and to dispense with any search through visual, tactile, smell, or taste space.

- (12) a. That's my favorite song. b. What is that pinging?

Not just co-forms, but also triggers can lexicalize sensory limitations on search space. Thus unlike English *that*, which is neutral to modality, some languages are reported to have triggers basically glossable as ‘that sound’. And, as seen in section 2.2.6, the Yucotec Maya trigger *b’e’* indicates that the target has the features of being insubstantial and nonvisual. The hearer thus searches for something insubstantial within a reduced search space consisting of the perceptual modalities for sound, smell, and feel.

Spatial region. A morpheme providing a co-form cue to the target’s identity can also be so lexicalized as to reduce the size of search space with respect to the target’s location within the total environment. Thus, by contrast with the morpheme *Cessna*, the morpheme *cloud* is lexicalized to indicate that its referent has the feature of being located solely in the sky. Accordingly, if the hearer is on the ground when hearing the utterance in (13), she knows to search only through the upper portion of physical space by looking upward and to dispense with looking at ground level or downward.

(13) That cloud looks like we’re going to have rain.

By the same token, we can now look back at the morpheme *horse*, as used, for example, in (2), and recognize that the conceptual category it activates also includes the spatial information that an instance of it is likely to be on the ground rather than in the air. Accordingly, the earlier hearer of the rancher’s utterance will limit her physical search space to the ground level and dispense with searching through the air.

7.2 Targetive Salience Cues

Section 7.1 relied on the lexical cues in a speaker’s utterance for the hearer to determine the target. They activated feature categories in the hearer that—whether singly or in combination—included enough information about features of the target for the hearer to definitively single that target out in a search of the perceptual environment. In our terms, the categories were effective for those targetive feature cues.

Section 7.1.1 did consider a case in which the lexical cues were inadequate. There, the rancher produced the same utterance as in (2) with its reference to just a single horse, but the field contained two or more horses. This lack of cue adequacy was remedied if the speaker added a further cue. This could be an exhibitiv cue—that is, a gestural, corporal, or hearer-focus cue—or a further co-form cue. This last recourse was seen in (8) with the addition of the adjective *grey* to the utterance.

But if the lexical cues are inadequate for targeting and the speaker cannot or chooses not to add the types of cues just cited, one further cue type may serve to restore cue adequacy. Cues of this type are forms of salience exhibited by the target that can attract the hearer’s attention to it—what we have called “targetive salience cues.” The speaker may rely on such cues if she assesses that they are, in fact, present and that the hearer

can respond to them. We next consider the circumstance where an utterance's lexical cues are inadequate for successful targeting, but where targetive salience cues restore felicity.

7.2.1 Subeffective Categories Yielding to a Salience Search

In a speaker's utterance, the lexical cues to a target can activate feature categories in the hearer that, whether singly or combined, do not have enough information about the target's perceptual features for the hearer to recognize them immediately and unambiguously. The information is too sketchy or abstract for the hearer to succeed in a feature search. As noted earlier, a feature category that in this way is below a criterial amount for the hearer to definitively recognize an instance of it will be said to be subeffective. The speaker must then remedy this situation.

Consider two cases for illustration. An experienced camper is with a novice in the woods where, among all the phenomena that they can both perceive, in one case some animal is visible darting across a small clearing, and in the other case some yipping sounds are audible. In either case, she says (14) to him. The target of her trigger *that* is the image of the darting figure in the first case and the sounds of yips in the second.

(14) That's a coyote.

The co-form cue from the noun *coyote* activates a conceptual category in the novice hearer that is subeffective for him. He may have some sense, say, that a coyote is a forest animal something like a dog or a wolf, but lack a clear idea of its appearance, sounds, or behavior. And its combination with the category activated by the trigger *that* in the utterance yields a compound category that is also subeffective for him. He thus cannot be sure which perceived or potentially perceivable stimulus from a uniplex distal entity within his entire environment represents the speaker's intended target.

The speaker, for whom the "coyote" category is effective, may assess that it is subeffective for her addressee and so seek to ensure cue adequacy. Thus, in the visual case, she might add a gestural cue by immediately pointing toward the clearing as she produces the preceding utterance in (14). Or in the auditory case, she might add further co-form cues by inserting more words in her utterance, as in (15).

(15) That series of sharp yipping sounds is a coyote.

In this latter case, though, the compound category that the hearer would form by combining the lexical cues would be effective: he could immediately and unambiguously recognize a sequence of yips in auditory space. Thus, the revised utterance would simply initiate the targetive feature search of section 7.1.

But the speaker has a further alternative. If she assesses that the darting or the yipping, relative to its surroundings, is salient enough in the hearer's perception to attract

his attention to it, she can treat that as a targetive salience cue. Her exploitation of this additional cue then brings the ensemble of cues up to adequacy.

In general terms, a speaker can judge that insufficient adequacy of other cues will prompt a hearer to search for forms of salience in his environment. Such a procedure by the hearer will then be called a **salience search**. In the circumstances addressed so far, the two types of proposed searches are thus largely complementary. The hearer undertakes a feature search for targetive feature cues where the relevant categories are effective. But he undertakes a salience search for targetive salience cues where the relevant categories are subeffective. In the former case, the hearer searches for specific features ascribed to the target by lexical cues—that is, by core or co-form cues. In the latter case, there are not enough specific lexically ascribed features to search for. The hearer instead becomes receptive to whatever forms of salience attract his attention.²

It thus seems that, in any given environment, some combination of certain types of salience above particular levels is most likely to attract the hearer's attention. This process can be considered another kind of pop-out effect. A speaker ensuring cue adequacy, then, would not rely on salience as a targetive cue unless it would, in her judgment, have such a pop-out effect for the hearer.

7.2.2 Salience-Associated Parameters and Their Relationships

We next look at those characteristics of salience that are relevant to a salience search, considering first different parameters associated with salience and then different relationships among such parameters.

Salience-associated parameters A phenomenon seems to have greater salience—that is, to perceptually attract attention more strongly—the higher it ranks along certain qualitative scalar parameters. We will call these **salience-associated parameters**. The directionality and labeling of such parameters is then set up here so that an increasing value along them correlates with increasing salience. In a salience search, a hearer checks through the perceivable phenomena in his environment for their rankings along such parameters.

Uniqueness salience. One such parameter—the “uniqueness parameter”—may have a special role in a salience search. It is the degree of uniqueness that a phenomenon has—with respect to some relevant property—in the hearer's current environment. A phenomenon can range from ranking at the low end of the parameter, where it shares the property with every other perceivable phenomenon, to ranking at the high end, where it alone manifests that property there. The closer to the high end, the more it exhibits **uniqueness salience**. The property at issue could be the identity of the phenomenon. Or, as a kind of meta-case seen in section 7.2.3, it can be the phenomenon's manifestation of salience on some other parameter.

Unfamiliarity, recency, and nonprototypicality salience. Three further parameters may have a strong role in salience searches. One is a phenomenon's unfamiliarity to the hearer, which ranges from its being wholly familiar at the low end of the parameter to being wholly unfamiliar at the high end. The higher a phenomenon is along this "unfamiliarity parameter," the more it exhibits **unfamiliarity salience**. Another parameter is a phenomenon's recency on a scene, which ranges from its having been present all along to being the latest newcomer. The closer to the high end of this "recency parameter," the more that the phenomenon has **recency salience**. And one more parameter is a phenomenon's nonprototypicality, which ranges from its being prototypical to being quite unusual for its category. The higher on this "nonprototypicality" parameter, the more it exhibits **nonprototypicality salience**.

Suddenness, brevity, swiftness, and loudness salience. Still further parameters rest on factors that the human perceptual system is generally known to orient to. Where a phenomenon changes with respect to some factor, one parameter is the rate of this change's onset and cessation, from a shallow gradient to a steep gradient. The closer toward the latter high end of this "suddenness parameter," the more that the phenomenon exhibits **suddenness salience**. Where a phenomenon's perceivable presence is bounded in time, another parameter is its degree of brevity, from long to short duration. The closer it is to the latter high end of this "brevity parameter," the more that it exhibits **brevity salience**.

Further, where a phenomenon's motive state is being processed, a further parameter is its speed, from being stationary to slow to fast. The closer toward the high end of this "swiftness parameter," the more it exhibits **swiftness salience**. And where a target produces sound, another parameter is its volume, from soft to loud. The closer to the high end of this "loudness parameter," the more it has **loudness salience**.

Global versus local scope. Among all the salience-associated parameters that were and will be presented, the analysis proposed here treats the uniqueness parameter alone as having a certain property. By this analysis, a phenomenon's ranking along the uniqueness parameter inherently rests on the hearer's surveying all the phenomena in the entire environment. That is, his concept of a phenomenon's degree of uniqueness in a given environment in principle has a global basis and is comparative.

By contrast, this analysis treats a phenomenon's ranking along any other parameter as being solely local and noncomparative. For example, the hearer can rank a phenomenon's degree of unfamiliarity to him independently for that phenomenon alone without taking into account the rankings of other phenomena in the environment. To be sure, he can then undertake a secondary process of comparison, for example, to determine which phenomenon in an environment is the most unfamiliar.

Parameter relationships The rankings of phenomena along salience-associated parameters can bear various relationships to each other when two or more such rankings occur together in a situation. As with different cues to a target (see section 1.2), such relationships are of two types, compatible and conflicting.

Compatible relations. The main compatible relationship consists of concurrence—analogueous to corroboration among different cues. As the main example of it, high degrees of salience exhibited by a single phenomenon along different parameters can reinforce each other and attract a hearer’s attention more strongly to that phenomenon.

The hearer might find such concurrence across parameters either all at once or serially. That is, his salience search might be either unified or nested, much as was the case for a feature search (see section 7.1.4). Both these search types themselves occur without conflict, and so they might be thought to further exemplify compatibility in relation to parameter rankings.

Conflicting relations. In a conflicting relationship, one case of ranking outweighs or overrides another. We can cite three such relationships.

—High-low conflict. One of them involves two phenomena and one parameter. One phenomenon’s high degree of salience along a particular parameter outweighs another phenomenon’s low degree of salience along that same parameter. This relationship can be thought to involve a “high-low conflict.” It is actually the basic relationship that makes a salience search useful in the first place. The hearer’s attention is attracted to that phenomenon with the higher degree of salience along the parameter at issue.

—High-high conflict. Another conflicting relationship involves two phenomena and two parameters. One phenomenon’s high degree of salience along one parameter can outweigh another phenomenon’s high degree of salience along a different parameter. This relationship involves a “high-high conflict.” The hearer’s attention is preferentially attracted to the privileged high-salience phenomenon.

—Low-high conflict. The third conflicting relationship involves one phenomenon and two parameters. In it, a phenomenon’s low degree of salience along one parameter can in fact outweigh its high degree of salience along another parameter, so that the phenomenon ends up attracting little attention from the hearer. This relationship can be said to involve a “low-high conflict.”

All the foregoing parameters and relationships will be illustrated next.

7.2.3 Illustrating the Parameters and Their Relationships

To first return to the coyote example, the hearer might begin by using what information he does have about the target from the subeffective categories activated in him by the lexical cues. It might provide some general features to expect, while helping him eliminate certain classes of phenomena. Thus, his sense that a coyote is something like a dog or wolf will, in any visual check, spare him a search through the air for flying birds or cloud formations and, in any auditory check, will save him from considering the calls of birds or the splashing sounds of a creek. But he otherwise does not know what features to search for and nothing in the lexical cues directs him to the darting or the yipping.

Given this deficiency of a feature search, the hearer will undertake a salience search. Either the darting of something across the clearing or the series of yips may attract his attention due to the following types of salience that they exhibit.

Compatibility illustrated First, both phenomena exhibit high unfamiliarity salience: the hearer cannot recognize or identify either what is doing the darting or what the sounds are. Second, both the period of darting and the train of yips exhibit high brevity salience: each has only a short duration. Further, both exhibit high suddenness salience: the burst of darting has an abrupt onset and termination, while each yip shows a spike in amplitude. In addition, the darting exhibits high swiftness salience in that the movement is fast, while the yipping exhibits high loudness salience since the yips are piercing. Finally, both phenomena exhibit high uniqueness salience: each is the only phenomenon currently in the scene exhibiting the preceding types of salience (this is the meta-type of uniqueness salience).

As can be seen, five of the salience types proposed earlier are exhibited at high degrees by each of the illustrated phenomena. Their parameters thus exhibit the compatible relationship of concurrence. The salience types reinforce each other to attract the hearer's attention even more strongly to the phenomenon.

If the hearer's salience search here is unified, the combination of all the salience types would attract the hearer's attention in one step. But the hearer's salience search might be nested. To consider just two of the proposed parameters, his attention might be attracted first to all the phenomena on the scene with high unfamiliarity salience and next, within that set, to the phenomenon with high suddenness salience. Or the reverse nesting might occur. Such alternatives would require experimental resolution. But either search type would occur without conflict in a compatible relationship with the salience parameters.

Conflict illustrated Certain modifications of the preceding example can in turn illustrate conflicting parameter relationships. First, to consider just the yipping case, suppose that, exactly when it occurred, a soft growling could also be heard at another location. Both

sounds would be equally high on the unfamiliarity, briefness, and suddenness parameters, so that neither would be more salient than the other on those grounds. But on the loudness parameter, the yipping would rank higher and the growling lower. The yipping would thus be more salient and would outweigh the growling in a high-low conflict. Through a salience search, the hearer would settle on the yipping as the speaker's intended target.

In a different modification, suppose that both the darting could be seen and the yipping could be heard at the same time at different locations. Again, both phenomena would be of equally high salience on the unfamiliarity, briefness, and suddenness parameters. But now both would also be of equally high salience on their respective swiftness and loudness parameters. This is a high-high conflict. But it is possible that the human orienting system is more responsive to one of these parameters than the other—for example, more to visual speed than to auditory loudness. If so, the hearer might consider the phenomenon ranking high on that parameter as the more salient one and regard it as the intended target. Experimentation would be needed to test these and other pairs of salience types to determine whether there is a hierarchy among such types.

For a third modification, suppose that four different animal sounds, all of them unfamiliar but continuous, are heard coming from different locations in the woods. One of these sounds—the same growling as before—is soft. The other three are loud—the same yipping as before, now joined by squealing and by roaring. This situation lets us illustrate two different types of low-high conflict, both of them pitting the uniqueness parameter against the loudness parameter.

In one low-high conflict, the speaker wants to target the soft growling. This phenomenon is high on the uniqueness parameter, since it is the only unfamiliar sound of the four that is soft, and so might be thought to have high uniqueness salience. But it is also low on the loudness parameter and so affords little loudness salience. Our surmise is that its low ranking on the loudness parameter would outweigh its high ranking on the uniqueness parameter, leaving it with little overall salience to attract the hearer's attention to it. To get the hearer to single it out, the hearer would need to provide additional cues.

The second type of low-high conflict is basically the reverse of the first. Here, the speaker wants to target the yipping. This sound is high on the loudness parameter and so might be thought to have high loudness salience. But at the same time it is low on the uniqueness parameter, since it is one of three loud sounds, and so has little uniqueness salience. Our surmise here is that its low ranking on the uniqueness parameter would outweigh its high ranking on the loudness parameter, again leaving it with little overall salience to attract the hearer's attention to it. And again, to get the hearer to single it out, the speaker would need to provide additional cues.

The direction of resolution in both these types of low-high conflict can be summed up in a single principle. As between the uniqueness parameter and any other salience-associated parameter, the low ranking of a phenomenon on one outweighs its high ranking on the other.

Recency and nonprototypicality illustrated Two more of the parameters first cited still need illustration. One is the recency parameter, with a phenomenon exhibiting recency salience at its high end. Such salience is in part what attracts the attention of viewers in a planetarium to an inset newly projected onto one region of the overhead dome as an astronomer says (16a). The same attracting of attention occurs again if she then says (16b) as another inset is projected onto a different part of the dome.

(16) a. This is the Andromeda Galaxy. b. And this is the Magellanic cloud.

For some hearers in the audience, a feature search would yield little, since they would not be able to distinguish galaxies from other formations displayed on the dome. They instead resort to a salience search. They rely on the recency salience—along with the suddenness salience—of the latest inset's appearance. A phenomenon at the low end of the recency parameter—here, an image that has remained on the dome while others have appeared—is presumably of low salience and unlikely to attract attention.

The two types of low-high conflict can be illustrated for this situation as well. Suppose that the inset showing the Andromeda galaxy had appeared on the dome and remained there as, some minutes later, three new insets appear at the same time, one of them showing the Magellanic cloud. The astronomer could not say (16a) to target the original Andromeda inset because its low salience on the recency parameter outweighs its uniqueness in being the earliest. Nor could she say (16b) to target the Magellanic member of the three just-appearing insets because its lack of uniqueness outweighs its recency.

We lastly illustrate the nonprototypicality parameter and, at its high end, nonprototypicality salience. To a novice birder near a lake, all the bird calls he has heard so far may be unfamiliar to him, but they have all still fallen close to his conceptual prototype of birdsong. Suppose that he now hears two new unfamiliar calls, one again within his prototype, but the other a prolonged partially gliding plaintive wail, as his expert companion says (17). Both calls have recency salience, but the wailing sound also has nonprototypicality salience due to its comparative peculiarity. It thus affords more targetive salience cues and is what the hearer will likely settle on as the speaker's intended target.

(17) That's a loon.

Further salience-associated parameters? A final example can help further explore salience-associated parameters. A family in a pet shop stands before a cubicle with a number of puppies and, without pointing, the young child says (18).

(18) That's the puppy I want.

The hearers here, we propose, undertake a two-stage nested search for targetive cues. The first stage is a feature search for instances of the compound effective category “a uniplex distal third-person entity with the identity of a puppy”—itself activated by lexical cues from the trigger *that* and the noun *puppy*. The hearers can definitively identify a set of individuals with those features.

The second stage involves narrowing down to just one individual within that set. Part of this stage is a feature search based on the subeffective category “desirableness in a puppy,” itself activated by co-form cues from the sequence *the puppy I want*. But since this is insufficient, the rest of the narrowing down relies on a salience search for targetive salience cues. This two-stage nested procedure resembles that for the grey horse in (8), except that, there, both stages involved feature searches, whereas the second stage here involves a salience search.

This salience search could rest on some of the salience-associated parameters cited earlier. For example, if one puppy is walking about while the rest lie still, it would have comparatively high swiftness salience, as well as uniqueness salience for being alone in moving, thus attracting the hearers' attention to it and perhaps tipping them into settling on it as the speaker's intended target. The same might hold if one puppy is barking while the rest are silent, thus having comparatively high loudness salience.

But setups like the present one might accommodate experimentation to determine further parameters with salience association, as well as ones without it. Suppose here, for example, that one puppy alone is looking directly at the family members while the others are otherwise engaged. If the hearers readily settle on the puppy looking at them as the target, we might need to posit a “sociality” parameter and, at its high end, **sociality salience**.

Or different color or brightness contrasts could be tested to determine whether, among a group of sleeping puppies, one puppy with color X would attract targeting attention over the remainder of puppies with color Y, or whether a puppy with a brighter coat than the others would have **brightness salience** at the high end of a “brightness parameter.”

Or again, a range of spatial relationships could be tested to determine whether any can endow an entity with enough salience for targeting. For one example, suppose that the earlier rancher had said *That horse is Jane's* while in view of a field with a solitary horse at one end and a pack of horses at the other. The hearer might well settle on the solitary horse as the speaker's intended target because it has **isolability salience** at the high end of an “isolability parameter.”

On the other hand, in the pet shop, suppose the puppies were all sleeping together in a circular huddle, and the child had wanted to target the puppy lying in the exact center. It seems unlikely that her utterance in (18) would lead the hearers to single that puppy out as her intended target. There thus may be no salience-associated parameter of “spatial centrality” in effect for targetive salience cues.

This last observation raises a final point. Perhaps the forms of salience needed for any speech-external targeting initiated by a linguistic trigger compose a set partly different from that of all the forms of salience that humans might be experimentally shown to respond to. For example, perhaps one dog uniquely lying asleep amid others walking about could indeed attract attention to it but still not be usable as a salience cue for targeting it, as in response to the child’s utterance in (18). If this is the case, it would be important to know why only certain forms of salience, but not others, are linguistically privileged in this way.

7.2.4 Augmenting an Initial Salience Search

If no target candidate emerges on an initial salience search, a hearer might try two further procedures.

Sensitization One procedure is that of **sensitization**. The hearer might endeavor to lower his perceptual thresholds so as to allow in fainter stimuli or loosen criteria he may have been maintaining so as to allow more unexpected stimuli into noticeability. This procedure could involve a process of defocusing—attending to a greater bandwidth—or of disinhibition—relaxing constraints that blocked out other stimuli—so that the hearer’s perceptual receptivity or scope is expanded. The hearer thus expands the space he can search so as to find targetive salience cues. Such a process then contrasts with the factors in section 7.1.6 that reduced the space a hearer must search through to find targetive feature cues.

We can illustrate with a new modification of the original coyote example. The speaker still says (14) but now, instead of the highly salient darting or yipping, what is present, at lower salience, is an animal crouching near a shrub in one case or a soft growling in the other case. The sensitization procedure might now render that sight or sound available to the hearer’s perception and turn it into a targetive salience cue. If the speaker is aware of the hearer’s need to increase sensitivity, she might aim to promote that procedure by adding a sentence like *Can you see/hear it?*

We may find support for proposing such a sensitization procedure in that it apparently occurs in other linguistic phenomena. Thus, it can be posited that a hearer generally inhibits awareness of all the polysemous and homophonous senses of a morpheme he hears other than the one sense pertinent to its current context. But poets and punsters aim to induce hearers to increase their sensitivity to certain additional senses.

That is, the hearers are meant to relax their usual inhibitions on these noncontextual senses and become aware of them.

Category checking If a hearer fails to turn up a target candidate through a salience search, even after a sensitization procedure, he may follow a second procedure—**category checking**. This procedure in turn encompasses two components: a memory search and a challenge. For the first component, the hearer conducts an inward-directed search in his memory of the subeffective category for possible additional bits of information overlooked initially. This might be fainter information that perhaps itself requires a sensitization procedure. For example, he might vaguely recall having once heard that coyotes can growl softly—a feature that he should then turn his perceptual attention back outward to try to detect.

For the second component, he might challenge the accuracy of the category as currently stored in his memory. For example, he might wonder if a coyote is more like a skunk than like the dog or wolf he had supposed, and perhaps turn his attention outward to search for an odor.

7.3 Targetive Criterion Cues

The lexical cues in a speaker's utterance have so far been seen to activate feature categories in a hearer. These in turn have constituted two types of categories that initiate two corresponding types of search. To summarize, an effective category contains enough information for the hearer to recognize an instance of it immediately and unambiguously. It initiates a feature search for phenomena in her perceivable environment that exhibit the features indicated by the category. The target itself must exhibit such targetive feature cues. As the second type, a subeffective category's information is spotty in the hearer's cognition—insufficient for her to identify an instance of it definitively. It instead initiates a salience search for phenomena in the perceivable environment that attract her attention by having one or more forms of salience. The target must exhibit such targetive salience cues.

But a speaker's lexical cues can also activate a further type of category, one that does not involve the features of the first two types. The information provided by such a category consists of a particular criterion that instances of the category must meet. Such instances can differ from each other greatly in their form. As potential speech-external targets, they can thus differ in their perceptual features. The range of variations that such instances might manifest, moreover, need not be closed, but might be indefinitely open-ended. Further, such instances need not be unfamiliar to the hearer—she may be able to recognize many of them definitively. The instances are thus not necessarily unfamiliar, but rather they are perceptually unspecified.

A category of this sort—based on a criterion and potentially multiform in its instantiation—will be called a **criterion category**. A hearer in whom such a category is activated might then undertake a **criterion search**. She may search through her perceivable environment for phenomena that, though having no previously prescribed perceptual features, might be assessed as meeting the criterion, thus exhibiting a **targetive criterion cue**.

7.3.1 Criterion Categories Related to Effective and Subeffective Categories

A criterion category thus resembles and differs from the earlier two category types in certain ways. What it shares with an effective category is that both provide a basis by which a phenomenon can be definitively identified as an instance of the category. But it differs in that its basis is a comparatively generic or abstract criterion whereas, in the effective case, the basis is a set of specific perceptual characteristics that can be identified directly.

Complementarily, what a criterion category shares with a subeffective category is that it too lacks specific information on the particular perceptual features that the intended target has. But it differs in that its criterial information can definitively rule a phenomenon in or out as a potential target, whereas the information in a subeffective category is too vague or spotty for such a definitive determination.

7.3.2 A Simplex Criterion Category

As one possibility, a criterion category can be a pre-existing component of a hearer's store of linguistic knowledge that is able to be activated by the co-form cue from a simple morpheme in the speaker's utterance. Such a morpheme might, for example, be the noun *gift* as used in (19). A speaker might produce this utterance to target either a bank check lying alone on the table or a medieval cannon standing on the front lawn—as usual here without gesturing or looking at the object.

(19) That's my gift to the museum.

The morpheme *gift* has the criterion that its referent must be an entity whose possession is transferred free of charge to a recipient intended to benefit from it. But that morpheme does not specify the particular physical or perceptual features of the entity. The hearer here conducts a criterion search of the environment and might settle on either the check or the cannon—each of which she can readily recognize—as able to meet the criterion, that is, as exhibiting a targetive criterion cue.

7.3.3 A Compound Criterion Category

A criterion category need not be already stored like “gift” but can instead be a compound category formed for the occasion. The hearer forms it by combining stored categories, themselves activated by multiple lexical cues in the speaker's utterance. To

illustrate with an overheard example, as two women emerged from an afternoon concert into the cool air of a city with unpredictable weather, one said (20) to the other.

(20) That's why I carry a sweater around.

The lexical cues in this utterance lead the hearer to form a compound criterion category. Its criterion is the following: an instance of it must be a phenomenon of a kind that can motivate one to carry a sweater around. Motivations in this criterion might include not only the wish to protect against cool weather in an unpredictable climate, but also, for a tourist in a T-shirt, the need for a quick means to look stylish enough to enter an upscale establishment or, for that matter, the desire for something soft to sit on when chancing on a venue with only hard seats. The category is accordingly multi-form: instances of it can vary widely in their perceptual features. Thus, corresponding to the motivations just indicated, such instances might be cool air felt on one's skin, a fine restaurant coming into view, or wooden benches spotted in a park.

On forming the category, the hearer embarks on a criterion search through the perceivable environment for phenomena that might satisfy the category's criterion. In the present example, the hearer will soon settle on the chill she perceives in the air as the target of the trigger *that* in the speaker's utterance—that is, as the speaker's intended target. If the same two women had instead been nearing a fine restaurant they wanted to enter but the speaker was casually dressed, the hearer might then interpret the trigger *that* as targeting admission into the restaurant.

7.4 Gestural Targetive Cues

In this chapter so far, the locus of all the targets and the targetive cues they exhibit has been the environment outside the speaker and hearer. But in this section, the locus of the targets and their cues is the speaker herself. Prototypically, these targets consist of genuine gestures—that is, configurations and/or movements of the speaker's body—which then also exhibit the targetive cues.

This difference in locus correlates with a difference in the type of cue adequacy process that is required (see section 1.5.1). The earlier targets required a perceptual process. The targets and the targetive cues exhibited by them existed independently, and the speaker used her perception of those cues to ensure their presence. Here, the targets require a productive process. The speaker herself forms the targets and their targetive cues outright—they do not exist independently.

A target of the present kind can be regarded from two perspectives that call for different terms. If thought of as a particular kind of target, it will be called a **gestural target**. As such, it has all the usual properties seen to be associated with speech-external targets. In particular, it exhibits perceptual targetive cues. It accordingly has a requirement for perceptual accessibility (see section 1.5.1). In the visual modality, for example,

it would be an ill-formed communication if a speaker indicated with her utterance that the target would be a gesture and then formed the gesture behind her back.

Alternatively, if thought of as a particular kind of gesture, it is the “self-targeting gesture” characterized in the chapter on gestures (see sections 5.1.1 and 5.1.2), as distinguished from an “outward-targeting gesture.” Broadly, an outward-targeting gesture functions as a way station providing a cue to guide the hearer’s attention further toward a separate target entity. But a self-targeting gesture is itself the target, the endpoint of the hearer’s attentional search. As seen in the upcoming Relation of the gesture to the final target subsection,, though, some self-targeting gestures do in turn represent or generate a further phenomenon, which is then the final target.

7.4.1 Parameters for Self-Targeting Gestures

Self-targeting gestures and any phenomenon they represent differ with respect to certain parameters.

Motive state A self-targeting gesture can be either stationary or moving, and each of these motive states can in turn represent a phenomenon that is either stationary or moving. There is thus a two-by-two matrix in which the motive states of the gesture and of the represented phenomenon crisscross.

Stationary gesture, stationary target. For a stationary-stationary case, a speaker might produce a fixed self-targeting gesture to represent a fixed shape. For example, while saying (21), she might hold her hands still—touching the right thumb to the left forefinger and the left thumb to the right forefinger at their tips in a way that forms a parallelogram—so as to represent that static geometric shape.

(21) This is a parallelogram.

Moving gesture, stationary target. For a moving-stationary case, a speaker might produce a dynamic self-targeting gesture that, in mid-air, traces out the contour of a particular static geometric shape. The degree-of-precision parameter, which was earlier applied to outward-targeting gestures (see section 5.12) applies here as well to self-targeting gestures. Thus, a speaker saying (22a) could, at a more precisional degree along the parameter, trace out an ellipse in the air with a slow deliberate tensed movement of a fingertip. Or while saying (22b), she could, at a more approximative degree along the parameter, sweep her open hand around with a rapid casual motion to sketch the shape of an oval. Note that the English nouns here themselves lexicalize a precisional or approximative conceptualization of the shape.

(22) a. This is an ellipse. b. This is an oval.

Stationary gesture, moving target. For a stationary-moving case, a fixed self-targeting gesture can be used to represent the overall contour that a path has progressed along. Thus, a speaker saying (23) might gesture by holding her arms fixed in an “S” shape, with one elbow twisted up and the other down, while the fingertips join in the middle. This static shape then represents the cumulative summation of the fish’s dynamic trajectory.

(23) This is the path the fish took through the water.

Moving gesture, moving target. For the final moving-moving case, a speaker can produce a dynamic self-targeting gesture to represent a dynamic path or action, iconically replicating some of its sequential features. For example, a speaker might again say (23), but now move her flat hand through the air along an “S” shaped path whose progression through space and time approximately corresponds to that of the original fish’s path.

Or a speaker could say (24) while squatting and moving her back and arms to and fro—that is, recruiting her body generally to enact a rowing activity in its normal temporal sequence.

(24) This is how you row a boat.

Moving gestures further subdivided. Note that the two moving-gesture cases in our taxonomy can be further bifurcated in accord with Mueller’s (1998, 2014) four-way distinction among moving-gesture representations. Thus, within our moving-stationary case, our ellipse-tracing example corresponds to her “hand draws” type. And the gesture for the utterance *The tree was this big around* in (38a) corresponds to her “hand molds” type.

Further, within our moving-moving case, the rowing demonstration corresponds to her “hand acts” type. And our example with the speaker’s flat palm moving along an “S” curve can correspond to her “hand embodies” type—especially if the palm also wriggles to suggest the fish’s bodily twists.

Sensory modality In the preceding examples, the targetive cues produced by the self-targeting gestures all relied on the hearer’s visual perception. But such gestures can also produce targetive cues in other sensory modalities.

Thus, except for the rowing case, the gestures in all the preceding examples can with adaptation be produced tactilely on the skin of a hearer—say, a blind person—while preserving the original static or dynamic motive state, both of themselves and of the represented phenomena.

Or a dynamic gesture can iconically represent a dynamic auditory phenomenon. For example, while saying (25a), a speaker can clap her hands together in a specific rhythmic pattern that produces sounds in the same pattern. Or she might say (25b) while scraping her nails along a blackboard to produce a screaming sound.

- (25) a. This is the samba rhythm. b. When the sail ripped, it sounded like this.

Degree of engagement Section 5.12 introduced the parameter of “engagement.” This was the degree of a gesture’s engagement with its target, based on its proximity to, effect on, or identification with the target. From its lowest degree for gestures of the types treated first, such engagement progressively increased through the types of gestures that involved target neighboring, target contacting, target maneuvering, and target altering. In turn now, self-targeting gestures, where the gesture constitutes or forms the target, can be regarded as having the highest degree along the engagement parameter.

Increasing degrees of engagement are illustrated here with the target kept constant as the shape of a parallelogram. In all the examples except the last, this target is represented by a wire bent into a parallelogram shape, held upright on a stand, itself resting on a table in a geometry class. At low engagement, using a target-intersecting gesture, the speaker stands back from the table and points toward the wire frame while saying (26a). At the next higher degree of engagement, using a target-neighboring gesture, the speaker stands near the wire frame and lowers her open hand down behind it while saying (26b)—the utterance she uses for the remaining examples as well.

At a still higher degree of engagement, using a target-contacting gesture, the speaker now touches the frame. At a yet higher degree, using a target-maneuvering gesture, she lifts the wire frame in the air. And at the highest degree of engagement, using a self-targeting gesture, the speaker forms the shape with her thumbs and forefingers.

- (26) a. That’s a parallelogram. b. This is a parallelogram.

Relation of the gesture to the final target A self-targeting gesture can have any of three main relations to the final target it is meant to indicate. It can embody, represent, or generate the target. The first of these gesture-to-target relations is direct, while the remaining two are nondirect.

Embodiment. The direct relation, as just noted, is that of embodiment. In it, the very physical constitution of the speaker’s articulator, or some part of it, is the target. This is the relation in effect, for example, where the speaker says either (27a) or (27b) while holding up her right hand for the hearer to see.

- (27) a. This is my good right hand. b. This is the cut I got this morning.

Representation. The first nondirect relation is that of representation. In it, the speaker’s gesture is intended to evoke in the hearer’s cognition a concept (or image or experience) of a particular phenomenon. To use the terms introduced in chapter 14, the gesture is then the initial target, but the phenomenon is the final target—the specific target actually intended by the speaker. As the initial target, the gesture is perceptually

accessible to the hearer and attracts his attention. But the final target cannot—whether in the current speech context or in principle—be perceived by the hearer. Instead, the gesture conceptually activates it or guides its construction in the hearer's cognition. The speaker specifically forms her gesture to induce the hearer to conceptualize the final target in this way.

Thus, while a speech-external target until now has simply *been* itself—or, as it were, has “represented itself”—the speech-external gesture here represents a target outside itself. In effect, after first attracting the hearer's attention, the gesture can be thought to redirect that attention beyond itself to the final target that it represents. The gesture here then is “self-targeting” only through its status as an initial target.

—Symbolic representation. Such a representative relation is in turn of two types, symbolic and iconic. In a symbolic representation, the association of the gesture with the evoked concept results wholly from a learned convention. The gesture activates this concept, already stored in the hearer's knowledge. For example, a speaker saying (28) might hold up one hand with the middle finger extended. In certain cultures, this gesture is conventionally associated with an attitude of angry rejection. The final target of the trigger *this* is then not the physical gesture itself, but the concept that it symbolically represents.

(28) !-This is what I think of denialism.

—Iconic representation. In an iconic representation, the hearer abstracts out certain aspects of the articulator's configuration or movement to construct a concept with the same or similar aspects. This concept can be one of some specific phenomenon occurring at a particular place and time, or of a generic abstract category, either of which is then the final target.

For example, on perceiving the entire gesture composed of the speaker's arms held in an “S” shape in the “fish” example of (23), the hearer would have abstracted a single smooth linear contour away from the bulk of the arms, the multiplicity of fingers, and the sharp angles of the joints. He would have retained this contour as the main component of the image he would be constructing, an image of a particular path that a certain fish had swum along at some specific other place and time. This last was the final target intended by the speaker.

Or again, the hearer perceiving the speaker's hands clapping in the “samba” example of (25a) would have abstracted out the rhythmic pattern—leaving behind the sight of the hands' specific motion and the particular sounds then produced—to form a concept of the generic category of the samba rhythm, which was the speaker's final target.

Comparably, if a U.S. speaker holds up the four fingers of one hand while saying (29), the hearer will abstract out numerosity—leaving behind the fact of the fleshy digits per se—to conceptualize the abstract category of “fourness.”³

(29) Just today alone, I already tripped over my own feet this many times.

Generation. The second of the two nondirect relations is that of generation. In it, the speaker’s gesture produces a perceivable physical phenomenon outside itself. The relation of generation was already seen in the earlier “sail ripping” example of (25b). There, the action of the speaker’s fingernails moving along the blackboard produced a sound that was the speaker’s final target. For another example, the speaker might say (30) while waving her hand in front of the hearer’s face to fan air onto it, say, after a vigorous tango. The trigger *this* here targets the moving air generated by the gesture.

(30) !-This should feel cool.

The two nondirect relations have certain similarities. In both, the gesture can be regarded as the initial target that redirects the hearer’s attention to the final target, whether this is an evoked concept as in the representation case, or a produced phenomenon as in the generation case. And in both, the speaker forms her gesture specifically in order to engender the final target, whether to evoke it as a concept in the one case, or to create it as a physical phenomenon in the other. That is, the final target would not exist if it were not for the gesture—it has no independent existence, as it would have with an outward-targeting gesture.

The main difference is that the final target is a concept induced in the hearer’s cognition in the representation case, but a physical phenomenon perceivable by the hearer in the generation case.

Whose gesture We have so far applied the terms “self-targeting gesture” and “gestural target” to a type of gesture formed by the speaker, and we will continue this practice unless noting otherwise. But we do note here that this type of gesture can also be formed by a third party and sometimes even by the hearer himself.

In particular, the property of self-targeting gestures just seen in the two nondirect cases that allows them to symbolize, iconically represent, or generate a final target is that they are produced for that purpose by a sentient intentional agent. But gestures made by individuals other than the speaker can have the same property. Accordingly, a speaker could point toward a third person forming almost any of the gestures cited in this section, while saying the same respective utterances except for relevant trigger and pronoun shifts. Thus, a speaker could point to a person extending his middle finger, tracing out an oval, demonstrating boat rowing, clapping out a rhythm, or scraping his nails down a blackboard, and say the respective utterances in (31).

- (31) a. !-That's what he thinks of denialism.
 b. That's an ellipse.
 c. That's how you row a boat.
 d. That's the samba rhythm.
 e. When the sail ripped, it sounded like that.

Such third-party gesturing is of two types. In one, the third party happens to be forming a gesture, one that the speaker would like to target and then takes advantage of the opportunity by pointing at it. But in the other, the third party forms his gesture specifically in order to help the speaker achieve her intended communication. For example, a teaching assistant might trace an oval out in the air with a finger as the instructor of a class points to it and says *That's an ellipse*. In forming the gestural target, the third party here collaborates with the speaker to fashion a single communication. Responsibility for the elements of this communication is thus divided up, with the third party controlling the productive process so as to ensure the presence of targetive cues for cue adequacy.

Note that though the speaker has been depicted as pointing to the third party's gesture in the preceding examples, she can also refrain from producing gestural cues of her own. In that case, the hearer relies on the targetive cues provided by the third party's gesture—in keeping with this chapter's focus on targetive cues.

7.4.2 Type of Search for Gestural Targetive Cues

We have so far established that a self-targeting gesture constitutes a target that provides targetive cues to itself. In this section, then, we consider the type of search that a hearer must undertake to determine—or, more specifically, to perceive—such targetive cues. Ruling out the possibility of a criterion search, we look first at the minority case of a feature search, and then at the majority case of a salience search.

Feature search If the lexical cues in a speaker's utterance evoke an effective category for a self-targeting gesture in a hearer, then the hearer can undertake a feature search of the environment for the corresponding targetive feature cues. This circumstance can hold where either the speaker or a third party forms the gestural target. Thus, the original speaker forming a parallelogram could rephrase her utterance as in (32a), which is specific enough about the features to be searched for that the hearer will find them in her gesture and settle on it as the target. Comparably, the earlier speaker who had pointed at her third-party assistant tracing an oval could, now without pointing, reformulate her utterance to that in (32b) whose feature specificity will guide the hearer's feature search to find the targetive feature cues being produced by the assistant.

- (32) a. This shape I'm forming with my thumbs and forefingers is a parallelogram.
 b. That shape my assistant is tracing out with his finger is an ellipse.

Salience search But in the majority case—the prototype seen in most examples so far—the lexical cues together can evoke in the hearer only a subeffective category that is insufficient to support a feature search. So the hearer turns to a salience search to discern the phenomenon in the environment that most stands out as the likely target. This phenomenon turns out to be a gesture being formed either by the speaker herself or by a third party.

The salience of such a gestural target can accrue from several sources. It first has the general “gesture salience” described in section 5.1.2 for all communicative gestures. It can additionally exhibit targetive salience cues based on the types of salience itemized in section 7.2.2, as well as on further types proposed herein.

For illustration, consider again the self-targeting gesture made by a speaker with her thumbs and forefingers while saying *This is a parallelogram*. Her gesture first of all has the gesture salience generally associated with all communicative gestures. In addition, this gesture will most likely have uniqueness salience for being the only phenomenon of its kind in the current environment—that is, the only gesture now being visibly formed. The gesture also has recency salience from being the latest gesture produced and perhaps even the latest phenomenon in the environment to exhibit change. And in its specific form and movement, the gesture might have some degree of unfamiliarity salience and nonprototypicality salience—the hearer might not have seen that manual configuration before and might find it odd in the way it is being formed.

Further, the gesture may have swiftness salience since, even though it is stationary in its completed shape, the speaker’s hands must move to form and unform it, and likely do so quickly. The gesture may also have suddenness salience since the speaker’s hands transition abruptly from being stationary in preparation, to moving so as to form the gesture, to being stationary in holding the gesture, and again moving to unform the gesture. And the gesture would typically have brevity salience since the whole gestural action lasts only seconds. In addition, the gesture would have isolability salience if the speaker makes a point of, say, holding her hands away from her body and raising them toward the hearer’s eye level so as to make them perceptually more easily distinguishable from their surroundings.

Additional forms of salience can be posited to play a role as well. Thus, there may be a “proximity parameter” by which a phenomenon has more **proximity salience** the closer it is to a hearer. If the speaker is standing near the hearer when forming her gesture, it may thus also have proximity salience for him.

All these forms of salience constitute targetive salience cues that the speaker’s gesture exhibits. As increments combined together, they may have substantial strength in attracting the hearer’s attention to that gesture in a salience search.

Such a high level of strength can be put into relief through a contrast with self-targeting gestures at the low ends of most of the parameters just considered. Thus, for a whimsically extreme case, a hearer’s salience search might falter if the gesture intended

as the target were one of a number of ordinary gestures that several speakers at some distance had been very slowly forming and unforming near their body.

Complementarily, a self-targeting gesture still higher on the salience-associated parameters will attract a hearer's attention even more strongly. One extreme example of this—which also serves to show how early the use of a trigger to signal a gestural target can appear developmentally—is provided by the twenty-four-month-old daughter of Melissa Bowerman (p.c.) as she sat astraddle her mother's lap facing toward her. The girl wiggled around, waved her arms, rolled her eyeballs, stuck her tongue out, and made silly faces. She then asked the question in (33a), for the presumed standard counterpart in (33b).

- (33) a. That funny? b. Is that funny?

The target that the girl intended for her trigger *that* was her whole-body gesture, which was thus a self-targeting gesture. This gesture was exceedingly high on a number of the salience-associated parameters seen earlier. It had great uniqueness, unfamiliarity, nonprototypicality, recency, abruptness, swiftness, proximity, and sociality salience. In addition, it had the largeness salience proposed in section 7.5.2 and what might be additionally proposed as “quantity-of-movement salience.”

Especially when combined, all these forms of high salience had great strength in attracting the hearer's attention, and in leading the hearer to settle on it as the target. Still, for all the gesture's consequent obviousness as the target, it should be noted that the hearer in principle had to perform a salience search, since the girl's utterance included almost no lexical cues to the features of her intended target.

7.4.3 Yay

The English trigger *yay* involves many of the factors for self-targeting gestures treated in this section, but does so in such a unique way that it merits a detailed analysis in its own right (see section 2.2.1 under “distance between” for some initial discussion).

The prototype usage In its prototype usage, the trigger *yay* must be in construction with a positive gradable adjective. This adjective must refer to the magnitude of a straight bounded line segment. And this line segment must be one of the main axes of a bulk object—that is, one of the major linear dimensions internal to the object. Thus, *yay* can occur with *tall* but not with *short* or *rich*.

In addition, *yay* must be accompanied by a gesture representing this straight bounded line segment and its magnitude. The gesture consists of one or two articulators schematizable as a plane or line (e.g., a flat palm or straightened forefinger) held perpendicularly to the represented line segment at one or both of its end points.

To illustrate the two-articulator case first, a speaker could say (34a) or (34b) while holding her two flat hands horizontally apart with the palms facing each other.

- (34) a. The fish I caught was yay big. b. The tree trunk I saw was yay wide.

Where one articulator is used, it is paired with an external flat surface—generally a canonical one, like the ground—that is parallel to the articulator. Thus, the speaker might say (35) while holding one flat hand at a certain height above the ground with the palm facing down.

- (35) My son now stands yay tall.

The magnitude of the distance between the two indicators—here, between the palms or between the palm and the ground—is understood to roughly equal that of the selected linear dimension that extends through the referent object. And the orientation exhibited by the pair of indicators—horizontal in (34a) and (34b), but vertical in (35)—corresponds to the orientation that the selected linear dimension would have when the object is in its own canonical orientation.

Characteristics of the gesture The gesture accompanying a *yay* can be further characterized in terms of the distinctions treated in this chapter. First, it is a self-targeting gesture because it itself manifests the target, the magnitude of a line segment. Second, the speaker relies on the targetive salience cues of the gesture to attract the hearer's attention in a salience search. Third, it functions as an initial target that iconically represents the final target, the selected axis of a physical object.

Additionally, a speaker using the trigger *yay* can accompany it *only* with a self-targeting gesture, never with an outward-targeting gesture. Thus, while a speaker can say the “fish” utterance in (35a) while holding her hands a certain distance apart, she cannot say it while pointing toward a third party who is holding his hands that distance apart. This constraint on *yay* distinguishes it from such triggers as *this* and *that*. A speaker using these latter triggers can thus either hold her own hands a certain distance apart, as while saying (36a), or point to a third party holding his hands apart, as while saying (36b).

- (36) a. The fish I caught was this big. b. The fish I caught was that big.

In this regard, *yay* is like the triggers *thisaway/thataway* in that it *must* be accompanied by a gesture (see section 3.1.1). It thus again differs from such triggers as *this* and *that*, which have readings and usages not requiring an accompanying gesture. However, since the triggers *thisaway/thataway* must be accompanied by an outward-targeting gesture, *yay* is the only trigger in English that must be accompanied by a self-targeting gesture. This may be a crosslinguistically rare property.

Divergence from the prototype The more divergence there is from the prototype previously outlined, the less acceptable that the trigger *yay* and its accompanying gesture are.

Distance between two objects. They seem to still be fairly acceptable if the straight oriented line segment they indicate represents the distance in space between two separate objects, rather than an internal dimension extending through a single object. Thus, a speaker might acceptably hold her hands horizontally apart as in the fish example but now say (37a), targeting the distance between two crabs. Or she might hold one hand facing vertically downward as in the “son’s height” example, but now say (37b), targeting the distance between the ground and a frog at the apex of its leap.

- (37) a. Facing each other, the two crabs stood yay far apart
as they squared off before fighting.
b. The frog jumped yay high.

Circumference. Much less acceptable is any use of *yay* to indicate the magnitude of a referent object’s circumference, instead of a straight linear dimension running through the object. For example, a speaker might gesture as follows. She places her hands horizontally apart at chest level, palms facing each other. With each hand, she extends the four fingers together horizontally away from herself and the thumb toward herself, each group of digits somewhat curled in so that the hand is slightly concave. She can hold the hands fixedly in that position. Or, as if sliding them around the perimeter of a horizontal circle while keeping them diametrically opposed, she can move them alternately clockwise and counterclockwise. She can readily use this gesture with the trigger *this*, as in (38a). But she can barely, if at all, use it with the trigger *yay*, as in (38b)—a further demonstration of this trigger’s semantic specificity.

- (38) a. The tree was this big around. b. *The tree was yay big around.

Speed, shape. Still greater deviations from the prototype are wholly unacceptable. Thus, while *yay* can refer to the magnitude, of a straight linear extent, it cannot refer to the magnitude of any other physical parameter, such as that of speed. For example, while moving her hand quickly forward through the air, a speaker can say (39a) with the trigger *this* but not with the trigger *yay*. And *yay* cannot refer to shape. For example, a speaker cannot touch her thumb in forefinger together in an oval shape while saying (39b).

- (39) a. The dragonfly flew this/*yay fast. b. *The medallion is yay oval.

Approximation An additional semantic property of *yay* is that, on the degree-of-precision parameter (see section 5.12), it is necessarily approximative. Thus, a speaker holding her hand a certain height above the ground can say (40a) with its indication of approximation but not (40b) with its indication of precision.

- (40) a. My son is roughly yay tall. b. *My son is exactly yay tall.

Expansion Further, *yay* licenses the speaker to reach such an approximative magnitude from a gesturally smaller amplitude but not from a larger one. Thus, especially if she prolongs the trigger's pronunciation as in (41), the speaker can move her hands gradually outward from each other until they reach their final horizontal distance apart, but she cannot start with her hands a greater distance out and gradually move them inward toward each other.⁴

(41) The fish I caught was yaaay big.

This feature of gestural expansion may at times also be accompanied by one of deceleration. As the hands move to increase their distance apart, they may also slow down as they approach their final stopping points.

Positiveness in grading Finally, this gestural property permitting expansion but not contraction may in turn correlate with an initially noted constraint on the syntax and semantics of *yay*. While *yay* must be in construction with a gradable adjective, this adjective in turn must refer to values greater, not less, than its parameter's midpoint. Again, the trigger *this* is not constrained in this way. Thus, while using the adjective *small* and holding her hands a short distance horizontally apart, a speaker can say (42a) with *this*, but not (42b) with *yay*.

(42) a. The fish I caught was this small. b. *The fish I caught was yay small.

7.5 Definiteness and Targetive Cues

The English determiner *the*, and perhaps the category of definiteness in general across languages, has a usage in which it functions as a trigger that indicates a speech-external target. To illustrate this usage, as the earlier rancher rounds his house with a visitor and comes into view of a field with a single horse in the distance, he might say (43) with *the* as the trigger instead of the original *that* in (2a).

(43) The horse is Jane's.

The triggers *the* and *that* in these and comparable examples show both a commonality and several differences.

7.5.1 A Commonality between *The* and *That*

For a commonality, the two triggers function alike in initiating the hearer in a search for a target corresponding to the available cues, including the core cues that they provide. Thus, in examples (2a), (2b), and (43), the two triggers equally prompt the hearer to use the co-form cues from the singular noun *horse* in a feature search for a target with the features of having the identity of a horse and of being uniplex.

7.5.2 Differences between *The* and *That*

Apart from this commonality, the triggers *the* and *that* differ in other respects.

Core cues and lexical categories The two triggers differ in the core cues to the target's characteristics that they provide, and in the lexical categories that they can occur in. Thus, the trigger *that* provides the core cues that the target is uniplex and distal, whereas the trigger *the* is neutral to both plexity and degree of remove. In fact, *the* may provide the fewest core cues of any trigger.

In addition, the trigger *that* can have the lexical category of being either a determiner or a pronoun, as seen respectively in (2a) and (2b). But the trigger *the*, as in (43), can only be a determiner.

Timing and salience The two triggers may exhibit a further difference, one pertaining to the timing with which the hearer first accesses the targetive cues exhibited by the target—here, the horse (see section 6.1.1). In its overall usage, the trigger *that* permits a range of such timing. But in its prototype usage, the hearer has not noticed the targetive cues provided by the horse until this trigger, when it occurs, directs her to search for and find them. By contrast, in using *the* as a trigger, the speaker seems to judge that the hearer has already noticed the horse, and is directing her to return or keep her attention on it as his choice of target. That is, the speaker judges that the hearer is already aware of or familiar with the referent object.

It follows that the more salient the target is within its environment, the more likely it is that the hearer will have already noticed it before hearing the speaker's utterance, and the more felicitous it is for the speaker to use the word *the* as the trigger. If this characterization holds, then the trigger *the* initiates in the hearer not only a feature search for targetive feature cues, but also a salience search for targetive salience cues.⁵

In accord with this characterization, the use of *the* in (44) seems more natural than in the preceding example because, compared to a horse in a rancher's field, a Cessna or a jungle gym in the field is more salient.

(44) a. The Cessna is Jane's. b. The jungle gym is for the neighbor's kids.

Unexpectability and largeness salience. We might point out here that these last examples help expand the original list of salience-associated parameters (see section 7.2.2). Both the Cessna and the jungle gym have greater salience along a new parameter of "unexpectability," where, at the high end, a phenomenon is unusual for the context or circumstance it is in, and has **unexpectability salience** there. In addition, the Cessna has greater **largeness salience** along a new "largeness parameter," whose values increase the greater an entity's size is in a given context.

Uniqueness salience In its trigger function, further, the determiner *the* has an additional requirement. The target must have uniqueness salience based on its identity. That is, the target must be the only entity of its type perceivable in the environment. The co-form cues from the nominal accompanying the determiner can indicate that the target is uniplex or multiplex, so as to refer to a single horse as in (45a) or, say, to two horses as in (44b). But then that horse or those horses must be the only horses visible in the field—it or they must be unique there.

- (45) a. The horse is Jane's. b. The horses are Jane's.

Anti-exhibitiveness This uniqueness requirement of the trigger *the* naturally entails an exhaustiveness requirement. The target of this trigger must be the only and the entire instantiation of the indicated type of identity. Hence, if the field in fact contained two horses, the utterance in (46a)—which targets a single horse—would be unacceptable without some additional cue.

- (46) a. *The horse is Jane's. b. That horse is Jane's.

The trigger *the* here, though, has an interesting constraint pertaining to such an additional cue. The additional cue that might override the unacceptability of (46a) cannot be gestural. Thus, if the field in fact has two horses, the speaker cannot point at one of them while saying (46a) with *the* as the trigger. He would have to switch to a trigger like *that*, as in (46b), which does accept a gestural cue to single a uniplex entity out from a multiplexity. This is a further difference between *the* and *that*. As a still further difference, the trigger *that* can be given extra heavy stress as an accessory to being joined by a pointing gesture, whereas the trigger *the* here cannot be stressed at all.

More generally, the definite trigger *the* seems to reject all of the gestural, corporal, and hearer-focus types of exhibitivie cues in such a circumstance, and so it might in effect be thought to be “anti-exhibitivie.”

While this trigger use of *the* does not permit the singling out of one element from a multiplexity through a gestural cue, it does seem able to do so through an additional co-form cue. For example, if the field has five horses, one of them grey and the others not, the speaker can, without gesturing, target the grey horse with the acceptable utterance in (47). This utterance includes the determiner *the* as the trigger and the adjective *grey* providing the co-form cue that the target has the feature of being grey.

- (47) The grey horse is Jane's.

7.5.3 Nested Targeting

Hearing the preceding utterance may prompt the hearer to conduct a nested search procedure, much like that detailed in section 7.1.4. If so, her initial search might lead her from the global environment down to the five horses visible in the field, and her second search from those five down to the one grey horse.

But to explore the behavior of the trigger *the* further, we change this utterance to the four utterances in (48), which retain the intended meaning of the original initial noun phrase but expand it so that it now contains two triggers. The two triggers in (48a) are *the*, but the next three entries replace first one, then the other, and then both of these triggers with the distal exhibitiv triggers *that* or *those*. The hearer can now perform not only a nested search, but also nested targeting. The initial instance of targeting is based on the second trigger, and the following instance is based on the first trigger. The initial target contains the final target.

- (48) a. The grey horse among the horses is Jane's.
- b. That grey horse among the horses is Jane's.
- c. The grey horse among those horses is Jane's.
- d. That grey horse among those horses is Jane's.

In all four entries, the first search space consists of the global environment; within that, the target is the five horses. The second search space consists of those five horses; within that set, the target is the grey horse.

Where the trigger *the* appears in these examples, it has the properties earlier seen to be associated with it. For one of these, it prompts the hearer to pick as the target something that is unique and exhaustive of its kind in the search space, typically after she has already noticed it. Thus in (48a), the five horses targeted by the second *the* must be the only horses perceivable in the environment, and the hearer is presumed to have already perceived them. Further, the grey horse targeted by the first *the* must be the only grey horse among the five horses, and the hearer is presumed to have already noticed it.

In addition, no targeting gesture can accompany the utterance in (48a), where both the triggers are the determiner *the*, in accord with this trigger's constraint against gestural cues. However, this constraint is masked in (48b) and (48c), where the accompanying exhibitiv trigger licenses such a gesture (though (48b), (48c), and (48d) are all felicitous without a gesture).

7.6 Targetive Cues to a Speech-Internal Target

So far, the targetive cues looked at have been exhibited by speech-external targets, but speech-internal targets also exhibit them. The main difference between the targets of the two types is how their cues are manifested. Where the target is speech-external, the hearer directly perceives its targetive cues. But where the target is speech-internal, once the hearer has perceived and apprehended the earlier linguistic material, its targetive cues exist only in the hearer's short-term memory, where he must retrieve them.

Many of the factors adduced in the speech-external analysis apply here as well. In particular, a speech-internal target can exhibit either targetive feature cues or targetive

salience cues, and the hearer must correspondingly use either a feature search or a salience search to determine them, as treated next in order.

7.6.1 Speech-Internal Targetive Feature Cues

As was seen in (1) and (2) for the speech-external case, it is not enough that lexical cues specify features of the target. In addition, the target must exhibit those features so that the hearer can match up the specified features with the entity bearing them. The same holds where the target is speech-internal. Thus, while chapters 2 through 4 addressed how lexical cues specify features of a speech-internal target, initiating a feature search process in the hearer, we here address the other end of this process, where a speech-internal constituent exhibits those features and, through them, can be singled out as the target by the hearer.

Our illustrations here reflect the finding that a speech-internal target can have features along a continuum from the wholly formal to the wholly semantic (see section 1.6.1).

Formal features To start with features toward the formal end, we revisit an earlier finding. The core cues provided by a trigger can require that a speech-internal target be of a certain constituent type (an intrinsic feature—see section 2.2.8) and have a certain syntactic location (a contingent feature—see section 2.3.5). For example, an adverbial proclause requires that its target be the immediately preceding clause. Thus, the adverbial proclause trigger in (49) is *anyway* (whose semantic composition can be represented as ‘despite that’). And it targets the clause *snow was falling*—that is, the whole of the clause just before the clause it itself appears in.

(49) Snow was falling, but I went for a walk anyway.

The relevant point here is that the sequence *snow was falling* provides its own targetive feature cues: it is a clause with respect to its constituent type, and it immediately precedes the trigger’s clause with respect to its syntactic location. These feature cues provided by the target itself thus match up with the core cues from the trigger and allow the hearer to complete the connection.

Both formal and semantic features A trigger can also require that a speech-internal target have at once certain features from both the formal and the semantic ends of the continuum. For illustration, consider a speaker saying the two sentences in (50a) and (50b).

- (50) a. My son writes poetry.
- b. He’s very good.

- c. It often gets published.
- d. It relaxes him.
- e. It's an interesting fact.

In (50b), the core cues from the trigger *he* indicate that the target has the intrinsic features of being uniplex, an entity, and male, and the contingent feature of being third-person. The uniplex and entity features ascribed to the target typically correlate with the target's exhibiting the formal features of being a singular nominal. The hearer can find two such target candidates in (50a), *my son* and *poetry*. In turn, the uniplex and male features ascribed to the target should correlate with the target's exhibiting the semantic features of a unitary male. The hearer finds one match for these semantic features, the concept associated with the nominal *my son*. Thus this nominal exhibits both the formal and the semantic targetive feature cues that are called for and is selected as the target.

Moving further rightward along the continuum, a trigger—now together with co-forms—can rely most heavily on a requirement that a speech-internal target have certain features from the semantic end of the continuum, though still requiring some formal features. To illustrate, the previous speaker might now say (50a) followed by one of the sentences in (50c) through (50e). In all these sentences, the trigger is *it*. The core cues from this trigger ascribe to the target the features of being a uniplex third-person entity lacking sex differentiation. These features are compatible with constituents over a range of formal types, and so do little to reduce the pool of target candidates on the basis of formal criteria. But on semantic grounds, the “lacking sexual differentiation” feature rules out the nominal *my son* in (50a).

In turn, co-form cues respectively help rule in other constituents. In (50c), the co-form cue from the verb *publish* in its passive form indicates that the referent of the subject—the target of the trigger *it*—semantically is written material. Such a concept is readily represented syntactically by a nominal. Together, these ascribed features most closely match the targetive feature cues—both semantic and syntactic—exhibited by the constituent *poetry* in (50a). That constituent is a nominal, and its referent can consist of written material. The hearer hence settles on it as the target.

In (50d), the co-form cue from the transitive verb *relax* indicates that the referent of the subject—again the target of the trigger *it*—is semantically a relaxing process. Such a process concept is readily represented syntactically by a verb phrase. These ascribed features match the targetive feature cues exhibited by the constituent *writes poetry*—a verb phrase whose referent can be a relaxing process—now the target.

And in (50e), the predicate noun *fact* indicates that the referent of the subject trigger *it* is semantically a proposition. This concept is readily represented syntactically by a sentence. These ascribed features then match the targetive feature cues exhibited by the constituent consisting of the entire sentence in (50a), itself now the target.

Either formal or semantic features Alternative co-form choices can lead a hearer to search for either formal or semantic features of a target. We can illustrate this with the trigger *the* in construction with a noun that provides the pertinent co-form cues. Consider the sentences in (51).

- (51) a. We got our daughter a Parcheesi set and a dictionary for her birthday.
 b. The Parcheesi set was my idea. c. And the dictionary was my husband's.
 d. The game was my idea. e. And the book was my husband's.

For the formal alternative, the nominal accompanying the trigger *the* can be an exact duplicate of the earlier constituent *it* targets. This is the case for the two subjects of (51b) and (51c), which respectively target the corresponding nominals in the speaker's opening utterance in (51a). The hearer of (51b) and (51c) searches the preceding discourse for constituents that exactly replicate the phonological shape of the co-forms. Those exhibiting the same shape thereby provide a formal targetive cue to themselves as the targets.

For the semantic alternative, the nominal accompanying the trigger *the* might indicate the categorial identity of what the targeted constituent refers to, as in (51d) and (51e). In that case, the hearer searches for a particular semantic feature exhibited by the targeted constituent.

7.6.2 Speech-Internal Targetive Salience Cues

The lexical cues in a speaker's utterance might not ascribe enough features to a speech-internal target for a hearer to single it out. But much as in the speech-external case, if that constituent exhibits certain forms of salience, that salience can guide the hearer to select it as the target. The speech-internal constituent then exhibits targetive salience cues.

Salience of a constituent's formal aspects As seen, the aspects of a speech-internal constituent that are relevant in a given case can range from the formal to the semantic, and the forms of salience that are then in play vary accordingly. Our first illustration is toward the formal end. Person X says (52a), and then person Y, now the speaker, says (52b), using the trigger *that* to target a constituent in (52a).

- (52) a. X: By one count, language exhibits ten distinct cases of combinatoriality
 among different types of elements.
 b. Y: I appreciate that word.

The hearer here (person X), might first try a feature search. Lexical cues from the trigger and its accompanying nominal co-form ascribe to the target the features of being a uniplex distal word. But the sentence in (52a) has fifteen words, and these features are not enough to single one of them out. The hearer might then attempt a criterion search

(see section 7.3), looking for a word that might satisfy someone's reasons for appreciating it, such as its having phonetic beauty, cleverness of coinage, or aptness of selection. Again though, no one word of the fifteen most fulfills that criterion.

However, a salience search would seem to settle on the word *combinatoriality* as exhibiting the most targetive salience cues. With respect to the salience-associated parameters adduced so far, this word first of all has largeness salience: of the words in the sentence, it is the longest with its eight syllables and sixteen phonemes. Second, it can be thought to have nonprototypicality salience—or, perhaps better, to have a close relative, **uncommonness salience**—given its rarity of occurrence. The word *combinatoriality* might thus be singled out as the target for these two types of salience exhibited by its formal nonsemantic aspects.

Salience of a constituent's semantic aspects We next illustrate a speech-internal constituent exhibiting forms of salience due to its semantics. To adapt an example from Mitkov (1999), the core cues from the trigger *it* in (53) indicate that the target has the features of being a uniplex third-person entity lacking sex differentiation. A feature search by the hearer through the earlier portion of the utterance rules out everything except the two nominals referring to crockery, but cannot distinguish between them, so the utterance is infelicitous.

(53) I put the cup down onto the plate and broke it.

But the addition of a set of adjectives to the first nominal in (54a) or of the same set to the second nominal in (54b) seems to be enough for the hearer to settle respectively on the first or the second nominal as the target.

- (54) a. I put the square multicolored scalloped cup down onto the plate and broke it.
b. I put the cup down onto the square multicolored scalloped plate and broke it.

If this effect is borne out experimentally, its basis is presumably that the adjectives add certain types of salience to the semantics of each original noun. One such type is nonprototypicality salience, given that the indicated shape and ornamentation are unusual for cups and plates. Another type might be called **elaboration salience**. On the “elaboration parameter,” an entity becomes more salient the more that its characteristics or circumstances are detailed.

Topicality and elaboration salience. Mitkov summarizes research on a perhaps related phenomenon in which the referent of the antecedent to be selected has, in prior discourse, been a topic whose continuity the hearer has tracked in a process known by such terms as centering and focus. We can illustrate this process with a speaker who says either (55a) or (55b), which includes a prior mention of respectively either a cup or a plate. Then the trigger *it* in (55c) targets either the constituent referring to the cup

or the constituent referring to the plate in that same sentence. We might say that that constituent has **topicality salience**.

- (55) a. I've long owned a square multicolored cup. /
 b. I've long owned a square multicolored plate.
 c. I put the cup down onto the plate and broke it.

In the preceding analysis, a targeted constituent had elaboration salience if immediately adjoining material elaborated conceptually on its referent. But in topicality salience, earlier material elaborates conceptually on the referent of the targeted constituent. We might therefore generalize elaboration salience so that it also encompasses topicality salience. Such a generalization would eliminate topicality salience as a distinct phenomenon.

We might further generalize elaboration salience to pertain to speech-external targets as well. It would then apply to any entity that attracts greater attention due to being complicated in design, coloration, movement pattern, or the like. Experimentation will be needed to determine whether such a generalization is needed.

Isolability and explicitness salience. We can illustrate how two further types of salience form targetive salience cues that draw a hearer's attention to a particular speech-internal constituent as target. We reprise the speech-internal "lamb" example of (4:3)—a two-sentence utterance by a single speaker, repeated here.

- (56) a. One lamb and one piglet were playing together among others in the pen.
 b. That was the lamb I'd won at the fair.

Here, the core cues from the trigger *that* and the co-form cues from the noun phrase *the lamb* in (56b) narrow the pool of target candidates down to the two constituents in (56a) that refer to a lamb, namely, *lamb* and *others*. But the referent of *lamb* is more salient than that of *others* along two salience-associated parameters.

One of these is the isolability parameter seen in section 7.2.3. In the speech-external case there, an entity had greater isolability salience because it was spatially separated from a grouping of comparable entities. In the speech-internal counterpart here, the word *lamb* has more isolability salience because it refers to an isolated lamb by itself, whereas the word *others* refers to lambs in a group.

Further, we can posit an "explicitness parameter" along which the word *lamb* has greater **explicitness salience** because it refers to the concept of 'lamb' explicitly, whereas the word *others* includes lambs in its reference only implicitly through contextual inference.

It is not clear whether this newly proposed parameter has a speech-external counterpart. But if one is posited, both could be regarded as variants of a single more general parameter, one of direct and ready "identifiability."

The higher rankings along the two parameters just discussed, then, constitute speech-internal targetive salience cues that favor the referent of *lamb* over that of *others* in (56a) as the speaker's intended target.

7.7 In Sum

Targetive cues are properties exhibited by a speaker's intended target itself. They help guide the hearer toward singling that target out. Where the target is speech-external, the targetive cues are sensory stimuli that the target produces and that the hearer perceives. Where the target is speech-internal, the targetive cues are phonetic, syntactic, semantic, or pragmatic properties of the target that the hearer either perceives or apprehends and then holds in short-term memory.

There are three types of targetive cues, and the character of the lexical cues in the speaker's utterance determines which one is relevant. In one case, the lexical cues ascribe features to the target that are definitive for its determination. They evoke in the hearer a category that is effective for recognizing instances of the target. The hearer undertakes a feature search over her perceivable environment to find the corresponding targetive feature cues.

In the second case, the lexical cues do not ascribe enough features to the target for its definitive determination. The category that they evoke in the hearer is subeffective. The hearer then resorts to a salience search over her perceptual environment to determine the phenomenon with the most salience. This phenomenon is likely to be the speaker's intended target, now exhibiting targetive salience cues. The types of salience that such a target can exhibit cover a substantial range. They include ones involving uniqueness, unfamiliarity, nonprototypicality, uncommonness, unexpectedness, recency, suddenness, brevity, swiftness, loudness, brightness, largeness, isolability, proximity, sociality, elaboration, topicality, and explicitness.

In the third case, the lexical cues characterize a criterion that the target must satisfy. The hearer performs a criterion search to check through the phenomena perceivable in her environment for the one meeting the criterion and settles on that as the target.

A search can vary along several further parameters. It can be unified or nested, outward directed or inward directed, and unaugmented or augmented through procedures of sensitization or category checking.

A target exhibiting targetive cues can also be a gesture made by the speaker or, in some cases, by a third party. Such a gestural target, or self-targeting gesture, typically exhibits targetive salience cues to attract the hearer's attention to it as the speaker's intended target.

Notes

1. According to the degree that a particular compound category has previously been evoked in a hearer, it can range from being wholly novel to being highly familiar and hence, to that degree, also stored (or entrenched) in the hearer's linguistic cognition.
2. If co-form cues in an utterance explicitly indicate a target's salience, they would in effect be treating it as a feature of the target, and such a case would be outside the present discussion. Interestingly, most of the core cues provided by triggers crosslinguistically seem excluded from such a case. Such core cues seem to indicate not the types or degrees of a target's salience, but only target features of the types presented in sections 2.1 and 2.2. As one of the few exceptions, a definite trigger like English *the* (see section 6.5) does seem to initiate a salience search.
3. It was observed earlier (see sections 2.2.1 and 5.2.4) that in certain circumstances, though an outward-targeting gesture may seem to be indicating the whole of some physical entity, its specific target is actually a particular aspect of that entity that the hearer is to abstract out perceptually or conceptually. This was the case where the gesture targeted a manner, quality, quantity, or degree exhibited by an entity. We see now that this same abstractive process can be needed as well for a self-targeting gesture.
4. Since the caught fish did not grow in length, such a spreading of the hands represents fictive motion. In particular, it represents a new category of fictive motion not among those proposed in Talmy (2000a: chapter 2), one that might be called "stretch paths." This new category can then be seen in effect in a sentence like (i), where a factively fixed length is represented as if some linear extent stretches out at both ends to meet its endpoints.
 - (i) The wildlife corridor stretches / extends ten miles in length.
5. These timing and noticeability requirements of the trigger *the* with a noun are comparable to those for triggers consisting of an unstressed personal pronoun in the third person, like the *it* in the "robo-broom" example of (2:104).

8 Hearer-Focus Cues to a Target

As originally seen in section 1.2.3, a hearer-focus cue is a cue metacognitively available to a hearer indicating that her own current object of attention may be the speaker's intended target. In that case, she must also be sure that both the object and her attention on it are perceived by the speaker. To aid the presentation, we first further illustrate this cue category in section 8.1, before analyzing it in detail in section 8.2. While the target in those sections is speech-external, it is speech-internal in section 8.3.

8.1 Illustration of the Category

We here illustrate hearer-focus cues in three sensory modalities, those of sight, hearing, and smell.

8.1.1 In the Modality of Sight

To begin with the visual case, an earlier example is reprised in (1).

- (1) That's a Ferrari.

In one situation leading to the speaker's utterance here, the hearer first either looks fixedly at a particular car standing in traffic, or moves her eyes and head to track it as it progresses down the street. The speaker observes this bodily configuration or movement of the hearer and interprets it as a sign that the hearer is attentionally focusing on some external entity. The speaker then treats the characteristics of this **focusing behavior** of the hearer as clues that might help him determine the entity that the hearer is focusing on.

In particular, he assesses her behavior as the use of her sight to focus on a visible entity, and he might trace her line of sight to the first entity it intersects with, which he then looks at himself. He then opts to make that entity the target of a communication and produces his utterance with his trigger *that* targeting that entity. The hearer's processing in response to the speaker's trigger and utterance—including her determination of the hearer-focus cue per se—is discussed in the next section.

Focusing behavior caused by a cognitive state A speaker can interpret a hearer's focusing behavior as resulting from various prior cognitive states. As the speaker in (1) seems to interpret it, her focusing behavior results from her finding the external entity novel, so he provides information about it. But the speaker in (2) interprets the hearer's focus on the car as motivated by admiration, which he then reflects in his comment.

(2) Yeah, I'd like to be driving that car too.

A proximal target Another visual example shows that the object of the hearer's focus can be closer to the speaker, something he can then opt to target with a proximal trigger like *this*. Thus, at their first time together at a pool, the hearer looks intently at a spot on the skin of the speaker, who then says (3).

(3) This is a tattoo from my teenage years.

8.1.2 In the Modality of Hearing

To illustrate the auditory case, a biology professor and student are at some wetlands with different species of frogs calling. The professor suddenly lifts her head and tilts one side up at an angle. The student, here the speaker, asks his question in (4).

(4) Which kind of frog is that?

Again this speaker observes the hearer's bodily behavior and interprets it as a sign that she is attentionally focusing on some external entity. He again uses the characteristics of this focusing behavior to ascertain the entity she is focusing on. But this time, these characteristics suggest her use of the sense of hearing to focus on a sound-producing entity. He might accordingly direct his own attention to his working memory of the particular frog call he had heard at the instant of her sudden movement. He again opts to make that entity his communicative target.

Again having different alternatives available, the speaker might interpret the hearer's focusing behavior as the result, say, of surprise at hearing a novel frog call or of gratification at finally hearing a particular hoped-for frog species call.

8.1.3 In the Modality of Smell

Lastly, to illustrate the olfactory case, a trucker standing beside his rig sees a passing child wrinkle her nose and then says (5) to her.

(5) That's diesel fuel.

The speaker here observes the hearer's bodily movement and interprets it as a sign of attending to an external entity. Once again, the speaker uses the characteristics of this focusing behavior to ascertain the entity. This time, these characteristics suggest her use of smell to focus on an odor-producing entity, and he reactivates his own attention

on the fuel smell that he knew of but had long since ceased noticing. He again opts to make that entity his communicative target. He may interpret her focusing behavior as a response to her sudden perception of a new unpleasant smell.

8.2 Analysis of the Category

Hearer-focus examples like the preceding rest on a particular three-step sequence of speaker-hearer interactions (see section 13.5.1 for a more detailed version of this sequence). The sequence is set forth as a whole in section 8.2.1, while section 8.2.2 suggests a further perspective on step 2.

8.2.1 The Three-Step Sequence

Activity in the prototype hearer-focus sequence proceeds from the hearer to the speaker and back to the hearer. These phases of activity are the steps 1, 2, and 3 detailed next.

Step 1 The first step of the hearer-focus sequence is in the hearer's arena. She produces a certain bodily movement or configuration that can be interpreted as showing that she is currently attending to some external entity through perceiving the stimulus it generates. Such a bodily movement or configuration is her focusing behavior, and the stimulus-generating entity is the object of her focus. As seen from the examples, the hearer's focusing behavior can result from her perception of stimuli in different sensory modalities. And the behavior's type seemingly tends to correlate with the modality—for example, eye fixating with vision, ear cocking with audition, and nose wrinkling with olfaction.

Prototype focusing behavior. In what may be the prototype of focusing behavior, the object of focus is novel to and independent of the hearer, the hearer is stationary, and her response is unintentional. Thus in the three original examples of sight, sound, and smell, the focusing behavior seems not to be undertaken intentionally for some side purpose and may even be mainly involuntary. In the first two examples, it seems in particular to consist of orienting responses to sudden novel stimuli. Such responses may have evolved to enhance perceptual access to such stimuli.

The hearer's nose wrinkling in the third example, which can indicate olfactory distaste, may not be a true orienting response, and perhaps instead it originally evolved as a mechanism to reduce intake of a foul smell. But it does indicate attention to a current stimulus and so is here also classed as focusing behavior.

Variations on the prototype. But if these are prototype forms of focusing behavior, divergences from or additions to it can also be noted.

—Intentional focusing. For example, the focusing behavior can be intentional rather than unintentional. Thus, a hearer might intentionally exhibit focusing behavior—even exaggerate it—to elicit a comment from her collocutor about the entity she is focusing on. Or on the contrary, especially in the auditory case, she might intentionally exhibit focusing behavior to forestall further verbal interchange so that the hearer can better listen to what has attracted her attention.

—Non-novel object of focus. Focusing behavior may prototypically be a response to a hearer's experience of something external as novel. But as noted, the hearer may already be familiar with the object of her focus and experience it in another way, such as with admiration or gratification.

—A moving hearer. In the prototype case, the hearer is stationary and her focusing behavior consists of her acts of perceiving an object—what the speaker observes to select that object as his target. But the hearer can instead move physically in relation to an object in a way that shows it to be the focus of her attention. On this basis—and sometimes regardless of the hearer's acts of perceiving—the speaker can select that object as his target. To illustrate, a hearer can move toward an empty chair in a cafe and be told (6) by a speaker near the chair.

(6) Someone's already sitting there.

—Hearer-produced. In all the preceding examples, the entity that was focused on existed independently of the hearer. But hearer-focus cues can also occur where the hearer herself generates the entity she is focusing on. And such an entity can itself in turn be either unexpected by her or planned.

To illustrate, suppose that a light-show expert is at her controls producing novel displays on the ceiling of a dance hall, and that she can be seen watching a particular effect. A bystander might then say either of the (7) utterances to her. In both cases, the hearer has generated the entity she is focusing on. In (7a), that entity is unexpected to her and she herself looks startled, while in (7b), it is planned and she looks pleased. Nevertheless, all these cases fit the requirements for her focusing behavior to lead to hearer-focus cues.

(7) a. Yeah, that's a surprising effect. b. You're right to be proud of that effect.

For another example, suppose that a doctor is touching points progressively higher up along a patient's spine to learn where it hurts. At a particular instant, the patient says (8) to the doctor, now the hearer. At that instant, the hearer in effect generates the object of her current focus, the particular locus on the patient's spine, by touching it. The speaker selects that object of attention as his target.

(8) That's the spot.

Step 2 The second step of the sequence is now in the speaker's arena. We examine some of its properties.

Four sequenced components. Step 2 can in turn be analyzed as consisting of four sequenced components. As the initial component, the speaker notices the hearer's bodily movement or configuration and interprets it as focusing behavior—that is, behavior that accompanies the hearer's focusing on an external stimulus entity. Thus, the speaker in the “Ferrari” example (1) notices the hearer's fixity of gaze.

For the second component, the speaker uses the characteristics of the hearer's focusing behavior to determine what he can of the entity she is focusing on. He aims to determine such properties of that entity as its location and the sensory modalities that its stimuli manifest in. Thus in the Ferrari example, the speaker observes that the hearer's focusing behavior is sight-based and is directed, hence that the object of her focus must be emitting visual stimuli and be located somewhere in the direction she is looking in.

For the third component, the speaker aims to perceive the entity himself or to find its perceptual trace in his working memory. For the former case, he uses the information he has gleaned in the second component about the properties of the entity the hearer is focusing on. This information helps him track forward from the focusing behavior to the entity so he can perceive the entity directly. Thus in the Ferrari example, he might follow the direction of the hearer's gaze so that he himself can spot the car she is focusing on.

And for the final component, once the speaker has determined the stimulus entity, he elects to make it a target that he wants to communicate about, and so produces an utterance with a trigger that targets it. Thus, the initial speaker says *That's a Ferrari*, using the trigger *that*.

Available triggers. With regard to the trigger that the speaker can use here, perhaps no language has a trigger specifically lexicalized to invoke a hearer-focus cue, with a meaning glossable as ‘that entity that you are focusing on’. But in English, this trigger can, with just a few limitations, be any of the triggers used in other circumstances.

Of particular note is that English can here, among certain other personal pronouns, use unstressed *it* as the trigger, even though this form is highly constrained in this use.

The reason is that, where a hearer-focus cue must be invoked, the hearer's attention is already on the target at the time that the speaker utters his trigger referring to it. And as detailed in section 13.5.3, unstressed *it* in English is an attentional commonality trigger. Accordingly, all the initial example sentences can felicitously replace the stressed trigger *that* with the unstressed trigger *it*, as in (9).

- (9) a. It's a Ferrari. b. Which kind of frog is it? c. It's diesel fuel.

The presumptive cue adequacy process. Where a speaker intends his trigger to invoke a hearer-focus cue in the hearer, he uses the third cue-adequacy process, the presumptive process (see section 1.5.1). In particular, he assesses that the hearer can become metacognitively aware of her own current focus of attention and recognize it as his intended cue to the target.

Constraint on the use of hearer-focus cues. The procedure that the speaker uses in this second step to settle on his target has a requirement, one here considered criterial to the hearer-focus cue category. He must get the idea of the target he wants to communicate about from the hearer's displayed focusing behavior. Thus, if his attention has independently fallen on the same entity that the hearer is focusing on, his use of a trigger to target it will come under some other pertinent cue category.

Or consider the case where some entity is producing a stimulus with intrusive salience—that is, with the first degree of ease in accessing (see section 7.1.1)—for example, a fire alarm. This would ensure that both collocutors have already noticed the entity, thus removing the speaker's need to observe any focusing behavior by the hearer. Then if the speaker says *That's a fire alarm*, he would be relying on the targetive cue category, specifically on the target's salience cues, not on the hearer-focus cue category.

Non-transitivity in the use of hearer-focus cues. It follows that this hearer-focus requirement also excludes any transitive form of focusing behavior. For an example of such a transitive relationship, suppose that the speaker observes the hearer watching a third person who is looking up at a particular cloud formation. The speaker here cannot felicitously say (10a) to the hearer. The reason is that, for the speaker's trigger to introduce a hearer-focus cue, the hearer would have to be looking at the cloud herself, not watching someone else doing so. To introduce a hearer-focus cue here at all, the speaker could at best say something like (10b).

- (10) a. *That's a cirrus cloud.
b. That person is looking at a cirrus cloud.

Step 3 The third and last step of the sequence is back in the hearer's arena. The speaker's trigger has directed the hearer to look for all available cues. One of these is potentially a cue from the hearer-focus category. We consider two factors that can prompt the hearer to look for such a hearer-focus cue.

Hearer-focus cue relevance. To determine whether the speaker has intended a hearer-focus cue to be relevant, she must undertake two procedures. First, she must search internally to become metacognitively aware of whether she is currently focusing on some external entity, as well as producing overt behavior that reflects this focusing.

Second, she must project herself into the speaker's cognitive processing for his step 2. Specifically, she must assess whether her focusing behavior can be perceived by the speaker, who could then track forward from it to the object of its focus and select that object as his target. Such projection into a collocutor's cognitive processing is not new in this study: a speaker must also project himself into a hearer's cognition in order to ensure certain aspects of cue adequacy (see section 1.5.1).

If this inward search and assessment yield positive results, she can conclude that her own attentional focusing is indeed a cue intended by the speaker, and that the object of her focus is also the speaker's intended target.

Hearer-focus cue likelihood. A hearer will be more inclined to consider the hearer-focus category as a likely cue source if certain features occur.

One is that no compelling environmental or targetive cues are present. Another is that the speaker looks steadily at the hearer rather than at some other entity. And a third is that the speaker fails to produce any gestures.

Indeed, the fact that the hearer can become metacognitively aware of her own attentional focus and use it as a determinative cue to the speaker's intended target is why the speaker need not gesture, and why the category of hearer focus cues is on a par with that of gestural cues in the class of exhibitivive cue categories.

8.2.2 A Further Perspective on Step 2 of the Sequence

If the speaker's step 2 processing is examined further, it seems to roughly resemble the processing that a hearer has so far been seen to use to get from trigger to cue to target in a standard targeting procedure. Care has been taken in the preceding description not to use any of these three key terms in regard to the speaker's processing so as to avoid confusion. But three parallels can be observed.

First parallel. Relevant first is the focusing behavior of the hearer that the speaker here perceives (usually through vision) and that initiates his processing (the initial component of step 2). This can be analogized to the trigger that a hearer perceives (normally through audition) and that initiates her processing for a standard targeting procedure.

Second parallel. Relevant next are the characteristics of the hearer's focusing behavior that the speaker observes and that he uses as clues to the object of its focus (second component of step 2). These seem analogous to the elements of information that a trigger introduces and that a hearer searches for to use as cues to a target in a standard targeting procedure. In particular, the bodily movements or configurations that the hearer here produces as focusing behavior seem analogous to the speaker's gestural cues in a standard targeting procedure.

If this second analogy holds at least in part, a systematic comparison should be undertaken to determine the actual correspondences and discordances. For example, the hearer's eye movements in the Ferrari example do seem to equate with a targeting gesture of the target-sighting type (see section 5.2.2). But any use of ear cocking and nose wrinkling as targeting gestures, if feasible, is at best rare. The differences mainly arise from the fact that targeting gestures, mostly voluntary, are designed to direct another person's attention to an external entity, whereas focusing behavior, mostly involuntary, is largely designed to facilitate a person's own attention to an external entity.

Third parallel. Lastly relevant is the object of the focusing behavior that the speaker here in turn perceives or recalls by observing the characteristics of the focusing behavior (third component of step 2). It parallels the target that the hearer normally zeroes in on by determining the cues introduced by the speaker.

Cognitive basis for such parallelism. If the parallelism outlined here seems valid, it would promote a view of cognition as having the capacity to adapt basically the same procedure to different contexts—or, put another way, to maintain a more abstract meta-pattern that guides more specific applications.

This capacity here yields two comparable versions of the trigger-cue-target triad. One is adapted to the hearer's processing in a general targeting procedure. The other is adapted to the speaker's processing in observing hearer focus.

8.3 Hearer-Focus Cues to a Speech-Internal Target

Hearer-focus cues have so far been used for speech-external targets, but to some extent can also be used for speech-internal targets. To illustrate, of two collocutors X and Y, X first says (11a). Then Y as the speaker says (11b) to X who is now the hearer.

- (11) a. X: I wish they would just leave me the fuck alone. . . . Oops.
 b. Y: Yes, that pops out of my mouth sometimes too.

The exclamation *oops* in X's discourse, perhaps accompanied by a facial expression of embarrassment, can be interpreted as focusing behavior, where the object of attention is the expletive in what she just said. In Y's follow-up utterance, the trigger *that* targets that same object of attention. Speaker Y relies on the ability of X, as hearer, to notice her own focusing behavior and use it as a hearer-focus cue to help lead her to conclude that her own object of attention—namely, the expletive—is now also Y's intended target.

Apart from such examples, though, the hearer-focus cue category, out of all ten cue categories, may exhibit the least degree of speech-internal parallelism to speech-external usage. This may be mainly due to three factors.

First, where the object of a hearer's focus is speech-external, her focusing behavior occurs either concurrently with it or immediately after it. But where it is speech-internal, hence within the preceding discourse, her focusing behavior generally occurs substantially after it.

Second, where the object of a hearer's focus is speech-external, its relevant stimuli can be in a certain range of sensory modalities, with the hearer's focusing behavior following suit. But where it is speech-internal, its relevant stimuli are limited to the auditory. (Though perhaps a signer can exhibit visual focusing behavior on a sign she is producing, say, by looking at it quizzically.)

Third, where the object of the hearer's focus is speech-external, it is generated by the hearer herself only in highly select circumstances, as in the light-show "effect" examples of (7). But this is the only circumstance that applies in the case where the object of focus is speech-internal, since the hearer herself has to have produced it in earlier speech.

8.4 In Sum

A hearer-focus cue is a cue metacognitively available to a hearer indicating that her own current object of attention may be the speaker's intended target. In the sequence leading to its use, the hearer first observably directs her attention to some phenomenon. This is her focusing behavior. The speaker then observes this behavior, determines the phenomenon she is focusing on, proceeds to perceive that phenomenon himself, and produces an utterance with a trigger to target it. On hearing the trigger, the hearer is alerted to look for cues to its target. She ends up accepting the possibility that her own focus of attention is the speaker's intended target, especially if other cue categories are poorly represented. Parameters along which this procedure can vary include the sensory modality of the phenomenon that the hearer is focusing on, the hearer's reason for focusing on it, whether the hearer does or does not anticipate the phenomenon, and whether the phenomenon occurs independently of the hearer or is generated by her.

IV Background Cue Categories

Part IV here details the fourth pair of cue categories, those of environmental cues and of epistemic cues. We have designated these as “background” categories because, compared to the focal information provided by the cues of other categories, the cues here are from the field of information that the focal information is embedded in. Thus, while targetive cues are exhibited just by the target, environmental cues can come from any way within the physical or discourse surroundings of the target. And while co-form cues provide information tailored specifically to the target, epistemic cues can come from any of a hearer’s encyclopedic knowledge, within which knowledge specifically about the target is just a small part.

9 Environmental Cues to a Target

We begin our analysis of environmental cues with an outline of their main delineations.

A center point As the targeting process has been analyzed, environment may be best characterized with respect to a center point: the speaker in the speech-external case and the trigger in the speech-internal case. The term “environment,” then, is applied to everything extending out from such a center point in space and time, though diminishingly so with increasing distance from that center. As seen in section 1.2.4, an environmental cue is then any information provided by some component of an environment that helps a hearer determine the target and that is not already covered by another cue category.¹ Generally, environmental cues in the speech-external domain are sensory phenomena that the hearer perceives, while ones in the speech-internal domain are morphemic and syntactic phenomena that the hearer discerns.

Content and structure An environment’s composition can be heuristically divided into two aspects, content and structure, though it is understood that such aspects are interdependent. Cues that arise from these two aspects can be respectively designated as **environmental content cues** and as **environmental structure cues**. We note, though, that while this distinction is important in our analysis, a different distinction structures the following presentation.

The content of an environment mainly consists of the phenomena present in the environment that can be characterized by their intrinsic features. Thus, where the environment is speech-external in visual space, its content might include those individual objects and actions that can be recognized by their identities or other inherent characteristics.

In turn, the structure of an environment includes the interrelationships that such phenomena exhibit. Where the environment is speech-external in visual space, its structure might include reference frames and compass directions; the partitioning of the whole visual scene into a network that defines separate entities (whether discrete objects or expanses of material); the shapes, outer boundaries, and internal delineations

of such entities; the spatial relations of such entities to each other and to the scene as a whole; distances between entities; and paths of motion by or among such entities.²

The fact that environment is here characterized with respect to a center point confers a perspectival organization on it. Accordingly, where the environment is again speech-external in visual space, the speaker's vantage point affects her perception of both content and structure. With respect to content, it helps determine which entities have greater or lesser visibility due to their distance away, which entities are visible or nonvisible due to whole occlusion, which portions of entities are visible due to partial occlusion, and which side of each entity is visible. And with respect to structure, it helps determine the perceived sizes and heights, widths, and depths of entities; the perceived spatial relations and distances between entities; the perceived contours of the boundaries and other delineations of entities; any shifts in the preceding attributes due to motion by the entities or by the speaker; and the perceived inclinations of paths followed by moving entities.

Locating and bounding The main division we propose for environmental cues rests on how they help a hearer narrow in on a target—specifically, with respect either to its location or to its compass. This division's two types—environmental locating cues and environmental bounding cues—are treated next in order. As in the preceding four chapters, we first address such environmental cues for the speech-external case. The third section then addresses them for the speech-internal case.

9.1 Environmental Locating Cues

Environmental cues that help a hearer narrow down to a target's location within an environment will be called **environmental locating cues**—short for “environmental target-locating cues.” Such cues can in turn be roughly divided into two further types, treated next in order. In one type, the cues limit the portion of an environment that the hearer must search through to find the target. In the second type, the cues characterize the target's location in terms of some reference entity within the environment.

9.1.1 Locating with Respect to a Subenvironment

For any given instance of targeting, we will say that the **total environment** comprises the combination of the speech-external and speech-internal environments extending out respectively from the speaker and from the trigger. Anything less than such a total environment will be called a **subenvironment** or, where clear from the context, simply “an environment.” A subenvironment can consist of a single continuous portion of the total environment or of a specific set of distinct portions. This section addresses the case where a particular subenvironment is relevant to the targeting process because the target is located within it, rather than elsewhere in the total environment. When this

limitation on the target's possible range of location is known to the hearer, it reduces the size of the search space that, in any search procedure, he must check through to find the target (or, alternatively, to find targetive cues to the target—see section 7.1.6).

The speaker may provide nonenvironmental cues—generally lexical or gestural cues—that in turn direct the hearer's attention to certain characteristics of content and structure in the total environment. These characteristics then serve as environmental cues that help him narrow down to the subenvironment in which the target is located. This narrowing down by the hearer from the total environment to the relevant subenvironment will be called a **reduction process**. We here cite three types of reduction process that, in the order presented, yield the subenvironment at the outset, as a nested result, or after an unproductive search.

Immediate reduction In the first of the three reduction processes, nonenvironmental cues help the hearer narrow down to the relevant subenvironment—that is, reduce search space size—at the outset. This process will be called **immediate reduction**. Of the three reduction processes cited here, it is only immediate reduction that may also reduce the processing time and effort needed by the hearer (experimentation is called for). Several types of subenvironment are amenable to immediate reduction. Three of these are domain, modality, and region, treated next in that order.

Domain. We begin with the case where nonenvironmental cues provided by the speaker specify the domainality of the target. For example, the relative clause in (1a) provides the co-form cue that the target is located in the speech-internal subenvironment. The hearer thus knows immediately that he can limit his search for the target to the subenvironment consisting of the current discourse and disregard everything in the speech-external subenvironment. But the relative clause in (1b) provides a co-form with the reverse indications—the hearer here knows immediately that he need only search the speech-external subenvironment.

- (1) a. That woman I just mentioned is my boss.
- b. That woman I'm looking at is my boss.

In both cases, the total environment includes characteristics of content and structure that demarcate the discourse from non-discourse. The co-form cues lead the hearer to attend to these environmental characteristics and treat them as environmental cues that at the outset direct him where to search for the target and where not to.

Modality. The process of immediate reduction also applies readily to the sensory modality in which the target manifests. Generally, this type of reduction is relevant only to the speech-external subenvironment, since the speech-internal subenvironment is by and large solely auditory. Accordingly, narrowing a search for a target down

to a particular sensory modality is in general a reduction within a reduction. But the whole of this reductional complex still occurs at the outset.

Examples of modality reduction were already seen in (7:10). There, within the utterance *That horse is Jane's*, the speaker inserted either the phrase *you see* or the phrase *you hear* after the word *horse*. Each phrase provided a co-form cue indicating that—within the speech-external subenvironment—the sensory modality that the hearer needed to search through to single out the targeted horse was respectively either the visual subenvironment or the auditory subenvironment. The hearer was immediately spared the need to check other sensory modalities.

Region. The process of immediate reduction readily applies as well to the extensional region in which the target is located. Such a reduced extensional region amounts to a particular portion of space in the speech-external case and to a particular portion of discourse in the speech-internal case.

Examples of speech-external region reduction were also seen earlier, this time in (7:11). There, within the utterance *That Cessna is Jane's*, the speaker inserted either the phrase *in the field* or the phrase *in the air* after the word *Cessna*. Each phrase provided co-form cues that alerted the hearer to attend to the corresponding environmental content and structure cues. Together, these two cue types indicated that the spatial region that the hearer needed to search through to find the targeted Cessna was, respectively, either the horizontal layer at the hearer's eye level or the volume of space overhead. This reduction was again immediate and spared the hearer from checking other spatial regions.

We note that the preceding two illustrations respectively of modality and region reduction are here analyzed in terms of environmental cues, but were originally analyzed in terms of targetive cues (see section 7.1.6). The reason both analyses are possible is that the subenvironment in which a target is located can be treated either as an environmental fact that yields an environmental cue, or as an (intrinsic or contingent) feature of the target that yields a targetive cue.

A region from gestural cues. In the preceding “Cessna” example, the nonenvironmental cues provided by the speaker to help the hearer narrow down to a particular spatial region as the relevant subenvironment were co-form cues. But such cues can also be gestural.

—The lateral organization of the environment. To address this, some background is needed. A speaker can regard her speech-external surroundings—what she might see on looking about herself in all directions from her current vantage point—as arrayed in distinct regions. Such regions—perhaps typically imagined roughly as corridors or cones extending straight out from herself at the center—are set apart from each

other—left and right, up and down—by lateral separations. The boundaries around such regions largely correlate with perceivable aspects of the environment's content and structure. When perceived from the speaker's vantage point, such a pattern can be thought to constitute the lateral organization of the environment (first presented in section 5.2.2).

Note that such laterally adjacent corridors extend radially out from the speaker's central vantage point globally in all directions. If just one direction of concern were selected, say, straight in front of the speaker, it might become appropriate to discuss the lateral organization of the environment in terms of the plane of an x- and y-axis and to discuss the axial organization of the environment in terms of a z-axis. But the globally radial framework precludes such a standard rectilinear three-axis framework.

—Prototype gestural indication of a lateral region. Chapter 5 analyzed any outward-targeting gesture mainly in terms of how it related specifically to its target—in particular, how it connected with that target through a fictive chain. But such a gesture can also be analyzed in terms of how it relates to the speaker's entire surrounding environment. The specific issue here is how it indicates the particular region within the environment's lateral organization that the target is located in.

To illustrate first with the prototype pointing gesture, its fictive linear projection need not provide a cue to the target's location solely by intersecting with that target. Whether in addition to this or instead of this, it can indicate the particular region of the environment among the full lateral array of such regions that the target is located in. It does so by means of the direction that the projection takes, that is, the projection's orientation in the global space surrounding the speaker. In the cognitive process by which this region reduction is realized, the fictively advancing projection may be imagined as being accompanied by an expanding zone around it. In effect, it generates a fictive envelope that extends forward from the tip of the pointing finger (see section 5.2.2 for such "projection widening"), forming a perhaps roughly conical region of space in which the target will be found to lie. The gesture thus at the outset rules in this comparatively narrow volumetric region as containing the target, while ruling out other regions.

A few early examples of lateral ambiguity did show how a prototype gesture can localize a target through region reduction rather than through intersection with it. For a new illustration of this here, suppose that a speaker says *That's Jane's horse* while pointing with lateral ambiguity toward a cow and horse standing together in a field with other cows and horses. The hearer imagines a roughly conical region that extends away from the speaker's fingertip and that encompasses the target somewhere within it. This gestural cue coordinates with environmental content and structure cues in that the outer boundary of the region is imagined to thread its way between the cow-horse

pair and neighboring animals. The gesture here is too far away to indicate a connection directly with the specific target and instead indicates a larger region containing the target. It is then cues of other types that complete the target pinpointing process through lateral disambiguation.

—Whole-body gestural indication of a lateral region. Another type of gesture that can localize a target through region reduction rather than through intersection with it is a speaker's turning of her body so that its front—in particular when head, torso, and legs are aligned—faces in a particular direction. The hearer can then imaginably schematize the front of the speaker's body as an articulator comprising a two-dimensional bounded plane that sends forward a three-dimensional volumetric projection. This projection may then coordinate with aspects of environmental content and structure to form an approximate corridor through space as the region in which the target is located.

Such body orientation was seen in the “puce” example of section 1.3.1, where it produced at the outset a reduction of the region containing the target. There, the speaker oriented her body toward the shop window. The hearer may have imagined her front side sending forward a volumetric projection whose outer boundary—in coordination with environmental cues—widened and aligned with the shop's ceiling, side walls, and floor. This interaction of gestural and environmental cues thus limited the search space that the hearer would need to check to find the target and within which other cues would guide him to the target's specific location.

The fact that this volumetric projection is wider than the target and includes other material within its scope means that it also exhibits a type of lateral ambiguity. But this type differs from that in which a linear projection is too far from a target to produce a clear intersection with it.

Nested reduction The second of the three reduction processes does not occur all at once at the outset, but rather in two or more stages, though only the two-stage case is addressed here. In the first stage, the hearer searches through the total environment for everything exhibiting the characteristics indicated by certain cues. What he finds constitutes a subenvironment. This subenvironment can consist of a set of distinct elements—themselves components of environmental content that serve as environmental content cues.

In the second stage, the hearer searches through this subenvironment for whatever matches certain further cues. These further cues will let him single out one of the elements as the target. The first search thus reduces the size of what the hearer must check through in his second search. Since the second search is nested within the first, we will designate this type of reduction process as **nested reduction**.

Nested search reframed as nested reduction. The nested search for targetive cues that was treated earlier (see section 7.1.4) can be reframed as nested reduction. The procedure undertaken by the hearer can be treated as one or the other of these two nesting types according to which aspects of it are foregrounded. In a nested search, the hearer simply finds whatever entities exhibit a particular targetive cue, before limiting his attention to them for further processing. But in nested reduction, the hearer is regarded as starting from the global environment, finding elements of it that exhibit a particular environmental content cue, and treating those as constituting a subenvironment.

Such reframing can be illustrated first for a targetive feature search. We use the example in (7:8) in which the speaker, without gesturing, says *That grey horse is Jane's* while standing in a field containing five horses with only one of them grey. In the first stage, the hearer now searches the global environment for elements of it exhibiting the environmental content cue of being a horse. He reduces the global environment down to a subenvironment consisting of five such elements. In the second stage, he searches this subenvironment for elements of it exhibiting the environmental content cue of being grey. He reduces the subenvironment down to one such element.

A targetive salience search can also be reframed. Recall the speaker in (7:14) who said *That's a coyote* expecting the hearer to single out the yipping sounds by their salience. The hearer can now be regarded as first searching the global perceptual environment to determine a particular subenvironment. This subenvironment would consist of that set of distinct elements exhibiting some salience of any type. He might then perform a second search through that set to determine the element in it with the most salience, finding that to be the yips. The subenvironment would thus offer a reduced search space through the process of nested reduction.

Targetive salience reframed as environmental salience. In a comparable way, targetive salience can be reframed as **environmental salience**. For an illustration, suppose that a speaker, without gesturing, says (2) at a circus with a number of horses in various rings, but where a particular horse is in the only ring lit up by flood lamps and otherwise cleared of activities.

(2) That horse was bred by my daughter.

In terms of the original nested search procedure, the hearer in the first stage might search for all target candidates exhibiting the targetive feature cue of being a horse. In the second stage, he would search through the candidates he had found for one exhibiting a targetive salience cue. But the salience he detects is of a new type needing to be added to the summary list in section 7.7. It is **special-ambit salience**, occurring at the high end of a parameter of "ambit specialness." Here, a target candidate acquires an increment of salience because its surroundings are special in some respect that is relevant to the circumstances. In the present example, the horse intended as the target

is more salient than the other horses because the ring around it is special by being well lit and cleared.

Now in terms of a nested reduction procedure, the hearer in the first stage reduces the global environment—everything within the circus tent—down to a subenvironment consisting of all the elements exhibiting the environmental content cue of being a horse.

In the second stage, the hearer reduces that subenvironment down to the one element exhibiting the most salience. The salience he detects is again of a new type, but one that can be construed as environmental salience. Different regions of an environment—ones generally delineated through environmental content and structure cues—can differ with respect to a parameter of “region specialness.” What renders a region special again varies according to the circumstances, but one at the high end of the parameter has **special-region salience**. A region with such salience can confer its salience onto entities within it. In the present example, one region within the global environment, a particular ring, has special-region salience because it is well lit and cleared, and it confers its salience to the one horse within it, the horse then selected as the target.

Dry reduction Unlike the first two reduction processes, the third does not involve cues that yield a smaller subenvironment for the hearer to search through as a potential aid in his processing. Instead, he simply makes a hit-or-miss selection of the first subenvironment to search through. If this selection yields no results, that is, comes up dry, he eliminates it from consideration. Still, his initial search reduces the size of what he must next search through and so can be thought to involve a process of **dry reduction**.

In a dry reduction, the sequence of the hearer’s subenvironment searches, from the initial one through subsequent ones, is thus not determined by any evidence but by his impromptu processes of selection. Still, the subenvironments he does select to search are likely informed by the major partitioning of the total environment into domains, modalities, and regions.

An instance of dry reduction occurred in the “mare” example of section 1.3.2 if the hearer there in fact followed the cognitive processes in the sequence cited. In looking for the target of the trigger *she* in the speaker’s utterance, the hearer may have randomly picked the speech-external domain as the first subenvironment to search through. Finding no candidate for target status there, the hearer next searched the subenvironment consisting of the speech-internal domain. The hearer’s initial dry search thus reduced the size of the next search space.

Another example of dry reduction was seen in section 7.1.6 where the speaker said *That horse is Jane’s* on passing a barn from which a neigh emerged, but where the speaker did not insert a phrase like *you hear* after the word *horse*. Here, then, no co-form

cue led the hearer to perform an immediate reduction down to a particular sensory modality. The hearer might have happened to select the visual modality to search first. But the environmental cues there were negative: that subenvironment contained no relevant content. This finding left a reduced remainder to consider. The hearer may have next selected the auditory modality to attend to, where the search would have in fact uncovered relevant environmental content.

9.1.2 Locating with Respect to a Ground

The process for locating a target introduced in this section can be regarded as lying on a continuum with the process of reduction by region (see the earlier Region subsection). In that earlier process, co-form cues—such as those from *in the air*—afforded the hearer with an immediate reduction to a particular region of space containing the target. But that process allowed only one spatial relationship: the target was somewhere *within* that region, which itself was generally extensive. And that process allowed only one procedure for finding the target: a blanket search of the region, whether that search turned out to be progressive or nonprogressive (panoptic). In our analytic framework, the target served as the Figure and the region as the Ground, but that Ground was of one type: an extensive containment.

Here, though, co-form cues can characterize the target's location more specifically over a wider range of relationships and search procedures. In particular, the Figural target can have any spatial relation to the Ground. And this Ground can be an entity of any identity, shape, or extent—though we here consider ones that, unlike the earlier region, are more circumscribed. Further, the hearer can perceptually start at the Ground entity and, from there, follow a procedure indicated by the co-form cues to find the target.

In general, the hearer will perceive the Ground entity before the target because it is likelier to attract his attention through greater salience, and it is selected by the speaker for that reason. Its greater salience might arise, say, from greater size or uniqueness in that perceptual environment. Since this Ground entity is an element of environmental content, it can be regarded as providing an environmental content cue to the target's location. In turn, the procedure that could lead the hearer from the Ground entity to the target generally relies on aspects of environmental structure, which thus provide environmental structure cues.

This procedure for locating a target through reference to a more specific Ground has a certain range of characteristics we will now examine. We will present examples of the procedure in a "regularized description" (see section 1.3), by which the hearer's cognitive processing is characterized in terms of discrete consecutive steps that reflect logical relations. A hearer's actual processing steps and sequences will require experimental determination.

A basic case To illustrate the procedure in its basic form, the speaker says (3) to the hearer. They are standing at a point in a field from which they can see a barn and a number of horses at various locations around it, including three horses respectively some ten, fifty, and one hundred yards north of the barn.

(3) That horse some fifty yards north of the barn is Jane's.

The core and co-form cues from the subject noun phrase inform the hearer that the target has the property of being a horse in its identity and indicate a procedure by which he might determine its location. In this procedure, the hearer first determines the location of the barn. The barn is more readily perceived than the targeted horse because it is larger and because it is unique in the visible environment, while the targeted horse is smaller and one among many. Both these factors accord the barn greater perceptual salience. The barn is an element of environmental content and provides an environmental content cue.

Next in the procedure, the hearer moves his focus of visual attention. Starting his focus at the barn's location, he then uses his compass sense to assess where north is so as to move his focus in that direction, and then estimates some fifty yards' worth of length along that path until spotting a horse. Both the compass directions and the fifty-yard linear extent can be regarded as aspects of environmental structure that provide environmental structure cues.

Experimental techniques might find a hearer in such a situation in fact diverging from this regularized description by, say, taking a panoptic view of the scene or making multiple fixations out of sequence from that just cited, or by putting the three horses north of the barn through a contrastive process to determine the one coming closest to what seems fifty yards. Still, the procedure as set forth might not just be a regularized description, but it might also play some actual role in the hearer's cognitive processing.

The role of perspective While the speaker selects her co-form cues to imply a particular procedure by which the hearer might locate the target, this selection is based on the perspectival organization that her vantage point imposes on the perceptual environment (see the beginning of this chapter). Thus, to target the same horse, a speaker might say (4a) from one vantage point, but she would say (4b) from certain other vantage points.

(4) a. That horse behind the tree is Jane's. b. That horse beside the tree is Jane's.

Mutual locating Interestingly, the locating procedure indicated by the core and co-form cues of an utterance can at the same time help the hearer single out not only the target but also the Ground entity from other candidates for the Ground role in the environment. For illustration, the speaker in the abovementioned field might say (5).

Suppose now, though, that the field contains not only several horses but also several trees dispersed at scattered sites, and that only one horse is by a tree while only that one tree has a horse by it.

- (5) The horse by the tree is Jane's.

Here, the Ground entity represented by the phrase *the tree* is not unique in the perceivable environment—other trees are visible. This fact disaccords with two earlier premises. First, the hearer cannot follow the previous procedure in which he first finds the Ground and then starts there to find the target. Second, when acting as a trigger, the determiner *the* requires that the target be unique in its environment (see section 7.5), which is here not the case.

These discordances can be resolved if we assume that the hearer here actually engages in two targeting processes in mutual interaction. If he concurrently seeks the respective targets of the two *the* triggers, the target can be singled out from its competitors by being the only horse near a tree, while the Ground becomes unique by being the only tree with a horse near it (for a related case, see section 3.3.2 for “cue codetermination”).

The speaker as ground In the preceding examples, the Ground has been an object (barn, tree) outside the speaker. But the speaker herself can also function as the Ground. As with an outside object, the speaker serves as the starting point of the hearer's locating procedure and, through speaker salience, she is a salient entity in the environment that the hearer can readily determine first. An example of this is seen in (6), where the speaker is in a field with horses at various locations around her.

- (6) The horse furthest from me is Jane's.

The hearer in this case first notes the location of the speaker and then, surveying the horses for their distances from her, determines the one at the greatest distance.

Structural alignment The locating procedure indicated by the co-form cues in the speaker's utterance can be of a particular type that requires what can be called **structural alignment**. In this type, after discerning the Ground, the hearer must first notice that Ground's structural relation to its immediate environment and then look for a target with the corresponding relation to its own immediate environment. In the speech-external domain, this type seems comparatively infrequent, and the locating procedure in it can be initiated only by explicit co-form cues. But we analyze this type here to prepare for its extensive counterpart in the speech-internal domain (see section 9.3.2). Consider the following example where the trigger *that* directs the hearer to locate a particular man as target.

- (7) That man in the next block standing there where I'm standing here is my brother.

Suppose this sentence is said by a speaker standing a third of the way along her block to a hearer who can see several men in the next block, including one man a third of the way along it. Guided by the co-form cues, the hearer first notices the speaker's spatial relationship to the block she is on, and then might be thought to superimpose that relationship onto the next block to single out the one man bearing the same spatial relationship to his own block.

But structural alignment cannot be used implicitly through environmental cues without co-form cues explicitly directing the procedure. Thus, even where all the elements and spatial relationships are the same, the preceding speaker could not say (8) and expect the hearer to figure out which man she is targeting. That is, the hearer will not spontaneously use the speaker's and the man's common spatial relation to their respective blocks as an implicit environmental cue to the target.

(8) That man you see in the next block is my brother.

Comparably, suppose that the speaker is riding forward on a horse with a second horse following immediately behind her and that, ten yards to the left, a third horse is walking forward in the lead with a fourth horse following directly behind it. The speaker cannot say (9) and expect a nearby hearer to understand that she intends to target the third horse. For this to happen, the hearer would have to take the speaker as the Ground, notice her position in the lead of a two-horse train, overlay that spatial relation onto the two-horse train on the left, and settle on the lead horse there as the target because it is in structural alignment with the speaker. The hearer again will not undertake such a procedure without explicit indications to do so.

(9) That horse is Bill's.

9.2 Environmental Bounding Cues

In the preceding section, the location of the speaker's intended target within the total environment was at issue and aspects of content and structure in the environment helped the hearer narrow down to that location. Here, by contrast, the location of the target—or at least of its central portion—is known, commonly through gestural cues. The issue instead is what the hearer should take to be the outer boundaries of what the speaker intends as his target. That is, the issue is where and how far the target extends out from its already known central portion.

Again, aspects of content and, especially, of structure within the environment can provide the hearer with cues to this determination. These will be called **environmental bounding cues**—short for “environmental target-bounding cues.” The hearer thus searches for aspects of environmental content and structure that might define the target's boundaries and settles on a particular set of them, whether from their own suggestiveness or from other cue types such as co-form and epistemic cues.

9.2.1 Basic Environmental Bounding

A hearer's determination of environmental bounding cues can be thought to have a basic form, illustrated with what we will refer to as the "lagoon" examples. A speaker says either (10a) or (10b) while standing with a hearer on a hill and pointing down toward the center of a roughly hundred-yard wide lagoon at the hill's base. A ten-foot log is lodged horizontally at that central spot.

- (10) a. Mist forms there in the morning. b. An otter suns itself there in the morning.

If the speaker says (10a), the hearer will likely conclude that the target of the trigger *there* is a three-dimensional location underlaid by the lagoon's entire surface and bounded by the sloping banks that form its perimeter. Starting with co-form cues from the relevant words around the trigger, she is guided to this conclusion by both epistemic and environmental bounding cues.

One epistemic cue might arise from a belief that mist generally extends horizontally over a relatively wide area, perhaps especially where this area is a concavity. Another epistemic cue is from a notion that mist might be associated with water.

In turn, one environmental bounding cue that the hearer observes comes from certain features of environmental structure. These perceived features are the horizontal underpinning provided by the lagoon's surface and the inclined containment provided by the lagoon's banks. Another such cue is from certain features of environmental content—the lagoon consists of water, while its surroundings consist of ground.

The hearer is unlikely to take the target to be either the minimal point intersected by the fictive projection from the pointing gesture, nor the log, since these both conflict with the understanding of mist as spread out, and since the log is not water.

But if the speaker instead says (10b), the hearer is likely to conclude that the target of the trigger *there* is a location consisting of the upper surface area of the log. Again starting with co-form cues, she is helped to this conclusion by cues of the same two further types. The epistemic cue is from the belief that a creature can better sun itself while resting on a solid surface than while immersed in a liquid. The environmental bounding cue comes from the structural feature that the log has a solid outer surface, part of it facing upward. She is again unlikely to take the target to be the specific spot pinpointed by the speaker's gesture, now from the understanding that the otter might lie not just on that one spot but anywhere over the log. Nor will she take the target to be the lagoon's whole surface, which does not provide a solid underpinning.

For both utterances, the speaker makes the same pointing gesture that intersects with the same spot within the expanse below. The hearer must then survey the concentric contours nested around the spot pointed at and select the outline likeliest to bound the speaker's intended target. This will be a different contour for the two utterances.

9.2.2 Divergences from the Basic

If the preceding represented basic environmental boundary determination, we now present three divergences from it, all shown by a single example. The speaker leads a guest into the underground garage of an office building and points horizontally in a particular direction. In one version, he says either (11a) or (11b), and in another he says either (11c) or (11d).

- (11) a. I park there. b. The employees park there.
 c. That's my parking space. d. That's the employees' parking section.

One difference involves which cue types provide which information. In the lagoon examples, the trigger *there* directly provided the core cue that the target is a location in its ontological category. The same is true here for (11a) and (11b). But in (11c) and (11d), the trigger *that* provides the core cue that the target is ontologically an entity. Information that that entity is here a generic concept to be understood more specifically as a location comes instead from co-form cues from the final words *space* and *section*.

For another difference, the projection from the speaker's pointing gesture in the lagoon examples intersected with a physical element of the environment—the log or lagoon surface. But here it self-terminates in mid-air above the ground of the parking space or section (see section 5.2.4 for such self-termination).

For a third difference, the boundary of the target in the lagoon examples—for both the “mist” and the “otter” variants—consisted almost entirely of directly visible aspects of the environment. But in all four alternatives of the present example, the hearer must augment all the directly visible environmental cues that she notices with epistemic cues from her cultural and physical knowledge. She uses all this information to imaginally complete the boundary.

Thus, first consider (11a) and (11c), where the co-form cues inform the hearer that the target is a volumetric location close to the size and shape of an individual car. What the hearer actually sees consists of one pair of parallel white lines on the ground, lying within the widening projection from the speaker's pointing gesture. She may also perceive an absence of certain impediments, such as a pillar standing between those two lines or a ceiling suspended only three feet above them. But based on these directly perceivable environmental cues, the hearer might imaginally generate a certain volumetric construct. This would consist of a fictive planar boundary in the approximate shape of a three-dimensional rectangular container that could enclose a car. The planar boundary first extends along the ground between the two white lines, thus forming a rectangle and then rises up from each of the rectangle's four sides, ending with a fictive ceiling.

Next consider (11b) and (11d), where the co-form cues inform the hearer that the target is a volumetric location that can encompass a number of cars. The environmental cues that the hearer directly perceives might include a portion of ground that is covered with pairs of parallel white lines and that is bordered on four sides by a section

of the outer wall, an entry ramp and an exit ramp, and an internal driveway. But the hearer may also imagine a fictive enclosure sitting over this portion of ground and high enough to accommodate parked cars. She would then regard this enclosure as the targeted “employees’ parking section.”

Much as with the lagoon examples, the speaker saying (11a) or (11c) on the one hand or (11b) or (11d) on the other hand produces the same pointing gesture that terminates at the same spot. And as before, environmental cues suggest a range of concentrically nested contours that surround that spot, from which the hearer must select the one likeliest to bound the intended target.

9.3 Environmental Cues to a Speech-Internal Target

Turning now to the speech-internal domain, we can first repeat the technical point that—other than core cues from the trigger—almost all cues to the target come from linguistic material outside the trigger and hence are co-form cues. We will indeed still say that co-form cues are provided by linguistic material around the trigger if it explicitly indicates features of the target. But as noted in the introduction to chapter 4, some linguistic material around the trigger can instead provide cues to a speech-internal target that seem analogous to environmental cues to a speech-external target. Such speech-internal cues will here, as before, be treated as environmental cues and so fit this chapter’s topic.

All the linguistic material outside the trigger can be regarded as its speech-internal environment in the most general use of this term. Moreover, as analyzed in this chapter’s introduction, such an environment extends out with diminishing relevance from a center point. In the speech-external domain, that center was the speaker, but here it is the trigger. Thus for a given instance of targeting, linguistic material is likely to provide fewer environmental cues the further it is from the trigger.

The heuristic distinction between content and structure cited earlier for the speech-external environment around a speaker (see this chapter’s introduction) applies as well to the speech-internal linguistic environment around a trigger. Further, it applies to each of a linguistic environment’s two main aspects, the formal and the semantic. With respect to the formal aspect, content includes morpheme, word, phrase, clause, and sentence constituents, as well as syntactic constructions, while structure includes the grammatical relationships between any two such constituents or constructions (e.g., the subject status of a nominal to a clause). As for the semantic aspect, content includes the meanings or referents of such constituents and constructions, while structure includes any conceptual relationship between two such meanings or referents (e.g., the Agent and Patient roles that can be held respectively by one referent acting on another).

As will be seen in the rest of this section, most of the divisions and subdivisions that needed to be recognized in the analysis of speech-external environmental cues have

analogs in the speech-internal domain, thus bolstering our thesis of a cross-domain system. Still, some differences emerge. For example, there is much speech-internal correspondence to environmental locating cues, but little suggests itself for environmental bounding cues and none is reported here.

One further difference, though, is expected and is due to the distinct character of the two domains. In the speech-external domain, environmental cues were mainly sensory phenomena perceived by the hearer. But speech-internal environmental cues come mainly from morphemic and syntactic phenomena discerned by the hearer and held in working memory for possible retrieval.

We again stress that, in the analysis that follows, a hearer's processing is presented in a regularized description based on logical interrelationships, and that his actual processing must be determined through experimentation.

9.3.1 Locating with Respect to a Speech-Internal Subenvironment

In a speech-internal counterpart to the speech-external case (see section 9.1.1), a hearer can use cues to narrow down from the total environment to a particular subenvironment within which the target is located. That subenvironment here, though, is speech-internal, a part of the current discourse. And as before, a reduction process of certain types achieves the narrowing down. Two of the earlier types of reduction processes are evident in the speech-internal case—immediate reduction and nested reduction—and these are presented next in order.

Immediate reduction to a speech-internal subenvironment It was seen in section 9.1.1 that information from nonenvironmental cues could immediately reduce the search space that the hearer needed to check through to find the target, in a possible saving of his processing time and effort. Where that subenvironment was speech-external, a hearer could reduce to it by selecting a particular sensory modality or a particular region—in that case, an environmentally defined portion of physical space. But where the subenvironment is speech-internal, a hearer generally reduces to it only by selecting a particular region—in this case, a syntactically defined portion of the discourse. And reduction to it can be guided either by nonenvironmental or by environmental cues, as illustrated next in order.

Reduction through nonenvironmental cues. To begin with nonenvironmental cues, the core cues from certain triggers can yield an immediate reduction to a particular syntactic subenvironment. One such is the trigger *so* in the second reading we cited for it (see section 2.2.8). To illustrate, we reprise the following example from section 2.3.5.

- (12) Madge believes that we'll return to the moon soon, but I don't think so.

On hearing the trigger *so*, the hearer immediately knows that he can reduce his search space to the full clause preceding the one containing that trigger. He is spared the effort of looking for the target elsewhere. In the present case, he is also spared the effort of searching through the whole of that prior clause, since the trigger *so* also indicates that the targeted constituent is to be the complement clause embedded within the full clause (here *we'll return to the moon soon*).

Reduction through environmental cues. Environmental cues consisting of cues from the trigger's direct syntactic surroundings can also immediately reduce the hearer's search for the target to a particular syntactic subenvironment that contains the target. One case of this is a principle in the targeting framework that can be regarded as a partial equivalent of c-command or functional ranking in formal linguistics (see, e.g., Haegeman, 1994; Bresnan, 2001). The commonality here is coreference, whether between a trigger and a target or between an anaphor and an antecedent. If such coreference is limited to that occurring across clauses, our coreference principle can be stated as follows.

- (13) A trigger in a main clause cannot target a constituent in a following clause.

This principle can first be seen to hold where both clauses are main clauses, as in (14).

- (14) a. Bret woke up. He took a pill.
b. He woke up. Bret took a pill.

Environmental cues from its surroundings indicate that the trigger *he* is here located within a main clause. By the coreference principle, the trigger can target the constituent *Bret* when that constituent is in a prior clause, as in (14a), but not when it is in a following clause, as in (14b). A hearer noticing that this trigger is in a main clause in (14b) thus immediately knows that whatever follows its clause is ruled out as a syntactic subenvironment containing the target, and he is spared any effort to look there. If he seeks the target elsewhere, he can use the coreference principle to reason that the target of the trigger cannot be Bret, and that, if the utterance is felicitous, it must be another male identified earlier. That is, the principle leads to a process of immediate reduction in which the only subenvironment that the hearer need search through for the target consists of preceding clauses.

In (15), the coreference principle can next be seen to hold between the main and the embedded clause of a complex sentence.

- (15) a. When Peg is sick, she stays home.
b. When she is sick, Peg stays home.
c. Peg stays home when she is sick.
d. *She stays home when Peg is sick.

The trigger *she* can target the constituent *Peg* in all the sentences except (15d). In that last sentence, it is in a main clause, with the only available candidate constituent being in the following clause, and the principle disallows coreference in that case. Again if the hearer seeks the target elsewhere, he will reason that it must be a female other than Peg who is referred to earlier in the discourse.

Note that a condition must be added to the coreference principle as stated in (13)—and analogously to c-command—to prevent an overgeneralization. It turns out that at least locative triggers—perhaps among still other types of triggers—do not follow the principle. As illustration, both sentences in (16) are felicitous. In (16b), in particular, the trigger *there* in the initial main clause *can* target the constituent *Paris* in the following clause.

- (16) a. I'll be in Paris for the first time in my life when I go there next June.
 b. I'll be there for the first time in my life when I go to Paris next June.

Nested reduction to a speech-internal subenvironment The second type of reduction process seen in section 9.1.1—a nested reduction to a particular speech-external subenvironment—also has speech-internal analogs. The hearer now first searches through the overall speech-internal environment for whatever exhibits the characteristics indicated generally by certain nonenvironmental cues. To then single out the target within this speech-internal subenvironment, the hearer performs a second nested search, now guided by either nonenvironmental or environmental cues—two cases considered next in order.

The second search based on nonenvironmental cues. For the case where both the first and the second speech-internal search rest on nonenvironmental cues, we can refer back to the mare example in section 1.3.2. In that example, core cues from the trigger *she* guided the hearer in an initial search that reduced the pool of target candidates down to two: the referents of the constituents *my sister* and *her mare*. Together, those two referents composed the relevant speech-internal subenvironment. A second search within that reduced subenvironment was again guided by a nonenvironmental cue—specifically, an epistemic cue—and led the hearer to the referent of *her mare* as the intended target.

The second search based on environmental cues. We turn to the case where the first search again rests on nonenvironmental cues, but the second rests on environmental cues. These cues can come from environmental salience, two forms of which are considered next.

—Proximity and special-region salience. Consider first the example in (17).

- (17) a. While one walrus was facing south, one walrus was facing north.
b. That was the walrus we'd rescued.

For his first search based on nonenvironmental cues in (17b), the hearer will use the core cue from the trigger *that* and the co-form cue from the noun *walrus* to narrow down to the subenvironment consisting of the two occurrences of *walrus* in (17a). But he may base his second search on environmental cues, specifically, on salience cues from the speech-internal environment.

The thesis needed here is that—whether language-specifically or universally—one particular kind of syntactic structure can be more salient than certain others. Further, manifesting the environmental salience proposed in section 9.1.1, the more salient syntactic structure can confer greater salience on the constituents within it.

One potential principle under this thesis, at least for English, is that a syntactic structure with the joint features of being a main clause and of being proximal to the trigger is more salient than a syntactic structure with the joint features of being a subordinate clause and of being distal from the trigger. The feature of proximity here would give rise to either recency salience or proximity salience, as proposed in chapter 7. In turn, the feature of main clause status might give rise to special-region salience, the new type of environmental salience proposed in section 9.1.1 for the “circus” example of (2).

By this analysis, mention of the south-facing walrus in (17a) occurs in the less salient clause, whereas that of the north-facing walrus occurs in the more salient clause. Through a process of nested reduction, the hearer had previously narrowed down to a subenvironment consisting of the two walrus mentions, and, of these two mentions, he now selects the north-facing walrus as the target.

Suppose now, by contrast, that the speaker had first said (18a) before again saying (18b). There, the main clause is more distal from the trigger while the subordinate clause is more proximal—a divergence from the prior feature conjunctions. Neither clause seems to have much greater salience than the other, and the hearer may indeed be confused as to which mention of a walrus was the speaker's intended target. Knowing these principles, the speaker will more likely avoid the formulation here in (18a) and instead use the earlier formulation in (17a) to guide the hearer to the intended target.

- (18) a. One walrus was facing north, while one walrus was facing south.
b. *That was the walrus we'd rescued.

—Subject salience. Another example of the same type also requires the thesis that different syntactic structures can have different degrees of salience. The principle that this example rests on is that the grammatical relation of “subject” is more salient than other grammatical relations and confers greater salience on the NP that is in that relation.

Such **subject salience** may be due to the discourse factor that, in many languages, the default role of subject status is to showcase the topic entity, and so it reflects the topicality salience cited in section 7.6.2. Consider the next example where the speaker first says either (19a) or (19b), and then follows with either (19c) or (19d).

- (19) a. The Romans were near the barbarians. /
 b. The barbarians were near the Romans.
 c. They were tired. /
 d. Luck was with them.

The core cues from the trigger *they* in (19c) lead the hearer to first search for NP constituents referring to a multiplex third-person entity. Whether the speaker has said (19a) or (19b), the hearer will first narrow down to the same subenvironment consisting of the two noun phrases, *the Romans* and *the barbarians*. But to select between these two candidates in his second search, he will rely on the principle of subject salience and opt for that one of the two noun phrases that is in the subject role. He will accordingly settle on *the Romans* as the target if the speaker has said (19b), but on the barbarians if she has said (19c).

The hearer will end up with the exact same result if the speaker had ended her utterance with (19d) instead of (19c) and thus used the object trigger *them* instead of the subject trigger *they*. If one had considered only (19c) and not also (19d), one might have thought that a process of syntactic alignment (see the upcoming Through the use of environmental cues subsection) had a role here. The reason would be that the trigger *they* is the subject in its clause, and the target NP is correspondingly the subject within its own clause. But the fact that the object trigger *them* in (19d) also targets the subject NP shows that subject salience is the only factor at work here.

9.3.2 Locating with Respect to a Speech-Internal Ground

As in the speech-external case (see section 9.1.2), cues here can guide a hearer in a procedure that directs his attention from a Ground to the target. But while the Ground earlier could be either an external object or the speaker, here it is always the trigger. And while the procedure earlier rested on sensory perception, here it rests on morphemic and syntactic discernment. Further, while the guiding cues earlier had to be explicit nonenvironmental cues (generally co-form cues), here they can be either that or implicit environmental cues—two cases that are treated next in order.

Through the use of nonenvironmental cues The basic procedure for locating a speech-external target with respect to a Ground was seen in the “barn” example of (3) in section 9.1.2. In turn, a close analog of this procedure for a speech-internal target can be seen in (20), a three-sentence utterance by a single speaker.

- (20) a. Global warming will be devastating.
 b. Horrible things are already happening around the planet.
 c. That first word in my last sentence says it all.

As before, the hearer here must first determine the Ground on which his procedure for finding the target will be based. In the speech-external case, that Ground could be an external object (like the barn) or the speaker herself. But in the speech-internal case, it is generally the trigger—here, the word *that* in (20c). The target-finding procedure is explicitly indicated in the accompanying co-forms there. The phrase *my last sentence* directs the hearer first to determine the sentence containing the trigger, namely, (20c) and then to determine the sentence immediately preceding it, namely, (20b), since that would be the last sentence in the foregoing sequence. In turn, the string *The first word in* directs the hearer to determine the first word in the sentence he has just settled on and take it as the target.

Through the use of environmental cues In the speech-external domain, a target-locating procedure of the type that employs structural alignment was shown to be partly available (see section 9.1.2). That type of procedure could be used if co-forms provided explicit indications for it, as in the “brother” example of (7). But it could not be used if the structural alignment implicitly rested on environmental cues alone, as in the “Bill” example of (9).

In the speech-internal domain, however, essentially the reverse is the case. If it were possible at all for co-forms to explicitly indicate some structural alignment of the trigger with the targeted constituent, the result would be highly stilted. But in many circumstances, the hearer will readily use structural alignment within the syntactic environment, that is, will use otherwise unspecified environmental cues. In this speech-internal case, structural alignment—a general term meant to apply to both domains—amounts to syntactic alignment. The hearer’s locating procedure will thus start at the trigger and include syntactic alignment to reach the targeted constituent.

To illustrate, a speaker might first say either (21a) or (21b) and then say (21c).

- (21) a. The Romans were near the barbarians. /
 b. The barbarians were near the Romans.
 c. They attacked them.

The sentence in (21c) has two triggers, the subject trigger *they* and the object trigger *them*. The hearer will likely take these to target respectively the subject NP and the object NP of the prior sentence. If that sentence is (21a), the Romans would be the target of *they* and be the attackers, and the barbarians would be the target of *them* and be the attacked, while the reverse would hold if (21b) had been said instead.

To analyze this targeting pattern, we first note that in the original “Romans” example, which had only one trigger—either the subject trigger *they* in (19c) or the object trigger *them* in (19d)—that trigger in either case targeted only the subject NP of the prior sentence. We thus know from that example that an object trigger can target a subject NP, with no role played by syntactic alignment. But here, the object trigger *them* cannot target the prior subject NP—it can only target the prior object NP—while, at the same time, the subject trigger *they* can only target the prior subject NP. The conclusion is that the cooccurrence of the two triggers in (21c) sets up a condition in which syntactic alignment governs. We can say that, for either of the two triggers, the other trigger is a component of its structural environment.

A finer analysis can begin with the hearer’s processing of the trigger *them* in (21c). He first treats it as a ground that his locating procedure can start at. He next assesses its structural environment. He finds that it has object status within its clause, a syntactic environment in which another trigger has subject status. He recognizes this as a condition that licenses the use of syntactic alignment in his locating procedure.

The hearer additionally notes that the core cues from both the triggers indicate that each target is a multiplex third-person entity likely to be represented by a plural noun phrase. He accordingly searches the prior discourse to find a structurally aligned syntactic environment—a clause with two plural noun phrases having subject status and object status—and finds it in the preceding sentence. With the further use of structural alignment, he lastly selects the NP with object status as the one corresponding to the object trigger *them* and settles on it as the target. He then performs an analogous procedure with the subject trigger *they*.

It can be further seen that the operative factor in syntactic alignment here is that of grammatical relations, not of linear order. If the speaker were to say (22) instead of (21c), the subject trigger *they* and the object trigger *them* respectively target the same NPs as before, even though they occur in the reverse order.

(22) Of course, attack them they did.

We can finally note again that the use of structural alignment in the speech-internal locating procedure here is undertaken implicitly, without explicit indications from co-form cues, unlike the speech-external case.

9.4 In Sum

The environment is everything that extends out from the speaker in the speech-external domain and from the trigger in the speech-internal domain. Any aspect of the environment that helps a hearer determine the target is an environmental cue, though such aspects tend to diminish with increasing distance from the center. One division within this cue category is between environmental content cues and environmental

structure cues. Another division is between environmental locating cues and environmental bounding cues.

An environmental locating cue involves locating with respect to either a subenvironment or a Ground. In the former type, the cue helps the hearer limit her search for the target to some particular subenvironment out of the total environment. The reduction process that leads to that subenvironment can be immediate, nested, or dry. In the latter type, an environmental locating cue enables a procedure by which the hearer can perceptually or imaginably start at a particular Ground as reference point and proceed to the location of the target.

For its part, an environmental bounding cue helps a hearer determine which one, among a nested set of contours, constitutes the boundary around what the speaker intends as his target.

Though differences exist, the analytic distinctions that must be recognized in the environmental cue category are largely the same for both the speech-external and the speech-internal domains—bolstering the thesis of a cross-domain system.

Notes

1. When applied to the speech-external domain, this last condition thus excludes targetive, hearer-focus, choral, and perichoral cues from treatment as environmental cues. Gestural, corporal, and epistemic cues are already excluded because they are based at the speaker, not outside her.
2. Where the speech-external environment consists of sound in auditory space, many comparable aspects of structure may well be found. But where it consists of tastes in “taste space,” what might be judged to function as structure seems quite divergent. Some similarities do seem to exist, for example, a notion of distance, where the distinct tastes in different pairings might be judged as being closer to or farther from each other. But divergence seems in the majority. For example, the notion of a straight line between two objects in visual space has no counterpart in taste space. One cannot go from one taste to another and pass through a known sequence of specific intermediary tastes.

10 Epistemic Cues to a Target

As originally seen in section 1.2.4, an epistemic cue is any information that a hearer derives from his own knowledge that then helps him determine the speaker's intended target. The term "knowledge" here is meant to apply broadly. It covers both explicit (declarative) and implicit (procedural) knowledge—terms used to distinguish knowledge that is about phenomena and knowledge that guides action. It covers both "knowledge" and "belief"—terms that a speaker applies differentially to some propositional content of another person when the speaker herself regards it respectively as true and as undetermined or false. And it covers both long-held and recently acquired knowledge.

Our term "knowledge" also covers the distinctions present in Clark and Marshall's (1981) "common ground," referring to knowledge that two collocutors believe they share. It thus covers the general knowledge that is assumed to be had by every adult participant in the culture and the local knowledge that just the collocutors have in common through their linked pasts. And it covers both the nonlinguistic and the linguistic knowledge that the collocutors share. Concerning this last distinction, if nonlinguistic knowledge can be regarded as "basal knowledge" about "first-order" phenomena, then linguistic knowledge might be regarded as "meta-knowledge," since it is knowledge about how to refer to first-order phenomena.

All such knowledge is in the hearer's "knowledge store" and has "storage accessibility" to him (see section 1.5.1).

It is difficult to draw a dividing line between cues of the epistemic category and the cues of a nonepistemic category where the information provided by these two cue categories lies on a continuum. Such gradience is most clearly the case between epistemic and co-form cues. In this case, our resolution has been to assign only a limited denotative meaning to the co-form but to assign full encyclopedic information about the co-form's referent to the conceptual category it has within the hearer's knowledge store. Thus in (1:13), the co-form *father* was held to have simply the meaning 'man who has sired a child' for the hearer, but the conceptual category "father" was held to have all the information the hearer had gathered about fathers. This difference

parallels that between the literal-semantic and the further-knowledge levels proposed in section 1.6.1.

This chapter is organized in terms of the distinction between nonlinguistic and linguistic knowledge. Epistemic cues from these two types of knowledge help guide the hearer to a speech-external target in the first three sections and to a speech-internal target in section 10.4. Within the first three sections, more specifically, 10.1 and 10.2 together address the collocutors' shared knowledge about nonlinguistic phenomena that, in the sequence presented, range from the most to the least perceivable. In turn, section 10.3 addresses the collocutors' shared linguistic knowledge, including knowledge about their common language and about discourse management. Much of this progression in the use of epistemic cues for speech-external targets is shown in section 10.4 to have counterparts for speech-internal targets, again demonstrating the cross-domain parallelism.

10.1 Knowledge about Perceived Nonlinguistic Phenomena

As noted, epistemic cues from a hearer's knowledge about nonlinguistic phenomena that she currently does or could perceive can help her determine a speech-external target. Epistemic cues of this sort have been seen at work when interacting with certain combinations of other cue types. Examples with three such combinations are reviewed next.

Epistemic cues pertaining to perceived phenomena were seen to interact with co-form and targetive cues in section 7.1.2 and following. Thus, when a rancher, without gesturing, said *That's Jane's horse*, a co-form cue from the noun *horse* activated the conceptual feature category "horse" in the hearer's store of lexical knowledge. That category in that hearer contained enough information about a horse's appearance and vocalizations for her to immediately and unambiguously recognize such targetive feature cues on perceiving them. The category was thus effective for her, and epistemic cues from it led to her definitive identification of the target. She was accordingly able to sort through the perceivable nonlinguistic phenomena around her and single out a horse seen standing beside a cow or to single out a horse heard neighing while a cow was mooing.

Epistemic cues pertaining to perceived phenomena were also seen to interact with co-form, gestural, and environmental bounding cues in section 9.2, where a speaker said either of the two utterances in (9:10) while pointing down toward the center of a lagoon. For (9:10a), epistemic cues from the hearer's belief that mist forms in an extended horizontal layer, especially when over water, guided her to use her perception of the full surface of the lagoon and its perimeter at the sloped banks to define the locative target. And for (9:10b), epistemic cues from her belief that an animal would sun itself on a solid surface, rather than while immersed in water, helped her settle on the perceived upper surface of the log in the lagoon as the locative target.

Finally, epistemic cues pertaining to perceived phenomena were seen to interact with co-form and gestural cues in section 1.3.2, where a speaker said *That's my father*

while pointing with lateral ambiguity to three people waiting for her in a train station. Two of the people were men, one looking older than the speaker and one younger. Co-form cues from the word *father* activated her conceptual category “father,” which contained the knowledge that a father is some years older than his child. Epistemic cues from this knowledge interacted with the hearer’s perceptions of the two men. They ruled out the younger looking man and ruled in the older looking one, thus resolving the pointing gesture through lateral disambiguation.

10.2 Knowledge about Unperceived Nonlinguistic Phenomena

While the hearer in section 10.1 needed epistemic cues to determine the target, that target was either perceivable or, where it constituted a location, its boundaries were perceivable. In this section, the target is not perceived, and epistemic cues help to determine it.

In the first three subsections that follow, the target is a location—indicated by the locative trigger *here* or *there*—whose position and/or boundaries are not perceivable, and the hearer needs epistemic cues from his knowledge about phenomena and space to imaginably determine them. Environmental cues from the hearer’s perception of his surroundings can interact with those epistemic cues to different degrees. In these next three subsections, we divide the cases we consider into groups requiring progressively less perceptual information. These three subsections thus join with the preceding section to present a steadily decreasing involvement of perception.

In the fourth subsection, the target is not a location but an entity, one whose identity is not perceivable, and the hearer needs epistemic cues from his knowledge about phenomena to help determine it.

10.2.1 The Unperceived Is Integrated with the Perceived

We begin with where the hearer’s perceptions play the greatest role in his targeting process. Here, the targeted location is situated within the hearer’s perceivable surroundings. And these surroundings provide environmental cues that interact directly with epistemic cues from the hearer’s knowledge store to help him set that location’s boundaries. The targeted locations illustrated here involve only the visual modality. They comprise respectively the ambient area around the terminus of a speaker’s pointing gesture (a gestural cue—see section 6.6.1) and the vicinal region around a speaker’s site (a corporal cue—see section 6.1).

For the gestural case, then, consider again the “horseshoe/hubcap” examples in (1:55). There, the speaker pointed toward a rural road some twenty yards away. The speaker used the cleft locative trigger construction *That’s where* to target a region in which a galloping horse’s shoe in (1:55a) and a speeding car’s hubcap in (1:55b) had sailed off through the air and then traveled along the ground before coming to rest.

The hearer had to imaginally construct the different boundaries of each region. For this to take place, epistemic cues from his beliefs about the ballistic properties of certain objects flying off at particular speeds had to be integrated with gestural and environmental cues indicating a particular spot on a straight road oriented at a certain angle. He may thus have ended up conceptualizing the locative target in both cases as an elongated volumetric region centered on the gesturally indicated spot and roughly aligned with the road but, in the case of the speeding car, as a region substantially wider and longer.

To illustrate the corporal case, consider again the example of (6:7), where a mother said *Pull your wagon over here* to her young son standing some thirty feet away. This example is here altered so that the mother is now in their garden on her knees digging up carrots. The son will find environmental cues in his perception of the spatial properties of all these elements, including himself and his wagon. He will integrate these with epistemic cues from his knowledge about where a wagon can be freely wheeled and where it should be positioned for items to be loaded into it. With his mother's location providing the corporal cue, he will likely conclude that the vicinal region is an area of the ground free of carrot plants, roughly five feet in diameter, and adjacent to the side of his mother nearest him. He will likely not conclude that his mother's corporal trigger *here* was intended to target, say, the whole of a circular area extending out from her with a twenty-foot radius, so that compliance with her instructions would entail pulling the wagon just ten feet toward her.

In the same vein, Hanks (1990) stresses that deictics in Yucatec Maya are sensitive both to physical structure and to knowledge about it, for example, as regards the traditional Mayan homestead and its subdivisions. Thus, the boundary around a location that a speaker of this language indicates gesturally or corporally reflects (in our terms) both environmental and epistemic cues, ones either directly visible or socially constructed on the basis of visible structure.

10.2.2 The Unperceived Is Extrapolated from the Perceived

In this section, the hearer's perceptions have some, but a lesser, role to play in his targeting process. Here, the targeted location can be within his directly perceivable surroundings but obscured there. Or it can be in an area continuous with his directly perceivable surroundings but outside them. In either case, the hearer can use epistemic cues from his knowledge pertaining to the physical structure of the world. Such knowledge allows the perceived portion of the environment to be imaginally extended through a cognitive process of **extrapolation** to unperceived portions.

The case where the targeted location is local but obscured was illustrated in the (5:62) example of a wormhole in the back side of an apple that the speaker and hearer could see from the front. The speaker said *That apple has a wormhole right !-there*, as she gestured by moving her fingertip along a "J"-shaped path. The hearer may have imagined

that a fictive copy of the speaker's finger moved past the apple and then curved back to jab toward the obscured location of the wormhole. This gestural cue may have activated the hearer's epistemic knowledge that an object is typically not a facade consisting just of what is visible, but continues around to form a closed volume with an unseen rear side, and that one can extrapolate from its visible to its nonvisible portion.

The case where the targeted location is in a neighboring but unseen area was illustrated in the "kite" example of (1:32). The speaker said *My kite landed way over !-there* and gestured by jabbing her finger forward and upward at a forty-five-degree angle. To the hearer, this gesture suggested a parabolic fictive projection heading up outside the visible terrain and curving down to land on the unseen targeted location. The hearer extrapolated from his actually seen surroundings and proceeded imaginally to the adjacent unseen targeted location through his knowledge about the contiguity properties of space and terrain.

In both the preceding examples where the target was nonvisible and extrapolated from the visible, the trigger *there* could be used to indicate the target because it is non-ostensive, that is, it does not require target perceivability (see section 2.3.3). But the trigger *that* cannot be used in any corresponding examples because it is ostensive, requiring that the target be perceivable. Thus, a speaker could not point in the direction of the apple (whether directly or in a "J") and say (1a). Nor could a speaker point in the direction of the kite (whether directly or parabolically) and say (1b).

- (1) a. *That's a wormhole in the apple.
- b. *That's my kite way out in the woods.

Extrapolative epistemic cues like those just seen can be activated not only by certain gestural cues, as in the last two examples, but also by certain corporal cues. This was seen in the example of (6:2a) where the speaker, without gesturing, said *There are lots of restaurants around here* to a visitor in her house. The visitor used epistemic cues from his knowledge of how urban terrain might extend unseen out from a visible house interior, and combined them with epistemic cues from his knowledge about restaurant size and distribution, to end up with an imaginal vicinal region of several miles' radius surrounding the house. Unlike the "wagon" example where the hearer could see both the speaker's location and the targeted vicinal region around her, the hearer here could see the speaker's location but not the targeted region.

10.2.3 The Unperceived Is Independent of the Perceived

In the final circumstance, the hearer's direct perception of his physical surroundings has no role in his determination of a targeted location other than to suggest that it is not situated there or in neighboring areas. Instead, the hearer must imaginally construct a cognitive representation of the targeted location on the basis of epistemic cues, ones in part activated by lexical cues.

This imaginal process was seen in the (6:2b) example where a pilot radioed in the message: *The radiation is strong everywhere here*. The hearer had to use epistemic cues from his beliefs about air flight and radiation's spread in open air to conceptualize the targeted location as a roughly spherical volume some miles in radius around a point at cloud height. But the hearer was unable to spatially relate the targeted location to his own location. This was because its particular position within the overall global environment was unknown to him and, further, it was depicted in terms of the speaker's location, which kept shifting in unknown ways.

Distinguishing between extrapolation and independence The difference between cases where something unperceived is extrapolated from the perceived and where it is independent of it needs exploration. It was just seen in section 10.2.2 that a speaker, while gesturing parabolically, could use the nonostentive trigger *there* to target a kite's unperceived location, provided that the hearer could use his epistemic knowledge of spatial continuity to extrapolate to it gaplessly from his own perceived location. Under the same proviso, perhaps a speaker can use the same trigger and gesture even to target a town several hours' drive distant, as while saying (2).

(2) I live over there in Chico.

But consider changing the radiation example so that the speaker is now not the pilot using the corporal trigger *here* but is instead a third person standing beside the hearer and referring to the pilot. This speaker cannot gesture and use the trigger *there*, as in saying (3).

(3) *The radiation is over there around the pilot.

There are seemingly two reasons for this failure. The first does not involve the fact that the location of the radiation is further from the hearer than that of Chico is, but rather that its particular position relative to the hearer is unknown and potentially shifting. The second reason is that—although nonostentive *there* does not require a perceivable target—a different constraint does apply to it. If it targets an unperceived location, the hearer must be able to use his epistemic understanding of spatial continuity to conceptually extrapolate to it from his own perceived location—something that he here cannot do because the targeted location is unknown and potentially shifting. To provide a term for this constraint, we will say that although the trigger *there* is non-ostentive, it must nevertheless be **extrapolative**. The trigger cannot be used to target a location that is “independent” of such extrapolation.

10.2.4 The Unperceived Is an Entity, Not a Location

So far, the unperceived targets have been locations, and epistemic cues to their positions and boundaries have, where feasible, come from the hearer's knowledge of phenomena and spatial structure. But an unperceived target can also be an entity, one

whose positioning and bounding are not at issue. In this case, epistemic cues from a hearer's knowledge of phenomena can instead help determine the target's identity. We illustrate this case with two examples whose unperceived targets have not previously been in reference, and whose epistemic cues come respectively from general and from local knowledge.

Suppose first, then, that the hearer has struck up a conversation with a stranger alone who then says (4). The trigger *we* indicates that the target consists of the speaker plus one or more others, but no such others are perceivable in the physical surroundings, nor referred to in the prior discourse. The hearer's general knowledge includes the fact that an adult often lives together with a spouse and perhaps children. Epistemic cues from this knowledge lead the hearer to imagine such unperceived others together with the speaker to constitute the target.

(4) I work downtown, but we live in the suburbs.

Suppose next that a hearer about to enter his workplace in late morning encounters a colleague on the sidewalk who then says (5). The target of the trigger *he* again is not perceivable in the physical surroundings and has not been referred to before. But now epistemic cues from the local knowledge shared by the two collocutors suggest that the target is the boss that they have in common and whose negative personality traits they are both familiar with.

(5) Steel yourself. He's been on a rampage all morning.

10.3 Knowledge about Linguistic Phenomena

In the foregoing sections, epistemic cues to a speech-external target rested on what was called nonlinguistic knowledge. As noted, this consisted of basal knowledge about first-order nonlinguistic phenomena. Here, this included knowledge about a horse's appearance and vocalizations, a father's relative age, a mist's shape and positioning, objects' ballistic properties, a wagon's access to a garden, a terrain's extension, restaurants' spacing, and radiation's spread.

But a hearer can also be helped to determine a speech-external target by epistemic cues based on linguistic knowledge. This includes the collocutors' common knowledge about the lexicon and grammar of the language they are speaking together, and their knowledge about the principles governing discourse, whether discourse in general or the discourse of their current interaction. As noted, this can be regarded as meta-knowledge because it is employed to refer to first-order phenomena.

The next two examples illustrate common knowledge about discourse. This knowledge includes a particular application of Mithun's (1987) principle of **newsworthiness**. In this application, a speaker aims to avoid presenting as new information something that the hearer would be generally assumed to know already, or that the speaker

believes that that hearer in particular knows already. Knowing the speaker to be governed by this principle, the hearer can in turn use the speaker's utterance choices as guides for her targeting. In this interaction, both collocutors use reasoning-based cue processing (see section 1.5.3).

10.3.1 General Discourse Knowledge

To illustrate the case of general discourse knowledge, suppose that two zoo visitors are in front of an enclosure with a giraffe and a straight-horned antelope standing close together and one says (6) while pointing broadly at the pair of animals.

(6) That's an oryx.

This is yet another case of lateral ambiguity. But this time, disambiguation is provided by epistemic cues. These could play a role in either of two ways. First, they could be cues from knowledge about the newsworthiness principle. The hearer would realize that a giraffe would be one of the items that she would be expected to know, and hence not need to be informed about. In our terms, she would be expected to have an effective category for a giraffe that included definitive information about its appearance. The hearer would reason that the speaker could not have been informing her about the giraffe and hence must have been referring to the other animal in the pair pointed at.

Alternatively, the epistemic cues could come from knowledge of the counterfactual principle (see section 1.5.3). The hearer may have first wondered if the speaker was informing her that “oryx” is another name for a giraffe. But she would then reject this possibility since the speaker in that case would have had to formulate his utterance in a way that acknowledged *giraffe* as the standardly known name for that animal, perhaps by saying something like *That's an oryx—another name for a giraffe*.

10.3.2 Local Discourse Knowledge

In this last example, the collocutors realized they shared certain general knowledge—the widespread familiarity of giraffes and their linguistic labels—which helped the targeting process. But they can also realize that they share certain local knowledge based only on their own interactions, which again can help targeting.

To illustrate, consider a change in the heraldry example in (5:75). In that original example, the museum guide first used a lax pointing gesture to indicate the whole of the shield on exhibit while saying *That's an escutcheon*, and then used a precise gesture to indicate the smaller emblem contained within it while saying *That's a saltire*. Faced with scope ambiguity, he thus exploited the precision parameter—using two different degrees along it for his gestural cues—to provide disambiguation.

But in the revised version, the guide has already named the escutcheon and previously shown exemplars of it to the visitors. In the present communication, then, he says solely *That's a saltire* and only laxly points toward the exhibit. The speaker will

have reasoned: I am aware that the hearers already know what an escutcheon is, and I assume they realize my awareness of this, so I can simplify my gesture accordingly, relying on the hearers' ability to reason about this on the basis of this knowledge. Complementarily, each hearer will reason: the speaker is aware that I already know what the word for the larger containing object is, so he cannot be informing me about that object, and must instead be informing me about (i.e., targeting) the smaller contained entity. Thus, each hearer here uses epistemic cues from her knowledge of newsworthiness in locally shared discourse to disambiguate the scope ambiguity.

10.4 Epistemic Cues to a Speech-Internal Target

A hearer can use epistemic cues from his knowledge store to help him determine not only speech-external targets, as addressed so far, but also the speech-internal targets addressed here. The same approximate division between nonlinguistic and linguistic knowledge employed in the foregoing analysis is also applied here respectively in the next two sections.

10.4.1 Knowledge about Nonlinguistic Phenomena for Speech-Internal Use

Sections 10.1 and 10.2 treated a hearer's knowledge of nonlinguistic phenomena along a cline of their involvement with the hearer's current perception of the speech-external environment. But in the speech-internal domain, none of the nonlinguistic phenomena that become activated in the hearer's knowledge store pertain to anything being perceived and so correspond to the low end of the cline (illustrated by the abovementioned "radiation" example). Accordingly, the hearer here does not experience a percept, but cognitively weaves his knowledge about the activated phenomena into an imaginal construct. Thus, we do not here use degrees of perception to organize our analysis of nonlinguistic knowledge for speech-internal use. Instead, we simply cite three processes that epistemic cues were earlier seen to be engaged in for a speech-external target and show speech-internal analogs.

A higher conceptual level In the "riding" example of (1:59a), a co-form cue from the word *exertion* activated the corresponding category "exertion" in the hearer's store of lexical knowledge. He then combined further epistemic cues from his knowledge about bicycling along country roads with environmental cues from his perception of the scene before him to form a conceptual complex at a higher conceptual level—there, a further-knowledge level. Within that conceptual complex, he narrowed down to something that might correspond to "exertion" to take as the intended target. We now see that epistemic cues can function analogously in the speech-internal domain, as in the discourse sequence in (7).

- (7) a. I saw a car turn left and drive into a bus.
 b. Luckily, no one was hurt in that collision.

Here, a co-form cue from the word *collision* activates the corresponding category “collision” in the hearer’s store of lexical knowledge. This category includes such knowledge about nonlinguistic phenomena as that of one moving vehicle impacting with some hard object, commonly another vehicle, strongly enough to damage one or both of them. The hearer now does not try to perceive environmental cues that correspond to the category in physical speech-external space, but tries to detect them in the referents of prior speech elements. No single morpheme in (7a) has a referent matching the category. But he combines further epistemic cues from his knowledge about vehicles in traffic with these referents to form a conceptual complex at a higher conceptual level. Within this conceptual complex—which might be at an immediate-pragmatic level—he narrows down to what might correspond to a “collision” and takes that as the intended target.

Target bounding In the first example of section 10.2.1, epistemic cues interacted with co-form cues and gestural cues to help the hearer imagine the size and shape—hence, the boundary—of a speech-external target: a locative region in which either a horse-shoe or a hubcap was thrown off through the air and slid to rest along a road. But epistemic cues can serve the same role in imagining a speech-internal locative target. This is seen for (8), a speech-internal counterpart of the original horseshoe/hubcap example of (1:55).

- (8) a. A horse galloped past a point along the old country road this morning
 and lost a shoe there.
 b. A car sped past a point along the old country road this morning
 and lost a hubcap there.

The trigger *there* induces the hearer to imaginally construct a location as target around the “point” referred to in each sentence. Co-form cues from forms referring to a galloping horse and lost shoe in (8a), or to a speeding car and lost hubcap in (8b), activate the hearer’s knowledge about the different velocities and objects in flight. Much as in the speech-external version, epistemic cues from this knowledge guide the hearer’s imaginal construction of the targeted region: an elongated volume roughly aligned with the road that is shorter and narrower in the former case, but longer and wider in the latter.

Selection among target candidates In the second example of section 10.1 where a speaker pointed toward a log in the middle of a lagoon, epistemic cues interacted with co-form, gestural, and environmental cues to let the hearer select between two candidates for target status—the location atop the surface of the log or of the whole lagoon. But

epistemic cues can help in making the same selection where the two candidates are referred to speech-internally, rather than perceived speech-externally. We can illustrate with one speech-internal counterpart to the earlier example, where the speaker says either (9a) or (9b) and then says (9c).

- (9) a. A log lay in a lagoon. b. A lagoon surrounded a log.
c. An otter sunned itself there in the morning.

The epistemic cue from the belief that a creature can better sun itself while resting on a solid surface than while immersed in a liquid directs the hearer to regard the trigger *there* as targeting a location on the log, not the lagoon, though both are in reference. Since the hearer's targeting process is the same whether the speaker says (9a) or (9b), it clearly rests on epistemic cues, rather than on environmental cues from the syntactic roles of the referents' constituents.

For a comparable case, consider again the example in (7:55c) where the speaker said *I put the cup down onto the plate and broke it*. In accord with its semantics, the transitive verb *break* indicated that the referent of its direct object—here, the referent of the trigger *it* was something breakable. But presented with that sentence alone, the hearer could not resolve whether the trigger *it* was to target the cup or the plate, since his knowledge of crockery would indicate that both are readily breakable. But if the speaker instead says (10), the substituted word *table* activates the hearer's knowledge that tables are not readily breakable. Thus, epistemic cues from the hearer's knowledge of crockery and furniture lead him to select the referent of *cup* as the target of the trigger *it* out of the two candidates that it might have targeted.

- (10) I put the cup down onto the table and broke it.

Or again, consider this variant of the "number" example in (1:45).

- (11) a. X: The best number to reach me at is 383-4121.
b. Y: Could you repeat that please? c. X: 383-4121.

The trigger *that* in (11b) where Y is the speaker might readily be taken to target either the whole utterance in (11a) or just the phone number. But person X, the present hearer, uses epistemic cues from his knowledge that a phone number must be known exactly to be useful, and that a string of numbers is not always easy to catch the first time through, to conclude that Y's intended target is just the number and not the whole sentence. Thus epistemic cues here too are the key to selecting among target candidates.

Epistemic cue failure. In the three examples of the preceding subsection, earlier discourse contained several constituents that the trigger might target, and epistemic cues from the hearer's knowledge about nonlinguistic phenomena led him to the appropriate choice. Curiously, though, for a class of cases (still needing precise determination)

where the hearer must again use epistemic cues to associate the trigger with the appropriate target, the utterance is infelicitous.

To illustrate, consider again the last speech-external example of section 10.1, where the speaker pointed with lateral ambiguity to a group containing two men, one looking older and the other younger than herself, while saying *That's my father*. Epistemic cues from the hearer's feature category "father"—with the information that a father is older than his child—provided disambiguation and had the hearer settle on the older man as the target. One speech-internal counterpart of this situation appears in (12).

- (12) a. As she got off the train, a man older than herself
and a man younger than herself were waiting for her in the station.
b. *That / *He was her father.

It might have been thought that, analogously to the speech-external case, either of the triggers shown at the beginning of (12b) would "point" with ambiguity toward the noun phrase conjunction in (12a) containing two nominals, and that the same epistemic cues from the feature category "father" would provide disambiguation, allowing the hearer to settle on the referent of one of the nominals—*the man older than herself*—as the target. It is perplexing, then, that (12b) is infelicitous, or ungrammatical, even though reasoning on the basis of knowledge about relative age would resolve the targeting ambiguity.

The same is seen in the next example where a single speaker first says (13a) and then says either (13b) or (13c). Logically, the trigger *him* in (13b) should target the son in (13a), and the trigger *he* in (13c) should target the father in (13a), but both alternatives are again infelicitous.

- (13) a. A father and son met for dinner in a restaurant.
b. *The older man handed him a gift. / c. *He handed the younger man a gift.

This infelicity cannot simply be attributed to the fact that the nominal to be targeted is conjoined with another nominal in a larger noun phrase. As (14) shows, epistemic cues from knowledge about categorization (a Parcheesi set is a game) does allow the trigger *that* in (14b) to target just one of the conjuncts (the Parcheesi set) within the larger noun phrase in (14a). The preceding epistemic failure, then, remains a puzzle.

- (14) a. We got our daughter a Parcheesi set and a dictionary for her birthday.
b. That was the game she'd wanted.

10.4.2 Knowledge about Linguistic Phenomena for Speech-Internal Use

As where the target is speech-external, a hearer can be helped to determine a speech-internal target by epistemic cues from her linguistic knowledge. As before, this includes knowledge she shares with the speaker about the lexicon and grammar of their language, as well as about general discourse principles and their current interaction.

We begin as before with discourse management involving the newsworthiness principle. Our illustration, though, involves a variant of this principle in which the speaker requests information instead of providing it. The speaker would not request as new information something she would be generally or currently assumed to know already. Consider the cross-speaker example in (15).

- (15) a. X: The farmer provided some silage for the cow. b. Y: What's that?

As speaker in (15b), person Y intends her trigger *that* to target the referent of one of the constituents in the (15a) utterance of person X, but no lexical cues in her question help narrow down the pool of candidates. However, person X, now as hearer, uses epistemic cues from his common-ground knowledge of newsworthiness to reason that, like most adult English speakers, person Y already knows the referents of the nouns *farmer* and *cow* as well as that of the verb *provide* and so could not be asking about the meaning of those constituents. The only candidate left is the referent of the noun *silage*, which X concludes is the speaker's intended target. Person X is thus led to the target by epistemic cues from linguistic knowledge.

We treat this as linguistic knowledge, rather than as nonlinguistic knowledge about concepts generally, because speaker Y's question rests on the absence of the noun *silage* from her lexicon, not on the absence of an understanding of the concepts it refers to. Thus, if person X had instead said (16a), in which the referent of *silage* is expressed with lexical forms familiar to person Y, then any further question person Y has about the utterance cannot be felicitously expressed as in (16b).

- (16) a. X: The farmer provided some preserved plant matter for the cow.
b. Y: *What's that?

Epistemic cues to a target can also arise from linguistic knowledge about lexical items, where these—in accord with construction grammar—are understood as constructions with particular phonological, syntactic, semantic, and pragmatic properties. This was already seen in the mare example in section 1.3.2. The hearer's linguistic knowledge of the adjective *dappled* used by the speaker included the fact that it had two main meanings, one of them requiring accompaniment by constituents referring to light or shade. The absence of such accompanying constituents yielded the epistemic cue that the other meaning was intended. And that was enough additional information for the hearer to select just one of the two remaining candidates as the intended target.

Finally, epistemic cues to a target can arise from linguistic knowledge about grammatical indicators of comparison, in conjunction with certain aspects of reasoning. Consider the next example—adapted from Mitkov (1999)—in which the speaker first says (17a) and then goes on to say either (17b) or (17c).

- (17) a. Barb drove from the park to the club.
 b. Chad !-also left there. c. But Chad !-left there.

In (17a), the preposition *from* indicates that the referent of its object, the ‘park’, is a point of departure, while the preposition *to* indicates that the referent of its object, the ‘club’, is a point of arrival. Further, in both (17b) and (17c), the verb *leave* indicates that the referent of its object—the target of the trigger *there*—is a point of departure. Both these sentences also have grammatical indications of comparison. However, these indications are semantically opposite. The hearer has linguistic knowledge of their semantics and of how to establish the comparisons they indicate between a current referent and a prior referent.

The hearer thus knows that the particle *also* in (17b) indicates that the point of departure for Chad was the same as that for Barb. The sentence in (17a) indicates that one endpoint of Barb’s path is a departure while the other is an arrival, so the hearer concludes that the location at the departure endpoint, the park, is the target of the trigger *there*.

However, the hearer of (17c) knows that the contrastive stress on the verb *left*, in alliance with the contrastive conjunction *but*, indicates that Chad’s act of departing is the opposite of Barb’s act of departing and is hence like her act of arriving. The hearer thus concludes that the location targeted by the trigger *there* is Barb’s point of arrival, the club.

In both cases, then, epistemic cues from the hearer’s linguistic knowledge of how certain grammatical constructions operate lets him single out the target from the two target candidates in (17a). Note that Mitkov invokes a notion of “semantic alignment” to explain why *the park* is the antecedent of the anaphor *there* in his equivalent of our (17a)–(17b) sequence. But our fuller example shows that such a notion is not necessary here. The hearer need only search through the prior discourse for reference to a point of departure or to its opposite, a point of arrival.

10.5 In Sum

An epistemic cue is any information that a hearer derives from her own knowledge that then helps her determine the speaker’s intended target. The term “knowledge” here is meant to apply broadly. It covers both explicit (declarative) and implicit (procedural) knowledge; both “knowledge” and “belief”; both long-held and recently acquired knowledge; both general and local knowledge in the collocutors’ common ground; and both nonlinguistic and linguistic knowledge. Nonlinguistic knowledge is basal knowledge about first-order phenomena. Linguistic knowledge, then, is meta-knowledge about the lexicon and syntax of a language and about the principles of discourse management that the collocutors use to represent the first-order phenomena.

Linguistic knowledge about discourse management often involves knowledge of Mithun's newsworthiness principle and of our counterfactual principle.

The use of epistemic cues shows extensive parallelism across the speech-external and speech-internal domains. In both domains, epistemic cues can help a hearer find a target within a higher-level conceptual complex, set a boundary around a locative target, and select the target from competing candidates. And largely the same epistemic cues from both nonlinguistic and linguistic knowledge are used in both domains.

V Temporal Cue Categories

Every element of the targeting process has temporal properties, including its location on the timeline, its duration, and its temporal relations to other such elements. Some of these temporal properties can serve as cues that help the hearer determine the speaker's intended target. These constitute the group of "temporal cues," the fifth and final group in our analysis.

Such temporal cues can be divided into two categories on the basis of whether they are temporal properties of a particular trigger or of elements around the trigger. The former category is that of "chronal cues," treated in chapter 11, while the latter is that of "perichronal cues," treated in chapter 12.

11 Chronal Cues to a Target

In the speech-external domain, a chronal cue is the temporal location of the trigger on the speech-external timeline. That is, it is the point in time at which the trigger is physically manifested by the speaker's utterance of it. As seen in section 2.3.1, we call this temporal location the "trigger moment" and represent it with the capitalized form "Now." In terms of earlier distinctions, a chronal cue is not intrinsic to the trigger providing it but is contingent on when the trigger is uttered (see section 2.3). And it involves the productive type of cue adequacy process (see section 1.5.1) in that it rests on when the speaker opts to utter the trigger.

A trigger that, in its current reading, is lexicalized to require the use of its own temporal location as a chronal cue will be called a **chronal trigger**. Any other trigger of course also has a temporal location, but that is not used as a cue to the target.

In the main, the target of a chronal trigger is a particular portion of time, what will be called the **chronal interval**. The chronal interval contains or coincides with the trigger moment. Its duration can range from very long down to the limiting case of just the instant of the trigger moment. This duration of the chronal interval is the basis here for partitioning speech-external chronal targeting into three major divisions. The chronal interval is **supersentential** if it is longer than and includes the sentence that the trigger appears in. It is **subsentential** if it is shorter than and included within that sentence. And it is **cosentential** if it is coextensive with that sentence. These three divisions are treated in order in the next three sections.

A chronal trigger can thus be seen to interrelate three temporal factors. It provides a cue, the chronal cue, whose information is temporal—namely, its own location on the timeline. Its target is temporal, namely, an interval of time—the chronal interval—not, say, a physical object. And the attributes it ascribes to this target are temporal—the target's duration and temporal location—where the latter consists of its being centered on the trigger moment.

In the speech-internal domain, the chronal cue is the temporal location along the speech-internal timeline of an event referred to in the discourse before or after the trigger. This trigger, in turn, is a chronal trigger if it is lexicalized to require the use of such

an event's temporal location as the chroral cue. Apart from these differences, speech-internal chroral targeting largely parallels the speech-external type. It will be examined in section 11.4.

11.1 Supersentential Chroral Interval

When a chroral trigger speech-externally targets a supersentential interval, it invokes a structural schema containing three temporal locations in a particular relationship. This schema is highly analogous to that for a corporal trigger (see chapter 6), the one being in time and the other in space. The three locative analogies, as well as differences, can be outlined as follows.

For the first analogy, the speaker's spatial location, that is, the corporal cue (represented by "Here") has its counterpart in the trigger's temporal location, that is, the chroral cue (represented by "Now"). One difference, though, is that the hearer prototypically uses perceptual access to the speaker's location within space to single it out, but uses interoceptive access to the trigger's location along the timeline to single it out (see section 1.5.1).

For the second analogy, proximal triggers in both cases target a location that surrounds the cue. The main proximal corporal trigger *here* targets an area of space—the vicinal region—that constitutes a spatial location containing the speaker's location. Correspondingly, the main proximal chroral trigger *now* targets an extent of time—the chroral interval—that constitutes a location along the timeline, one that contains the trigger moment, in other words, passes through it. (The chroral interval might alternatively have been termed the "vicinal interval" to express the parallelism.)

For one speech-external difference, though, the distal spatial trigger *there* has a corporal usage (albeit a less frequent one) in targeting a region outside the vicinal region—that is, the extravicinal region—as in the "ghost" example of (6:1b). But the distal temporal trigger *then* has virtually no chroral usage in targeting an interval outside the chroral interval—that is, there is no "extracorporal interval"—as seen in the "pizza" example of (2:79b). This temporal trigger can be used only if the speaker gestures at a spatial representation of time—as on a calendar—as in the "takeover" example of (2:80).

For the third analogy, the speaker's utterance generally specifies a Figure that occupies a location relative to the location surrounding the cue. Where the trigger is corporal, the Figure is an entity located with respect to the vicinal region. Where the trigger is chroral, the Figure is an event located with respect to the chroral interval.

To highlight these and still further parallels that supersentential chroral targeting has to corporal targeting, the presentation here will largely follow the earlier one, including some similar wording, though certain differences will require alterations. In addition, the present section might best be read along with the material under the headers

Degree of temporal remove in section 2.3.1 and Direction of temporal remove in section 2.3.2, which will largely not be repeated here.

11.1.1 The Figure's and Hearer's Relations to the Chronal Interval

Section 6.2 addressed the range of relations that a Figure or a hearer could have to the vicinal region targeted by the corporal trigger *here*, and we here address some of the chronal counterparts. In English, the two main chronal triggers that target a supersentential interval are *now* and the present tense, and both will appear together in the first series of examples.

The figure's coextensive relations to the interval We first consider the case where the Figure event is at least as long as the chronal interval and extends through it (the case where the Figure event is shorter is addressed in the two upcoming subsections whose headers begin with: A punctual Figure event).). Such a coextensive Figure event can be a continuous state as in (1a), a continuous activity as in (1b), a multiplex (iterative) activity as in (1c), a bounded action as in (1d), a habitual action as in (1e), or the nonoccurrence of an activity (which then behaves like a continuous state) as in (1f). Figure events like these that are distributed temporally over a chronal interval are, if anything, more varied than their corporal counterparts. Those counterparts were Figure entities distributed spatially over a vicinal region, as seen in section 6.2 and illustrated there by restaurants and radiation.

- (1) a. The bathroom is free now. b. It's raining hard now.
 c. The lighthouse beacon is flashing now. d. I'm setting the table now.
 e. She eats meat now. f. He isn't coughing now.

The hearer's limited relations to the interval In the corporal case (see section 6.2.2), the hearer had a range of possible relations to the vicinal region that rested on his having a physical manifestation in space. These relations differed with respect to his motive state (stationary or moving), his location as remaining inside or outside the region or as shifting across its boundary, and his having a perspective point that did or did not enable him to perceive the speaker, region, or Figure. But in the chronal case, the hearer's temporal manifestation, like that of everything else, progresses along the timeline. We thus posit that the hearer has only a limited relation to the chronal interval. His temporal location and perspective point are simply at the trigger moment when the trigger occurs. He accesses that moment interoceptively, while accessing the earlier portion of the chronal interval only in memory or imagination, and the later portion only in imagination.

For example, suppose that the hearer looks out the window at the exact moment that the speaker says (1c) about the lighthouse beacon. He may directly perceive a flash

occurring at the instant that the trigger is uttered. But any prior flashes he includes within the interval that he conceptually constructs because of the supersentential trigger *now* are placed there from his imagination or working memory (if he had seen earlier flashes in the series). And any upcoming flashes are placed there from his imagination through a cognitive process of future projection.

11.1.2 Three Phases in Processing a Chronal Trigger

Again using a regularized description, we will say that, when a chronal trigger is heard, a hearer's cognitive processing consists of three consecutive phases: determining the temporal location of the trigger's occurrence, of the chronal interval, and of the Figure event. These three phases parallel those in the corporal case (see section 6.3). We examine these phases in the next three numbered sections.

We can note that the three chronal locations meet the two conditions in section 1.7.2's characterization of a temporal location, much as the three corporal locations did for section 1.7.1's characterization of a spatial location.

11.1.3 Phase 1: Determining the Trigger's Temporal Location

In the first phase of the chronal targeting procedure, the hearer is directed by a chronal trigger to determine the chronal cue—here, the temporal location of the trigger's own occurrence. The use of this location as a reference point was seen represented by the capitalized form “Now” in our analysis of the degree of temporal remove (see section 2.3.1). This phase amounts to the first stage of the targeting procedure, the cue-determining stage, when applied specifically to a chronal cue.

The hearer of a corporal trigger (see section 6.3.1) variously determined the speaker's location in space through vision or another exteroceptive sensory modality—or, where such perception was not feasible, through imagination. By contrast, the hearer of a chronal trigger uniformly determines the location of the trigger in time through his interoceptive sense of temporal progression. He thus never needs to search for or imagine the trigger moment but directly equates it with his cognitively noted experiential present.

The locations of successive trigger moments In the corporal case, a speaker performed serial targeting if, while moving along, she uttered the same corporal trigger *here* at different spatial locations to target different vicinal regions. This is what the ornithologist did in the “camera” example of (6:9). Comparably in the chronal case, a speaker can perform serial targeting if, as time passes, she utters the same chronal trigger *now* at different temporal locations to target different chronal intervals. The speaker does this in (2) as she calls out from the kitchen to a friend waiting for coffee in the dining room.

- (2) a. I'm washing out the mug now. . . .
- b. And I'm drying the mug now.

The ornithologist's corporal camera example required a repetition of the proximal trigger *here* and did not allow any expression of contrast by first using *here* and then the distal *there*. So too in this chronal example, the speaker must repeat the proximal trigger *now* and cannot later, for contrast, switch to the distal trigger *then*.

11.1.4 Phase 2: Determining the Interval's Temporal Location

After the hearer has noted the temporal location of the trigger moment, the second phase in his chronal targeting procedure is to determine the temporal location of the chronal interval around that trigger moment. This interval's location involves its position along the timeline and its boundaries—that is, the distance of its beginning and ending from the trigger moment—which in turn set its duration. Since this location is the target, this phase amounts to the second stage of the targeting procedure, the target-determining stage.

In some cases (see the “meditating” example of (4)), a hearer can interpret a chronal interval as having begun at the point of some event he recalls perceiving. But generally, the chronal interval is a conceptual construct that the hearer generates using three processes and the cues of certain categories, as discussed next.

Three processes in constructing a chronal interval The three processes are basically the same as in the corporal case. In the first process of excerpting, the hearer prepares to separate out one portion of time—as yet nondefined—from the rest.

In the second process of centering, the hearer conceptually positions the interval so that it is around the trigger moment (whose location was determined in phase 1) so that this moment is roughly at its center. This process differs in one respect from corporal centering. The vicinal region in space had an inner boundary that prototypically abutted adjacently on the surface of the speaker's body and did not penetrate it. But the chronal interval in time extends right through the moment of the trigger's occurrence. For one account of the difference, the usual conceptualization of entities existing in space is that they do not interpenetrate. But the usual conceptualization of events in time is that, if they are concurrent, they do occupy the same point or points of time. In effect, that is, they temporally interpenetrate.

In the third process of bounding, the hearer conceptually sets the outer boundaries of the interval. In the corporal case, the hearer set the size, dimension, and disposition of the vicinal region, and we consider their counterparts here.

Size bounding. The centering process here rested on just one cue category, that of the chronal cue (the trigger's temporal location). But the process of bounding an interval for size rests on a range of other cue categories. These are next considered individually.

—Co-form cues in bounding an interval. Much as in the corporal case, a hearer may find cues on where to conceptually place boundaries around a choral interval from co-forms occurring near the choral triggers *now* and the present tense in the speaker's utterance. He typically combines such co-form cues with epistemic and other types of cues to reach the immediate-pragmatic level as an aid in the boundary placement.

Thus, the hearer of example (1d) found co-form cues in the reference to table setting, combined them with epistemic cues from his knowledge store about how that activity typically proceeds, and perhaps combined them further with environmental cues from sounds emerging from the dining room that suggested a certain rate of progress. From these cues, he may have placed the choral interval's boundaries at just a few minutes to either side of the trigger moment.

The boundaries of the supersentential intervals considered here are at least outside the trigger's sentence but, beyond that, the interval can be of any duration, much as the vicinal region could be of any size, as seen in the "Europe" example of (6:10). Thus in the following three example sentences, the hearer will interpret the choral intervals targeted by *now* and the present tense as being successively longer, from minutes in (3a), to days or weeks in (3b), to geological eons in (3c).

- (3) a. (It was occupied, but) The bathroom is free now.
- b. (I had a cold, but) I'm well now.
- c. (It was the age of dinosaurs before, but) It is the age of mammals now.

—Environmental cues in bounding an interval. Environmental cues were just seen to help in boundary placement when combined with co-form and epistemic cues. But they can play a direct role when an environmental phenomenon perceived by the hearer leads him to align a boundary with that phenomenon. A corporal instance of this was seen in the "Cryptotronics" example of (6:11), where the outer wall of a building marked the boundary of a vicinal region. For a choral example, suppose a visitor standing outside a Zen center hears a gong and, some minutes later, is told (4) by an official. He is likely to conceptually place the boundary that begins the interval targeted by *now*, as well as by the present tense, at the time of the gong as it is registered in his working memory and to place the boundary that ends that interval at the time of a second gong that he expects to hear in the future.

- (4) They're meditating now.

—Perichronal cues in bounding an interval. In the serial targeting of the "mug" example in (2), the speaker produced two successive instances of the choral trigger *now* at different instants. She thus targeted two different choral intervals. But the hearer is unlikely to have regarded those intervals as overlapping. Much as in the corporal case, the hearer's imaginal placement of boundaries around those intervals would in part

have been governed by the “no-crossing” condition of the perichronal cues arising from their seriality (see section 12.1.2). Generally in chronal serial targeting, as the successive triggers occur further apart or closer together in time, the chronal intervals can be correspondingly longer or shorter, but still nonoverlapping.

Again as in the corporal case, for this nonoverlapping effect to hold, the two instances of targeting must be understood to constitute a series. Thus, suppose that the speaker’s second utterance had not been (2b) but rather (5), which would not be a member of a targeting series. Then the duration of the chronal interval targeted by its chronal trigger *now* would not be limited by the preceding chronal interval and, in fact, would here likely encompass it.

- (5) For some reason, the kitchen is really hot now.

—Core cues in bounding an interval. In some languages, corporal triggers can provide core cues that, without specifying any absolutes of magnitude, indicate that the chronal interval is relatively smaller or larger for the given context—that is, that its boundary should be placed closer in or further out. Such triggers are monomorphemic in some languages. But English has such multimorphemic forms respectively as *right now* (or *this very instant*) and *nowadays* (or *these days*, as well as *anymore* with negative polarity). These correspond to the corporal forms *right here* and *hereabouts* seen earlier. Simplex *now* and the present tense are neutral to the distinction, as was simplex corporal *here* before.

For example, on the phone with a friend asking about her immediate activities, a speaker might answer as in (6a), but she could not replace *right now* with *nowadays*. Conversely, describing a shift in someone’s fortunes, a speaker might say (6b), but is unlikely to replace *nowadays* with *right now* if she considers Rex’s circumstances stable.

- (6) a. (We had dinner and) we’re watching TV right now / *nowadays.
b. (Rex used to be poor, but) he’s quite wealthy nowadays / ?right now.

Dimension bounding. In the corporal case, a hearer could set a vicinal region as being effectively one-, two-, or three-dimensional (see section 6.3.2). But in the chronal case, a hearer’s choice is limited to setting the interval as one-dimensional (except when conceptualizing it as a zero-dimensional point).

Disposition bounding. In the corporal case, a hearer imaginally bounded a vicinal region so as to set its disposition, including its shape, clear-cutness, orientation, and ground-level relation. Of relevance to the chronal case, though, are only shape and clear-cutness and only the equidistance aspect of shape.

Thus, in the absence of cues to the contrary, the default imaginal setting for a chronal interval may be that it extends equidistantly out from the trigger moment. For

instance, the hearer of example (1c) may well have imagined that the beacon's flashing lasted about the same amount of time before and after the speaker's utterance. But divergence from such default equidistance can occur where cues do call for it. Thus, if the hearer heard the gong only shortly before the trigger in the meditating example of (4), he may well have assumed that the chroral interval would extend much further after the trigger than before it.

And as in the corporal case, the clear-cutness of a boundary exhibits a range. It can be quite sharp, as in the earlier example of a meditation period, begun and ended by a gong. The same holds for the example in (7), said by a ticket seller to a visitor. But the clear-cutness becomes progressively coarser on proceeding through the "bathroom," "well," and "mammals" examples in (3).

(7) The hour-long castle tour is in progress now.

11.1.5 Phase 3: Determining the Figure's Temporal Location

In the third phase of a hearer's chroral targeting procedure, after he has noted the trigger moment and imaginably established a chroral interval extending through it, he uses the available cues to decide on the temporal location of the Figure event with respect to that interval. We here examine in turn Figure events occurring outside the chroral interval and inside it (the reverse order from that for the corporal case in section 6.3.3).

A figure event outside the chroral interval In the corporal case, the location of a Figure entity outside a speaker's vicinal region was typically characterized in terms of its spatial relation to that whole region, which then tended to be conceptually reduced in size, potentially down to just the speaker's location. Correspondingly here, a Figure event can have a temporal location outside the chroral interval around a trigger moment. This location can then be characterized in terms of its temporal relation to the whole interval. That interval in turn tends to be conceptually reduced in size, potentially down to just the trigger moment itself. In that case, as in its corporal counterpart, we will say that the Figure's location is represented as a temporal "displacement" from the reduced chroral interval. A trigger that represents a Figure as displaced in this way will be called a **displacement trigger**. Our examples here will assume the limiting case, with capitalized "Now," as before, representing the trigger moment.

Under the header Degree of temporal remove (see section 2.3.1), a number of triggers were seen that targeted a temporal location outside the chroral interval, and we here reprise a selection of these—only ones with speech-external targets—to exemplify displacement. The table in (1) presents these triggers with their semantic representations in past/future pairings. All are displacement triggers.

- (8) Speech-external temporal displacement triggers
- a. <PAST> / <FUTURE>: ‘at a moment with a noncoincident degree of temporal remove before/after Now’
I washed / will wash the car.
 - b. just / immediately, right away: ‘at a moment with a hyperproximal degree of temporal remove before/after Now’
I just washed / will immediately wash the car.
 - c. recently / soon: ‘at a moment with a proximal degree of temporal remove before/after Now’
I recently washed / will soon wash the car.
 - d. T ago / in T: ‘at a moment with a T degree of temporal remove before/after Now’
I washed the car an hour ago. / will wash the car in an hour.

We can note that the tense triggers in (8a) can occur alone, but the past-oriented triggers in (8b)–(8d) must occur in conjunction with the past tense. For their part, the future-oriented triggers there can occur with the future or present tense (see the following discussion for the latter case).

A figure event inside the choral interval The corporal analysis in section 6.3.3 provided an integrated account of the patterns in which Figure entities might appear inside a vicinal region. But the corresponding choral analysis of the patterns in which Figure events can occur inside a choral interval is better divided into three parts, presented under the next three headers. The first of these three treats an extended Figure event (corresponding to the corporal “restaurants” and “radiation” examples), while the next two treat a punctual Figure event (corresponding to the corporal “ghost,” “wagon,” and “Fred” examples).

An extended figure event with now and the present tense. Given a choral interval extending through a trigger moment, one of the two main possibilities is that the Figure event is also temporally extended and is distributed over the interval. The original examples in (1a)–(1f) illustrated this case. Those examples each had two triggers—*now* and the present tense. Both these triggers targeted the same choral interval, and their core cues thus corroborated each other. In this regard, then, they have the same semantic representation, shown in (9) (repeated here from section 2.3.1).

- (9) now, <PRESENT>: ‘through an interval
with coincident-adjacent-proximal degrees of temporal
remove from Now’

Given that an English sentence requires a tense indication, the trigger *now* in this usage must cooccur with the present tense trigger. But the present tense trigger in this usage

can alternatively occur without the trigger *now*. In fact, all the sentences in (1a)–(1f) would have the same temporal structure if the trigger *now* in them were removed.

A punctual figure event with now. We just saw that the trigger *now* can target an extended chroral interval occupied distributively by an extended Figure event. But we here find that it can equally well target an extended chroral interval where the Figure event is punctual (or conceptually reducible to being punctual) and occurs at just one point somewhere within that interval. This usage, though, requires that the sentence contain one or two additional triggers that provide different information about the Figure's temporal location. One of these triggers must be a past or future tense trigger, which indicates that its target is a temporal point outside the chroral interval and that the Figure event occurs at that displaced point. But the interval that it targets is independent of the interval targeted by *now* and is conceptually reduced potentially down to just the trigger moment. An optional further temporal trigger can also appear that specifies the degree of that targeted point's degree of displacement into the past or future. Together, these two or three triggers provide complementary forms of information that help a hearer zero in on the Figure event's temporal location.

—The punctual event after the trigger moment. In the first illustration, the speaker is on the phone with a friend describing her performance of a punctual event of oven lighting. This event occurs after the trigger moment in (10). The sentence in (10a) has both the trigger *now* and the future tense trigger *will*.¹ The sentence in (10b) shows that an additional displacement trigger with future orientation, *soon* can also be included.

- (10) a. I'll turn the oven on now. b. I'll turn the oven on soon now.

—The punctual event before the trigger moment. The same punctual Figure event can also occur before the trigger moment, as in a sentence like (11a) with both the trigger *now* and the past-tense trigger *-ed*. In this case, though, such a sentence is felicitous perhaps only if its action is understood as one step in a sequence. Here, for example, the friend on the phone might be guiding the speaker through the steps of a particular recipe, one step at a time, starting with getting the oven lit. The sentence in (11b) adds a displacement trigger with past orientation, *just* (and may be a bit more colloquial than (11a)).²

- (11) a. Okay, I turned the oven on now. b. Okay, I just turned the oven on now.

—Complementary information. In both (10) and (11), by the analysis adopted here, the trigger *now* directs the hearer to conceptualize as its target a comparatively short bounded interval extending through that trigger's occurrence³ and to imaginally locate the punctual Figure event (the oven lighting) somewhere within that interval. At the

same time, a past- or future-tense trigger (and optionally an additional displacement trigger with the same direction of remove) directs him to conceptualize as its target a point before or after the trigger moment and to imaginably locate the punctual Figure event at that point. These two (or three) triggers thus provide different information about the temporal location of the punctual Figure event and, together in a sentence, they help the hearer narrow down to that location.

—Chronal interval size. On the basis of co-form and epistemic cues—as well as of core cues from any additional displacement trigger—the hearer approximately gauges the size of the chronal interval that contains the punctual event, as well as the size of the Figure event’s displacement from the trigger moment. This gauged size can vary greatly. In the preceding example, it was probably a matter of a few minutes but, in the following example, it might be up to several months.

- (12) a. His finances are in a mess, but he’ll finally put them in order now.
 b. His finances were in a mess, but he finally put them in order now.

A punctual figure event with the present tense. Where the Figure event is inside the chronal interval, we first saw that the trigger *now* and the present tense trigger together can target an extended chronal interval, with an extended Figure event distributed over the whole of it. We next saw that the trigger *now*—in conjunction with the future or past displacement trigger—can target an extended chronal interval, where now the Figure event is punctual and occurs at just one point along that interval. But comparably to this last use of *now*, we here consider whether the present-tense trigger itself—not simply a past or future displacement trigger—can equally well target an extended chronal interval, where the Figure event is punctual and occurs somewhere along it.

In the examples we use to explore this possibility, the Figure event will be represented by a verb phrase having punctual aspect (or lexicalized with punctual Aktionsart). We look at five circumstances with Figure events proceeding from the future into the past.

—First circumstance. In the first circumstance, the present tense trigger is generally, though not necessarily, accompanied by an expression of future displacement (such as the expression *next Monday* in (13)). The hearer construes the Figure event as occurring in the future and as being wholly punctual. The punctually aspected verb phrase can be in its simple form as in (13a) or in the progressive as in (13b). These can be taken as utterances by a speaker reporting on an upcoming business trip.

- (13) a. I leave town next Monday. b. I’m leaving town next Monday.
 c. I’ll leave town next Monday. d. I’ll be leaving town next Monday.

But the corresponding utterances in (13c) and (13d) with the future displacement trigger *will* are virtually synonymous. It could accordingly be argued that the English present tense trigger is a polysemous morpheme, and that one of its senses—selected in this first circumstance—in fact designates the future. If so, then the present tense trigger here behaves like a future displacement trigger targeting a punctual Figure event. It does not behave like the present tense trigger that was first seen targeting an extended chroral interval.

—Second circumstance. In the second circumstance, the present tense trigger can be, though is not necessarily, accompanied by the chroral trigger *now*. The hearer again construes the Figure event as occurring at a point in the future. But what occurs at that point is solely the direct literal reference of the punctually aspected verb phrase.

In addition, he conceptualizes the occurrence of a preparative phase that leads at least from the trigger moment up to that future point. In effect, the originally punctual Figure event is conceptually extended into the past to include this preparative phase in its overall compass. We will call this phase the **preparative preextension**.

The effective Figure event is thus no longer punctual, but instead it is extended over an interval. The present tense trigger here then, as originally, targets an extended chroral interval with an extended Figure event distributed along it.

The preparative preextension can be conceived to consist of one or more distinctive events. Or, if an Agent is to carry out the culminative Figure event, the preextension can consist simply of the period during which the Agent's intention to do so is in effect.

To illustrate, if a guest at a party goes up to the host and says (14), her utterance is not construed to mean that she is passing out through the front door at that instant, but rather that she is starting a preparatory lead-up to that actual exit. This lead-up could consist simply of her intention to exit soon. Or it could comprise several different events, such as those of making her good-byes and gathering up her things.

(14) I'm leaving (now).

Comparably, the utterance in (15)—heard uttered by a radio show host at the end of her program—did not mean that the employment contract was being signed as the host spoke, but rather that potential candidates for the job were being invited to apply for a selection that would ultimately lead to that moment of contract signing.

(15) We're hiring a development specialist (now).

—Third circumstance. For the third circumstance, we consider whether the present tense trigger, unaccompanied by *now* or any temporal displacement trigger, can target a chroral interval within which a punctual Figure event occurs exactly at the trigger moment. Subsentential targeting is not at issue here, since it requires a prosodic trigger. We can check this third circumstance by using the present tense with a verb like *enter*.

Such a “punctual verb” is generally construed as referring to a single punctual event when in the nonprogressive past or future, provided that it is not there interpreted as habitual or iterative.

Two usages of the nonprogressive present with a punctual verb do come close to a reading in which the verb’s action is copunctual with the trigger moment. One is the cosentential “sportscaster” usage, as in *And she crosses the finish line!* (see section 11.3). Even closer is the performative usage, as in a sentence like *Class is dismissed*, where the dismissal is enacted at the moment of the sentence’s utterance (Langacker, 1991). But in these two usages, the present tense trigger seems to directly target the moment in which the punctual Figure event occurs, rather than targeting a larger chronal interval within which a punctual Figure event occurs at the trigger moment. In any case, a third usage, the habitual reading, as in *He enters the bar every day at 3*, is inherently non-copunctual with the trigger moment.

Apart from these special usages, though, a punctual verb in the present must be in the progressive. And in that case, the referent of the verb is no longer construed as punctual, nor as being copunctual with the trigger moment. With the hearer’s perspective point located at the trigger moment, the referent instead undergoes a conceptual process of magnification (see section 1.7.2). It is then conceptualized as occupying an interval instead of just a point and as extending through the trigger moment. This conceptualization thus resolves into the original pattern (see section 11.1.1) in which an extended Figure event occurs distributively over an extended chronal interval targeted by the present tense trigger. The conclusion is that the present tense trigger cannot target a chronal interval where the Figure event is punctual and occurs at the trigger moment. For illustration, consider the progressive sentence in (16).

- (16) Ann is entering through the back door.

The hearer’s conceptualization here is not that Ann punctually flashes through the plane outlined by the door frame at the exact instant that the speaker utters the word *is*, which contains the componential present tense trigger. The action referred to by *enter*, rather, is conceptually stretched out. The hearer might imaginably extend the ‘entering’ concept in both directions to include Ann’s walk up to and beyond the door within its compass. Or the hearer might imagine that, as in a slow-motion film, the front boundary of Ann’s body meets the doorway plane, its depth progresses through that plane, and its back boundary in turn leaves the plane.

—Fourth circumstance. For the fourth circumstance, we consider whether the present tense trigger can support the reverse of preparative preextension, which was seen under the second circumstance. In such a mirror image conceptualization, the direct literal referent of a punctually aspected verb phrase occurs in the past, but it is treated as having a consequence that extends up to or beyond the trigger moment. Such a

conceptualization might then be correspondingly termed a **consequentive postextension**. Such a conceptualization does indeed exist, but the perfect construction is what expresses it, as in (17a). This utterance would be generally construed to mean that Greg's departure from the country occurred at a conceptually reduced moment in the past, but that the consequences of that punctual event—for example, his subsequent unavailability for certain desired interactions—are felt up to the present. This conceptualization cannot be expressed by the present tense, as attempted in (17b).

- (17) a. Greg has left the country. b. *Greg is leaving the country for a month already.

—Fifth circumstance. Finally, in the fifth circumstance—the mirror-image of the first circumstance—we consider whether the present tense trigger can be used, with or without an expression of past displacement, in an utterance meant to refer to a punctual Figure event occurring in the past. A construction of this sort is attempted in (18a) and fails, whereas the corresponding construction with the past tense trigger in (18b) is fine.

- (18) a. *He leaves / is leaving town last Monday / a week ago.
b. He left town last Monday / a week ago.

Under the first circumstance, we proposed that the present tense trigger could be used in referring to a future punctual Figure event because its polysemous range included a sense equivalent to that of a future displacement trigger. The proposal here, correspondingly, is that the polysemous range of the present tense trigger lacks a sense equivalent to that of a past displacement trigger.⁴

—General conclusion. If we survey its behavior in the five circumstances treated, we can reach a general conclusion about the semantics of the present tense trigger. Unlike the chroral trigger *now*, it cannot target an extended chroral interval in which a punctual Figure event occurs. Its use is wholly blocked if the Figure event is in the past, as in the fifth and fourth circumstances. Its use is licensed in the third and second circumstances, but there the Figure event is conceptually extended to an interval. And while its use with a future punctual Figure event is licensed for the first circumstance, that use can be attributed to its having a non-present sense within its polysemous range.

11.1.6 Where *Now* and the Present Tense Differ

The chroral trigger *now* and the chroral present tense trigger exhibit certain syntactic and semantic differences.

Syntactic differences For the first of two syntactic differences, the trigger *now*, as seen, can occur in the same sentence with the trigger for past or future tense. But insofar as the trigger for present tense is in a mutually exclusive set with those for the past and

future tense, it cannot cooccur with either of them (though constructions like that in *is going to* may be free of the constraint).

Second, as seen in (19), the trigger *now* has a syntactically nominal usage—one with the gloss ‘an interval containing Now’—parallel to the nominal usage of corporal *here* seen in the camera example of (6:9). The present tense trigger can in no way duplicate such a usage.

- (19) a. Now is a good time to do our taxes. b. The crisis began long before now.

Some semantic differences For the first of several semantic differences, we saw that, where both triggers target an extended chronal interval, a punctual Figure event can be represented as occurring at a point along that interval with *now*. But from the evidence presented here, this is not the case for the present tense.

Second, it was seen that the present tense trigger can be interpreted as having a directly future sense in its polysemous range. But this is a sense that the trigger *now* lacks. Third, complementarily, the polysemous range of *now* includes a sense not shared by the present tense. This sense might be roughly glossed as ‘so far and counting’, as in (20).

- (20) I haven’t been able to sleep well for two weeks now.

Semantic differences in contrast and attention Where the two chronal triggers target a chronal interval through which an extended Figure event is distributed, as was the case in the initial example sentences in (1a)–(1f) and in their joint glossing in (21), their semantic overlap is evident. Still, even here, the pair of triggers show two further semantic differences.

First, unlike the present tense, *now* seems to be intrinsically contrastive. It opposes the chronal interval against another generally adjacent interval. The Figure event that is expressed as occurring or not occurring in the chronal interval has the opposite polarity of occurrence in the other interval. This is seen in (21), whose sentences are in the habitual, where the difference may be most evident.

- (21) a. Bev eats meat. b. Bev eats meat now.
c. Bev doesn’t eat meat. d. Bev doesn’t eat meat now.

The positive sentence in (21a) has the present tense without *now*, and makes no suggestion of a period during which Bev did not eat meat—she may have eaten it all her life. But the corresponding sentence in (21b) with *now* specifically sets up a contrast set that opposes the current interval of meat eating with a non-meat-eating period. This alternate period can be explicitly placed in the past, as by adding *but she didn’t use to*, or in the future, as by adding *but she’s going to give it up*. In a complementary way, the sentences in (21c) and (21d) represent the Figure event as non-occurrent, so that the

now in (21d) sets up a contrast with a period with opposite (i.e., positive) polarity during which Bev did or will eat meat.

The semantic difference seems more muted in non-habitual present tense sentences, where the represented proposition is understood to be changeable by nature, incapable of indefinite persistence. For example, the hard rain in (1b) is not expected to last, and the report of the bathroom's availability in (1a) itself announces a change. The omission or addition of a *now* in these sentences accordingly seems to affect their meaning less.

To account for this semantic difference between the two chroral triggers, we note that the inclusion of tense in a sentence—specifically here, that of the present tense when it is appropriate—is obligatory, whereas that of *now* is optional. The inclusion of *now* is thus generally interpreted as a choice by the speaker for some effect—here, the contrastive effect cited. Contrarily, corporal *here* is not in competition with any corporal counterpart to the present tense trigger, and perhaps for that reason—though capable of taking part in a contrast—it does not seem intrinsically contrastive.

A further semantic difference between the two chroral triggers is attentional—specifically, the degree of salience these morphemes confer on their referent. The trigger *now* seems to call more hearer attention to the presence of a temporal dimension—specifically, the presence of a trigger moment and chroral interval—than the present tense trigger does. This difference too can be attributed to the optional as against obligatory character of the two morphemes.

11.1.7 The Nonscalarity of Chroral Now

Much as with the vicinal region targeted by the corporal trigger *here* (see section 6.4.2), the chroral interval targeted by the chroral trigger *now* is nonscalar. As seen in (22), it rejects scalar modifiers.

- (22) a. I'll turn on the radio now. b. *I'll turn on the radio very now.
 c. *I'll turn on the radio more now than I'll turn on the TV.
 d. *I'll turn on the radio 2 minutes more now than I'll turn on the TV.

In both space and time, this nonscalarity is in effect where the corporal region or chroral interval is conceptually unreduced. But where it is reduced virtually down to the speaker's location or trigger moment, as with a displacement trigger, scalarity can reenter. Thus, as seen in (23), the future displacement trigger *soon* does accept all the preceding scalar modifiers (see section 2.3.2 for further analysis of this).

- (23) a. I'll turn on the radio soon. b. I'll turn on the radio very soon.
 c. *I'll turn on the radio sooner than I'll turn on the TV.
 d. *I'll turn on the radio 2 minutes sooner than I'll turn on the TV.

11.1.8 The Figure Event as Target

Section 6.5 first showed that corporal *here* could at times be alternatively represented more analytically as by a phrase like *in this area* employing what was called a “corporal *this*.” The counterpart for chronal *now* was already seen under the Degree of temporal remove header in section 2.3.2. This counterpart includes not only what might be called “chronal *this*,” but also expressions like *the current* and *the present* placed before a nominal referring to a temporal interval of any length, as seen in (24).

- (24) a. Our division chief is ready to speak with you at this / the present time.
 b. The old supercontinent Pangaea is divided up
 in this / the current / the present geological era.

Section 6.5 also showed that corporal *this* could target not only a vicinal region, but also a Figure that fully occupied a vicinal region, as in examples like *this city* and *this economy*, seen in (6:31). The chronal counterpart also occurs. Thus, the chronal trigger *now* in (25a) targets an interval occupied throughout by the indicated Figure event, a state of silence. But the chronal expression *the current* in (25b), which directly targets the Figure event, still indicates that the same chronal interval is occupied by that event. The trigger in (25c) can correspondingly be taken as chronal *this*. (But it might equally well be interpreted as the usual exhibitiv trigger *this* to which targetive feature cues from the silence correspond.)

- (25) a. The silence now is unusual.
 b. The current silence is unusual. c. This silence is unusual.

What might be the case more generally though, is that every instance of corporal *this* targeting a Figure locally is also a chronal *this* targeting the same Figure currently. Thus, *this economy* refers to the economy occupying not only the speaker’s vicinal region, but also the chronal interval passing through the trigger moment.

11.1.9 Where Corporal and Chronal Targeting Are the Same or Differ

Through this chapter so far, we have pointed out commonalities and differences between corporal targeting and supersentential chronal targeting with respect to the conceptual structures and schemas that they invoke. We first summarize the commonalities in the following table. (A further entry “r” is added to this table in section 11.2.2.)

- (26) Commonalities between corporal targeting and supersentential chronal targeting
 “S” = in the realm of space; “T” = in the realm of time
 In both realms:
 a. There is a principal trigger.
 S: corporal here; T: chronal now
 b. There is a principal reference entity.
 S: the speaker’s body; T: the trigger

- c. The location of the reference entity is the cue.
S: the corporal cue; T: the choral cue
- d. The trigger targets an “area” immediately around the cue.
S: the vicinal region; T: the choral interval
- e. A Figure is located with respect to the targeted area.
S: a Figure object; T: a Figure event
- f. Three entities have three locations with the same interrelations:
 - 1. The reference entity has a location.
 - 2. The targeted area has a location around that.
 - 3. The Figure has a location relative to that in turn.
- g. The same three-phase procedure is in effect. The hearer:
 - 1. determines the location of the reference entity.
 - 2. conceptually excerpts, centers, and bounds the targeted area.
 - 3. determines the Figure’s location relative to the targeted area.
- h. The same further cue categories help set the boundary of the targeted area.
 - 1. Co-form cues help set the boundary’s distance,
which can be indefinitely far away.
 - 2. Environmental cues can align the boundary
with a perceived environmental element.
 - 3. In serial targeting, perichronal cues keep boundaries close enough in,
so that they do not overlap.
 - 4. The core cues from different triggers can indicate that
the boundary is relatively closer in or further out.
- i. Certain aspects of the bounded area’s disposition are the same:
 - 1. The default conceptualization is that the bounded area extends
equidistantly from the cue location, but an alternative distribution
can be inferred.
 - 2. The area’s boundary can range in clear-cutness from sharp to fuzzy
and in its placement from precise to nondefinitive.
- j. The Figure can be actually, potentially, or not inside the targeted area.
- k. If the Figure is inside the targeted area, it can
occupy part of the area as a uniplex entity,
or be distributed over the area as a continuous or multiplex entity.
- l. If the Figure is outside the targeted area, its location can be indicated
by a displacement trigger.
- m. If the Figure is distributed over the targeted area,
A trigger other than the principal one (e.g., *this*) can target it directly.
- n. The targeted area is nonscalar.
- o. Gestural cues are not needed/possible as help in determining the targeted area.

- p. It is rare/impossible for a distal trigger to target an area outside the area targeted by a proximal trigger.
- q. In serial targeting, only proximal triggers can be used to target successive areas.

The table in (27) now lists some of the differences observed between the two cue categories.

- (27) Differences between corporal targeting and supersentential chronal targeting
- a. S: The targeted area (the vicinal region) can be effectively one-, two-, or three-dimensional.
T: The targeted area (the chronal interval) is one-dimensional.
 - b. S: The targeted area lacks intrinsic directionality and progression..
T: The targeted area has intrinsic directionality and progression.
 - c. S: Different portions of the targeted area are not systematically distinguished.
T: Different portions of the targeted area are systematically distinguished as being before or after the cue.
 - d. S: Conceptually, the cue (the location of the speaker's body) occupies a three-dimensional area.
T: Conceptually, the cue (the location of the trigger's occurrence) is zero-dimensional.
 - e. S: The targeted area does not enter the area occupied by the cue.
T: The targeted area extends through the cue.
 - f. S: The Figure can move into, out of, or through the targeted area, as well as have a stationary location in or out of it.
T: The Figure can only be in or out of the targeted area.
 - g. S: If not directly perceiving the cue, the hearer must assume or imagine it.
T: The hearer perceives the cue directly through interoception.
 - h. S: In its disposition, the targeted area can have a distinctive shape around the cue location.
T: In its disposition, the targeted area can only differ in its extent before vs. after the cue location.
 - i. S: The hearer can be stationarily located inside or outside the area or move across its boundary.
T: The hearer can only be located at the trigger moment.
 - j. S: The hearer accesses the cue and the area exteroceptively or in imagination.
T: The hearer accesses the cue interoceptively, a prior area in memory or imagination, and a later area only in imagination.
 - k. S: Here tends not to contrast the targeted area with another area.
T: The present tense behaves the same, but now contrasts the targeted area with another area.

As can be seen, the commonalities across corporal and choral targeting are extensive, testifying to the parallelism in our conceptualization of space and time, while a number of differences also exist, reflecting the dissimilarities in our conceptualization of those same two realms (see also section 1.7).

11.2 Subsentential Choral Interval

In the supersentential case looked at so far, the choral trigger targeted a choral interval longer than and containing the sentence that the trigger was in. We turn now to the subsentential case where the targeted choral interval is shorter than and contained by that sentence.

11.2.1 Prosody in Subsentential Choral Targeting

To present a baseline for a subsequent comparison, we begin with yet another supersentential example in (28). Here, the choral trigger *now* targets a supersentential choral interval, and the imperative is a future-oriented displacement trigger that locates the punctual Figure event of button-pushing within that interval's future portion. As before, the choral cue provided by the trigger *now* is the temporal location of the physical realization of this trigger as it is produced under normal speaking conditions.

(28) If you want to start the movie, press the green button now.

In contrast with this, (29) presents an example of subsentential choral targeting based on an example from Fillmore ([1971] 1997).

(29) If you want to save my life, press the green button . . . riiiight . . . NOW!

Here, the trigger *now* is typically uttered with a combination of two particular prosodic effects that we represent together by full capitalization. The form is pronounced with heightened stress and more quickly—compressed into a shorter duration as if to mark out a mere instant.

The choral cue here still consists of the temporal location of the trigger's physical realization along the timeline. But this location is now taken to be a mere instant in duration, perhaps conceptualized as being a zero-dimensional temporal point. While the choral cue was earlier said to consist of the "trigger moment" for the latter word's sense of approximate briefness, it now consists of what can be called the **trigger instant** for the latter word's sense of extreme briefness.

As for the target of the choral trigger, it is here, as earlier, another temporal location. And it can still be termed the "choral interval." But while the choral interval earlier was extended one-dimensionally, it has here been reduced to its limiting case of being a zero-dimensional point, and so it might alternatively be termed the **choral instant**.

Further, while the chronal interval earlier was longer than and inclusive of the sentence containing the chronal trigger, it is now a point within that sentence—in our terms, no longer supersentential but now subsentential. Moreover, the targeted chronal instant is not located just anywhere within the sentence, but it is coincident with the trigger instant. Our term “subsentential” is thus actually not quite specific enough.

Finally, as before, a Figure event specified in the sentence can occur during the targeted chronal interval. But now, this Figure event—here, the button pressing—is necessarily punctual. It is accordingly coincident with the chronal instant and, by extension, also with the trigger instant.

In addition to all this, the trigger in (29) is preceded by an extendedly pronounced word and pauses that, together, constitute a lead-up that prepares the hearer for the appearance of the instant of the chronal cue (see section 12.2.1 for analysis of such a lead-up). Together, the lead-up to the chronal cue and this cue’s own precise temporal placement function to guide the hearer in singling out a particular instant in the progression of time as the target.

Compressed prosodic chronal trigger A wider examination suggests, though, that the trigger bringing about the subsentential chronal effect in this example is not the segmental form *now* at all, but rather the articulatory compression and heightened stress that accompany it. On this view—the one adopted here—this combination of prosodic features is a new and distinct chronal trigger in its own right. It is of the type earlier called a “prosodic trigger” (see section 2.1.3).

A prosodic chronal trigger on a nonchronal trigger. As evidence of its distinct status, this prosodic trigger can occur not only on a chronal trigger like *now*, as just seen, but also on a nonchronal trigger, such as *there*, with the same subsentential chronal effect. We illustrate with the sentences in (30), where it is supposed that the speaker and hearer are in a boat, and that the *it* refers to a surfacing dolphin. In both sentences, the *there* can be interpreted as an exhibitiv spatial trigger that the speaker accompanies with, say, a pointing gesture aimed at a target location in which the Figure object, the dolphin, appears. If the dolphin appears on the surface for relatively long periods, the speaker has the temporal affordance to utter (30a) at a normal pace and to point steadily at the dolphin’s current location. But if the dolphin’s appearances on the surface are momentary and the hearer has not yet spotted it, the speaker would likelier say (30b). Here, his subsentential trigger is a prosodic compression and stressing of the word *there*, and the gesture that he accompanies the sentence with is a quick jab—both timed to coincide with the fleeting appearance of the dolphin.

- (30) a. There it is again. b. THERE it is!

—Independence of the prosodic and segmental triggers. In the preceding (30b) “dolphin” example, it can be posited that both the triggers—the prosodic trigger and the familiar segmental trigger *there* that it occurs on—are concurrently active and that these perform complementary targeting functions. The exhibitive trigger *there* helps the hearer single out a particular spatial location, while the subsentential prosodic trigger helps her single out a particular temporal location. Both types of locational information are needed for her to find this target that, with respect to her perception and knowledge, has unpredictable positions at unpredictable times.

Perhaps this analysis can also be extended to the “button pressing” example in (29). If so, then the segmental trigger *now* would itself, as in section 11.1, target a supersentential interval containing a punctual Figure event. In turn, the prosodic trigger would pinpoint the Figure event’s occurrence within that interval as being at the exact instant of the segmental trigger’s occurrence.

A prosodic choral trigger on a nontrigger. Further evidence that the combination of compression and heightened stress constitutes an independent prosodic trigger in its own right is that it is not even limited to occurring on another trigger. It can accompany seemingly almost any word and yield the same subsentential choral effect. The word bearing the prosodic trigger is then simply another co-form within the sentence. The example in (31) shows the prosodic choral trigger appearing on the word *o’clock* (with that word’s usually stressed syllable taking the extra stressing), to index a precise instant of time.

(31) The time is exactly . . . threeee . . . o’CLOCK.

The prosodic choral trigger can also occur on a verb, like the *grab* in (32b). This sentence with subsentential choral targeting is shown in minimal contrast with the purely referential sentence in (32a). The second sentence directly guides the hearer to the singling out of a particular instant in the progression of time. But the first sentence simply aims to coordinate the action of grabbing with the expected future occurrence of another event.⁵

- (32) See that bent can starting on the conveyor belt right there?
 a. As it comes in front of you, grab it.
 b. As it comes in front of . . . youuuu . . . GRAB it!

Stretched prosodic choral trigger In all the preceding examples, the prosodic choral trigger has guided the hearer to single out a mere instant occurring within the temporal scope of the sentence. But it is not limited to marking out instants. It can also guide the hearer to single out a particular bounded temporal extent—that is, a particular one-dimensional interval—also within the scope of the sentence. An example is shown in (33). Here, the trigger is again prosodic, but this time it involves not compression

but stretching—the articulatory stretching of a word, here represented by an iterated dashed vowel. And again, a pause can serve as a lead-up to the occurrence of the trigger form.

(33) What's that periodic faint . . . bu-u-u-u-uz I keep hearing?

In this example, the speaker waits until he again hears the faint buzzing sound he has been noticing and coordinates his stretched pronunciation of the word *buzz* to coextend with that sound so as to direct the hearer's attention to it.

With this example, we have thus now seen two distinct prosodic triggers that differ in duration. One extends over a compressed trigger moment, or trigger instant, and the other over a stretched trigger moment.

11.2.2 Temporal Granularity

It was observed in chapter 6's introduction that corporal cues generally have a coarser granularity than gestural cues in targeting a location in space. Corporal cues are based on the position of the speaker's whole body and target the region around it, while gestural cues are commonly based on the positions of the speaker's fingers and can target a small location. Gestural cues are especially fine-grained if they are produced at the precise end of the degree-of-precision parameter (see section 5.12) and are of the type that contacts the target (see section 5.10). These conditions would be in effect if a remodeler carefully touches a fingertip to an exact point on the wall while saying (34) to an assistant.

(34) Stick the pushpin in !-there.

We can now further observe that, in an analogous way, supersentential chronal cues generally have a coarser granularity than subsentential chronal cues in targeting a location in time. Although both types of chronal cue are comparably brief, the former type targets a chronal interval longer than and roughly centered around its sentence, while the latter type targets a chronal interval exactly as brief as it itself is and coincident with it.

The subsentential type in fact seems to use the precise end of a temporal counterpart of the original degree-of-precision parameter. Thus, through his careful articulation of it, a speaker precisely “places” a compressed prosodic trigger at a specific chronal instant or at the beginning and ending points of a stretched prosodic trigger that mark the beginning and ending points of a particular stretched chronal moment.

Many features were earlier seen to hold in common between corporal targeting in space and supersentential chronal targeting in time, as summarized in the first table of section 11.1.9. We now see that coarse granularity is another common feature that could be appended to the table, as in (26).

- r. The area targeted by the trigger is coarse-grained in comparison with the location targeted by:
 - S: a precisional gesture
 - T: a subsentential prosodic trigger.

11.2.3 Three Phases in Processing a Prosodic Chronal Trigger

The three phases in the supersentential processing of a choral trigger, presented in section 11.1, apply here as well, though with certain emendations. The first phase, determining the location of the trigger's own occurrence along the timeline (see section 11.1.3) involves the hearer here in basically the same interoceptive process of noting her own experiential present. In this subsentential case, though, the hearer must amplify the sensitivity of her interoception so that it can register finer-grained successions of time.

The second phase, determining the temporal location of the targeted choral interval (see section 11.1.4), in principle comprises the same three processes of excerpting, centering, and bounding. But the extensive range of cues and operations that the hearer needed to conceptually set the outer boundaries of a supersentential choral interval here reduces simply to the concept that the choral interval has the same boundaries as the trigger. Its boundaries are separated and coincide with those of a stretched trigger moment, while they are merged and coincide with the merged boundaries of the compressed trigger instant. The centering process is correspondingly negligible since the targeted choral interval does not contain the trigger moment somewhere within itself, but coincides with it.

As for the third phase—determining the location of the Figure event relative to the choral interval (see section 11.1.5)—the conceptual range of supersentential possibilities is here again reduced down to the simple concept that the Figure event coincides with the trigger moment—coextensive with it when stretched and copunctual with it when compressed. And the earlier alternative between the Figure event's occurring inside or outside the choral interval is here eliminated: it is always inside.

Despite all these special features, the subsentential choral trigger does share a major function with a supersentential choral trigger. It identifies a certain locus along the timeline that is then used in singling out a particular interval as the target from among alternative candidates. But its special features give it a further function. The boundaries of its duration also mark out the boundaries of the targeted interval (as well as of the occupying Figure event). This further function was not available to the supersentential choral trigger *now* because its duration was short relative to the duration of its target, an interval longer than its sentence, and was thus irrelevant to determining the interval's boundaries.

11.2.4 Temporal Co-Location

It has just been seen that, in any event of subsentential choral targeting, three components—the trigger moment, the choral interval, and the Figure event—are all temporally co-located. That is, they all have the same placement on the timeline, and they are all temporally coincident, either copunctual or coextensive. Thus in (30b), the Figure event of the dolphin's fleeting appearance is copunctual with the choral instant, itself copunctual with the trigger instant marked by the speaker's compressed pronunciation of the word *there*. And in (33), the Figure event of a slightly prolonged buzzing is coextensive with the choral interval, itself coextensive with the stretched trigger moment marked by the speaker's lengthened pronunciation of the word *buzz*. We now further observe that two additional components of the targeting event are temporally co-located with these three components.

Co-location of the hearer's response A speaker using a subsentential choral trigger intends that this trigger will evoke from the hearer a particular response to the Figure event, and that this response will be as co-located with the compressed or stretched trigger moment as the hearer can manage. That is, he wants the hearer's response to occur in coincidence with the already co-located trigger moment, choral interval, and Figure event. Inducing such timing can be called **hearer-response synchronizing**.

The response to the Figure event that the speaker here wants to evoke from the hearer is of three types. The hearer can enact it, as where she was to press a button or grab a can. She can perceive it, as where she was to catch sight of a surfacing dolphin or listen for a buzz. Or she can become copunctually informed of it, as when she was told that the exact instant of three o'clock had arrived.

Apart from the enactment type of response, which might be equated with the occurrence of the Figure event, the inclusion of the hearer's response brings the number of co-located targeting event components to four.

Co-location of the prompting event In all of this section's subsentential examples, the speaker has produced his prosodic trigger—that is, compressed or stretched pronunciation—as the result of a particular cause. This cause differs from the one at work in virtually all of this book's earlier examples. Earlier, the speaker selected the moment at which to utter his trigger largely on the basis of the internally generated timing of his interest in communicating to the hearer about the referent that the trigger targeted. The timing of external conditions was ample enough to allow a normal pace for his utterance's delivery. Here instead, the speaker remains alert for the occurrence of a particular event, and his perception of it, when it does occur, prompts his utterance of the trigger. He then aims to produce the trigger so that it is as coincident with the prompting event as he can get it.

The prompting event can be the occurrence of the Figure event itself—that is, the event specified by co-forms in the sentence—as in the examples involving the appearance of a dolphin and the sounding of a buzz.

However, it can also be a separate event distinct from the Figure event but correlated with it. This is the case in the examples where the speaker watched for a can to reach a point at which it should be grabbed, monitored a digital clock for the appearance of a reading to be announced, or perhaps checked a dial on a meter for when a button was to be pressed.

Thus in this latter case where the prompting event and the Figure event are distinct, as many as five components of a targeting event can be co-located. These are 1) the prompting event, 2) the Figure event, 3) the speaker's production of the trigger and hence the choral cue (the trigger moment) that this provides,) 4) the choral interval, and 5) the hearer's response.

If the speaker also produces a gesture timed to be coincident with the choral interval—as in the case of jabbing a finger toward the fleetingly appearing dolphin—then a gestural cue constitutes yet a sixth targeting component in the co-location (see section 12.2.2).

The cause-result relation that holds between the prompting event and the trigger's production, as well as between the trigger's production and the hearer's response, inevitably introduce an increment of temporal lag. Still, the five or six components can be regarded as effectively co-located, since both the speaker and the hearer aim to get them as close together as possible.⁶

In terms of cue adequacy processes (see section 1.5.1), a subsentential choral cue is now seen to rest on a combination of both productive and perceptual processes. The speaker produces the cue by uttering the prosodic trigger. But he times this utterance with his perception of a prompting event.

11.2.5 Absence of Temporally Co-Located Components

With the inclusion of a prompting event and a hearer's instant response, we previously distinguished five components that can be temporally co-located in an event of subsentential choral targeting. This may be the prototype pattern for such targeting. But less prototypical variants also exist in which one or both of those two components are absent.

Absence of a prompting event One variant eliminates the need for a prompting event. That is, the speaker need not remain alert to perceive the occurrence of a certain event that will initiate his production of a trigger. Instead, the speaker himself decides on the moment at which to produce the subsentential choral trigger. But the remaining components and their co-location are still in effect. This variant is seen in (35), uttered

at the start of an informal track event. The speaker uses the compressed prosodic trigger on the word *go* to mark a trigger instant of his own choosing.

(35) Get ready, . . . get seeeeet, . . . GO!

To be sure, the speaker's choice of when to utter the trigger here is constrained by approximate standards of delay after saying *get ready*, but the exact instant is not initiated by the occurrence of any prompting event and finally rests on the speaker's decision. Given this occurrence of the chronal cue, though, the remaining components—the chronal instant, the Figure event, and the hearer's response, plus any momentary gesture the speaker may produce—are all co-located with it.

Absence of a co-located hearer's response A further variant of subsentential targeting lacks a co-located hearer's response. To illustrate, suppose that an artist, who wants his child to help him complete a collage, says (36). In our first version of this example, during the lead-up to his utterance of the compressed trigger, his finger circles or meanders over the surface of the collage and, at the trigger instant, it plunges down to hit a certain precise spot, where it then rests for a while.

(36) Put the gold fleck riiiiight . . . THERE!

The hearer might interpret this as follows. The speaker first spends some time deliberating internally over where the fleck should be placed and, during that time, produces the verbal lead-up and circling portion of his gesture. He then reaches a moment of decision and, copunctually with that moment, produces the compressed trigger and the plunging part of his gesture. His moment of decision, even though internal, functions as a prompting event. The relevant point here is that the speaker does not intend that the hearer also co-locate her response with that compressed moment by instantly placing the fleck at the indicated spot. He intends simply that she learn the chosen spot as his finger continues to rest on it, so that she can later place the fleck there.

Absence of both a prompting event and a co-located hearer's response A second version of the preceding example lacks not only the hearer's co-located response, but even the functional prompting event. The artist here again says (36). But now, during the verbal lead-up, he simply holds his pointing finger poised directly above a particular spot before plunging down to hit it. The interpretation now might be that the speaker does not deliberate over which spot to pick, but has already chosen one. Accordingly, as with the "get ready" example of (35), there is no prompting event—whether internal or external—and the speaker selects his own trigger instant. As before, the hearer's response here is not expected to be immediate.

The issue now, though, is what communicative function is served by the delay followed by a three-way punctual co-location: the compressed prosodic trigger, the

chronal instant, and the jabbing gesture. One possibility is that it sets up a metaphoric mapping based on the degree-of-precision parameter (see section 5.12). Precision in the temporal realm as the source domain is mapped onto precision in the spatial realm as the target domain. More specifically, the speaker intends that the precision of the temporal point he indicates will put the hearer in mind of the precision of the spatial point she should place the fleck at.

If this account holds, it is another instance of the widespread cognitive process of “recruitment” (Talmy, 2011), in which a cognitive configuration with a certain original function or conceptual content is appropriated to perform another function or to represent some other concept. Here, the whole apparatus of subsentential choral targeting is recruited—even in the absence of any copunctual prompting event, Figure event, or hearer response—for use in a different function, that of conveying spatial precision.

11.3 Cosentential Choral Interval

As seen so far, the choral interval over which a Figure event can extend can be supersentential—longer than and inclusive of the choral trigger’s sentence—or subsentential—shorter than and included within that sentence. But the interval that a Figure event extends over can also be of roughly the same length as and coextensive with the sentence. Such a choral interval will be called **cosentential**.

Such cosentential duration and coextension are perhaps clearest where a sequence of sentences, each with the present tense as its choral trigger, evokes serial choral targeting in relation to a sequence of Figure events. That is, each present tense trigger here marks a new choral moment ever later on the timeline, and each such choral moment targets a cosentential choral interval that a new Figure event occupies. (See section 11.1.3 for serial targeting with *now*.)

The choral intervals targeted by the sentences flanking any given sentence approximately confine the choral interval that it itself targets to its own boundaries and duration. This is one reason that each choral interval is cosentential in such a sequence of sentences. In addition, the speaker times her utterance of each sentence so that it is temporally co-located with the Figure event it refers to, introducing pauses between the sentences if needed so that each occurs in time with its referent event.

English represents serial cosentential targeting with two main types of syntax. In one type, the main verbs are in the present progressive or present perfect that would normally be expected. To illustrate, the speaker in (37) can be imagined as a detective viewing a weight lifter through a window with binoculars and talking over a phone to report her observation of four successive events he engages in. The last three of the events are brief, but they can still be reported on in the present progressive as they occur. The first event is too brief for that and so is reported in the present perfect.

- (37) He has dropped the barbell. . . . He's bending down. . . .
He's gripping it. . . . And he's picking it back up.

In the second type of syntax, the main verbs of the successive sentences are in the simple present, in a construction known by such terms as the "sportscaster's present" (e.g., McGilvray, 1991). To illustrate, suppose that the speaker is a sports announcer broadcasting her observations of a weight-lifting competitor engaged in the same succession of events as in the preceding example. But now she reports these events as in (38).

- (38) He drops the barbell. . . . He bends down. . . .
He grips it. . . . And he picks it back up.

This serial cosentential targeting with the sportscaster's present is like that seen in (37) with the present perfect and present progressive in that it retains the same succession of trigger moments, event durations, and co-locations of those events with the sentences referring to them. But it differs in two ways. First, it neutralizes the distinction that the earlier forms marked between brief and very brief events.

Second, the sportscaster's present seems to be specifically lexicalized to indicate serial cosentential targeting. Accordingly, if even just a single sentence is uttered with the sportscaster's present, the event it refers to may well be still construed as one in a series. In the preceding example, by contrast, if any of the four component sentences were uttered by itself, it would stand alone in reporting a single event without indicating that that event was embedded in a series.

Still, where serial cosentential targeting is called for, we have yet to determine the exact factors that might require the present perfect or progressive as against the sportscaster's present. The latter, on the one hand, seems inappropriate for the detective in the initial example, but, on the other hand, it is also not limited to sportscasters.

11.3.1 Cophrasal Chronal Interval

In an instance of serial cosentential targeting, if the subject nominal is the same across the succession of sentences, then these can generally be reconstituted as a single sentence with a succession of verb phrases (or parts thereof). The preceding two examples were of this type and so can be reformulated as in (39).

- (39) a. He has dropped the barbell, . . . is bending down, . . .
is gripping it, . . . and is picking it back up.
b. He drops the barbell, . . . bends down, . . .
grips it, . . . and picks it back up.

The chronal interval targeted by each present tense trigger now coextends with the verb phrase and so will be said to be **cophrasal**. Such serial cophrasal targeting is discussed here because it behaves much like the cosentential type: the speaker utters each

verb phrase so that it is temporally co-located with the corresponding Figure event and, to that end, introduces pauses if needed. However, although a cophrasal chroral interval occurs within the sentence, it is not of the subsentential type treated in section 11.2 because it extends beyond the trigger's location and duration.

11.4 Chronal Cues to a Speech-Internal Target

The speech-internal form of chroral targeting parallels the speech-external form seen so far in most respects. Thus, the chroral trigger here is lexicalized to require that the hearer undertake the same three-phase procedure. Namely, she must determine the temporal location of the chroral cue, of the chroral interval that contains the cue, and of the Figure event that occurs along the interval. The chroral interval is the target, and its temporal location is determined through the same three processes: excerpting, centering, and bounding the interval. And the bounding process, where the hearer conceptually sets the outer boundaries of the interval, can rely on a range of cue categories.

The main difference in the speech-internal case, though, is that the chroral cue is not the trigger moment, but the temporal location along the speech-internal timeline of an event referred to in the discourse before or after the trigger. As seen in section 2.3.1, we call such an event the "base." Most often, this event is, or is conceptually reducible to being, taken as short and its temporal location is then called the "base moment" and represented by the capitalized form "Then." An earlier example is reprised in (40) for illustration.

- (40) then: 'through an interval containing Then'
 I dropped by the monastery for an hour last year.
 The main chapel was under renovation then.

The hearer's processing operates mainly on her conceptualization of the narrative world and its speech-internal timeline (see section 2.3.1). She determines that the base is the event of my dropping by the monastery. Its temporal location is the base moment, serving as the chroral cue. The chroral interval serving as the target is a period of time extending through that base moment. And the monastery's renovation is the Figure event coextensively occupying that interval. Epistemic cues from her knowledge about how long renovations can take help her set the outer boundaries of the chroral interval and its occupying Figure event. In addition, speech-external intrusions from the past tense triggers and the phrase *last year* lead her to place the occurrence of the base moment and chroral interval at some remove before "now" (the point at which she hears the trigger) on the speech-external timeline.

In the following subsections, we both elaborate on certain parallels of chroral targeting with corporal targeting and present special aspects of chroral targeting.

11.4.1 Contraction of the Base Moment

The base period need not be just conceptualizable as reduced to a moment in duration (like the drop-by visit in the preceding example), but it can be actually experienced as punctual—that is, contracted down to a “base instant.” Further, the chroral interval occupied by the Figure event and targeted by the speech-internal trigger *then* need not amply contain the base moment (like the reconstruction period in the preceding example), but it can decrease in duration toward that of the base moment and, in the limiting case, coincide with a base instant.

In (41), to illustrate, the base instant is the point at which Nate broke into a smile. The chroral interval occupied by the Figure event of picture-taking reduces to closely containing this base instant when targeted by the normally pronounced trigger *then* in (41a). And it coincides with the base instant when targeted by the stressed *then* in (41b) in conjunction with the precisional co-form *just*.

- (41) Nate finally smiled.
 a. I took his picture then. b. I took his picture just !-then.

Interestingly, the apparatus of subsentential chroral targeting—whose basic function is to pinpoint the present instant speech-externally—can be licensed even for speech-internal use. Thus, in the variant of the present example in (42), the speaker uses compressed and stressed prosody on the trigger *then*, preceded by a slight final-vowel prolongation and pause. This may lead the hearer to adopt a temporal viewpoint that gradually approaches the speech-internal base instant and finally arrives at it, in effect imaginably simulating the speaker’s original temporal experience. It may also promote a proximal degree of affective/perspectival remove, somewhat as in the “Picasso” example of (2:96).

- (42) Nate finally smiled. I took his picture exactlyyy . . . THEN.

11.4.2 Expansion of the Base Moment

The base moment was just seen able to contract to a base instant, but it can also expand. Thus, unlike the speech-external trigger moment, whose duration is always short since it coextends with the trigger’s utterance, the temporal period associated with the base need not last a mere moment or be conceptually reducible to one, but it can be temporally extensive and conceptually irreducible. It is perhaps then better labeled as a “base interval.” Such an expansion is seen in (43), where the base interval is all of last year—the period of my stay at the monastery. The trigger *then* now targets this extended base interval. In the semantic representation shown in (43), it is represented by the form “TheN” with the first and last letters capitalized, as if to mark the endpoints of an extent. The Figure event—the renovation—extends through the base interval.

- (43) then2: 'through an interval with a coincident degree
of temporal remove from TheN'
I spent all last year at a monastery. The main chapel was under renovation then.

11.4.3 Displacement from the Base Moment

Also as in the speech-external case, the Figure event can be represented as occurring outside the chroral interval, which then tends to be conceptually reduced in duration, potentially down to the base moment. A displacement construction of this sort is illustrated in (44).

- (44) I got sick on Thursday. I had gone walking in the rain three days before then.

As seen in section 2.3.1, English has a number of displacement triggers that are lexicalized to indicate such temporal displacements speech-internally. The following table reprises a selection of these.

- (45) Speech-internal temporal
- a. have -EN (before, beforehand, earlier):
'at a moment with a noncoincident degree of temporal remove before Then'
I fixed the drier. I had washed the car beforehand.
 - b. afterwards: 'at a moment
with a noncoincident degree of temporal remove after Then'
I fixed the drier. I washed the car afterwards.
 - c. just: 'at a moment
with a hyperproximal degree of temporal remove before Then'
I fixed the drier. I had just washed the car.
 - d. immediately: 'at a moment
with a hyperproximal degree of temporal remove after Then'
I fixed the drier and I immediately washed the car.
 - e. recently: 'at a moment
with a proximal degree of temporal remove before Then'
I fixed the drier. I had recently washed the car.
 - f. soon: 'at a moment with a proximal degree of temporal remove after Then'
I said I was done with tasks for that day, but I soon washed the car.
 - g. theretofore: 'through an interval
with a separative-adjacent degree of temporal remove before Then'
The third midterm exam was over. I'd been an easy grader theretofore.
 - h. thereafter: 'through an interval
with an adjacent-separative degree of temporal remove after Then'
The third midterm exam was over. I was a hard grader thereafter.

11.4.4 The Speech-Internal Continuum

Finally, recall that corporal targeting in the speech-internal domain allowed discourse to be analogized to a speaker's forward motion in space (see section 6.10.2). This in turn licensed the use of spatial triggers like *here*, *above*, and *below*—as in the “accident” example of (6:50b) and the “plan” example of (6:53)—to target temporal points in the discourse. The question arises whether something comparable occurs in speech-internal chronal targeting. The counterpart examples in (46) show that the three spatial triggers can be replaced by the temporal triggers *now*, *earlier*, and *later* without substantially changing the meaning.

- (46) a. I should mention now that I didn't actually see the accident myself.
 b. The plan was described earlier and its results will be explained later.

To analyze this chronal usage further, we note that, in the analysis of section 1.6.1, triggers can target aspects of discourse that range from the most physical to the most conceptual. An aspect toward the conceptual end—the aspect that was in play in the preceding subsections—is that discourse represents a narrative world that manifests through time along the speech-internal timeline. But an aspect toward the physical end is that discourse is a substantive phenomenon that manifests through time along the speech-external timeline. The three new triggers can be judged as targeting this more physical aspect of discourse. In particular, they target temporal points on the timeline along which the discourse proceeds.

The words *mention*, *described*, and *explained* in the examples can be taken to bridge these conceptual and physical aspects. On the one hand, they refer to certain elements of conceptual content that did or will occur at certain points on the speech-internal narrative timeline. On the other hand, these narrative points did or will occur at certain points on the speech-external timeline of the discourse's overt manifestation. The triggers target those speech-external temporal points, but the hearer is expected to access the speech-internal narrative content that was being expressed at those points.

11.5 In Sum

A chronal cue informs a hearer about the temporal location of the target as an aid in determining that target. The trigger is lexicalized to require this cue. The chronal cue consists of the trigger moment—the moment of the trigger's own occurrence—in the speech-external domain and of the base moment—the moment at which an event in reference occurs—in the speech-internal domain. The target is an interval—the chronal interval—that contains the trigger or base moment or, in the limiting case, coincides with it. A range of cue types helps the hearer set the boundaries of this chronal interval. The trigger indicates whether a separately specified figure event occurs within the chronal interval or outside it.

When speech-external, the choral interval targeted by the trigger can be of three types. It is supersentential if it is longer than and inclusive of the sentence that the trigger appears in, subsentential if shorter than and included within that sentence, and cosentential if coextensive with that sentence.

In the supersentential case, the main English triggers are *now* and the present tense, whose properties exhibit both commonalities and differences. In the subsentential case, there are two prosodic triggers: a compressed and a stretched pronunciation of a word in the sentence. This case allows as many as six components of a targeting event to be temporally coincident: a prompting event, the Figure event, the speaker's production of the trigger and hence the choral cue it provides, the choral interval, a gesture, and the hearer's response. In the cosentential case, one main trigger is the sportscaster's present.

Notes

1. The main future displacement can be indicated not only by an explicitly future form like *will*, but also by directives with their implicit future orientation, as seen for the imperative in (ia) and for advice or suggestion in (ib).

- (i) a. Turn the oven on now.
- b. You should / Why don't you turn the oven on now.

2. The sequence *just now* is here regarded as an idiomatic collocation with syntactic and semantic properties distinct from either the *just* or the *now* under discussion. For example, unlike either of the latter triggers, it can occur in three sentence positions:

- (i) a. Just now I cut myself.
- b. I just now cut myself.
- c. I cut myself just now.

3. Evidence that the trigger *now* indicates a bounded interval, relatively short for the given context, within which the punctual Figure event occurs is provided by a sentence like that in (i), where it is incompatible with a temporal expression indicating an unbounded and potentially long interval.

- (i) I'll turn the oven on (*now) when and if I feel like it.

4. The historical present illustrated in the "cigarette" example of (2:97) was there held to be a construction for attaining a proximal degree of affective/perspectival remove for a past event. But it might also be interpreted as an exception to the lack just cited. It would then constitute a past sense within the polysemous range of the present tense trigger.

5. If the initial Fillmore example were to be recast in the present example's pattern, where the prosodically affected word refers to the Figure event, it might come out as in (i).

- (i) If you want to save my life,
put your finger on the green button . . . aaaaand . . . PRESS it!

6. A speaker may be able to use his ongoing perceptions and his knowledge of how events unfold to anticipate the point at which the prompting event will occur. To the degree that this process is effective, the hearer can reduce the lag between the prompting event and his production of the trigger—as well as to gauge the prelude to the prompting event and so adjust his production of constituents occurring in the lead-up to the trigger.

By the same token, while a lag may be expected between the production of a trigger and even a hearer's understanding of it, let alone any response she makes to it, this lag can be reduced to the degree that she can anticipate the trigger.

12 Perichronal Cues to a Target

A perichronal cue is any temporal property of an element other than the trigger that helps the hearer determine the target. Covering quite a range, a perichronal cue could then consist of the temporal placement of a co-form relative to a trigger, the insertion of a pause, or the speed of a gesture. Perichronal cues are here divided into two types, those that are indirect in their guidance to the target—the majority type treated in section 12.1—and those that are direct—the minority type treated in section 12.2.

Perichronal cues of the majority type are the temporal properties of the elements near a trigger that indicate which of those elements can serve as cues to its target. They are indirect because they help a hearer determine the cues to the target, not the target itself.

Perichronal cues of the minority type are the temporal properties of the elements near a trigger that indicate certain temporal properties of its target. They are direct because they help a hearer determine the target itself, not just cues to it.

Any quantitative aspects of perichronal cues can here be only suggested and must be established experimentally. But perichronal cues can also have qualitative aspects, for example, whether an element is concurrent with or temporally separated from a trigger and, if separated, is before or after it. Such qualitative aspects may be more amenable to analytic proposals, and these are mainly what is focused on here. Still, all the perichronal proposals that follow will need testing.

The next two sections address perichronal cues to a speech-external target, while those to a speech-internal target are addressed in section 12.3.

12.1 Perichronal Cues that Help Determine Other Cues

As noted, the perichronal cues treated in this section—the majority type—are those temporal properties of nontrigger elements that help a hearer assess which of those elements can serve as cues to a target. Specifically, for any element within the ambit of a particular trigger, certain of its temporal properties, which then serve as perichronal cues, determine whether it can be a candidate cue (belonging to one of the other nine

cue categories) in association with that trigger. While such an element might be ruled in or out as a potential cue for that trigger on other grounds, the perichronal cues it provides determine whether it is acceptable on temporal grounds.

The particular temporal properties of a nontrigger element that can serve as perichronal cues are primarily: how temporally close it is to the trigger, whether it is temporally separated from or concurrent with the trigger, and whether it precedes or follows the trigger. These temporal properties, combined with certain additional factors, are formulated into a set of conditions—examined in the remainder of section 12.1—that must be met by the relevant elements and triggers in a portion of discourse.

Again as noted, the perichronal cues treated here are considered indirect because they perform a screening function for other cues to the target, rather than directly ascribing characteristics to the target itself. But they still fit our definition of cues, since they are elements of information that aid the hearer in determining the target.

12.1.1 The Basic Condition

If we imagine all the surroundings that extend out from a trigger before, during, and after its utterance, an element within them can serve as a cue seemingly only if it meets a certain basic condition. This condition can be equivalently formulated from three perspectives.

First, any element that a speaker intends a trigger to employ as a cue must be sufficiently proximal to that trigger in time. That is, the moment at which or interval through which the candidate cue occurs must be sufficiently proximal to the moment at which the trigger occurs. The condition from this perspective will be called the (cue-to-trigger) **proximity condition**. If a potential cue is concurrent with the trigger, it automatically meets the proximity condition. If it is nonconcurrent with the trigger, then it must be temporally no further from that trigger than by a certain amount.

From the second perspective, a trigger can be taken to be at the center of an interval—a temporal “window”—within which all its cues must appear. From this perspective, the basic condition can be called the **within-window condition**.

Finally, the foundation of the basic condition is working-memory access (see section 1.5.1). Where an element perceived by a hearer occurs before a trigger, that element must be active enough in her working memory at the moment she hears the trigger for it to function as a cue for that trigger. Such an element cannot have attenuated in her memory by the time of the trigger’s occurrence. Where the element occurs after the trigger, complementarily, the hearer’s perception of the trigger must be active enough by the time she perceives the element for her to treat that element as a potential cue in association with the earlier trigger. From this third perspective, the basic condition can be called the **activation condition**.

The amount of separation a potential cue can have from its trigger—or, equivalently, the size of the trigger’s window—seems to differ according to the cue type and other

factors, as will be seen, and can, of course, be fuzzy. Such quantitative factors will need to be addressed experimentally. Accordingly, our focus next will be more on qualitative temporal factors.

12.1.2 Cues Necessarily Concurrent with the Trigger

Due to their intrinsic character, the cues of five categories are necessarily concurrent with the trigger that invokes them, and those of a sixth (hearer-focus cues) are regularly so. For any element within the extended surroundings of a trigger to serve as one of these cues for that trigger, it thus must be concurrent with that trigger. It must meet what we will call the **concurrence condition**. As noted, since concurrence is a more restrictive form of proximity, any element meeting it automatically also meets the proximity condition. An element's temporal property of being either concurrent or nonconcurrent with a trigger is thus the perichronal cue that rules it in or out as a potential cue of one of these six types for that trigger.

In our use of the term, two intervals are said to be “concurrent” if they have at least one temporal point in common—they are otherwise temporally “separated.” Mainly at issue here are the interval occupied by a cue and the interval occupied by the trigger. The latter is the trigger moment, prototypically brief and conceptualizable as a temporal point. The next two subsections respectively treat types of cues whose intervals are narrowly and broadly concurrent with the trigger.

Cues copunctual with the trigger The cues of two categories, addressed next in order, are under a narrower form of the concurrence condition. The interval occupied by these cues—like that of the trigger—is also brief and conceptualizable as a temporal point, and this point is copunctual with the trigger. For an element in the situation to be a cue of one of these types, it must then meet what we will call the **copunctual condition**. Such an element's temporal property of being either copunctual or noncopunctual with a trigger is thus the perichronal cue that rules it in or out as a potential cue of one of these two types for that trigger. If an element meets the copunctual condition, it automatically also meets the concurrence and proximity conditions.

The choral cue category. One such category is that of choral cues. In the speech-external domain presently under discussion, the choral cue associated with a particular trigger is the moment of that trigger's occurrence. Such a choral cue is thus inherently copunctual with the trigger moment.

Some upcoming examples will include serial targeting, where each trigger in its turn generates its own trigger moment and choral cue. But each such trigger is active—that is, functions *as* a trigger—only at the moment of its utterance. The copunctual condition, then, rules out all choral cues associated with triggers before or after the currently active one and rules in only the choral cue copunctual with that currently active trigger.

The core cue category. The other category whose cues are necessarily copunctual with the trigger moment is that of core cues. As seen, a core cue is a cue that the trigger itself is lexicalized to provide and hence is presented to the hearer at the same moment as the trigger's occurrence.

Again, other triggers in the surrounding discourse provide core cues of their own. But if these retain any trace in consciousness by the time of the currently active trigger, they are blocked from involvement with the targeting process governed by that currently active trigger. The reason is that such involvement would fail the copunctual condition. To illustrate, the speaker in (1) uses three triggers with speech-external targets—*those*, *here*, and *this*. While uttering the first of these triggers, he points across the room at some cushions lying on a table, and while uttering the third trigger, he touches a love-seat beside him.

- (1) Bring those cushions over here and set them down on this.

At the third trigger moment in this utterance, the trigger *this* provides the core cue that its target is a proximal uniplex third-person entity, which the gestural cue narrows down to being the nearby loveseat. But at this same trigger moment, the hearer disregards the core cues provided by the first two triggers at the first two trigger moments. In particular, the first core cue that the target is a distal multiplex third-person entity and the second core cue that the target is the speaker's vicinal region are treated as irrelevant to the target of the third trigger currently active in the hearer's processing.

Cues broadly concurrent with the trigger The cues of three further categories—environmental, epistemic, and corporal—are also necessarily in concurrence with the trigger, while those of a fourth—hearer-focus—are generally so. But these cues have a broader form of concurrence. In their range of realizations, such cues can, on the one hand, occupy just a temporal point copunctual with the trigger moment—the pattern just discussed. But they can also occupy a so-conceived unbounded or bounded interval that contains the trigger moment. Accordingly, each such cue can exhibit any of three types of duration—that of an unbounded interval, a bounded interval, or a temporal point. Correspondingly, it can exhibit three types of concurrence with the trigger moment—that of unbounded containment, bounded containment, and copunctuality. Which of the three duration and concurrence types is in effect in a given case is judged on the basis of the period through which a cue is thought to remain accessible in an unchanged form.

An element's temporal property of either having or not having such broad concurrence with the trigger is thus the perichronal cue that rules it in or out as a potential cue of one of these four types for that trigger. We separately consider each of the four cue types in this regard.

The environmental cue category. Cues of the environmental category can exhibit all three of the concurrence types just noted. In the perhaps prototypical case, environmental cues are stable through an unbounded interval that contains the trigger moment. Thus, in the “lagoon” example of (9:10a), the environmental cue consisting of the lagoon’s perimeter—along with other aspects of environmental content and structure—are continuous through the discourse. The temporal open-endedness of such an environmental cue makes concurrence with the trigger moment probable, since its unbounded duration is likely to contain the punctual duration of that moment.

An environmental cue can also remain stable through a briefer bounded interval that still encompasses the trigger moment. To illustrate, suppose that a speaker is playing an interactive online war game where the screen shows a succession of different terrains, each lasting about one minute. He points toward a particular region on the screen and says (2) to a companion. As the screen switches to the next terrain, he shifts the angle of his finger and repeats the utterance.

(2) I bet the enemy fighters are hiding !-there.

The environmental structure of each scene provides an environmental cue to the hearer that helps her delimit the particular region intended as the target. As before, this environmental cue encompasses and so is broadly concurrent with the moment when the trigger *there* is uttered. But this time, the cue occupies a bounded interval lasting only a minute. On the basis of the concurrence condition on environmental cues, the hearer rules out the environmental structures exhibited by earlier or upcoming screen displays as possible cues in association with the current use of the trigger *there*. At the same time, she rules in the environmental structure of the display whose duration now encompasses that trigger’s occurrence.

Exhibiting the third duration type, an environmental cue can also endure for just a moment and occur copunctually with the trigger moment. For illustration, we might look to an environment with ongoingly shifting structure and content, such as one involving traffic. Thus, if a car is idling in a lot waiting to enter a line of cars moving along a road passing crosswise in front of the car, the passenger might point to a suddenly opening space several car lengths wide and say (3) to the driver.

(3) You can drive in right !-there!

While the gesture here points to a single spot, the environmental structure cue indicates that the endpoints of the entire spatial gap mark out the full target of the trigger *there*. However, this gap lasts only a moment and is copunctual with the trigger moment. Because it meets the concurrence condition, the hearer rules in this momentary environmental pattern as a potential environmental cue to be associated with the trigger *there*. Complementarily, due to their nonconcurrence, she rules out traffic patterns occurring at all other moments from consideration as environmental cues.

The epistemic cue category. Cues of the epistemic category effectively also exhibit all three forms of concurrence. In the perhaps prototypical case, epistemic cues rest on information in the hearer's knowledge store that is relatively unchanging, and so the cues are stable through an unbounded interval that contains the trigger moment. An example might be the epistemic cues a hearer might derive from the category "horse" in her knowledge store (see section 7.1.2 for such "effective categories") and might use as a speaker says *That's my horse* while pointing toward a cow and horse standing together.

An element of information can also enter a hearer's working memory during the current discourse—as recently as the sentence preceding the trigger—and then serve as an epistemic cue that occupies a bounded interval concurrent with the trigger. For example, a researcher showing a visitor around his lab might first say (4a) and then say (4b) while pointing with lateral ambiguity toward two outer garments hanging from hooks, one of them a light lab coat and the other a heavy jacket.

- (4) a. The next room in my lab is kept cold. b. You might want to wear !-that.

The next room's coldness described in (4a) is new information for the hearer, but it is serviceably in her awareness as she hears the trigger *that* in (4b). It thus becomes an epistemic cue occupying a relatively brief bounded interval concurrent with the trigger moment. She uses this epistemic cue—together with environmental cues from the two garments she perceives, as well as with further epistemic cues from her knowledge about what protects against cold—to reason that the target intended by the speaker is the heavy jacket, and not the light lab coat.

New knowledge usable as an epistemic cue can also arise adjacently to a trigger, where it can be regarded as effectively in copunctual concurrence with it. For example, a handyman might say (5) to a householder while pointing with lateral ambiguity toward two tools, one of which is a hammer.

- (5) Could you pass me that gimlet?

The final word in this utterance generates in the hearer the instant knowledge that *gimlet* is the name of a kind of tool, one that she is unfamiliar with. She uses this knowledge as an epistemic cue with which to reason that the speaker's intended target is the tool other than the familiar hammer.

In all three of these examples, certain information accessible by the hearer is (effectively) concurrent with the trigger moment and, by the concurrence condition, is ruled in as a potential epistemic cue. Through the operation of perichronal cues, this condition rules out any information that was once in the hearer's knowledge store but that was since superseded or, for that matter, any information that will be but is not yet in her knowledge store.

The corporal cue category. Cues of the corporal category can also exhibit all three forms of concurrence with a trigger moment. That is, while uttering a corporal trigger like *here*, a speaker can be at a location for an unbounded interval, for a bounded interval, or momentarily. If the hearer infers that the vicinal region targeted by the trigger is linked with a particular concurrence type, that information can help her select the relevant vicinal region.

The case of a location being occupied indefinitely might be realized by a bedridden or shipwrecked speaker. This case might be illustrated by a hospital patient saying (6). The hearer would interpret the targeted vicinal region as the patient's hospital room.

(6) I never see anyone new here.

The case of a location being occupied for a bounded interval might be illustrated by a student in a library archive saying (7). The hearer would interpret the vicinal region as being the whole archive. Through the use of perichronal cues in conjunction with the concurrence condition, she would rule out regions occupied by the speaker during other bounded intervals, such as the period of walking to the archive, which might have instead been rather quiet.

(7) It's surprisingly noisy here.

Finally, the location of a moving speaker at the moment he utters a corporal trigger is a corporal cue occupying only a temporal point copunctual with the trigger moment. This case is illustrated by a speaker hurrying down a sidewalk and saying (8) to a companion as he glances at a shop window. The hearer will interpret the vicinal region as the small area around the speaker at that instant and will rule out prior or upcoming small areas along his path.

(8) Let's come back here soon to look at the display.

The perichronal properties of a corporal cue can be further teased out with a sentence like (9), which includes both the corporal trigger *here* and the past tense.

(9) The governor was here at 10 AM this morning.

The speaker might be a guard at a state fair who at 2 PM has entered a particular pavilion for the first time that day. He knows that the governor was in the pavilion at 10 AM that morning, but left it after that. The corporal cue is the location of the speaker—hence, of the guard, not of the governor—at 2 PM and not at any other time of the day. The target of the corporal trigger *here* is then the region around the guard at 2 PM, not the region around the guard at any earlier time of the day, nor the region around the governor at 2 PM. This targeting of the region is thus linked, as it were, with the “present tense” of the utterance's production, not with the past tense of the utterance's

reference. The latter refers only to the earlier location of the governor in the presently targeted region.

The hearer-focus cue category. Cues of the hearer-focus category can in principle exhibit all three forms of concurrence with a trigger moment, though it is implausible for a hearer to focus on something through an unbounded interval. The presumable norm is for the hearer to focus on something through a bounded interval. This could be a longer interval, as when she is reading a book whose title is visible, prompting a speaker to say (10a). Or it could be a shorter interval, as when she looks at a passing car, prompting a speaker to say (10b) (repeated here from an earlier example).

- (10) a. That's a great book. b. That's a Ferrari.

And a hearer-focus cue can come close to being punctual, as well as copunctual with a trigger. For example, a museum docent might watch a visitor's glance jump from one to another display in the small-mammals room and say (11) in pace with her glances.

- (11) That's a meerkat. And that's a lemur. And that's a hedgehog.

A hearer's attention on something generally cannot serve as a hearer-focus cue for a trigger if it ends before or starts after that trigger, thereby failing the concurrence condition. However, a hearer's observable attention on something does seem able to serve as a hearer-focus cue even if it terminates before a speaker's trigger, provided that the delay is brief. For example, if a hearer looks intently at a particular car in traffic and then looks away for a few seconds, a speaker can still say (12), now using either the present or the past tense. The speaker here invokes a hearer-focus cue by relying on the hearer to recall her just-preceding attentional focus.

- (12) That's a Ferrari. / That was a Ferrari.

12.1.3 Cues either Concurrent or Nonconcurrent with the Trigger

The cues of the remaining three categories—gestural, co-form, and targetive cues—can be either concurrent or nonconcurrent with their associated trigger. They will be called **separable cues**. They are still under the proximity condition, but are not under the concurrence condition. When a separable cue is in fact not concurrent with any trigger, a new issue arises. How does a hearer associate it with a particular trigger?

To start with a broader perspective, the role of perichronal cues focused on in the last section was to determine whether an element in the ambit of a trigger could, on the basis of its temporal properties, serve as a potential cue for that trigger. The temporal property at issue there was whether the element was concurrent with the trigger. Perichronal cues can play an analogous role here. They can determine whether a nonconcurrent element can serve as a potential separable cue for a particular trigger by being

proximal enough to it. And to some extent, this role will be considered here as well. But in the present section, we treat a given nonconcurrent element as already being a potential separable cue and focus instead on *which* trigger it should, on the basis of its perichronal cues, be associated with.

Addressing the three separable cue categories in turn, each of the next three subsections proceeds through a graduated series of cases to determine the set of conditions that govern such associations. Though differing somewhat, these conditions will be seen to be largely comparable across the three cue categories.

We again note that the staggered occurrence of the cue and the trigger in such associations engages the hearer in a particular accessing type of those listed in section 1.5.1: working-memory accessing. If a cue precedes the trigger, the hearer can access it only in her working memory by the time the trigger is heard—she can no longer access it directly. By the same token, if the trigger precedes the cue, the hearer can access it only in working memory by the time she perceives the cue—the trigger is no longer directly audible. The cues in these two cases can be respectively called a **pre-cue** and a **post-cue**.

The gestural cue category A gestural cue—say, a speaker's pointing a finger at the target—perhaps usually occupies the durational range from a brief interval to a temporal point. The speaker can generally produce such a cue in concurrence with the trigger it is to be associated with. But in some circumstances, it seems, a speaker can also produce a gestural cue nonconcurrently with the associated trigger, proximally before or after it. We now examine such circumstances, proceeding through progressively more complex ones, to derive an additional series of conditions for associating a gestural cue with a trigger on temporal grounds.

One cue and one trigger. We begin with a basic case of a speaker producing one gesture and one trigger—the one it is to be associated with—with a brief separation between them. Standing with a companion before several horses, a speaker could first execute a gesture toward a particular horse and then, after a moment's pause, turn toward the hearer and say (13). The gesture might consist of lifting his hand, unhurriedly moving his horizontally extended forefinger about eight inches toward the horse, retracting it, and lowering his hand. Comparably, the speaker could have first uttered the sentence and then, after a moment's pause, made the gesture. The pre- and post-cues here might be more specifically called, respectively, a **pre-gesture** and a **post-gesture**.¹

(13) That's my horse.

In accord with the proximity condition, the pre-gesture cannot have occurred too long before its associated trigger, nor a trigger too long before an associated post-gesture. Suppose, for instance, that the speaker of the example had produced his gesture five minutes before his use of a trigger in an utterance. His pointing gesture might

have correctly intersected with his horse. But it would presumably have attenuated in the hearer's working memory—that is, gradually lost its activation—and be too backgrounded there when the trigger occurs five minutes later for her to associate it with that trigger. That is, it would have failed the activation condition. Or if she does manage to link the gesture with the trigger, it seemingly would be through general reasoning processes, rather than through the specifically linguistic cognitive processing at work in an operation of targeting.

If a speaker produces only one gesture and one nonconcurrent trigger that seems to call for a gestural cue, and both occur within a period of time that meets the proximity condition, as in this subsection's original pre-gesture and post-gesture examples, then the hearer's process of associating the two elements is straightforward. Neither the cue nor the trigger has any competition, so the hearer associates them by default. We will say that the cue and the trigger here meet the **no-competition condition**.

One cue and two triggers. The next pattern we consider differs from the last by adding a trigger occurring in its own separate utterance, one that follows the initial utterance after a slight pause. The new examples, then, will each have one gesture and two triggers in distinct utterances separated by a pause, where all three elements occur within a single span of the hearer's working memory.

For an initial case, suppose a speaker first says (14a) with its trigger *that* and, at the same time, looks and points at a particular horse among several in a field, as represented in (14b). A moment later, he turns to face the hearer and, without gesturing, says (14c) with its own trigger *that*.

- (14) a. That horse is lame.
- b. <points toward a particular horse among several horses>
- c. That's my horse.

The hearer can be assumed to associate the gestural cue in (14b) at least with the trigger it is concurrent with, the trigger *that* in (14a). The basis for this association, we propose, is that the trigger meets what can be called the **closest-trigger condition**, pertaining to temporal closeness. If a speaker produces two or more temporally staggered triggers that are able to host a particular cue, then, by this condition, the cue will at least be associated with the one closest to it in time.

But the hearer will also likely judge that the later trigger *that* in (14c) has the same speech-external target—the same particular horse—and that the gestural cue associated with the first trigger continues its singling-out function for a second targeting of that horse.²

The hearer here thus associates the gestural cue in (14b) not only with the concurrent trigger in (14a), but also with the subsequent trigger in (14c). That is, she associates the same cue with more than one trigger or, as we will say, with plural triggers.

—The plural-trigger condition and the pre-cue constraint. For the same cue to be associated with plural triggers, though, a **plural-trigger condition** must be met. And this condition itself is met only if two particular constraints are met. One of these is the **pre-cue constraint**. Under this constraint, a cue's associability can extend only forward to a later trigger, not backward to an earlier one. Put another way, if a cue is concurrent with a particular trigger, it can also function as a pre-cue for a later trigger, but not as a post-cue for an earlier trigger.

To illustrate, suppose that the gesture in (14b) is now produced concurrently with (14c) rather than with (14a). The speaker now says (14a) while looking at the hearer without pointing and then looks and points toward the horse while saying (14c). In this case, the attempt at targeting in (14a) is a failure while that in (14c) succeeds.

—The gesture-category constraint. The other constraint that must be met for the plural-trigger condition to hold can be called the **gesture-category constraint**. This constraint pertains to the ten categories of targeting gestures identified in chapter 5. It applies where the cue in question is, in fact, gestural. Under this constraint, for a gestural cue to be associated with plural triggers, it must be interpretable as belonging to the same gestural category for each trigger.

This constraint is met in the original example. The gesture is interpreted as a target-intersecting gesture (see section 5.2) both with the trigger *that* in (14a) (the lame horse) and with the trigger *that* in (14c) (my horse).

Now, though, consider the example in (15).

- (15) a. That horse is lame.
- b. <points, projecting a fictive line interpretable as
intersecting with or passing through the horse>
- c. My son drove off that way.

As in the original example, the speaker here says (15a) while pointing toward one horse among several. In accord with the closest-trigger condition, the hearer will associate this gesture at least with the trigger *that* in (15a) and will class it as a target-intersecting gesture that intersects with the one horse.

But the trigger *that* in (15c) calls for the gesture to belong to the target-coprogressing category (see section 5.5), with its projection passing through the horse and extending on in alignment with the son's path. The same pointing gesture can accommodate either interpretation. It is in effect "polysemous," with each trigger calling for a different sense within its polysemous range.

However, (15c) is infelicitous in this sequence, and its trigger governs a failed targeting event. The reason would seem to be that the sequence breaks the gesture-category constraint, since the gesture was first to be interpreted as intersecting and now as

coprogressing. Accordingly, the plural-trigger condition is unmet, so that the gestural cue associated with the first trigger cannot also be associated with the second.

As seen, if either the pre-cue constraint or the gesture-category constraint is unmet, the plural-trigger condition does not hold. In that case, a nonconcurrent cue can be associated with only one trigger where two or more triggers are present. We will then say that the cue is under an **exclusive-trigger condition**. This condition will be seen to play a further role in our analysis.

—Looseness of the plural-trigger condition. We just observed where the plural-trigger condition fails to hold, but we can now observe where it holds more amply than might have been thought. The condition here exhibits a certain loosening from strict specificity. In particular, the condition is met where a target-intersecting gesture, due to lateral ambiguity, can indicate nothing smaller than a whole grouping of objects, but where each of the plural triggers targets a different one of those objects. In this case, the single gestural cue can still be associated with all the triggers.

To illustrate, consider an example like the original one in that the speaker again says (16a) and, at the same time, points as before. But now, the field has both horses and cows, and he points with lateral ambiguity toward a particular horse-cow pair, as represented in (16b). Then, without pointing again, he produces the new utterance in (16c).

- (16) a. That horse is lame.
- b. <points toward a horse and cow standing together
among other horses and cows>
- c. And that cow is my favorite.

Co-form cues from the word *horse* in (16a) and from the word *cow* in (16c) provide enough lateral disambiguation for the hearer to single out first the horse and then the cow from the pair indicated by the gesture. The interesting point here, though, is that this same single gesture, produced only at the outset, serves both as a cue in association with the trigger *that* in (16a), which targets the horse, and as a pre-cue in association with the trigger *that* in (16c), which targets the cow.

Here again, the gesture's effect can spread only forward in time in accord with the pre-cue condition. Thus, if the speaker had said (16a) while looking at the hearer without pointing, and then looked and pointed toward the horse-cow pair while saying (16c), then (16a) would be a failed targeting event.

Two cues and two triggers. For the next increment in the present series of examples, we add a second gesture temporally separated from the first. The new examples, then, will each have two temporally separated gestures and two triggers in distinct utterances separated by a pause, where all four elements occur within a single span of the hearer's working memory. These examples will also be set up so that the first and second gestures

indicate different objects, and the first and second triggers take those objects as their respective targets. Consider first the following example, again said and gestured by a speaker standing before several horses.

- (17) a. That horse is lame.
- b. <points toward one of several horses>
- c. And that horse is nervous
- d. <points toward a different one of the horses>

Consider first the case where the gestures in (17b) and (17d) are either concurrent with the triggers in (17a) and (17c) respectively, or—as either pre- or post-gestures—are near them. The hearer will associate the gestures with their respective triggers in accord with the closest-trigger condition. She may also block each gesture from becoming associated with the other trigger in accord with a version of the exclusive-trigger condition. In this version, the blockage applies where two triggers would call for a particular gesture to indicate different objects, rather than for it to belong to different categories.

Suppose next that both the gestures are post-gestures, and that the speaker delays producing them by the same amount after the utterances containing their respective triggers. The delay is such that the first gesture in (17b) still occurs before the second trigger in (17c). But it is now temporally closer to that second trigger than to the first trigger in (17a). The first gesture is also closer to that second trigger than the second gesture in (17d) is. Experimentation is needed, but we speculate that the hearer would nevertheless continue to associate the first gesture with the first trigger, and the second with the second. If so, these associations would run counter to the closest-trigger condition.

The hearer's associations would instead be in accord with what can be called the **co-sequencing condition**, which then overrides the closest-trigger condition. By this new condition, if a speaker produces n gestural cues in roughly the same period as n triggers, then the hearer associates the first gestural cue with the first trigger, the second with the second, and so on. This condition would also hold for the reverse of the preceding setup, where both gestures are now pre-gestures produced in anticipation of the utterances containing their respective triggers.

However, this new condition by itself is still not enough to exclude certain seemingly unviable cases. As it was just characterized, it would technically permit both the gestures in (17) to appear after both the triggers had been uttered, so that the sequence of the entries in (17) would now be [a-c-b-d]. But the hearer in such a case would presumably not be able to associate the gestures with the correct triggers, even though both pairs still have the correct co-sequencing. An additional **no-crossing condition** would be needed. By this condition, the gesture in (17b) can maintain its association with the trigger in (17a) if, in its delayed production, it solely approaches the trigger in (17c), but does not co-occur with or follow that later trigger. The no-crossing condition would

also hold for the reverse of the preceding setup, where both gestures precede both utterances in a [b-d-a-c] sequence.

The co-form cue category We turn to cues of the co-form category. As seen in chapter 4, a co-form cue to a target can be provided by linguistic material in the ambit of a trigger that can range in size from a single morpheme to a portion of discourse. With respect to its temporal properties, then, a co-form cue can correspondingly range in duration from a single temporal point to a relatively sizable bounded interval. But we here focus on the briefer type.

As with separable cue categories generally, it is possible for the co-form cue to be concurrent with the trigger. But this can happen only if the trigger is of the prosodic type engaged in subsentential chroral targeting, and if the co-form is coincident with that trigger. Otherwise, the co-forms that provide cues to the target are nonconcurrent with—that is, separated from—their trigger. They can appear in the same sentence as the trigger, but also in surrounding sentences as well. Their temporal separation from the trigger is then constrained by the proximity condition or, equivalently, the activation condition. We again go through a succession of cue and trigger combinations to work out the perichronal cues that co-forms can exhibit.

One cue and one trigger. We again begin with a basic case where now the speaker produces one trigger and one co-form cue associated with it. To illustrate, a rancher might first say (18a) to an inexperienced visitor and, after a pause, then say (18b) while pointing with lateral ambiguity toward a horse and cow standing together among other horses and cows.

- (18) a. We raise many breeds of horses on our ranch.
 b. That's a Falabella. <points toward a horse-cow pair>

On hearing (18b), the hearer knows from the core cues of the trigger *that* that the target is a uniplex distal object and from the accompanying gestural cue that it is one of the two animals pointed at. But while she might infer that the word “Falabella” refers to a particular breed, she does not know whether it is a breed of horses or of cows, and so that word provides no co-form cue that she might use to further narrow down to the specific target. However, the word *horses* in the prior (18a) sentence provides the co-form cue that the target may involve horses, and this is enough additional information for the hearer to single out the horse of the horse-cow pair as the intended target.

The only co-form cue in the immediate discourse able to resolve the trigger's targeting is the one provided by the word *horses* in (18a). Correlatively, the only trigger for which the word *horses* can provide a co-form cue is the *that* in (18b). Neither the cue nor the trigger have any competitors. They can accordingly be held to meet the

no-competition condition (introduced earlier for the case of one gestural cue and one trigger), with the result that the hearer will associate the co-form cue with the trigger.

We can further ask how much earlier (18a) can occur before (18b) and still provide it with a co-form cue. In general, co-forms may influence a hearer's sense of the ideational context more than, say, gestures, so that a co-form cue might have a longer period of activation in her working memory than a gestural cue does. If so, then the proximity condition it must meet may be more lax. But there will be some (albeit fuzzy) amount of anteriority beyond which (18a) would no longer be associated with (18b) and serve to disambiguate it.

As in the gestural case, a co-form cue seems able to follow the trigger it is to be associated with. For example, suppose that the rancher here first said (18b) while pointing toward the horse and cow, and then, after a pause, said (18a). The hearer might well have the core and gestural cues active enough in working memory for them to become successfully complemented when the co-form cue later arrives.

One cue and two triggers. The next case continues with a single co-form cue, but now, instead of just a single trigger, there are two triggers in separate utterances. A co-form cue can meet the same plural-trigger condition seen earlier for gestural cues—in fact, more extensively so. To illustrate, suppose now that the rancher first says (19a) while pointing with lateral ambiguity toward a horse and cow standing together, then after a pause says (19b), and after another pause says (19c) while now pointing with lateral ambiguity toward a different horse and cow standing together.

- (19) a. That's a Falabella. <points toward one horse-cow pair>
- b. We raise many breeds of horses on our ranch.
- c. That's an Andravida. <points toward a different horse-cow pair>

The word *horses* in (19b) provides the co-form cue that the target pertains to horses. This single co-form cue can extend both backward and forward to resolve the ambiguity in both the prior (19a) and following (19c) utterances, each with its own trigger and accompanying gesture. The hearer will thus understand that Falabella is the breed of the horse in the first pair of animals, and that Andravida is the breed of the horse in the second pair—and that these breed names do not apply to the cows.

It was seen earlier that for a gestural cue to meet the plural-trigger condition, it must meet the pre-cue constraint. But the present example shows that a co-form cue is not under the second constraint. Its effect can extend both backward and forward so that it becomes associated with triggers both before and after it.

Two cues and two triggers. As with the gesture series, we can now add a second co-form cue for a total of two co-form cues and two triggers in separate utterances. For example, the co-form cue about horses that the rancher provides in (20a) lets the hearer single

out the horse as the intended target of the trigger in (20b) with its underspecific core cues and accompanying gestural cue. Likewise, the co-form cue about cows in (20c) lets the hearer single out the cow as the target for the underspecific cues of (20d).

- (20) a. We raise many breeds of horses on our ranch.
 b. That's a Falabella. <points toward one horse-cow pair>
 c. We also raise many breeds of cows.
 d. That's a Barzona. <points toward another horse-cow pair>

The same co-sequencing condition seen at work earlier for gestures applies here as well. To restate it for the present cue type, if a speaker produces n co-form cues in roughly the same period as n triggers, then the hearer associates the first co-form cue with the first trigger, the second with the second, and so on (and, as treated in the next subsection, the co-form cues must also be mutually incompatible).

And as before, this condition by itself is not enough. Suppose that the (20a) and (20c) utterances containing the two co-forms were both produced initially, while the (20b) and (20d) utterances with the two triggers and accompanying gestures were both produced last, to yield a [a-c-b-d] sequence. We speculate that a hearer would be unclear how to sort out the cues and carry out the targeting. If so, a sequence of this sort should be blocked, and the no-crossing condition seen earlier serves to that end here as well. By this condition, the co-form cue about cows in (20c), which is in second position in the revised version, cannot cross over the trigger appearing in (20b), now in third position, to become correctly associated with the trigger appearing in (20d) still in fourth position.

Two cues and one trigger. We now consider the combination of two co-form cues and one trigger.

—Compatible cues. In one type of case, the two co-form cues are compatible with each other and provide complementary elements of information. But both need to be associated with the trigger for the targeting to succeed. We will say that such a case must meet the **plural-cue condition**, a counterpart of the earlier plural-trigger condition.

An example is an artist uttering the sequence in (21) at an exhibition. While saying (21c), he points with lateral ambiguity toward a grouping of three paintings, one of them a portrait in a square frame, one a still life in an oval frame, and one a portrait in an oval frame.

- (21) a. I only paint portraits. b. All my frames are oval. c. That's my painting.

By combining the co-form cue about portraits in (21a) with that about oval frames in (21b)—together with the core and gestural cues in (21c)—the hearer has enough

information to narrow down to the one painting within the grouping that is both a portrait and oval.

—Incompatible cues. In a second type of case, two co-forms under consideration cannot both compatibly apply to the trigger, and so they provide two merely potential co-form cues, only one of which is the actual cue to be associated with the trigger. They fall under what can be called the **exclusive-cue condition**, a counterpart of the earlier exclusive-trigger condition. We illustrate with the new rancher example in (22).

- (22) a. We raise many breeds of cows on our ranch.
 b. And we raise many breeds of horses.
 c. That's a Falabella. <points toward a horse-cow pair>

Here as earlier, the utterance in (22c)—with its too-general trigger *that*, its subeffective co-form cue from the word *Falabella*, and its laterally ambiguous accompanying gesture—does not provide enough cue information for the hearer to settle on the intended target. The co-form *cows* in (22a) and the co-form *horses* in (22b) each provide a potential co-form cue that the target is respectively a cow or a horse, but they cannot both be associated at once with the trigger in (22c). However, the hearer seems likely to pick the co-form *horses* in (22b) as providing the actual co-form cue, and be likelier to do so the longer that the interval between (22a) and (22b) is.

If so, the hearer would be complying with what we might call the **closest-cue condition**—a counterpart to the closest-trigger condition introduced earlier. By this new condition, the trigger is associated at least with the closest of two or more cues. Adding in the exclusive-cue condition then rules out any farther cues.

Suppose now that the (a) and (b) sentences of the preceding example are combined into the single sentence of (23a) in which the mention of cows and the mention of horses, though still in the same sequence as before, now occur in the same phrase.

- (23) a. We raise many breeds of cows and horses on our ranch.
 b. That's a Falabella. <points toward a horse-cow pair>

The inexperienced hearer in this case would not be able to resolve whether the speaker's intended target is the cow or the horse of the indicated pair. The reason, it seems, is that the closest-cue condition requires that the competing cues be sufficiently separated in time and that the mention of cows in the same phrase with horses is too close.

The targetive cue category We turn finally to cues of the targetive category. As seen, a targetive cue is a sensory stimulus emitted by a target and perceivable by a hearer as a clue to the target. As with separable cues generally, a targetive cue can be concurrent with the trigger, as when it is continuously available through an unbounded interval (e.g., the sight of a horse in a field), available through a bounded interval (e.g., the

sight of a horse running from behind one barn to behind another), and, if the speaker times his trigger just right, even punctual (e.g., the sound of a thunderclap). But we here treat only the temporally separated case—bounded or punctual targetive cues that end before the trigger or begin after it. We again proceed through a series of cue-trigger combinations.

One cue and one trigger. Returning to the examples in section 2.3.2 with a one-second electronically generated tone, we begin again with the basic case of one cue and one trigger, as in (24). The tone in (24a) ends one second before the start of the utterance containing the trigger in (24b). The targetive cue here is the auditory stimulus that the hearer perceives.

- (24) a. <a tone starts and ends> b. That's an F sharp.

Since the hearer hears only one potential targetive cue and one trigger that could target it, she readily associates the two under the no-competition condition. Note that although the hearer perceives the targetive cue when the tone is sounded, thus meeting the perceptual requirement for a cue to be targetive, she can access that cue only in working memory by the time she hears the trigger. The cue is then under the activation condition—it cannot have occurred so long before the trigger that its trace in working memory becomes too attenuated.

As before, the targetive cue can appear on either side of the trigger and still be associated with it. Thus, as in (25), the tone can be sounded after the utterance with the trigger. The trigger in this case can only be *this*, not *that* (see section 2.3.2).

- (25) a. This is an F sharp. b. <a tone starts and ends>

One cue and two triggers. The case of one targetive cue and two triggers can readily meet the plural-trigger condition. For example, a hearer would associate the auditory targetive cue occurring in (26b) both with the preceding trigger *this* in (26a) and with the following trigger *that* in (26c).

- (26) a. This is an F sharp.
b. <a tone starts and ends>
c. That's the top note of a G major seventh chord.

Two cues and two triggers. As before, we can take the next step and consider two targetive cues and two triggers, as in (27).

- (27) a. <a tone starts and ends>
b. That's an F sharp.
c. <a different tone starts and ends>
d. And that's a G.

The co-sequencing condition holds here as earlier. To restate it for the present cue type, if n targetive cues occur in roughly the same period as n triggers produced by a speaker, then the hearer associates the first targetive cue with the first trigger, the second with the second, and so on. Thus, the targetive cue in (27a) will be associated with the trigger in (27b) and that in (27c) with the trigger in (27d).

We can consider certain permutations of the sequence in this example, provided that a *that* is shifted to a *this* where necessary. The same cue-trigger associations will then result by the co-sequencing condition where the two tone-soundings occupy the outer positions in an [a-b-d-c] sequence or where they occupy the inner positions in a [b-a-c-d] sequence.

As before, though, certain permutations that do maintain co-sequencing are nevertheless infelicitous. One example is where both tones occur before both utterances in an [a-c-b-d] sequence. But also as before, such sequences are blocked by the no-crossing condition.

—Former/latter. However, the no-crossing condition can be circumvented through the use of a certain construction containing the word *former* or *latter*. We analyze this as a particular part-whole construction. The portion of this construction that represents the “part” is the noun phrase *the former* (N/one) or *the latter* (N/one). And the portion that represents the “whole” includes a trigger *them/these/those*. This trigger collectively targets a single group whose elements would otherwise be targeted separately. This construction is of the partitive type analyzed in section 3.3.3—specifically, of the subtype where the “part” is a definite token and the “whole” is a definite multiplexity. The portion of this construction that contains the trigger can be ellipsized. The preceding “tone” example whose sequence of components was barred by the no-crossing principle is seen in (28) to be acceptable when modified to include the new construction.

- (28) a. <a tone starts and ends>
 b. <a different tone starts and ends>
 c. The former (tone/one) (of those two tones) is an F sharp.
 d. The latter (tone/one) (of those two tones) is a G.

Note that although this trigger-containing *former/latter* construction might usually be associated with speech-external (anaphoric) usage, the present example shows that it can also be used speech-externally (deictically). Thus, like many previous trigger complexes, it spans both targeting domains.

Two cues and one trigger. As with co-form cues, the case of two targetive cues with a single trigger can come under the closest-cue condition. For example, if two different tones are sounded in succession, as in (29a) and (29b) and the speaker next uses the trigger *that*, as in (29c), then the hearer will likely select the tone closest to that

trigger—here, the second tone in (29b)—as the intended target. This effect increases the longer that the interval between the two tones is.

- (29) a. <a tone starts and ends>
- b. <a different tone starts and ends>
- c. That's an F sharp.

For a comparable example that changes the trigger from *that* to *you* and the targetive cue from a tone to speech, we reprise the utterance in (2:98b), copied here as (30). After one student in a class has spoken to offer a legal opinion, the law professor, without looking at the student, produces the utterance.

- (30) How would you justify that conclusion?

The student's speaking can be regarded as a targetive salience cue that points to that student as the target. But the same might be said about any other student who had earlier spoken up during the class. This is thus a situation with one trigger—the word *you* uttered by the professor—and several potential targetive cues. But the closest-cue condition rules in favor of the temporally closest case of a student speaking as the targetive cue that should be associated with the trigger *you*. Accordingly, the entity producing that cue—the student who just spoke—is ruled in as the intended target.

Two targetive cues can also be temporally separated because either their targets or the speaker and hearer are moving through space. The closest-cue condition can apply here as well. To consider the latter type of motion, suppose that two joggers are running along the sidewalk past successive parked cars spaced amply apart, each car in turn to the left of them (as first seen in section 1.2.5). When the joggers are beside one particular car, the speaker might look to his companion and, without gesturing, say (31).

- (31) That's my car.

The hearer will likely select the car now directly to the left of them as the speaker's intended target, rather than any of the cars they have passed or will pass, even though those in principle are also candidates for target status. Our account for this rests on our temporal interpretation of the closest-cue condition. The perceptual availability of each car that the hearer passes in turn occurs within a bounded interval during which she has a view, or the clearest view, of it. The visual stimuli enabling such delimited views are the potential targetive cues produced by each target candidate in turn. They are temporally sequenced. The car currently left of the speaker and hearer thus provides the temporally closest targetive cue, which will then be the one associated with the trigger *that*.³

12.2 Perichronal Cues that Help Determine the Target Directly

We turn now to perichronal cues of the minority type that directly help a hearer determine the target—rather than help him settle on which cues to use to determine the target, as in the majority indirect type just treated. The use of such direct perichronal cues, though, is subject to three limitations.

First, they pertain only to a subsentential target—that is, the target indicated by and coincident with a prosodic trigger. They help determine the temporal location and sometimes duration of such a target. Second, seemingly the only types of elements that yield direct perichronal cues are co-forms and gestures, treated in turn in the next two sections. The speaker exercises her productive control over both these types. And third, the elements of these two types are not used for any co-form cues or gestural cues that they might provide—and in fact generally do not provide any. They are used, rather, for certain temporal characteristics of their execution, which then constitute the perichronal cues.

12.2.1 Direct Perichronal Cues from Co-Forms

Direct perichronal cues provided by co-forms were already seen in some subsentential examples in section 11.2. The first such example in (11:29) is repeated in (32), which is modified to include an additional pause. This example is of the type where the prosodic trigger is compressed, marking a trigger instant that is copunctual with the target—the compressed chroral interval—as well as with the punctual Figure event of button pressing.

- (32) If you want to save my life, . . .
 press the green button . . . riiiiight . . . NOW!

The pauses and extended pronunciation in the co-forms leading up to the trigger are perichronal cues that prepare the hearer for the instant of that trigger's occurrence. Together, these perichronal cues and the trigger's own precise temporal placement—the chroral cue—function to guide the hearer in singling out a particular instant in the progression of time as the target. Such perichronal cues consist either of relative temporal location or of duration and speed, treated next in that order. In accord with the third limitation cited in section 12.2's introduction, these temporal characteristics of the co-forms rest only on their execution, not on any co-form cues those forms might otherwise provide. In fact, of the co-forms in the present example, only the word *right* provides a co-form cue that helps single out the target.

Perichronal cues of relative temporal location The analysis can begin by dividing the co-forms in (32) into three groupings—the initial clause, the phrase *press the green button*, and the word *right*. These groupings exhibit five properties of temporal location relative to each other and to the trigger that serve as perichronal cues.

For the first property, they are all nonconcurrent with—temporally separated from—each other and the trigger. For the second property, they precede the trigger, where they can function as a preparatory lead-up to it—they do not follow the trigger. Third, the entire ensemble of co-forms is immediately adjacent to the target—it does not end some time beforehand with other material intervening. Fourth, the three groupings and the trigger are temporally spaced relative to each other in a way that introduces intervening pauses. These pauses are of intermediate duration—not a brief instant and seemingly not much longer than any grouping. And fifth, the speaker may tend to space the groupings and trigger roughly evenly through the period they occupy, so that the pauses between them are roughly equal.

Perichronal cues of duration and speed A speaker can also shift the duration, and hence the speed, of co-forms from their normal delivery to provide perichronal cues to the target. Thus, the speaker in (32) prolongs, and so slows down, her production of the co-form *right*—effects here represented by vowel-letter iteration. Like the pauses, this extended pronunciation marks out an elapse of time that prepares the hearer for the anticipated trigger instant and target.

Though not discussed earlier in section 11.2, the co-forms preceding a subsentential choral instant can also be contracted in duration through a speed-up of their pronunciation. This is seen in (33), where these effects are represented by italics together with dots to indicate that the words are run on with minimal intervening separation. A speaker may produce these effects if she assesses that the prompting event (the event she wants to synchronize her production of the trigger with) is coming up sooner than expected.

(33) If you want to save my life, . . . *press.the.green.button.right*.NOW!

Comparing the earlier and the present type of prosodic effects All these temporal characteristics that the speaker imposes on co-forms can be regarded as prosodic effects that then call for comparison with those of the prosodic triggers in section 11.2. For one thing, both the earlier type and the present type of prosodic effects are alike in that they constitute divergences from a normal prosodic delivery. Constituents are speeded up and shortened or slowed down and lengthened (in both types), spaced further apart or closer together (in some co-form cases), and stressed more heavily (in one trigger case).

Acoustic investigation will be needed to determine whether the two types exhibit the same divergences in duration and speed. On the one hand, the “stretching” of a stretched prosodic trigger does impressionistically seem much like the lengthening and slowing of a co-form. On the other hand, the “compression” of a compressed prosodic trigger seems distinct from the shortening and speeding up of one or more co-forms

together. Accordingly, until a correspondence is demonstrated, we have reserved the terms “stretching” and “compression” for the trigger type and have kept their orthographic representations distinct from those for co-forms.

12.2.2 Direct Perichronal Cues from Gestures

A speaker can also produce gestures whose temporal properties can function as perichronal cues to a subsentential target. The hearer observes these properties and uses them as further help in identifying such a choral target. Such perichronal cues from gestures supplement the information provided by perichronal cues from the co-forms and by the choral cue from the trigger, either corroborating or complementing them.

A gesture of this kind comprises one of the six elements that can be co-located in subsentential targeting (see section 11.2.4). The other five are the prompting event, the Figure event, the trigger moment, the choral interval, and the hearer’s response. We look next at such gestural accompaniment in turn for a compressed and a stretched prosodic trigger.

Gestures for compressed trigger instants We can illustrate the compressed case with a speaker in the woods who has been hearing a periodic quick chattering sound of uncertain location. She asks her companion about the sound’s identity, but he had not been noticing it. To help alert him to its next occurrence, she holds her right hand in front of her chest, upturned at the wrist, with forefinger cocked back and the other fingers curled in. At the instant of the chitter (the prompting event), she rotates her hand forward and then straightens and jabs her forefinger forward, saying: *Right THERE!*.

The cocked phase of this gestural complex can be interpreted as comparable to the lead-up provided by co-forms spaced apart and slowed down. In both cases, the prolongation signals the hearer to be ready for an impending punctual event. In accord with the third limitation cited earlier, the gesture during this phase is produced solely for its temporal properties, not for any exhibitivistic gestural cue that it might have afforded. It provides perichronal cues to the temporal target, ones that yield information complementary to that of the choral cue.

The jabbing phase of the gestural complex—in particular, the sharpness of its movement—can in turn be analogized to the compressed stressed vocal character of the prosodic trigger. Both are produced to be copunctual with the punctual event. Since the sound’s location is unknown, the gesture in this phase also cannot be providing an exhibitivistic gestural cue (e.g., by pointing at the sound’s source). As before, the gesture is instead produced for its temporal properties—here, specifically, its crisp punctuality. It too thus provides a perichronal cue to the choral target—one that this time corroborates the choral cue (i.e., the prosodic trigger instant).

The speaker may join these cues from two different sensory modalities—one visual and one auditory—to enhance a response in the hearer. This response may be like an

orienting response except that the stimuli from the cues do not direct the hearer's attention back to themselves but onward toward a further entity, the sound.

Gestures for stretched trigger moments A gesture can also be associated with a stretched trigger moment and the brief but extended choral interval that it targets. We can illustrate with the “buzz” example in (11:33), which also has a lead-up—a cluster of co-forms followed by a pause—before the trigger. And the speaker's gesture again has two corresponding phases. First, during the co-forms and pause, the speaker might hold her extended forefinger at a fifteen-degree angle above the horizontal. Then, at the onset of the buzz, she might then dip her finger down to a forty-five-degree angle below the horizontal, hold it there for the duration of the buzz, and bring the finger back up to its starting position at the buzz's cessation.

The temporal properties of the initial poised-finger phase in this gestural complex provide perichronal cues that corroborate those of the coextensive verbal lead-up. These are a joint signal to the hearer to wait and remain alert for the starting instant of the target interval. The temporal properties of the gesture's second phase—the instant of the finger's dip, the interval of its hold, and the instant of its return—are also perichronal cues that corroborate the choral cues provided by the stretched prosodic trigger. Both of these in turn match the temporal properties of the targeted choral interval and of the Figure event (i.e., the buzzing). As before, this gesture is produced to provide perichronal cues, not gestural cues.⁴

12.3 Perichronal Cues to a Speech-Internal Target

As has been the case so far in this chapter, we here continue to regard discourse for its overt progression along the speech-external timeline, rather than for any reference it may make to a narrative world progressing along an interior timeline. But in the speech-internal domain that we now turn to, the target is an element of that discourse, not an element outside the discourse as before. Further, only elements of that discourse—hence, a trigger or the co-forms around it—provide temporal properties for assessment. As before, a trigger's moment of occurrence, the trigger moment, provides the choral cue. Now, though, only the temporal relations of co-forms to a trigger can provide perichronal cues.

Chapter 4 posited that a co-form can be regarded as providing a co-form, targetive, or environmental cue in accord with the kind of information it provides. Any of these three cue types could then also be regarded as exhibiting the perichronal cue. In the examples that follow, the co-form cues whose perichronal properties are discussed will in fact mainly function like targetive cues. But for the sake of a clearer treatment, we will refer to them simply as co-form cues.

Co-forms here, further, necessarily show a temporal separation from any trigger, since concurrence is possible only where the target is speech-external and subsentential (see section 12.2). The main issue addressed in section 12.1.3 for separable cues when not concurrent with the trigger, then, is also relevant here. This issue is which trigger it is that a separated cue should, on the basis of its perichronal cues, be associated with. To examine this issue here, we follow the same succession of cue and trigger combinations as in that earlier section.

12.3.1 One Cue and One Trigger

We begin with the simplest case where a portion of discourse contains only one trigger and one co-form that could pragmatically provide a co-form cue associable with that trigger. In the speaker's two-sentence utterance in (34), the only trigger needing a co-form cue is the word *that* in (34b). And the co-form *caviar* in (34a) provides the only relevant co-form cue to the speaker's intended target, which is the referent of that same co-form, namely, physical caviar. Since neither the cue nor the trigger has any competitors, they meet the no-competition condition. As a result, the hearer will associate that co-form cue with that trigger.

- (34) a. I love caviar. b. I wouldn't mind that for my birthday.

As in the speech-external case, an interval of only some maximum duration could be introduced between (34a) and (34b), with the co-form in (34a) still able to meet the basic condition—equivalently, the proximity, within-window, or activation condition—and hence be associable with the trigger in (34b). To be determined experimentally, that duration would presumably be fuzzy and depend on such circumstances as the presence or absence of intervening material.

12.3.2 One Cue and Two Triggers

Again as in the speech-external case, a single co-form can provide the same co-form cue for use with two different triggers. It can thus meet the plural-trigger condition. Such a co-form cue is also not subject to the pre-cue condition, and so can be associated with triggers both before and after it. The example in (35) of a single speaker's three-sentence utterance demonstrates these properties.

- (35) a. I wouldn't mind !-this for my birthday.
b. I love caviar.
c. You could give me that for Christmas, too.

Here, the co-form *caviar* in (35b) provides the same co-form cue as in the previous example. But now the hearer associates this cue both with the preceding trigger *this* in (35a) and with the following trigger *that* in (35c). The referent of the co-form—physical caviar—is thus the target of both triggers.

12.3.3 Two Cues and Two Triggers

We again proceed to the case of two co-form cues and two triggers, all in separate sentences. Consider the earlier speaker now producing the four-sentence utterance in (36).

- (36) a. I love caviar.
 b. I wouldn't mind getting that for my birthday.
 c. I'm also fond of aged port.
 d. You could give me that for Christmas.

The co-sequencing condition earlier governed the association of co-form cues with triggers having speech-external targets, and it does so here as well where the targets are speech-internal. This condition again is that, if a speaker produces n co-form cues in roughly the same period as n triggers, then the hearer associates the first co-form cue with the first trigger, the second with the second, and so on. Here then, the hearer associates the co-form cue from the word *caviar* in (36a) with the trigger *that* in (36b), which then targets the referent of that word, whereas she associates the co-form cue from the phrase *aged port* in (36c) with the trigger *that* in (36d), which in turn targets the referent of that phrase.

And as before, the co-sequencing condition by itself is not enough. Suppose that the (36a) and (36c) sentences yielding their respective co-form cues were both produced initially, while the (36b) and (36d) sentences with the two triggers were both produced last, to yield an [a-c-b-d] sequence. A hearer here would probably be unsure how to carry out an alignment. If so, a sequence of this sort should be blocked, and the no-crossing condition seen earlier would accomplish that.

Again as earlier, though, constructions with *the former/the latter* can circumvent the no-crossing condition, as in (37).

- (37) a. I love caviar.
 b. I'm also fond of aged port.
 c. I wouldn't mind getting the former (one) (of these two entities)
 for my birthday.
 d. And you could give me the latter (one) (of these two entities) for Christmas.

12.3.4 Two Cues and One Trigger

We finally turn to the combination of one trigger and two potentially applicable co-form cues. We consider the case where the two co-form cues cannot both be associated with the trigger at once, and so they fall under the exclusive-cue condition. This case is illustrated in (38).

- (38) a. I love caviar.
 b. And I love aged port.
 c. That's the one thing you could give me for Christmas.

The core cues from the trigger *that* in (38c), reinforced there by co-form cues from the phrase *the one thing*, indicate that the target is uniplex. Co-form cues from the word *caviar* in (38a) and from the phrase *aged port* in (38b) point to their forms' respective referents as potential targets, but only one of those cues can be associated with the trigger. It seems likely that the hearer would select the co-form in (38b) as the one providing the applicable cue—increasingly so, the greater a pause there is between (38a) and (38b). If so, this choice is governed by the closest-cue condition: the co-form referring to aged port is closer to the trigger.

The closest-cue condition can be reillustrated with the competing cues appearing in the same sentence. We examine the three sentences of (39) (all reprised from earlier examples) individually, not as a sequence.

- (39) a. I saw a man near a sapling who was 5 feet tall.
 b. I saw a man near a sapling which was 5 feet tall.
 c. I saw a man near a sapling that was 5 feet tall.

As a trigger, the relative pronoun *who* in (39a) provides the core cue that the target is sapient and so selects for the referent of the co-form *man* over that of the co-form *sapling*. Complementarily, the trigger *which* in (39b) indicates that the target is nonsapient and so selects for the referent of *sapling*.

But as a trigger, the relative pronoun *that* in (39c) provides no core cue pertaining to sapience and so could in principle target the referent of either *man* or *sapling*. However, a hearer is likely to select the latter, the referent of *sapling*, as the target. If so, the reason is presumably that—in the absence of semantically based cues—the closest-cue condition holds sway, favoring the referent of *sapling* because that co-form is closer to the trigger.

12.4 In Sum

A perichronal cue is any temporal property of an element other than the trigger that helps the hearer determine the target. Such perichronal cues are of either the majority indirect type or the minority direct type.

Perichronal cues of the majority type are the temporal properties of the elements near a trigger that indicate which of those elements can serve as cues to its target. They are indirect because they help determine the cues, not the target itself. They variously require that certain conditions be met.

For any element to be a cue associated with a particular trigger, it must meet a certain basic condition with three aspects. Equivalently, it must be temporally close enough to the trigger—the proximity condition; or it must appear inside the trigger's ambit—the within-window condition; or it must remain activated enough in the hearer's working memory when the trigger occurs—the activation condition.

For an element to be a cue of any of six particular cue categories, it must also meet the concurrence condition by sharing at least one temporal point with the trigger. For two of these categories—core and choral cues—the element must meet the even more stringent copunctual condition by occurring copunctually with the trigger moment. For cues of the remaining four categories—environmental, epistemic, corporal, and hearer-focus cues—the element can be more broadly concurrent with the trigger moment, either copunctual with it or containing it.

An element can be a cue of any of the three remaining cue categories—gestural, co-form, and targetive cues—without meeting the concurrence condition: it is separable, able to occur concurrently with or separated from a trigger. But if separated, it must meet certain other conditions to be associated with that trigger. These conditions variously hold for different combinations of one or two cues with one or two triggers. They include the no-competition condition, the closest-trigger or closest-cue condition, the plural-trigger or plural-cue condition, the exclusive-trigger or exclusive-cue condition, the co-sequencing condition, and the no-crossing condition.

In the speech-internal domain, the only elements that exhibit temporal properties are triggers and the co-forms around them. The co-forms are always temporally separated from the triggers, and the perichronal cues they provide closely parallel those of co-forms in the speech-external domain. In fact, they must meet most of the same conditions just enumerated.

Perichronal cues of the minority type are the temporal properties of the elements near a trigger that indicate certain temporal properties of its target. They are direct because they help determine the target itself, not just cues to it. They pertain only to the target of a subsentential prosodic trigger—specifically, only to the precise time and duration of its occurrence. The elements providing such cues are basically either co-forms or gestures. The temporal properties of these elements that can serve as perichronal cues are their temporal relation to each other and to the trigger, and the speed of their production.

Notes

1. Marking a comparable distinction, Clark and Estigarribia (2011) call an extendedly held gesture “leading” or “trailing” if (a portion of) it respectively precedes or follows the utterance containing the trigger.
2. That is, the trigger *that* in (14c) also functions speech-externally. If the trigger there had instead been *it*, it would have a speech-internal target—the referent of the phrase *that horse* in (14a).
3. An alternative analysis would rest on a spatial counterpart of the closest-cue condition. When the trigger *that* is uttered, the hearer selects the spatially closest perceivable image of a car as the relevant targetive cue.

4. Although they do not provide gestural cues, the preceding jabbing gesture and the present dipping gesture may afford certain metaphoric indications. Thus, the forward jab of the previous gesture may suggest a fictive projection intersecting with one physical object located among others. Such an object would have the properties of being a bounded, individuated, and singled out entity. This cluster of properties may then function as a source-domain element that maps onto the bird call with the same cluster of properties in the target domain. And the dip and return of the present gesture might suggest an action something like the pressing and release of a door buzzer, which might again be mapped onto the bounded extent of the buzz.

VI Sequences in Targeting

The targeting process exhibits certain significant forms of sequencing. Though such sequences were previously only implicit or touched on lightly, they are the focus in the next two chapters. The sequences examined in these chapters pertain respectively to triggers and to cues.

Chapter 13 shows that every trigger is lexicalized to require its being located at a certain point in a particular type of discourse interaction sequence. Further, this sequence must include a particular incremental increase in attentional complexity, culminating in joint attention on the target.

Chapter 14 examines the case where a speaker deliberately introduces cues incompatible with each other as a form of “constructive discrepancy.” The hearer must then undertake a particular cognitive sequence that first recognizes the incompatibility and then reconciles it.

13 Interaction Sequences and Joint Attention

Triggers necessarily involve certain interactive sequences carried out by the speaker and hearer that lead to joint attention on the target. This chapter begins in section 13.1 by building up an analytic framework for interaction sequences in general. Section 13.2 then proposes that most triggers are lexicalized to take part in a particular interaction sequence: the basic targeting sequence. Section 13.3 next builds up an analytic framework for common attention in general, with joint attention as its most complex realization. Section 13.4 then relates a trigger's basic interaction sequence to the hierarchy of common attention, showing how it culminates in joint attention on the target. Finally, section 13.5 introduces certain uses of triggers and new types of triggers that diverge from the basic targeting sequence and its attentional pattern.

13.1 Analytic Framework for Interaction Sequences

A simplex morpheme or larger construction in a language (the term “morpheme” or “construction” alone is often used in this discussion to refer to both of these) can be lexicalized to represent a specific temporal sequence of particular events. A morphemically or constructionally represented sequence of this sort has certain attributes. It is in effect a Fillmorean frame that is not punctual but extends through time. It is not wholly static but includes at least one change. And it consists not of a single event, but of two or more.

A trigger turns out to be a morpheme lexicalized to represent a particular sequence of this sort. Starting with section 13.2, we present an analysis of its sequential properties. In the present section, though, we first build up a general analysis of such morphemically represented sequences apart from triggers per se.

13.1.1 Narrowing Down to Interaction Sequences

Morphemes can represent sequences of different types, and we here distinguish among these types so as to narrow down to the type that triggers represent.

Inner versus outer sequences We first distinguish between inner and outer sequences. If a morpheme is lexicalized to represent an **inner sequence**, the morpheme's referent itself comprises a sequence of events. Schank and Abelson (1977) introduced the term "script" for such a referent. An example of theirs, the noun *restaurant*, expresses such an inner sequence—one that, for a customer, includes ordering food from a server and ends with paying the bill. Another example is the force-dynamic sequence referred to by the verb *f2 persuade* (see Talmy, 2000a: chapter 7), as in *She persuaded him that the plan would work*. The referent of this verb covers three stages. In the first stage, the person named as subject holds a belief that the person named as direct object does not share. In the second stage, the subject person presents arguments for the belief while the object person resists. In the final stage, the object person relents and switches to the subject person's belief.

However, a morpheme of the type that includes triggers is lexicalized to represent an **outer sequence** (whether or not it also represents an inner sequence). Such a morpheme is lexicalized to indicate that it must occur within a certain sequence of steps in an interaction between collocutors and, further, that it must appear in a specific one of those steps.

Single-actor versus cross-actor sequences A number of morphemes are lexicalized to represent sequences in which two or more of the steps include the participation of a sentient actor. These will be called **single-actor sequences** where the steps involve the same actor and **cross-actor sequences** where the actors are different (see section 1.6 for the comparable single-speaker/cross-speaker distinction). This distinction applies to both inner and outer sequences, but the remaining analysis addresses only the latter.

To illustrate a single-actor outer sequence, the verb *promise* in its use as a performative is lexicalized to occur in step 1 of a two-step "commissive sequence." Here, the same person who utters the verb in step 1 to commit to performing a particular action, as in (1), is expected to subsequently perform that action as step 2.

- (1) I promise to take out the garbage as soon as I get off the phone.

Other morphemes are lexicalized to represent cross-actor outer sequences. Such a sequence will be specifically called an **interaction sequence** where the morpheme is used in an exchange between two collocutors, and where any two successive steps must be produced first by one and then by the other of the collocutors. A number of morphemes—including all triggers—are lexicalized to represent such interaction sequences.

Interaction sequences can vary with respect to still further distinctions. In particular, the steps can be either all overt or in part covert, and overt steps can be either all verbal actions or in part nonverbal actions—as treated next in order.

13.1.2 The Steps Are All Overt, All Verbal

We first consider interaction sequences whose component steps are all **overt**, that is, perceivable verbal or nonverbal actions. These actions, further, are produced voluntarily, in contrast with the inadvertent actions addressed later.

While section 13.1.3 treats sequences with some nonverbal steps, the sequences in this section have only verbal steps, that is, steps consisting of linguistic utterances. An interaction sequence here thus constitutes a dialog, and the utterances that the collocutors produce constitute the turns of a turn-taking sequence. To show their range, a variety of such dialogic interaction sequences is presented next.

The possibly longest interaction sequence The first illustration in (2), where speakers X and Y alternate turns, exhibits morphemes that require the longest interaction sequence I know of. As elsewhere in this book, an exclamation point before a word marks heightened stress on the word (realized on its main stressed syllable) that is, the level of stress just above primary stress. Such heightened stress largely occurs on a word in contrastive focus, and it is here interpreted as an independent morpheme in its own right, the morpheme responsible for expressing such focus.

Two exclamation points before a word represent **doubly heightened stress** on that word—a level of stress still greater than that of heightened stress. It is generally accompanied by a vocal quality and intonation contour that can be associated with irritation or exasperation. Such doubly heightened stress can in turn be interpreted either as a new individual morpheme in its own right, or as a construction that coalesces two instantiations of the singly heightened-stress morpheme, ones that together express focus on a focus.

- (2) Five-step exasperation sequence
 - a. step 1. X: My son-in-law just totaled his car.
 - b. step 2. Y: !-Who totaled his car?
 - c. step 3. X: My !-son-in-law totaled his car.
 - d. step 4. Y: !!-Who totaled his car?
 - e. step 5. X: My !!-son-in-law totaled his car.

Doubly heightened stress has a highly specialized occurrence pattern, one that requires a particular interaction sequence and a particular place within that sequence. In the main form of this pattern, when doubly heightened stress is on a Wh- word, it occurs in step 4 of a certain five-step interaction sequence, and when it is on a non-Wh- word, it occurs in step 5 of the same sequence.

As (2) illustrates, in step 1 of this sequence, person X as speaker opens a dialog with a declarative utterance presenting certain information. In step 2, person Y as the new speaker, who could not make out one of the words in the original utterance, uses a particular construction, a “Wh- echo question,” to ask person X to re-utter that word for

Y's clarification. This construction consists both of the focusing morpheme of heightened stress on the Wh- word and of a special intonation pattern with sustained high pitch over the whole expression. In step 3, person X accommodates this request with a "Wh- echo answer construction." This construction consists both of the focusing morpheme of heightened stress on the word at issue and of low pitch on the remainder of the sentence.

But person Y still cannot make out the word, so in step 4, he repeats his Wh- echo question. This time, though, he uses the morpheme of doubly heightened stress on the Wh- word—again in conjunction with sustained high pitch. This can be called the "redoubled Wh- echo question construction." This construction may indicate, perhaps with a suggestion of impatience, that this utterance is a second attempt at getting information and perhaps also that it is placing Y's first act of focusing in focus. As with any question, this construction is lexicalized with a particular semantic component, the expectation that the collocutor will follow it with an answer, so that this fourth-step occurrence of the construction must be followed by a fifth step.

This interaction sequence is then in fact concluded when speaker X in step 5 provides the information again by re-uttering the word at issue. She pronounces the word this time with doubly heightened stress—again in conjunction with low pitch on the remainder of the sentence—in what could be called the "redoubled Wh- echo answer construction." The doubly heightened stress at least presents the word more clearly, but the overall construction may also indicate person X's exasperation over the inability of person Y to catch the word the first two times around. This type of five-step interaction sequence might in fact be dubbed the "exasperation sequence."

The two constructions with doubly heightened stress in this example seemingly cannot occur anywhere else than as steps 4 and 5 of such a five-step exasperation sequence. That is, included among the formal and semantic properties lexicalized in the redoubled Wh- echo question construction is the property that it must occur as step 4 of a five-step exasperation sequence, while the redoubled Wh- echo answer construction is lexicalized to occur there as step 5.¹

Shorter interaction sequences We can also look at turn-taking interaction sequences with fewer steps. One of these is in fact embedded in (2). The interchange from (2a) to (2c) taken by itself illustrates a particular three-step interaction sequence that could be called the "Wh- echo question sequence." The Wh- echo question construction, containing singly heightened stress, is lexicalized to require such a sequence and the step 2 position within it. This construction requires a prior step 1 consisting of an utterance of any type, provided it has one constituent unclear to the echo questioner. And it calls for step 3 to consist of a declarative construction with a non-Wh-word under singly heightened stress.

A longer sequence piggy-backing onto a shorter one. The pair of doubly heightened stress constructions in steps 4 and 5 of (2), which complete the five-step exasperation sequence, can be understood as piggy-backing onto the basic three-step Wh- echo question sequence that occupies steps 1 to 3.

In turn, steps 2 and 3 of the Wh- echo question sequence seen in (2) can be understood as piggy-backing onto the declarative construction in (2a). This construction might then be regarded as the sole step of a one-step “sequence,” what might be called the “declarative sequence.” Such a one-step sequence can be taken as the limiting case of an interaction sequence involving turn-taking discourse. It is an utterance type that is complete in itself and requires no response (though see section 13.1.4 for another interpretation).

Interaction sequences with an even number of steps Although the preceding sequences all had an odd number of steps, a morpheme or construction can of course be lexicalized to require a turn-taking interaction sequence with an even number of steps.

Interrogative sequence. Thus, consider an interrogative construction that initiates a discourse exchange. This construction could be either a yes/no question with interrogative intonation or a Wh- question with declarative intonation. Such a construction can be lexicalized to occupy step 1 of a two-step “initiator interrogative sequence,” where step 2 is the collocutor’s expected answer, as in (3).²

- (3) Two-step initiator interrogative sequence
 a. step 1. X: Who won the game? b. step 2. Y: The Warriors.

Correction sequence. For another even-step example, what can be called a “correction construction” is, in its basic usage, lexicalized to occupy step 2 of the two-step “correction sequence.” This construction requires that step 1 of the sequence be occupied by an utterance that contains a constituent that speaker Y regards as incorrect. The sequence is illustrated in (4) (see section 13.1.4 for further analysis).

- (4) Two-step correction sequence
 a. step 1. X: I heard your parents are going to Rome this summer.
 b. step 2. Y: No, they’re going to !-Paris, not !-Rome.

Interaction sequences based on illocutionary effects The constructions cited so far as being lexicalized to require certain interaction sequences have been of a certain type. They could all be characterized as a particular pattern of certain lexical, phonological, or grammatical elements, such as the simplex morpheme *promise*, heightened stress, or a Wh- form. But we here propose extending the notion of a construction. In this extension,

a particular construction is characterized by the specific illocutionary effect that it has. Though such an “illocutionary construction” can also require the inclusion of certain specific elements, it can draw from a wide range of elements for its composition, as long as these elements together produce the defining illocutionary effect. What is relevant here is that some illocutionary constructions are lexicalized to require distinct types of interaction sequences.

We can illustrate with the type of interchange exemplified in (5). Each successive utterance here represents a different illocutionary construction, and each such construction requires the kind of sequence occurring up to that point, culminating in the four-step “concession sequence.”

- (5) Four-step concession sequence
 - a. step 1. X: I’m going to the store for cigarettes.
 - b. step 2. Y: Please don’t go—I need you here to get ready for the guests.
 - c. step 3. X: Well, I’m going to the store anyway.
 - d. step 4. Y: so !-go to the store then.

In step 1, person X’s utterance expressing an intention to perform a certain action has an illocutionary effect of “assertion” or “informativeness” (see section 13.1.4). In step 2, person Y tries to dissuade person X from carrying out this intention with an utterance producing an illocutionary effect of “opposition.” Such opposition seems intrinsically to be a step 2 type of illocutionary effect in a two-step illocutionary “opposition sequence.” In step 3, X’s reassertion of the original intention despite the opposition then has an illocutionary effect of “insistence.” Such insistence in general seems intrinsically to be a step 3 type of verbal act in a three-step illocutionary “insistence sequence.” Finally in step 4, Y yields to the force of the insistence using an expression with an illocutionary effect of “concession”—in this case, with an added angry tone. A verbal act of conceding may thus in general intrinsically occupy step 4 of just such a four-step sequence as the one here that consists of assertion, opposition, insistence, and concession.

13.1.3 The Steps Are All Overt, Some Not Necessarily Verbal

In the interaction sequences just seen, the steps were all overt, that is, perceivable actions, and these actions were all verbal, so that each sequence consisted of a succession of utterances alternating between the two collocutors. Accordingly, where the morpheme or construction that required a particular sequence was itself uttered by a collocutor in step i , and that step was not final in the sequence, then it called for the other collocutor to produce another utterance in step $i+1$ —that is, to produce another verbal action as a follow-up. But a sequence-requiring morpheme or construction in step i can alternatively call for the collocutor in step $i+1$ to produce an action that need not be verbal.

For example, a construction of “command” or of “request” occurs in a step 1 utterance that calls for the collocutor to perform a particular action, not necessarily verbal, as the step 2 response. Such a construction requires a two-step “directive sequence” that need not be a pure dialogic sequence. Thus, person X’s saying (6a) calls for a response by person Y that consists of his physically passing the salt without necessarily saying anything, as represented in (6b).³

- (6) Two-step directive sequence
 - a. step 1. X: Please pass me the salt.
 - b. step 2. Y: <passes the salt to X>

The reason for describing step 2 of the directive sequence as “not necessarily” verbal is that the step 1 directive can in fact explicitly call for a verbal form of action. An example would be person X saying (7ai) to person Y. This step 1 directive shows a minimal contrast with the genuine step 1 question that X produces in (7aii) (see the Interrogative sequence section for this initiatory interrogative construction). Such a question construction is intrinsically lexicalized to require a verbal response as step 2. By contrast, the directive construction requires a response of potentially any action, though it can, as in (7ai), explicitly specify that this action should be verbal.

- (7) a. step 1. X: i. Tell me if you like this drink. ii. Do you like this drink?
 b. step 2. Y: Yes, I do.

What may intervene between steps Each type of interaction sequence can have its own constraints on the degree of separation that may occur between two successive steps, from immediately adjacent to indefinitely great. And where separation is allowed, it can have constraints on the kind of material that may intervene.

At the tightest extreme, a step 2 Wh- echo question seems to require that it immediately follow the step 1 utterance it questions.

Somewhat more loosely, an ordinary step 1 question need not be immediately followed by its step 2 answer. For example, if the responder did not understand the question, it permits a request for clarification and a reformulation of the question to intervene. This sequence might be constrained, though, as to which other construction types it admits.

Potentially at the loosest extreme is the two-step directive sequence just seen. Depending on the wording and context of its step 1 directive construction, it can permit an indefinite amount of material to intervene between its two steps. Thus, the step 1 friendly directive produced by speaker X in (8a) might be followed by innumerable actions over months before person Y produces the step 2 action of the directive sequence in (8b).

- (8) a. step 1. X: Drop by the next time you’re in town.
 b. step 2. Y: <drops by X’s home>

13.1.4 Some Steps Are Covert

In the interaction sequences so far, each step, whether verbal or nonverbal, was perceivably overt. But there are also sequences in which a speaker's utterance in step i can call for the collocutor to enter a particular cognitive state or to execute a particular cognitive process as a response in step $i+1$. Such a response might be accompanied by perceivable bodily movement (which can play a significant role in the targeting sequence, as seen later). But in its defining character, it is interior to the responder, unperceivable by the step i speaker. The step $i+1$ that it occupies will then be said to be **covert**.

Examples of sequences with covert steps An example of this pattern occurs where a speaker's utterance has the illocutionary function of a warning about some potential hazard, as when saying (9a). This step 1 warning calls for the collocutor in step 2 to adopt a cognitive state of caution or wariness about the hazard. Together, the overt utterance and the covert reaction constitute a two-step "warning sequence."

- (9) Two-step warning sequence
 - a. step 1. X: You'd better stay away from that construction site.
 - b. step 2. Y: <enters cognitive state of caution/wariness
over hazard reported in (a)>

Comparably, a step 1 utterance with the illocutionary effect of a suggestion to take a certain action, as in (10a), calls for the collocutor to execute the cognitive process of taking that action into consideration. These overt and covert steps together constitute a two-step "suggestion sequence."

- (10) Two-step suggestion sequence
 - a. step 1. X: You might spend your vacation in Hawaii.
 - b. step 2. Y: <undertakes cognitive process
of considering the idea presented in (a)>

Both of these two-step sequences, along with others like them, are here regarded as full instances of interaction sequences, even though the last step in the sequence has no necessarily overt physical correlate.

The possible prototype of sequences with covert steps Sequences with a covert step as a collocutor response may have a prototype. In it, the speaker uses a declarative construction to produce an illocutionary effect of "informativeness" about certain conceptual content. Such a declarative construction is then a step 1 construction that is lexicalized to call for the collocutor in step 2 to enter a cognitive state of "informedness" about that content in a two-step "informing sequence." The cognitive state of informedness is here understood to entail that the collocutor stores the information

at least in working memory so it is available to be referred back to in the immediate discourse—and, as a possibly implicit ideal, perhaps also in permanent memory. Thus, a speaker saying (11a) expects the collocutor to incorporate the expressed information into his knowledge store, at least for the duration of the interchange.⁴

- (11) Two-step informing sequence
 - a. step 1. X: I saw the doctor today.
 - b. step 2. Y: <enters cognitive state of informedness
about the content expressed in (a)>

The generality of sequences with covert steps The spoken part of the three examples just given—utterances of warning, suggestion, or informativeness—might have first been thought to comprise the sole step of an overt one-step interaction sequence. In fact, section 13.1.2 did treat an utterance of informativeness as the sole step of a one-step declarative sequence. But these are here understood in addition to call for a covert step 2 to be added on to the seemingly one-step overt sequence. The more general principle may be that step n of any overt n -step verbal interaction sequence calls for a covert cognitive follow-up from the collocutor as an additional step $n+1$.

To illustrate this principle where n is greater than 1, consider again the overt two-step correction sequence (see section 13.1.2). Collocutor X here makes an assertion in step 1, and collocutor Y corrects a component of that assertion in step 2. Y's corrective focus construction in step 2 then seems to call for a covert step 3 of cognitive processing by X. In this additional third step, X is to perform a kind of mental "transplant surgery" by swapping out the incorrect concept in her cognitive representation for the correct one, while leaving the remainder of that cognitive representation intact. Thus in (4), X is to keep intact the idea that Y's parents are going to a European capital city in the summer, but is to replace her original concept of 'Rome' with the concept of 'Paris' as the identity of that city.

Components within a covert step Each of the alternating steps in an overt interaction sequence has been treated as unitary. But a covert step of cognitive processing can in some cases be further analyzed as resolving into components, themselves perhaps partly sequenced.

Thus, the third covert step of the correction sequence—just addressed—might include something like the following sequence of components. X first recognizes that Y's utterance has the illocutionary function of a correction. She then zeroes in on the faulty concept at the location it occupies within her original conceptual structure. She next eliminates that concept at that location. And she finally inserts the new concept at that location.

A covert step of evaluation In an interaction sequence, one collocutor in step i can initiate a response from the other collocutor in step $i+1$. We will here call these two collocutors respectively the initiator and the responder. The initiator may in turn evaluate the response of the responder for its adequacy. This cognitive process by the initiator is then a covert step of “evaluation” that occupies step $i+2$.

We first consider the case where such a covert step of evaluation follows an overt step. Suppose that the initiator has produced an utterance as step 1 of a two-step directive sequence. The responder then produces an overt verbal or nonverbal response as step 2. By the new proposal here, the initiator evaluates this response within an additional covert step 3 (though this evaluation may have actually begun during step 2). A directive sequence thus now consists of three steps, the last being a covert step by the initiator.

If the initiator in step 3 evaluates the response as adequate, the sequence ends there. But if the response is evaluated as inadequate, the initiator may undertake a remediation process, perhaps by repeating the directive in a modified form.

The initiator can evaluate not only an overt step $i+1$, as just seen, but also a covert one. For this to happen, though, the covert cognitive processing by the responder in step $i+1$ must be accompanied by manifest physical behavior, perhaps inadvertently produced, such as facial expressions or body language. For example, consider the correction sequence, last analyzed as a three-step sequence. The initiator of the correction first acts in step 2. The original speaker is now the responder in step 3. In step 3, the responder covertly enacts the correction in her cognitive representation. But the initiator may now add a step 4 to evaluate the response by observing any behavior that might accompany the responder’s otherwise internal processing. Such behavior might include, say, a facial expression of slight surprise over the mistake.

Covert concomitants of overt steps Covert cognitive states and processes not only can on their own constitute whole steps of an interaction sequence, as just seen, but can also accompany overt steps. For example, a speaker who asks a question as an overt step 1 utterance accompanies that with certain cognitive states, namely the intention and expectation that the collocutor will produce an overt verbal answer as a step 2 utterance. In turn, on hearing the question, the collocutor may not simply provide an answer as a step 2 utterance, but also experience a compelling need to do so.

13.2 Triggers in a Basic Interaction Sequence

We now propose that a trigger is lexicalized to require a particular interaction sequence in accord with the preceding analytic framework. We will call this the **targeting sequence**. Most triggers require the basic form of this sequence that is set forth here,

but some triggers require certain divergences from the basic sequence, as treated in section 13.5.

The basic targeting sequence, then, is a three-step interaction sequence. A trigger is lexicalized to require this sequence and to occur in step 1 of the sequence. Step 1 is carried out by the speaker, the one producing the trigger; step 2 by the hearer; and step 3 again by the speaker. To facilitate tracking these two collocutors in this chapter's remaining analysis, the speaker will be represented as a "he" and the hearer as a "she." In broad strokes, the speaker in step 1 aims to get the hearer's attention on a particular target; the hearer in step 2 aims to determine this target; and the speaker in step 3 evaluates the hearer's success.

The next three subsections provide a finer-grained analysis of the three steps. Each step is resolved into components labeled by the letters a, b, and so on after the step's number. As with earlier regularized descriptions, the sequentiality of these letters reflects logical relations, not necessarily cognitive progression. Steps 1 and 2 together largely recapitulate the speaker's and hearer's targeting procedure first set forth in section 1.1, but their componentialization permits a finer-grained analysis.

13.2.1 Step 1

Step 1, carried out by the speaker, is here analyzed as having five components. Only component 1d is overt, while the rest consist of covert cognitive states and processes.

In step component 1a, the speaker's attention comes to be on some entity (or phenomenon) in the environment that he will next want to communicate about as a target. This process might be thought of as attending for speaking based on the model of Slobin's (2003) thinking for speaking.

This process can occur through several different **attentional routes**. By the first route, the entity has just come to the speaker's attention perceptually, because sensory stimuli from it have just become accessible. Visually, this could happen where the speaker and hearer move to where they can see the entity, like the rancher and visitor in example (7:2) rounding the house to gain a prospect onto the horse in the field, or where the entity itself moves into view, for example, if that horse had emerged from behind a barn. Auditorily, the entity could have just started to produce sounds, as where the horse in the barn began to neigh.

By the second route, the speaker has just now become conscious of an entity that was all along emitting perceivable stimuli because, say, his gaze had just fallen on the entity otherwise in view, or the sounds of the entity formerly in the background of his attention had just entered his awareness.

By the third route, the speaker has for a while been aware of the entity as a potential target, but his communicative impulse has just turned to it or an appropriate point in the discourse for it has just been reached.

In step component 1b, the entity that the speaker's attention is now on becomes—for any of various reasons—his intended target for the hearer. That is, he wants the hearer's attention to be on the entity jointly with his own at a particular point in his upcoming discourse.

In step component 1c, the speaker sees to it that the three felicity conditions for the hearer to succeed in determining the target (see section 1.5.1) are or will be met. In particular, he ensures that it is or will be the case that the cues are adequate, that they are accessible, and that the hearer is ready to access them.

In step component 1d, the speaker produces the trigger and the utterance containing it—along with their core and co-form cues. He also produces the cues of any other category, such as gestural cues, that require the speaker's productive process. This step component has the only overt actions in step 1.

In step component 1e, lastly, the speaker intends that the trigger in step component 1d will induce the hearer to perform the three-stage targeting procedure. Specifically, she should ascertain the cues, use them to determine the target, and integrate the target's concept into his utterance at the trigger's locus, thus joining her attention on the target with his own at that locus.

13.2.2 Step 2

Step 2 by the hearer is analyzed as having four components. These components mainly consist of cognitive processes and states in the hearer and, in that respect, they are covert. But in step components 2b and 2c, the hearer's determination respectively of the cues and of the target can be accompanied (perhaps at times unconsciously) by manifest physical indications—for example, eye movements during a visual search, or bodily repositioning—that the speaker can observe. In that respect, these step components are overt.

In step component 2a, then, the hearer hears the speaker's trigger, which induces her to initiate the three-stage targeting procedure.

In step component 2b, the hearer ascertains the available cues to the target. The combination of step component 2a's trigger detection with this step component 2b constitutes the first stage of the targeting procedure, the trigger-to-cues stage.

In step component 2c, the hearer combines the cues she has ascertained to determine the speaker's intended target. This step component constitutes the second stage of the targeting procedure, the cues-to-target stage. The hearer's attention is now on the target along with that of the speaker.

There are perhaps two attentional routes by which the hearer's attention can have come to be on the target. When she hears the trigger, her attention might turn to the target for the first time or might return to it after prior awareness of it. Note that in three forms of divergence from the basic targeting sequence (see section 13.5), the hearer's attention is already on the target.

Lastly, in step component 2d, having determined the target, the hearer maps her concept of it onto the original trigger in accord with its syntactic and semantic relation to its sentence. This is the third stage of the targeting procedure, the target-back-to-trigger stage. The hearer's attention is now on the target along with that of the speaker at his selected discourse point.

13.2.3 Step 3

Step 3, back in the speaker's arena, is here analyzed as having two components. These components mainly consist of cognitive processes and states that occur in him, and, in that respect, they are covert. But in step component 3a, the speaker's observations of the hearer during and after her own step 2 can themselves be accompanied by physical indications that he manifests and that the hearer can in turn observe. In that respect, step component 3a is overt.

Step component 3a is one of observation. It can begin during the hearer's step 2, as well as follow it. In it, the speaker monitors the hearer for any overt accompaniments of her otherwise covert processing. These overt accompaniments might include physical movements by the hearer to access the cues or target; facial expressions showing comprehension or, on the contrary, puzzlement; or verbalizations.

Step component 3b is one of evaluation. Based on his monitoring of her in step component 3a, the speaker now assesses whether or not the hearer has successfully ascertained the cues he had in mind, determined his intended target, and integrated the idea of the target into his full utterance, hence, shown understanding of his larger proposition.⁵

The speaker's evaluation can be positive or negative, and these two outcomes will be respectively represented as 3b+ and 3b-. If 3b+ is in effect, the speaker knows that the targeting sequence he initiated has culminated successfully. That is, the speaker recognizes that the hearer now has joint attention with him on his intended target at the relevant point in his discourse.

If 3b- is in effect, the speaker knows that the targeting sequence he initiated has failed to reach a successful culmination. He may then decide whether or not to conduct a new round of efforts to get the hearer's attention on the target. If his decision is to do so, He might repeat step 1, perhaps with certain modifications to step components 1c and 1d.

13.2.4 Summary of the Targeting Interaction Sequence

The targeting sequence just detailed is summarized in the table in (12).

- (12) Summary of the targeting interaction sequence
 Step 1. The speaker. Only component 1d is overt;
 the remaining components are covert.

- 1a. His attention comes to be on a particular entity in the environment.
- 1b. This entity becomes his target that he wants the hearer's attention to be on jointly with his own at a certain point in his discourse.
- 1c. He ensures that the felicity conditions for the hearer to determine the target are or will be met.
- 1d. He produces the trigger and its utterance, along with all the cues under his control.
- 1e. He intends that the trigger will induce the hearer to perform the 3-stage targeting procedure, ending with her attention jointly on the target with his own at the relevant discourse point.
- Step 2. The hearer. The components are basically covert, but may be reflected overtly.
 - 2a. She hears the speaker's trigger, which induces her to initiate the 3-stage targeting procedure.
 - 2b. She ascertains the available cues to the target.
 - 2c. She combines the cues she has ascertained to determine the target. Her attention is now on the target along with that of the speaker.
 - 2d. She maps her concept of the target onto the trigger in accord with its syntactic and semantic relation to its sentence. Her attention is now on the target along with that of the speaker at his selected discourse point.
- Step 3. The speaker. The components are basically covert, but may be reflected overtly.
 - 3a. He observes any overt actions the hearer may have made during or after her step 2.
 - 3b. Based on these observations, he evaluates whether or not the hearer has succeeded in determining the target and integrating it into his utterance.
 - 3b+. If positive, he knows that the targeting sequence has had a successful culmination, and that he and the hearer have joint attention on the target at his selected discourse point.
 - 3b-. If negative, he decides whether to attempt a renewed targeting sequence.

13.3 Taxonomy of Common Attention

Tomasello (2008) has argued for the evolutionary significance of the human capacity for joint attention on an entity. Linguistic reflexes of this capacity have previously been described, for example, by Evans (2005), which argues for the occurrence of certain

morphemes lexicalized to represent what he terms the “double perspective” on a referent. The evidence presented here suggests that triggers are specifically lexicalized to (among other cognitive effects) lead to such joint attention by the speaker and hearer on the same entity, the target.

Given the significance of joint attention to targeting as well as more generally, it merits a more detailed analysis. We propose that joint attention is the most elaborate form of a certain more generic attentional pattern, here called **common attention**. In this more generic pattern, two or more individuals are attending to the same entity at the same time—though only the case of two individuals is addressed here. A taxonomy of such common attention emerges from the interaction of four parameters—the participation, recognition, elicitation, and epistemic parameters—addressed next in order. The four parameters can each be regarded as increasing in complexity from lower to higher, so that this taxonomy of common attention can more specifically be regarded as a hierarchy of common attention.

13.3.1 The Participation Parameter

The first parameter pertains to how many of the two individuals within our scope of consideration are in fact currently attending to a particular entity. This **participation parameter** has three settings of increasing complexity from low to high. At the lowest setting—the “non-attention setting”—neither of the two individuals is attending to the entity. At the next higher setting—the “solitary attention setting”—just one but not the other of the two individuals is attending to the entity. And at the highest setting—the “common attention setting”—both of the two individuals are currently attending to the same entity. This last setting then is the case of common attention, which will be assumed to be present through the next two parameters.

13.3.2 The Recognition Parameter

The second parameter pertains to the extent of recognition across the two individuals of each other’s common attentional focus. This **recognition parameter** has four settings of increasing complexity from low to high.

At the lowest setting, the individuals happen to be attending to the same entity without knowledge of each other’s doing so. An example here might be a man and a woman in a park who, without noticing each other, are looking up in a tree at the same two birds fighting over territory. This lowest setting of the parameter will be called “unrecognized common attention.”

At the next higher setting of the parameter, one of the two individuals knows that both are attending to the same entity, but the other does not know this. In the park example, this circumstance would hold if, say, the woman has noticed that the man is also watching the birds, whereas he has not noticed her. Or it would hold if a woman

comes along, notices a man looking up into a tree, and then joins him in watching the birds. This arrangement will be called “unilaterally recognized common attention.”

At the third setting of the parameter, each individual separately knows that both of them are attending to the same entity but does not know that the other is aware of this fact. The park example would have this pattern in the following circumstance. The woman comes upon the man looking up at the birds and joins him in doing so, thus knowing that both of them are attending to the same birds. Then the man glances down at the woman also watching the birds, so that he too now knows that they are both attending to the same birds. This circumstance consists of two parallel occurrences of unilaterally recognized common attention. It will be called “bilaterally recognized common attention.”

At the highest setting of the parameter, each of the two individuals knows that both of them are attending to the same entity and also knows that the other is aware of this fact. This arrangement would hold in the park example if, say, the man and the woman not only attend to the birds and separately notice each other attending to the same birds, but also conjointly see each other noticing this. This arrangement will be called “mutually recognized common attention.”

13.3.3 The Elicitation Parameter

The third parameter pertains to whether or not one individual X has agentively elicited the other individual Y's attention on the entity. This **elicitation parameter** thus has two settings of increasing complexity, a lower “unelicited” setting and a higher “elicited” setting. In its elicited setting, X has his attention on the entity before Y and acts volitionally with the intention of evoking Y's attention and directing it to the same entity. In the park example, this setting of the parameter would be in effect if the man is initially alone in attending to the birds, and the woman later places her attention on the birds as well only because the man evokes and directs it there, for example, by simply pointing toward the birds or by pointing to them while saying (13).

(13) Look at those birds.

The parameter is at its “unelicited” setting everywhere else. This could be the case where Y attends to the entity independently or does so simply because of observing or assuming that X is attending to the entity. This setting of the parameter would be in effect in the park example if the woman simply comes upon the tree and independently looks at the birds, or if she comes upon the man already watching the birds and, from observing him, follows suit by looking up in the tree at the same birds.

The elicitation setting of the present parameter can occur in conjunction with all settings of the recognition parameter except the lowest one (the “unrecognized” case). The terms for the resulting combinations would then simply add “elicited” before the

remaining three earlier terms. Where the highest settings for both parameters occur together, the term would thus be “elicited mutually recognized common attention.”

13.3.4 The Epistemic Parameter

The fourth parameter pertains to how one individual may come to have a belief about common attention with the other individual on the same entity. It will be called the **epistemic parameter**. It is here analyzed as having three settings of increasing complexity from low to high: nescience, assumption, and observation.

The nescience setting. Where two individuals are present together, the “nescience setting” is exhibited by an individual in two circumstances. In one circumstance, the individual does not consider whether common attention on an entity is present or absent. In the other circumstance, he cannot assume or observe the other’s focus of attention.

With respect to the participation parameter, both of the individuals exhibit nescience in the non-attention setting. And one of them does so in the solitary attention setting. Comparably for the recognition parameter, both individuals exhibit nescience in the unrecognized common attention setting, while one of them does in the unilaterally recognized common attention setting (whether unelicited or elicited).

The assumption setting The “assumption setting” is exhibited by an individual who, without observing her, has a warranted belief that the other individual is or is not attending to the entity. For these two cases, such assumptions will be said to be respectively positive or negative.

As an example of the negative case, an individual entertaining a private thought can well assume that the other individual does not have common attention on it with himself.

But the positive case is in effect, for example, where the entity is perceptually intrusive, that is, at the first degree of perceptual ease (see section 7.1.1). This is a new attentional pattern that might be called “mutually assumed common attention.”

To illustrate this positive case, suppose that a firecracker has suddenly gone off between the man and the woman in the park. The man now not only attends to the explosion himself but, judging it as demandingly salient, also assumes—without needing to check the woman’s orienting behavior—that she is attending to the same phenomenon. The woman’s processing is equivalent.

The observation setting The “observation setting” is exhibited by an individual who observes the other individual’s physical behavior for any signs that she is or is not attending to the entity. Based on these respective findings, such observation will again be said to be positive or negative.

An individual who had elicited another individual's attention on some entity may, on a negative observation of her endeavors, repeat his elicitation. On a positive observation, though, he will regard his original elicitation as successful. In the park example, this latter condition would hold if the man had directed the woman's attention to the birds and then observed her raise her head and focus her eyes on their location in the tree.

Such positive observation occurs in all the previously cited forms of common attention whose label includes the word "recognized." One party exhibits it where "unilaterally" is in the label, and both parties exhibit it where "bilaterally" or "mutually" is in the label.

13.3.5 The Four Parameters Conjoined

The highest settings of the four parameters just treated can all occur together. The term for their conjunction might then be elicited mutually recognized common attention based on observation. With respect to the attentional patterns considered here, this is then the most complex form of common attention.

But this form seems also to be the prototype in communication. It is the form exhibited by an infant pointing something out to its mother for her joint attention (Tomasello et al., 2007). And it is the form of attention generally required by triggers (see section 13.4), a requirement accordingly lexicalized within them. Given its prototype status, this form of attention merits a shorter term and so, in addition to the descriptive but lengthy designation just offered, will also finally and simply be called **joint attention**. Although this term is the usual one found in the literature, the present analysis shows that the form of attention it refers to is not an elementary phenomenon but is actually the most elaborated endpoint in a hierarchy of attentional patterns.

The previous subsection on the assumption setting introduced an attentional pattern termed mutually assumed common attention. We here treat this pattern as well as a form of joint attention, but we regard it as a secondary form. Unlike the primary form just described, it is unelicited and assumed, rather than elicited and observationally recognized.

13.3.6 Summarizing the Taxonomy of Common Attention

The table in (14) summarizes the taxonomy of common attention—both generally and for its application to the targeting sequence.

- (14) Summary of the taxonomy of common attention,
 X: one individual; Y: another individual; Z: the object of attention
 P: (the proposition that) X and Y are both attending to Z (=common attention)

- A. Participation parameter (3 settings of increasing complexity)
 - 1. non-attention
 - neither X nor Y is attending to Z
 - 2. solitary attention
 - only X but not Y is attending to Z
 - 3. common attention
 - both X and Y are attending to Z (=P)
- B. Recognition parameter (4 settings of increasing complexity)
 - 1. unrecognized common attention
 - neither X nor Y knows that P
 - 2. unilaterally recognized common attention
 - X but not Y knows that P
 - 3. bilaterally recognized common attention
 - X and Y each know that P,
 - but neither knows that the other knows that P
 - 4. mutually recognized common attention
 - X and Y each know that P,
 - and each knows that the other knows that P
- C. Elicitation parameter (2 settings of increasing complexity)
 - 1. unelicited
 - X has not elicited Y's attention to Z
 - 2. elicited
 - X has elicited Y's attention to Z

When occurring in conjunction with B2/3/4:

 - a. elicited unilaterally recognized common attention
 - b. elicited bilaterally recognized common attention
 - c. elicited mutually recognized common attention
- D. Epistemic parameter (3 settings of increasing complexity)
 - 1. nescience (2 settings)
 - a. unilateral nescience of attention
 - X does not consider or know whether Y is attending to Z
 - b. bilateral nescience of attention
 - neither X nor Y considers or knows whether the other is attending to Z
 - 2. assumption (2 settings)
 - a. negative assumption of attention
 - X assumes that Y is not attending to Z
 - b. positive assumption of attention
 - X assumes that Y is attending to Z

Occurs instead of "recognized" in B2/3/4

- i. unilaterally assumed common attention
X but not Y assumes that P
 - ii. bilaterally assumed common attention
X and Y each assume that P,
but neither assumes that the other assumes that P
 - iii. mutually assumed common attention = secondary
joint attention
X and Y assume that P,
and each assumes that the other assumes that P
 - 3. observation (2 settings)
 - a. negative observation of attention
X observes that Y is not attending to Z
 - b. positive observation of attention
X observes that Y is attending to Z
- Occurs in conjunction with “recognized” in B2/3/4 and C2a/b/c
- i. when with C2c: elicited mutually recognized common
attention based on observation = joint attention

13.4 Relating the Targeting Sequence to the Taxonomy of Attention

We have outlined the basic targeting interaction sequence that triggers are lexicalized to require (section 13.2) and a taxonomy of common attention that is not specific to language (section 13.3). We can now relate the former to the latter.

The speaker, hearer, and target in the targeting sequence correspond to individual X, individual Y, and entity Z in the attentional outline. To begin with, then, speaker X's attention comes to be on entity Z in step component 1a. This is a case of solitary attention, (14A2). In step component 1d, speaker X intends that his actions will evoke hearer Y's attention and direct it to entity Z as a target. This represents the elicited setting of the elicitation parameter, (14C2).

In the remaining analysis, we first mark a certain maximum set of finer attentional distinctions, but then note that not all of them always need to be present. Suppose, then, that after step component 1d, the speaker attends only to his target, not to the hearer. This would be the case in the park example if, after the man sees the woman approach the tree and says *Look at those birds* while pointing up at them, he himself immediately looks back up at the birds and does not look back down at the woman.

Following this, in step component 2a, where the hearer has been led by the speaker to undertake the three-stage targeting procedure, suppose that she also notices that the speaker is no longer observing her. Then in step component 2c, where the hearer locates the target, she knows that her attention is now on the target along with that of the speaker. But she also knows that he is not yet aware of this fact. This would be the

case in the park example if the woman is now watching the birds along with the man, but he has not yet noticed her doing so. This pattern then is that of elicited unilaterally recognized common attention, (14C2a). Here, it is the woman who has the unilateral recognition.

Returning to the speaker, in step component 3a, he monitors the hearer's overt actions for signs that she has determined the target. Suppose he observes that she has found the target and is keeping her attention on it. This would be the case in the park example if the man, after directing the woman's attention up at the birds and returning his own attention to them, now looks back down at the woman to observe that she is in fact looking up into the tree and maintaining her gaze there. With respect to the epistemic parameter, the speaker has here transitioned from the setting of unilateral nescience regarding the hearer's attention, (14D1a), to that of positive observation of her attention on Z, (14D3b).

Then in step component 3b, the speaker's evaluation will here clearly be positive—his assessment is that the hearer has successfully determined the target—so that 3b+ is in effect. A succession of two further attentional events then occurs at this point and, by the interpretation adopted here, both are part of 3b+.

First, the speaker knows that the hearer's attention is now on the target along with his own, but also knows that she is not yet aware that he has this knowledge. She is unaware of this fact because she has continued attending to the target without checking on the speaker. In this stage, accordingly, each of the two parties separately knows that both of them are attending to the target but does not know that the other is aware of this fact. This stage is thus a case of elicited bilaterally recognized common attention, (14C2b). Additionally at this stage, the speaker knows that, with respect to the participation parameter, he has here transitioned from the setting of solitary attention, (14A2), to that of common attention, (14A3).

Second, the speaker continues to observe the hearer until she turns her attention from the target back to him and notices him observing her. At this point, the two of them have mutual recognition of their common attention.⁶ In the park example, the man continues watching the woman until she redirects her gaze from the birds back down to him, and they exchange glances of mutual awareness. This finally then is the stage of elicited mutually recognized common attention based on observation, that is, of joint attention, (14D3bi).

As noted earlier, the maximum of distinctions that the preceding analysis marked in the progression to joint attention need not always be present. For one illustration, we might alter the preceding park sequence so that, after the man directs the woman to look up into the tree, he does not return his own gaze there but instead continues looking at the woman. When he sees her look up, the attentional hierarchy has skipped the unilateral recognition stage and proceeded directly to elicited bilaterally recognized common attention.

13.5 Modified Targeting Sequences

We have so far outlined a pattern—that of the basic targeting interaction sequence and its relation to common attention—that the targeting procedure generally follows. But there are also certain exceptions that require particular modifications in this pattern. Two factors that can require such modifications are the presence of a hearer-focus cue and a high setting on the perceptual ease parameter. Further, some languages other than English have triggers—here called commonality, eccetive, and offerative triggers—that are specifically lexicalized to require three further types of modification. All five types of modification are treated next in the order just mentioned.

13.5.1 Hearer-Focus Cues Causing Modification

Chapter 8 showed that in a circumstance like that where a hearer looks at a particular car and the speaker says *That's a Ferrari*, the trigger (here, *that*) calls for a hearer-focus cue. Such a “hearer-focus trigger” requires a particular divergence from the basic targeting interaction sequence. It in fact requires a four-step interaction sequence—what we will call the **hearer-focus sequence**. In it, a new step consisting of activity by the hearer—we will call it “step 0”—precedes the basic three-step targeting sequence, which in turn requires certain emendations.

The new step 0 can be analyzed as having two components. In step component 0a, the hearer—for whatever reason—is attending to some external entity. In step component 0b, the hearer—perhaps typically involuntarily—produces perceivable physical signs that she is in fact attending to some external entity, signs that may include indications as to what that entity is. The hearer's attention in step 0 is accordingly already on the entity that will next become the speaker's target. This fact entails certain changes in how joint attention was seen to be reached in the basic targeting sequence.

First, the new step component 1a differs from the original 1a in that the speaker's attention comes to be on a particular entity through a different attentional route than the three previously cited in section 13.2.1. In this fourth route, the speaker's attention comes to be on the entity because he has noticed the hearer attending to that entity. In the taxonomy of common attention, this stage then already shows unilaterally recognized common attention on that entity. Specifically, the speaker knows that his own attention is now on the same entity that the hearer's attention is on, but the hearer does not yet know this fact.

The remaining components of step 1, from 1b through 1e, are generally the same as the originals. The main difference is that, in step component 1e, one element of the speaker's intentions has shifted. The hearer does not need to use the cues to find the entity he is targeting, since she is already attending to it, but rather to realize that the entity she is attending to *is* his target.

The hearer's step 2 in the hearer-focus case is generally the same as in the basic targeting sequence, though with one main difference. The original step 2c included unilaterally recognized common attention, whereas the new step 2c includes bilaterally recognized common attention. This is the case since, at this stage, the speaker knows that both he and the hearer have their attention on the target, but he does not yet know that the hearer is now aware of this fact; and the hearer knows that both she and the speaker have their attention on the target, but she does not yet know that the speaker is aware of this fact.

The speaker's step 3 here is mostly the same as the original but with two particular differences. In step component 3a, the speaker need not newly check the hearer's orienting behavior for signs that she has found the entity he was targeting, because it was her orienting behavior and focus on that entity that led him to target it in the first place. As for step component 3b+, it is like the original in that, in it, the speaker attains joint attention with the hearer on the target. It differs, though, in that it does not first pass through the bilateral stage, since that stage was already attained earlier.

13.5.2 Perceptual Ease Causing Modification

When present in a targeting situation, the highest two degrees of the perceptual ease parameter (see section 7.1.1) can each require certain modifications in the basic targeting sequence.

The highest degree of perceptual ease When at the highest degree of the perceptual ease parameter, the target of a trigger produces targetive feature cues of extreme salience. It is perceptually intrusive and attentionally demanding. Prior examples of such a target have been the fire alarm of example (2:104), the geyser of example (7:5), and the firecracker example described in section 13.3.4. For an example to have in mind for the present discussion, a veteran teacher might say (15) to a new teacher as a loud clanging starts to sound in a school building.

(15) That's the fire alarm—probably for a drill.

Triggers that target such an intrusively salient entity share a feature in common with the preceding hearer-focus triggers. In both cases, the hearer's attention is already on the entity that the speaker will select as his target. The main difference is that, here, there is no prior step 0 in which the hearer is the first to attend to the entity. Rather, the speaker and hearer become aware of the entity at the same time. Under the taxonomy of common attention, they immediately have mutually assumed common attention on that entity—entry (14D2biii). As noted, this is a secondary form of joint attention, an assumed and unelicited form.

The speaker's use of the trigger *that* in (15) still entails a targeting sequence. But this new **intrusive-target sequence** requires certain changes in the basic targeting interaction

sequence. These changes arise from the fact that the speaker's goal is no longer to bring about his and the hearer's joint attention on an entity that he has selected as a target, since they both already have a form of joint attention on it. His goal, rather, is to get the hearer to realize that he has selected this entity *as* his target.

Specifically, the speaker in step components 1b and 1e does not seek the hearer's joint attention with his own on the fire alarm. Rather, he seeks her realization that what he is referring to at the point in his discourse where the trigger *that* appears is the fire alarm that she is already attending to.

In step component 2c, correspondingly, the hearer is not the first to recognize that both she and the speaker have common attention on the fire alarm. Rather, she is the first to realize that they both now know of the trigger's reference to that alarm. This modified attentional stage might accordingly be called "elicited unilaterally realized common knowledge" that the commonly attended entity is the speaker's intended target.

In step component 3b+, accordingly, the speaker does not attain mutual recognition of the joint attention that he and the hearer have on the fire alarm, because he and she already have a mutual assumption of such attention. Rather, he realizes there that he and the hearer have joint knowledge that his trigger's target is the fire alarm. This final stage might then be called "elicited mutually realized common knowledge" that the commonly attended fire alarm is in fact the speaker's intended target. The function of the trigger here is thus to elicit not joint attention but joint realization of targeting.

The second highest degree of perceptual ease We here treat the situation where, in the period leading up to his trigger use in step component 1d, the speaker has observed the hearer closely enough to make a certain judgment about her ensuing performance. He judges that, in steps 2b and 2c, she will be able to discern the relevant cues and the target at the second highest degree of perceptual ease, for example, with a single glance already aimed in the right direction. He then virtually takes the success of her endeavor for granted.

Accordingly, his own step 3 is modified. Step component 3a in effect reduces to near insignificance because the speaker is confident that he need not observe the hearer for success in her final stages of finding the cues and target. In turn, he takes a positive evaluation for step component 3b—3b+—as a given.

The attentional type that 3b now begins with is basically that of entry (14D2bi), but since it was elicited, the word "elicited" can be added at the beginning to yield elicited unilaterally assumed common attention. Comparably, the attentional type it ends with is basically that of entry (14D2biii), a form of joint attention, but now modified as elicited mutually assumed common attention.

In other situations, by contrast, the speaker may judge that the hearer would be able to discern the cues or target only at the third or fourth degree of perceptual ease. She

would then need to maneuver her sense organs or body in a perceptual search (or to use greater processing in an interior search), while he would need to monitor the hearer more closely for success.

We can contrast the attentional effects of the second degree and lower degrees of perceptual ease with three illustrations, starting with one involving gestural cues. Suppose that a speaker observes a hearer as he leads her to a horse standing nearby in front of them and then, without observing her further, points to it while saying (16a). The speaker may well take it for granted that the hearer has seen his gesture and straightforwardly spotted the horse, so that he has no need to look over at her for signs of joint attention on the animal.

- (16) a. That's my horse. b. That's a finch.

But if the speaker uses precisional pointing to indicate a bird almost hidden in a tree's leaves while saying (16b), he may well look at the hearer to check if her eyes are aimed at the right spot while, for her part, the hearer may have to maneuver to find that spot.

Comparably for an example involving corporal cues, suppose the speaker has already observed that he is within full view of the hearer. He can then produce a sentence like (17a) without further checking whether she has spotted his location and perceived the region around him.

- (17) a. My cat was here just a few minutes ago.
 b. There's a cockroach in here!

But if the speaker is in some room in the house unknown to the hearer and shouts (17b), the hearer may well have to use all available cues to ascertain the location targeted by the speaker, and the speaker may more actively monitor the hearer's success in determining his location.

The contrast may comparably apply to speech-internal targeting. Thus, the speaker of (18a) may take it for granted that the hearer will take the trigger *he* to target the referent of the NP, *a man*, which immediately precedes it.

- (18) a. I saw a man. He looked tired.
 b. A man entered. The lights in the room were dim and placed at odd locations,
 and the air was filled with cigarette smoke. He looked tired.

But the speaker of (18b) may wonder if the hearer will succeed in the same targeting process and may monitor her facial expressions for signs of comprehension or confusion.

It can be conjectured that the lower the parameter setting is, the more metacognitively aware the hearer and speaker tend to be of their respective tasks. That is, the tendency may be that the hearer has more conscious attention on her endeavors to

ascertain the cues and target, while the speaker has more conscious attention on his process of monitoring the hearer for success.

13.5.3 Commonality Triggers Causing Modification

Resting on information from Aylin Küntay (p.c.) and Küntay and Özyürek (2006), the account that follows is presented in the terms of our analytic framework. In Turkish, the triggers that can target a speech-external entity are lexicalized to distinguish whether or not, at the point of their usage, the speaker and hearer already have common attention on the target.

Where such initial attentional commonality is lacking, the trigger used is *şu*, which is neutral to proximal/distal degrees of spatial remove. This **noncommonality trigger** requires the basic targeting interaction sequence. The speaker in step component 1b regards himself as the first of the two collocutors to have his attention on the entity he wants to target. He either observes that the hearer is not attending to that entity or by default assumes this to be the case. His aim in using the trigger is to bring the hearer's attention onto the entity in company with his own. Through stages, this aim should culminate in elicited mutually recognized common attention—that is, joint attention—on the entity. A Turkish speaker would thus use *şu* where an English speaker would use *this* or *that* to target an entity that he assumes or sees the hearer not to be attending to, as while pointing to one kitten in a litter and saying *That kitten is my favorite*.

Where initial attentional commonality is present, the Turkish triggers are *bu* and *o*, indicating respectively proximal and distal degrees of spatial remove. A speaker uses these attentional **commonality triggers** in three main circumstances.

First, the speaker uses a commonality trigger to target an entity where he regards that entity as intrusive and so assumes that the hearer already has her attention on it. In this case, the trigger requires the same modified targeting interaction sequence that was just outlined for an intrusive target (see section 13.5.2). In that intrusive-target sequence, the speaker's step component 1a already exhibits mutually assumed common attention. A Turkish speaker would thus use *bu* or *o* where an English speaker would use *this* or *that* to target an entity that he assumes has commanded the attention of both himself and the hearer, as where a fire alarm goes off and he says *That clanging is the school fire alarm*.

Second, the speaker uses a commonality trigger to target an entity where he observes the hearer already independently attending to that entity. In this case, the trigger requires the same modified targeting interaction sequence as for an English hearer-focus trigger (see section 13.5.1). In that hearer-focus sequence, the speaker's step component 1a already exhibits unilaterally recognized common attention. A Turkish speaker would thus use *bu* or *o* where an English speaker would use *this* or *that* to target an entity, as where he observes the hearer looking at a particular car and says *That car is a Ferrari*.

Third, the speaker uses a commonality trigger to target an entity where he observes that the hearer has now found and is attending to that entity after she failed to do so

on his previous targeting attempts. In the targeting sequence of each such previous attempt, the speaker in step component 3a evaluated the hearer's endeavor to find the target as unsuccessful and so went on to step component 3b- for another round of targeting. The attentional sequence of this new, now successful, round will be called the **repeat-targeting sequence**. Though similar to the four-step hearer-focus sequence (see section 13.4.1), it differs in certain respects.

In step component 0a, the hearer directs her attention to the entity not for independent reasons of her own, but because the speaker has been trying to get it there. In turn, step component 1a differs in that the speaker's attention is on the entity through a fifth route. He maintains it on that entity at a yet additional point in his discourse because his preceding attempts at targeting failed to get the hearer's attention on it. And the hearer in step component 2c, instead of just bilateral recognition, already attains elicited mutually recognized common attention—that is, joint attention—with the speaker on his targeted entity. This is because the hearer knows that the speaker has been monitoring her attentional endeavors and that his use now of a commonality trigger means that she has succeeded and that they are both aware of each other's attention on the target.

Özyürek and Kita (2000) illustrate such a repeat-targeting sequence with an example, here modified in (19) to show only the glosses and translations. In a ceramics class, the teacher is looking for some pot among the many on rows of shelves that would illustrate a feature he is discussing. A student spots a suitable pot and, intending to direct the teacher's attention to it, points to it while saying (19a), which contains the noncommonality trigger *şu*. The student observes that the teacher is failing to find the pot so, still pointing at it, he retargets it by saying (19b), again containing (as a stem) the non-commonality trigger *şu*. The student then observes that the teacher has finally spotted and is attending to the pot, so he once again targets it by saying (19c). But this utterance has now switched to the commonality trigger *o*, marking the shift from the student's preceding solitary attention on the pot to his and the teacher's common attention on it.

- (19) a. well sir *şu* [TRIGGER] oval for example
 “Well, Sir, this/that oval one for example.”
 b. *şunun* [TRIGGER-GEN] outer surface-DAT putting CON
 “by putting on this/that thing's outer surface”
 c. *ondan* [TRIGGER-ABL] as.well be:MOD
 “That can be as well.”

Note that the usage pattern of these Turkish triggers cannot be explained in terms of domainality instead of attentional commonality. Thus, it might have been thought that *şu*, as in (19b), is speech-external/deictic, while *bu* and *o* are speech-internal/anaphoric, on the grounds that the *o* in (19c) refers back to the same entity targeted in the preceding utterance in (19b). But our earlier observations provide two counters to

such an interpretation. First, the trigger in (19b) also refers to the same entity targeted in the preceding utterance in (19a), yet the trigger here is still *şu*, not *o*. Second, in the first two circumstances—those involving an intrusive-target sequence or a hearer-focus sequence—*bu* and *o* can appear in the initial utterance of a discourse, with nothing to refer back to.

In English, the triggers *this/these* and *that/those* are neutral to distinctions of attentional commonality and so can be used across the same range over which Turkish triggers must shift, as seen in the three translations in (19). But English does have certain triggers lexicalized to mark some of these distinctions. Thus, over perhaps most of their polysemous range, unstressed *it* and *they* are attentional commonality triggers (or, equivalently, triggers indicating a coincident degree of attentional remove—see section 2.3.1). Interestingly, though, they differ from the Turkish commonality triggers *bu* and *o* in that they serve only for the first two commonality circumstances cited earlier but not for the third. Thus, they can require an intrusive-target sequence or a hearer-focus sequence but not a repeat-targeting sequence, as seen respectively in (20).

- (20) a. It's / That's a Ferrari. b. It's / That's the school fire alarm.
 c. Yes, *it's / that's the pot I wanted you to see.

13.5.4 Eccetive Triggers Causing Modification

We turn to another type of trigger that requires modification of the basic targeting sequence. It is used when one of two collocutors has just perceived an entity that they had previously agreed on being interested in and wants to direct the other's attention to it. Certain triggers in various languages are lexicalized to indicate this usage. Examples are Latin *ecce*, Italian *ecco*, French *voici/voilà*, Russian *vot/von*, and Yiddish *ot*. This type of trigger and its semantic function will here be called **eccetive**, based on the Latin form.⁷

English represents eccetive semantics not with triggers lexicalized for that function, but with the triggers *here/there* in sentence-initial position, commonly in conjunction with a copula. But this general pattern is used as well by other English constructions—including the exhibitivite, the existential, and the offerative—all of which largely differ from each other only by subtle constraints. Since it is accordingly difficult to be certain which English construction is in effect in a given case, we will here rely on languages like those just listed with forms specifically lexicalized to express eccetive semantics.

It is not fully clear what the target of an eccetive trigger—or trigger with an eccetive function—is. The target might be the sudden appearance of the entity of interest—that is, its entry into perceivability; the location of the entity of interest, as the English triggers seem to suggest; or the entity of interest itself. But this last option will be adopted in the analysis that follows.

An eccetive trigger, then, requires a four-step interaction sequence. Like the hearer-focus sequence, this **eccetive sequence** has a step 0 before the basic targeting sequence.

Here analyzed as having three components, this step 0 consists of discourse between two collocutors—the ensuing speaker and hearer—during which they establish a certain common ground. In step component 0a, they both have an interest—whether positive or negative—in a particular entity that is currently not evident to them within their perceivable environment. This interest may have been common to both from the outset, or it may have belonged to just one of them and been communicated to or understood by the other. In step component 0b, they want to become aware of the entity as soon as it becomes perceivable, as may happen through changes in the location of the collocutors or of the entity. And in step component 0c, if one of them perceives the entity first, they want that one to call it to the attention of the other.

As noted in the original analytic framework (see section 13.1.3), interaction sequences can vary as to the amount of intervening material—from none to much—allowed between two successive steps. The hearer-focus sequence required adjacency between its step 0 and step 1. Here, however, step 0 can take place indefinitely long before step 1.

Step 1 starts when one of the collocutors perceives the entity of interest, and becomes the speaker that uses a trigger to target it, thus directing the other collocutor's attention to it. Steps 1 through 3 here then differ from the basic targeting sequence in only two modest respects. In step component 1a, the speaker wants to communicate to the hearer about the entity not because it suits his own interest, but because of its common interest to them both as agreed on in step 0. And in step component 1d, the trigger that the speaker uses is specifically *eccetive*.

In terms of our framework's categories, an *eccetive* trigger is *exhibitive* (see section 3.1.1) because it requires a targetive cue that helps the hearer discern the target. (It is also often accompanied by a gestural cue—perhaps typically of the target-intersecting or target-beholding type—as well as by co-form cues.) Through its core cue, the trigger further provides the hearer with the information that the target is something that she and the speaker had previously agreed was of interest.

The need for a step 0 with its collocutors' prior understanding of interest in a particular entity is demonstrated in (21). Here, the *eccetive* triggers of Italian (Francesco Spagnolo, p.c.), French (Annette Herskovits, p.c.), Russian (Alexander Kravchenko, p.c.), and Yiddish (Hershl Glasser, p.c.) exhibit the same relevant pattern. Their use is felicitous where the target they indicate was previously established as an entity of interest, as in (21a) and (21b). But it is infelicitous where the intended target is novel, as in (21c).

- (21) Felicitous and infelicitous uses of *eccetive* triggers
- a. Here's/There's the taxi. <collocutors phone for taxi in advance>
 Ecco il taxi.
 Voilà le taxi.

Vot i taksi. / Von taksi. Ot iz der teksi.

- b. There's a taxi. <collocutors agree to hail down a taxi if one is spotted>

Ecco un taxi.

Voilà un taxi.

Vot taksi.

Ot iz a teksi.

- c. There's a deer. <unanticipated sighting not previously discussed>

*Ecco un cervo. (Guarda, c'è un cervo. [look, there's a deer])

*Voilà un daim. (Il y a un daim là. [there is/are a deer there])

*Vot olen'. (Smotri, olen'. [look, deer])

*Ot iz a hirsh. (Dortn iz do a hirsh. [there is there a deer])

The context for (21a) is that the two collocutors at home have phoned for a taxi, and the one of them that sees it arriving utters the expressions cited. For (21b), the collocutors are walking toward a distant destination and decide they should hail down a taxi if one appears; on spotting one, the speaker can utter the expressions cited. Thus, (21a) and (21b) differ respectively in the definiteness and indefiniteness of the target—marked overtly by the relevant determiner in all the languages except Russian—but the eccetive forms are felicitous in both cases.

But in the context for (21c), the two collocutors are walking through the woods and one of them unanticipatedly spots a deer, an eventuality they had not previously discussed. As speaker, this person can now not use the eccetive triggers in the languages where they are morphemically distinct. For this context, instead, the native speakers consulted offered existential constructions as felicitous alternatives, shown in parentheses.

The three contexts together thus show that the felicity of an eccetive trigger is not based on the definiteness of the target but on whether the collocutors were already looking for the target or not.

Eccetive triggers are also seen in other language families, but sometimes with syntactic properties other than the adverbial status of the Indo-European forms just cited. Thus, Nicholas Evans (2003) lists two forms in the Australian language Bininj Gun-wok that can here be identified as eccetive triggers and that, as members of that language's demonstrative system, can function either as nominals or as modifiers of a head noun but not as adverbials. With masculine prefixes, these forms are *nabernu* 'the one you wanted to know about, which is over there' and *nabehrnu* 'the one you wanted to know about, which is here'. An example of the distal form's use (Nicholas Evans, p.c.) is shown in (22) and could, for example, be said by a speaker who spots the arrival of the hearer's girlfriend, where the speaker knew that the hearer was wondering if she might come.

- (22) Alernu daluk gare. [FEM-Demonstrative woman she-goes]

13.5.5 Offerative Triggers Causing Modification

Yet another type of trigger requiring a modified targeting sequence is used by a speaker as he physically offers an entity to the hearer with the aim that she accepts it. This type of trigger and its semantic function will here be called **offerative**. Of the languages cited in the preceding section, only Yiddish has a productive trigger specifically lexicalized to represent offerative semantics and so will be used in the analysis here. Italian, Russian, and traditional French use the same triggers to represent both ecceptive and offerative semantics. As a traditional linguistic term, the “presentative” has been applied to such triggers covering both these semantic functions, but our separate terms—ecceptive and offerative—will distinguish these functions in the present analysis. English again lacks a trigger specialized for the offerative and once more uses *here* and *there* to represent it.

As in the ecceptive case, it is not fully clear what the target of an offerative trigger—or trigger with an offerative function—is. The target might be the presentation of the entity; the location of the entity, as the English triggers suggest; or the presented entity itself. But again this last option will be adopted in the analysis here.

The Yiddish offerative form is *na* when the speaker addresses a hearer informally and *nat* when formally. The form can be used alone or followed by the dative of the second-person pronoun referring to the hearer. The resulting informal and formal expressions are then *na dir* and *nat aykh*. This expression can in turn be followed by the accusative of a nominal referring to the entity presented. For example, where an English speaker might say (23a) to a youngster, a Yiddish speaker would say (23b).

- (23) a. Here's a cookie for you. b. Na dir a kikhl.

In what might be considered the prototype use of *na*, the speaker holds the item to be presented in his hand and utters the trigger as he extends his hand toward the hearer up to the boundary of her personal space, with the intention that she extend her own hand to grip the item and move it toward herself within her own “possession space.” That is, the speaker offers it with the expectation that the hearer will physically retrieve it to complete an act of giving and taking.

In a non-prototype use, alternatively, the speaker could utter the trigger while directly placing the item within the hearer's possession space. His intention now is not that she physically take the item but that she undertake the cognitive process of accepting it. In the present example, the speaker might simply place the cookie on a plate lying in front of the hearer and expect that she will accept it as hers (to eat). In both cases, the speaker intends that the item end up in the hearer's possession, and he aims to induce her to help bring that condition about.

In terms of our framework's categories, the Yiddish offerative is an exhibitiv trigger (see section 3.1.1) because it requires a gestural cue that helps the hearer determine the target. This gesture, further, must be of the target-affecting type (see section 5.11), since the speaker's hand moves the target object up to or into the hearer's personal space.

Through its core cue, the trigger further provides the hearer with the information that the target is something that the speaker is physically presenting for her to take or accept.

An offerative trigger is here analyzed as requiring a four-step interaction sequence. This **offerative sequence**, however, does not begin with a step 0 but ends with a step 4. It in fact begins with the three steps of the basic targeting sequence unmodified. This sequential portion thus begins at step component 1a with the speaker's attention coming to be on a particular entity, the target-to-be (here, the cookie), presumably through the third attentional route, and ends at step component 3b+ with the speaker recognizing his and the hearer's joint attention on the target.

Step 4 consists of one of the response types described in section 13.1. In the prototype offerative case, step 4 is an overt nonverbal response—much as was seen for step 2 in a directive sequence, where the hearer performed some requested action. Here, the hearer physically takes the proffered target, the cookie. But in the non-prototype case just cited, step 4 is a covert cognitive response—much as was seen for step 2 in the warning sequence, where the hearer entered a cognitive state of wariness. Here, the hearer enters a cognitive state of acceptance, that is, of accepting the target as now belonging to her.

13.6 In Sum

We set forth two analytic frameworks—one pertaining to sequences of steps in a discourse and one to common attention—to which triggers have specific relations. The framework pertaining to discourse sequences can be outlined as follows. A simplex morpheme or larger construction can be lexicalized to require either an inner or an outer sequence, which in turn can be either a single-actor or a cross-actor sequence. An interaction sequence, then, is an outer cross-actor sequence in which two collocutors alternate steps in the sequence. The steps of an interaction sequence can be either all overt or in part covert, and overt steps can be either all verbal actions or in part nonverbal actions. A step can in turn consist of a sequence of overt or covert components.

The framework pertaining to common attention—when applied to two parties and one object of attention—is based on four parameters. First, the participation parameter has three settings of increasing complexity: non-attention, solitary attention, and common attention, where both parties are attending to the same entity. Second, where both parties have common attention on an entity, the recognition parameter has four settings of increasing complexity. The fact of their common attention can be unrecognized, unilaterally recognized, bilaterally recognized, or mutually recognized by the parties. Third, the elicitation parameter has two settings of increasing complexity: unelicited and elicited, where one of the parties directs the other's attention to the entity. And fourth, the epistemic parameter—which pertains to how one party comes to have a belief about common attention with the other party—has three settings of increasing complexity: nescience, assumption, and observation.

When the highest settings of all four parameters occur together, the result is elicited mutually recognized common attention based on observation. It is this most complex conjunction of parameter settings that constitutes what is generally termed joint attention in the literature.

In terms of these two frameworks, then, triggers are generally lexicalized to occur in step 1 of a certain three-step interaction sequence—the basic targeting sequence. Step 1 by the speaker has five components, including the overt step component 1d in which he produces the trigger. Step 2 by the hearer has four components, including step components 2b and 2c in which she ascertains the cues and the target. Step 3 by the speaker has two components: 3a in which he observes the hearer's step 2 actions, and 3b in which he evaluates them for their success. At certain points in this succession of step components, the attentional patterns shift from solitary attention, to elicited unilaterally recognized common attention, to elicited bilaterally recognized common attention, and finally to elicited mutually recognized common attention—that is, to joint attention on the target.

Certain exceptions, however, require particular modifications in this basic targeting sequence. Two such exceptions are the presence of a hearer-focus cue and a high setting on the perceptual ease parameter. Further exceptions are triggers of certain types in languages other than English—for example, commonality, eccetive, and offerative triggers—that are lexicalized to require particular alternative targeting sequences.

Notes

1. Construction grammars (see section 1.8.1) have identified many of the properties a construction can have. But a property that should be included among these, yet generally is not, is the one cited here. Namely, a construction can require its own occurrence at a particular step in a particular interaction sequence.

2. In a three-step “follow-up interrogative sequence,” a declarative construction occupies step 1, and the interrogative construction follows it in step 2 so as to question it, as in (i).

- (i) a. step 1. X: I was at the game. b. step 2. Y: Who won?
 c. step 3. X: The Warriors.

3. Although a directive sequence like this ends in a nonverbal step, the verbal steps of a longer sequence can piggy-back onto it. Thus, if the speaker in step 1 regards herself as benefitting from the action in step 2, as here, then she can utter a step 3 construction with an illocutionary effect of gratitude, as by saying *Thank you*. Such a construction occupies step 3 of a three-step “gratitude sequence.” In turn, a four-step “gratitude acknowledgment sequence” piggy-backs onto the three-step gratitude sequence if step 4 includes a construction with the illocutionary effect of acknowledging gratitude, as where person Y now says *You're welcome*.

4. Instead of a purely covert cognitive response, the collocutor in step 2 might also utter an expression like *Oh*. It can be posited that this expression, in one of its readings, is a construction

indicating just-acquired informedness and lexicalized to function as step 2 in an overt two-step informing sequence.

5. The hearer's processes were represented as accomplishments in the characterization of step 2, but here they are represented as endeavors that the speaker must evaluate.

6. By an alternative interpretation, not adopted here, the basic targeting sequence does not stop at three steps, but has a step 4 in which the hearer returns her attention to the speaker, so that the two of them become mutually aware of their common attention only during that later step.

7. Latin, Italian, and Yiddish have forms neutral to the target's degree of spatial remove. And it seems that modern French tends to use *voilà* for the eccetive if the NP lacks a relative clause, *voici* for the offerative, and *et voici/voilà* for target beholding (Laure Sarda, p.c.). Only Russian here then regularly marks a proximal/distal distinction for the eccetive.

14 Cue Conflict and Its Resolution

In nearly every targeting example treated so far, all the cues that the speaker intends the hearer to find and use to determine the target have been compatible with each other. This compatibility has covered both the case of corroboration, where two of the cues provide basically the same information about the target, and the case of complementation, where two of the cues provide different but non-conflicting information about the target.

But two such cues can also be incompatible, providing conflicting information about the target. Two types of such incompatibility can be distinguished. In one type, not treated here, the speaker is likely to have produced that set of cues inadvertently, and the hearer, finding no further way to resolve the conflict, might be blocked in further processing of the communication or ask for clarification. But in the other type, the incompatibility is a well-formed feature of the speaker's production, designed to initiate certain forms of cognitive processing in the hearer that resolve the conflict and lead to a coherent conceptual complex. Such cues will be said to exhibit **constructive discrepancy**.

Under the previous condition of compatibility, the cues invoked by the speaker all helped direct the hearer's attention to a single particular entity that was the speaker's intended target. But under the current condition of constructive discrepancy, some of these cues first direct the hearer's attention to an entity that is not the speaker's final attentional goal for the hearer but only what will be called an **initial target**. This initial target in turn helps redirect the hearer's attention to another entity construed as corresponding to it. This second entity is the speaker's actual attentional goal for the hearer, the **final target**.

We examine cue conflict and its resolution in the speech-external domain in the first three sections that follow and in the speech-internal domain in section 14.4. In sections 14.1 and 14.2, the initial target is physically and perceivably factive, but in section 14.3 it is fictive, with nothing to be perceived. For their part, the first two sections differ as to whether the initial and final targets have physically similar or dissimilar forms. In every example considered in the first three sections, a gestural cue is involved

in indicating the initial target and may in fact be a criterial component in speech-external constructive discrepancy.

14.1 The Initial and Final Targets Have Similar Forms

We examine cue incompatibility first where the physical form of the initial target is similar to that of the final target. In our initial set of examples, a woman as speaker is sitting across a restaurant table from a man as hearer. This setup is used in turn for two baseline examples that have no incompatibility and for a hybrid example that does have it.

14.1.1 Baseline Cases

In the first two examples of the cited set, presented as a baseline for comparison, the speaker initiates targeting events in which the cues are all compatible. In the starting example, then, the speaker touches a fingertip to her teeth at a particular point on the right side and says (1).

(1) I've got something in my teeth right here.

Here, the speaker directly indicates her intended target—a specific location on her teeth—by invoking a set of cues that provide compatible information. The core cue from the trigger *here* indicates that the target is a location proximal to the speaker. Co-form cues from the constituents *I* and *in my teeth* indicate that the target is situated at the teeth belonging to the speaker (although *I* and *my* are triggers in their own right, they are co-forms with respect to the trigger *here*). The gestural cue from her hand movement indicates that the target is an area on the right side of her teeth. The targetive cue from certain teeth showing forth—enabled by a retraction of the lips—indicates that the target might be the region from which those visual stimuli emanate. All these cues are produced by the speaker and so are of the productive type among the cue adequacy processes (see section 1.5.1).

In this initial example, since the speaker cannot look at her own teeth, her gaze direction might well be aimed at the hearer and so does not function as an ocular gestural cue to the target. But in subsequent examples it will have that function, then also being of the productive type.

To address one further cue type, recall that, in chapter 9's analysis of the speech-external domain, we treated the speaker as a center point and characterized what surrounded that speaker as the speech-external environment. In a comparable way, still in the speech-external domain, we can now treat a target as a center point and specifically characterize what surrounds it as its "setting." Such a setting may provide a hearer with information that helps him determine the target's location. We regard a target's setting as part of the speaker's environment, and so the information about the target that it

provides the hearer can be classed as an environmental cue. But we will also more specifically label such information as an (environmental) **setting cue**.

Like an environment, a setting can provide both content and structure cues. Such structure cues might include an outer boundary and internal delineations. In the present example where the target is a location on the speaker's teeth, the outer boundary of the setting might be the speaker's face, torso, or whole body. But we will adopt the whole-body alternative on the possibility of a perceptual bias for a stand-alone physically integral object, in which case the smaller-scoped boundaries are among the internal delineations. The setting cues here, then, indicate that the target is positioned within the contours of the speaker's body, as well as nestedly within the torso and face, with particular geometric relations to other delineations of the body.

To turn to the second baseline example, the speaker now reaches her finger across the table toward her companion to point directly at a particular part of his mouth, fixes her gaze on his mouth, and says (2).

(2) You've got something in your teeth right there.

The speaker's intended target here now is a particular location on the hearer's teeth, but she again indicates it directly with compatible cues. The core cue from the trigger *there* indicates that the target is a location distal from the speaker. The co-form cues from the constituents *you* and *in your teeth* indicate that the target is situated at the teeth belonging to the hearer. The manual gestural cue from her hand movement indicates that the target is located at the hearer's mouth. The ocular gestural cue from her gaze direction also indicates that the target is located at the hearer's mouth. Though the hearer cannot visually perceive his own mouth, a targetive cue may be provided by his proprioception of it. Comparably, a setting cue might be provided by the hearer's proprioception of his own body.

14.1.2 A Hybrid Case

But our third example (suggested by David Kamholz, p.c.) is a hybrid of the previous two baseline examples, and the cues here available to the hearer are not all compatible with each other. As part of the hybrid, the speaker now gestures as in the first example by touching her teeth on the right, but says (3) with the constituents *you* and *in your teeth* from the second example.

(3) You've got something in your teeth right here.

The specific cues available to the hearer in this hybrid can be itemized as follows. Four of these cues are the same as in the first baseline example. The target is indicated as being a location proximal to the speaker by the core cue from the trigger *here*, as being the area on the right side of the speaker's teeth that she touches by the manual gestural cue, as being the source of certain visual stimuli by the targetive cue, and as

being situated within the speaker's body by the environmental setting cue. But two further cues are the same as in the second baseline example. The target is now indicated as being situated at teeth belonging to the hearer by the co-form cues from the constituents *you* and *in your teeth* and as being situated at the hearer's mouth by the ocular gestural cue provided by the speaker's gaze direction.

The hearer of this hybrid example is likely to conclude that the speaker's finally intended target is an area of his own teeth that corresponds to the area indicated by the speaker on her teeth. But what cognitive processing in the hearer leads him to this conclusion? We next characterize this processing as a sequence of two phases—respectively involving assessment and resolution—each with its own steps. As usual here, though, this will be a regularized description (see section 1.3) of a cognitive activity whose actual elements and sequencing will need experimental determination.

14.1.3 The Assessment Phase

The hearer's processing of the cues he has discerned begins with an **assessment phase** that determines the cues' character and interrelationships. This phase can in turn be posited to include three operations, here treated as steps in a sequence.

The consistency checking operation An initial operation of **consistency checking** examines the cues for their mutual compatibility. It rests on certain conditions being met. One of these is the **plausibility condition**. This condition is met—and the communication is plausible—if all the available cues, when taken together at face value, yield a cognitive representation that is consonant, not at odds, with the hearer's knowledge of the world. Otherwise, a communication fails the condition and is implausible. On the basis of this condition, the hybrid example (3) is implausible. Any attempt by the hearer to integrate all the cues literally would lead to a scrambled image, perhaps one in which some of the hearer's teeth are in the speaker's mouth.

The operation of consistency checking can also rest on a **noncontradiction condition**. A communication fails this condition if any two of its cues are directly contradictory. In the hybrid example, the gestural cue and the co-form cue from the phrase *in your teeth*, for instance, seem to directly contradict each other. The gestural cue indicates an area of the speaker's teeth as the target, while the co-form cue indicates an area of the hearer's teeth as the target.

On the basis of this analysis, we can now propose a significant addition to the three-stage procedure originally outlined in section 1.1. The proposal is that every instance of targeting includes an operation of consistency checking. This operation would immediately precede the second targeting stage, that is, the cues-to-target stage. There, it would govern a branching node in the hearer's procedure. If the hearer judges that the cues he has found in a speaker's communication, when combined literally, are plausible and without contradictions, he will simply proceed with the second stage. But if

he judges the cue combination to be implausible or self-contradictory, he will direct it through the special processing described next. This processing includes the rest of the assessment phase, which also precedes the second stage, and the resolution phase, which is integrated with it.

The present hybrid example, run through the consistency-checking operation, has in fact been found to lack consistency. Its cues have been judged to fail the plausibility and noncontradiction conditions. So it will be passed on through the remaining special processing described next.

The clustering operation If the cues of a speaker's communication are deemed to be inconsistent under the first operation, the hearer remains within the assessment phase and goes on to a second operation of **clustering**. This operation segregates the cues into distinct groups, or clusters, that are each internally compatible but that are incompatible with each other. The noncontradiction condition applied to each pair of cues within the available set may suffice to determine such clusters. The cues of each cluster all indicate the same target, but the two cue clusters indicate different targets.

In the hybrid example (3), two clusters emerge. In one cluster with cues of four types, the core cue, the gestural cue, the targetive cue, and the setting cue are all compatible with each other. They indicate that the targeted location is either generally at the speaker or specifically at the right side of the speaker's teeth. Incompatible with this first cluster is a second cluster with cues of two types: the co-form cues and the ocular gestural cue. These cues are compatible with each other and indicate that the targeted location is either generally at the hearer or specifically at the hearer's mouth or teeth.

As can be seen, the two cue clusters indicate two distinct targets. The cues in the first cluster of the hybrid indicate the same target—a location at the speaker's teeth—as all the cues of (1), the first baseline example. Complementarily, the cues in the second cluster indicate the same target—a location at the hearer's teeth—as all the cues of (2), the second baseline example.

For a hybrid communication to exhibit constructive discrepancy, and hence be successfully processed by the hearer, it may have to meet a certain constraint. Under this constraint, its cues cannot fall into more than two clusters. For one test case, we devise the following communication with three mutually incompatible clusters of cues. In it, the speaker touches her teeth as in the original hybrid case of (3), but now she says (4) while looking out the window. Here, the core cues from the trigger complex *out there* and the ocular gestural cue together form one internally compatible cluster. The manual gestural cue, the targetive cue, and the setting cue form a second cluster. Lastly, the co-forms form a third cluster. But no obvious processing would make these three clusters cohere.

(4) *You've got something in your teeth out there.

The evaluation operation Suppose that the cues of a speaker's communication have been held to be inconsistent under the first operation and have been segregated into two mutually incompatible clusters by the second operation. The hearer then uses a third operation of **evaluation** (to be distinguished from the covert step of evaluation of section 13.1.4) to complete the assessment phase. This operation assigns opposite states of validity to the two incompatible clusters. It designates the cues of one cluster as **valid** and those of the other cluster as **anomalous**. Correspondingly, it designates the target indicated by the cluster of valid cues as being valid and the distinct target indicated by the cluster of anomalous cues as anomalous. In the resolution phase, as will be seen, the valid cues and target are retained in their original form, while the anomalous cues and target are operated on.

For the current hybrid example, the evaluation operation will lead the hearer to conclude that the two cues of the second cluster and their target are valid, while the four cues of the first cluster and their target are anomalous. Specifically, the co-form cue and the ocular gestural cue—along with the location they target at the hearer's teeth—will be evaluated as valid. And the core cue, manual gestural cue, targetive cue, and setting cue—along with the location they target at the speaker's teeth—will be evaluated as anomalous.

But what processing leads the hearer to this evaluation? To carry out the evaluation operation, the hearer must decide between two alternatives. With respect to the two incompatible clusters—call them “A” and “B”—either the cues of A are valid while those of B are anomalous, or the reverse is the case. This decision must be guided by particular principles, and three candidates are presented next. There is a strong case for the first, a modest case for the second, and the third is rejected.

A greater benefit principle. The hearer's initial evaluation principle can be best characterized by starting with the speaker. What reason might a speaker have in the first place to produce a hybrid communication whose internal conflicts the hearer must resolve and to opt for it over an available unconflicted communication that a hearer could process directly? One reason is that a hybrid may afford certain benefits over the unconflicted alternative. Mainly, it may avoid certain problems that the unconflicted alternative presents—a benefit that can be called **problem avoidance**. Consider (2), the second baseline example. It has an unconflicted direct indication of the same target that the hybrid communication is intended to indicate—namely, a location at the hearer's teeth. But it may be problematic with respect to the speaker's reaching across the table to point toward the hearer's teeth. This gesture might be considered socially inappropriate, physically awkward, or incapable of precision. By contrast, hybrid example (3), in which the speaker touches her own teeth, avoids such problems. It evades any social stigma, is easier to perform, and permits precision (the hearer can now use his vision to learn the exact location—otherwise impossible).

Proceeding to the hearer, he must, when presented with the hybrid, assign validity and anomaly to its two incompatible cue clusters in either of two ways. To accomplish this, he may test out both alternatives. He could then determine whether, from the speaker's perspective, one alternative affords a certain amount of benefit over its unconflicted counterpart, while the other affords a lesser benefit, or none at all, over *its* unconflicted counterpart. If one alternative proves more beneficial than the other, the hearer would, on the basis of a **greater-benefit principle**, accept that alternative while rejecting the other.

For the present example, the hearer, using this testing procedure, would at one point try treating the two-cue cluster—the one consisting of the co-form and ocular gestural cues—as valid and the four-cue cluster as anomalous. He will find that this alternative affords a benefit over its unconflicted counterpart, the second baseline example. Namely, it avoids the earlier-cited problems of inappropriateness, awkwardness, or imprecision that the latter may present.

The hearer would also test out the alternative with the reverse ascriptions of validity. Under this alternative, the four cues of the larger cluster would be valid, while the two cues of the smaller cluster would be anomalous. For example, the manual gestural cue of the speaker touching her own teeth would be valid, while the co-form cues from the spoken forms *you* and *in your teeth* would be anomalous and require alteration. The speaker's intended target would thus be a location on her own teeth. The unconflicted counterpart of this alternative would then be (1), the first baseline example. But that first baseline example was wholly unproblematic. This alternative of the two interpretations of the hybrid offers no benefit over its unconflicted counterpart. In fact, since the hybrid is circuitous while its baseline counterpart is direct, it actually presents a disadvantage.

The greater benefit principle here thus guides the hearer's evaluation operation. He concludes that the better assignment of values is the alternative in which the two-cue cluster is valid and the four-cue cluster is anomalous.

A priority principle. Another factor that might help a hearer assign values to the two incompatible cue clusters of a hybrid can be called the **priority principle**. This principle holds that, among all cue types, co-form cues are the likeliest to be valid. That is, they have intrinsic priority over the other cue types in an assignment of validity as against anomaly. Such a factor may seem arbitrary, but it does hold for at least all the examples adduced in this chapter. In the current hybrid example, for instance, the co-form cues from the speaker's words *you* and *in your teeth* are judged to be valid and hence to be retained for the final resolution, whereas four of the remaining five cue types are judged as anomalous.

The priority principle works in conjunction with two components of the evaluation operation. One of these components will be called the **shared value effect**. If one cue

in a cluster of compatible cues is judged to be valid or anomalous, the remaining members of that cluster are also respectively valid or anomalous. In our hybrid example, the priority principle treats the co-form cues as valid, so their cluster mate, the ocular gestural cue, is also treated as valid through the shared value effect. In turn, by the earlier-seen component of the evaluation operation that assigns opposite values to the two incompatible clusters, the remaining four cues are treated as anomalous. Thus, although the priority principle here functions solely to designate the co-form cues as valid, this single function leads to the full assignment of values across all the cue types.

If something like the proposed priority principle is found to hold, its basis would still be unclear. Its basis could not, for example, be any priority of language over paralinguage. Thus, while both the co-forms and the trigger are elements of spoken language, the former here is valid while the latter is anomalous. Complementarily, while both the manual gestural cue and the ocular gestural cue are elements of paralinguage, the former here is indeed anomalous, but the latter is valid.

No majority principle. We might next consider whether a “majority principle” is used by a hearer to evaluate the cues of a hybrid. By such a principle, if one of the two incompatible clusters of cues is larger than the other, it is valid while the smaller cluster is anomalous. But if “larger” is taken to mean having a greater number of different cue types, then this principle fails even for the current hybrid example. In particular, the four cue types of its larger cluster—the core, manual gestural, targetive, and environmental cue types—have proved to be anomalous. At the same time, the two cue types of its smaller cluster—the co-form and ocular gestural cue types—have proved valid.

In an attempt to save the majority principle, one might consider a construal in which the calculation of “larger” includes all individual cues, even ones of the same cue type. This move would work in the present example if, say, it had four separate co-form cues targeting a location at the speaker, thus tipping the balance. But the present example has at most two such co-form cues—those provided by *you* and *your*. And even this number would be reduced to one if the example sentence were changed to *There’s something in your teeth right !-here*.

14.1.4 The Resolution Phase

If an assessment phase has run to its end, the hearer’s three operations have 1) found that the speaker’s communication has incompatible cues and is thus a hybrid, 2) grouped the cues into two internally consistent clusters that themselves are mutually incompatible, and 3) evaluated one of these clusters with its target as valid and the other cluster with its target as anomalous. The hearer must next reconcile this conflict and does so in the **resolution phase**. This phase can be taken to comprise two operations in sequence, first one of assigning precedence and then one of mapping.

The precedence operation On the basis of his evaluation, the hearer can now assign precedence. In this **precedence operation**, specifically, he designates the anomalous cues and their target as “initial” because they will be affected and the valid cues and their target as “final” because they will remain intact. In particular, he treats the anomalous target as an **initial target** because, although the anomalous cues directly indicate it as their target, it will not remain the target for the overall communication. And he treats the valid target as the **final target** because it is what the speaker wants his attention to be on at the end of his processing, jointly with her own.

In the current hybrid example, the initial target is the location on the speaker’s teeth indicated by the four cues of the anomalous cluster. The final target is the location on the hearer’s teeth indicated by the two cues of the valid cluster.

The mapping operation The hearer does not simply disregard the initial target, as well as the anomalous cues to it and any other attributes it may have. Rather, he processes all of these items so as to accommodate them to the final target, as well as to the valid cues to it and any other attributes it may have. This accommodation process consists mainly of a **mapping operation**.

Mapping the setting. We can consider first how this mapping operation applies to a target’s environmental setting—or, more specifically, to the structure of this setting (see the introduction to chapter 9 for what constitutes environmental structure). The hearer has already determined the setting of the initial target. He now presumes that the final target has its own setting. The operation then maps certain aspects of the initial setting’s structure onto the final setting.

In some cases, the hearer conceptually imposes these aspects of structure directly onto the final setting where it seems structurally neutral. But usually, the hearer knows of or imagines certain particulars of structure in the final setting. In that case, he conceives how aspects of the initial setting’s structure might align with aspects of the final setting’s structure. The mapping operation then establishes a certain structural homology between the initial and final settings. The function of the initial setting here can be thought to be that of structurally representing or corresponding to the final setting.

The hearer of our hybrid example may accordingly process its settings as follows. He has settled on the speaker’s body as the initial setting—the portion of the environment that contains the initial target, namely, a particular location on her teeth. He takes the structure of this initial setting to include the delineations that demarcate her torso and face, as well as their further articulations, in a particular spatial or geometric pattern. He now regards his own body as the final setting that contains what he already knows to be the final target, a particular location on his own teeth. He is aware of much of the structure of this final setting, his own body. He then performs the mapping operation,

aligning aspects of the structure just cited for the speaker's body with comparable structural aspects of his own body, thus establishing a structural homology.

The spatial arrangement here licenses the hearer to carry out his mapping operation in either of two main ways, since his body (the final setting) faces the speaker's body (the initial setting) front-to-front (and a hearer aware of both alternatives may wonder which one to follow). With a **rotational mapping**, the hearer conceptually rotates the speaker's body schema, pivoting it about its own vertical axis while revolving it around the axis between them, to superimpose it on his own body schema. With the structural homology established this way, the speaker's right side is aligned with his right side. But with a **reflective mapping**, the hearer conceptually superimposes the speaker's body schema onto his own as if his were a mirror image of hers. The speaker's right side is now aligned with his left side.

Mapping the target. The hearer must also apply the mapping operation to the initial target. The most precisional indication of the initial target—a specific location on the right side of the speaker's teeth—is provided by the manual gestural cue from her fingertip touching that location. The hearer now maps this initially targeted location, which has a specific geometric relation to the initial setting of the speaker's body, onto the geometrically homologous location within the final setting of his own body. The precisional final target that emerges is then the corresponding specific location on his own teeth. This will be on the right side if he has adopted a rotational mapping and on the left for a reflective mapping.

Separately mapping different aspects of a single cue. A single anomalous cue can have two or more distinguishable aspects, and the mapping operation can act differently on each such aspect. This circumstance applies to the three remaining anomalous cues in the current example.

—Mapping different gestural-cue aspects. The gestural cue provided by the speaker's finger in the present example might be regarded as having two relevant aspects. These are its spatial role in indicating the target's positioning, and its physical embodiment as a corporeal digit serving as articulator. For the first of these, the mapping operation acts on the spatial aspect of the gestural cue much as just described for the initial target, transferring its positioning information to the final setting. But as for the embodied aspect of the gestural cue, the operation might map the hearer's perception of the speaker's material finger onto an image he might generate of a finger (whether his own or the speaker's) touching his own teeth. Or the operation might simply be canceled, dropping this aspect from any transfer.

—Mapping different core-cue aspects. The hearer must then separately process the different aspects of the core-cue information provided by the trigger *here*—or, as it has

been spoken of before, separately process the distinct core cues provided by the trigger. One core cue indicates that the target, in its ontological category, is a location—not, say, an entity. Another core cue indicates that the target's degree of spatial remove is that of proximity with respect to the speaker as reference point. The hearer readily maps the indication of the former core cue onto the final target, which he accordingly now treats as being a location. He might then map the indication of the latter core cue so that its reference-point function shifts from the speaker to the hearer, or again he might simply drop it.

—Mapping different targetive-cue aspects. Finally, the hearer must process different aspects of the targetive-cue information—the sensory stimuli produced by the speaker's teeth at a particular location on them. One aspect of this targetive information is the dentality of the targeted location. The hearer maps this initial dental identity onto the final targetive information. Another aspect of the initial targetive information is the vividness of its visuality. The hearer may map this aspect onto the merely imaginal representation he maintains of his own teeth and so impose some vividness onto it.

Mapping outcomes. The mapping operation yields certain outcomes. First, the anomalous cues that the mapping operation acted on have helped overcome certain problems presented by the valid cues alone. These are the problems that the corresponding internally compatible communication (such as in (2), the second baseline example) would present. One of these problems is that the hearer would have only an imprecise mental image of the intended target, some location on his teeth. But his mapping of the anomalous cues overlays certain aspects of them onto the problematic mental image, thus enriching or refining it and abating its problems. In particular, these mapped aspects provide precisional information about the specific site of the targeted location and perhaps provide a sense of perceptual vividness to the drabber mental image.

Second, at this completion of the resolution phase, the originally anomalous cues have been accommodated to the valid cues and are now valid themselves. This final reconciled version of the original conflicted communication is thus now internally consistent. It is now comparable to any originally consistent communication that the hearer has processed to the end of the second stage of the targeting procedure. And, as with any process ordinary to this point, it is now ready to be put through the third and final stage—the target-back-to-trigger stage—thus completing the targeting procedure.

14.1.5 With Certain Factors Varied

Our analysis of cue conflict and its resolution has so far been based on a specific hybrid example. But certain changes in particular aspects of this example lead to extensions of the analysis and are undertaken next.

The final target is not at the hearer In the original hybrid example (3), the final setting is the body of the hearer as he sits opposite the speaker, and the final target is located in that setting, hence, at the hearer. But the final setting and target can also be elsewhere, as seen in the next two cases.

The final target is at a perceived other person. In one variant of the original hybrid example, the speaker keeps the same four anomalous cues, thus still touching her teeth and using the proximal trigger *here*. But now she looks at the mouth of a third party, a man sitting at an angle at another table, and produces third-person co-form cues as she says (5).

(5) He's got something in his teeth right here.

The hearer's processing may now differ in two respects. Whereas he previously generated an imaginal representation of his own body as the final setting and of a spot on his own teeth as the final target, he now directly perceives the final setting and target in looking over at the neighboring man and his teeth. And whereas he previously had the option of either a rotational or a reflective mapping, he is now likelier to undertake only a rotational mapping—placing the final target on the right side of the man's teeth—since the man does not directly face the speaker.

The final target is at an unperceived other person. For a further variant, the speaker, still as before touching her finger to the right side of her own teeth, now says (6).

(6) My mother needs to get a filling right here.

Here as before, the same four cues—the core, manual gestural, targetive, and environmental setting cues—are anomalous and compatibly indicate the same initial target, a location on the right side of the speaker's teeth. And the co-form cues are again valid (although the ocular gestural cue is now either anomalous or irrelevant). But the co-form cues here indicate the body and teeth of a person that is absent from the immediate physical environment (unlike in the previous two cases) and that the hearer cannot directly perceive (unlike the nearby diner in the preceding case).

In particular, the co-form cues may activate that part of the hearer's knowledge store that yields a cognitive representation of the speaker's mother. The hearer performs largely the same mapping operations as before. He imaginally superimposes the speaker's body schema onto his mental representation of the mother's body. Again likely to use rotational mapping as in the preceding example, he overlays the location on the right side of the speaker's teeth onto the corresponding location on the right side of the teeth in his representation.

But an additional complexity arises here. As he processes the utterance, the hearer presumably has (and may be aware of having) both an imaginal representation of the

speaker's mother in his mind, and the knowledge of a physical woman that this image represents, existing somewhere outside the immediate space. We will refer to the former type of these two realizations as a "representation" and the latter, in accord with one linguistic tradition, as a "referent" (here, the physical woman is the referent of the speaker's noun phrase *my mother*). The hearer may then set the location of the final target both in his imaginal representation of the mother and in the physical woman he knows to exist elsewhere, realizing that the effectively "fully final" target has the latter placement. Where the distinction between these two targets needs to be made explicit, they will respectively be called the **representation-based final target** and the **referent-based final target** (with corresponding terms for other elements, such as the setting).¹

The speaker in this new example as before follows the problem-avoidance principle. But where the advantage conferred by the hybrid formulation in the preceding examples was the avoidance of inappropriateness, awkwardness, or imprecision, the advantage here is avoidance of the physically impossible. The speaker cannot directly point to the target location, either on the hearer's mental representation of the mother or on the physical body of the mother herself. Thus, the only available means for including a gesture, an environmental setting, and an exhibit trigger in a communication is a hybrid formulation in which the speaker points to her own teeth.

The impossibility of the speaker gesturing at the teeth of her physical mother falls under the analysis in section 10.2.3. With respect to the "pilot" example of (10:3) there, a speaker could not use the trigger *there* or an (e.g., parabolic-type) gesture to target an unperceived location if he could not use his epistemic knowledge of spatial continuity to extrapolate to it from his own location. And that is the case here, since the physical mother's location is unperceived and may be both unknown and shifting.

14.2 The Initial and Final Targets Have Dissimilar Forms

In the hybrid examples so far, the initial target and setting were virtually twins of their final counterparts: teeth to teeth and body to body. But we now consider examples where the initial elements are dissimilar in their embodiment from their final counterparts. Though the assessment and resolution phases here are largely the same, such examples present new features worth examining.

We start as before with two baseline examples. Each example this time includes two instances of targeting initiated by two triggers but, for each instance, all the cues are mutually compatible. For the first example, a speaker is in front of an audience at a travel club in the United States standing before a large paper map of France on the wall. The speaker says (7) as he touches first one spot and then another spot on the map. The two targets here are two locations on the map.

(7) I drew a dotted line from here to there.

For the second baseline example, we change the scene. The speaker is in a plane over a French town and says (8) to his companion, while pointing out the window first directly downward at a town visible below and then at an angle to another town visible ahead. The two targets here are two towns understood as locations on geographic terrain.

(8) I rode a rented bike from here to there.

But we now switch to a hybrid example combining aspects of both the preceding examples. In this hybrid, the speaker is back in front of the travel club audience and gestures to spots on the map exactly as in (7), the first baseline example. But he now utters the same sentence, (8), as in the second baseline example.

The cues in this hybrid—for both its instances of targeting—can be identified as follows. To begin with, certain of these cues indicate that the targets are the same two as in (7), the first baseline example, namely, two spots on the map. Core cues from the triggers *here* and *there* indicate that these targets are respectively a proximal location and a distal location. Gestural cues, this time both manual and ocular, indicate that the targets are particular points on the map. Targetive cues indicate that the targets are the sources of certain visual stimuli (marks seen on paper). And the environmental setting cue indicates that the targets are contained within the map (while general environmental cues indicate that they are located within the overall visible surroundings).

But other cues indicate that the two targets are the same as in (8), the second baseline example, namely, two particular locations on geographic terrain. This indication is provided first by co-form cues from the discontinuous sequence *rode a rented bike from . . . to*. This indication is also provided by epistemic cues from the contextual knowledge that the subject matter is that of foreign travel—not, say, that of how graphic symbols are represented on paper.

A hearer in the audience will initially pass the speaker's communication through the assessment phase of processing. First performing the consistency-checking operation on it, she may conclude that it fails the plausibility condition since taking all the cues together literally could lead to an implausible image in which a tiny version of the speaker rides a tiny bicycle across the map. It also fails the noncontradiction condition since, for example, the gestural cue indicating that the target is a spot on the map and the epistemic cue indicating that the target is a place on terrain contradict each other.

Next performing the clustering operation, the hearer will group the first four cues—the core, gestural, targetive, and environmental cues—into one cluster compatibly indicating the targets as spots on the map. Incompatible with this first cluster is a second cluster consisting of the remaining cues—the co-form and epistemic cues—that compatibly indicate the target as locations on a terrain.

And for the third operation of evaluation, the hearer might first use the greater benefit principle. She would find that treating the cluster of two cue types as valid and the cluster of four cue types as anomalous does have the benefit of avoiding a problem. The

problem avoided is that, if the targets were indeed to be two foreign geographic locations not directly connectable to the speaker's location through extrapolation, it would be impossible for the speaker to indicate them gesturally. The anomaly of gesturing to a piece of paper so as to refer to foreign sites would thus be justified.

By contrast, treating the cues of the four-cue cluster as valid and those of the two-cue cluster as anomalous would not avoid problems but create them. A hearer might have to conclude, among other difficulties, that the co-form cues based on riding a bike across the map can be adapted to fit in through some metaphoric reinterpretation, though none is readily apparent, or that the epistemic cues based on people gathered to discuss foreign travel can be modified into actually representing, say, symbols on paper. The hearer thus ends up assigning validity to the two-cue cluster and anomaly to the four-cue cluster on the basis of the greater benefit principle.

She may also do so on the basis of the priority principle. As proposed, this principle holds that, where different cue types are in conflict, the co-form cues are likeliest to be valid. When applied here, this principle indeed corroborates the hearer's evaluation based on the greater-benefit principle. And in further corroboration, as a result of the shared value effect, the cluster-mate of the co-form cues—the epistemic cue—is also assessed as valid.

The current example in fact suggests amending the priority principle so that it now favors valid status for both co-form and epistemic cues. This addition did not arise in the teeth examples because the hearer's epistemic knowledge that the context was about something in the teeth held as much for the initial target as for the final target. But here, the hearer's epistemic knowledge that the context is about foreign travel does not hold for the initial targets (marks on paper), but only for the final targets (towns in geographic terrain).

The hearer now undertakes the resolution phase. Starting with the precedence operation, she treats the anomalous cues as pertaining to the initial setting, the map on the wall, while treating the valid cues as pertaining to its final counterpart. As in the earlier "mother" example of (6), though, there are here two final counterparts. The representation-based final setting is the image of the geography and terrain of France that the hearer has in her mind. The referent-based final setting is the physical geography and terrain of France that the hearer knows to exist in Europe.

14.2.1 The Reembodiment Operation

Then through the mapping operation, the hearer mentally aligns aspects of the initial setting's structure with homologous aspects of structure in the final settings. But it is here that the present example most differs from the examples of section 14.1, where the final setting was of the same physical form as the initial setting. The hearer of the present communication must additionally perform a **reembodiment operation**. She must conceptually transform the dots and lines that make up the initial setting's

structure into the population centers, roads, and waterways that make up the final settings' structure. And she must conceptually transform the physical substrate of the initial setting, the paper of the map, into the physical substrate of the final settings (especially of the referent-based final setting), the actual terrain of France.

Continuing her mapping operation, the hearer maps the initial targets that the speaker gesturally indicated within the initial setting (i.e., the two dots in the map on the wall) onto their counterparts within the final settings. As in the teeth examples, she preserves the geometric relations of the targets to the settings. But again performing a reembodiment operation, she conceptually transforms the two dots that comprised the initial targets into the two particular towns that comprise the final targets.²

14.2.2 With Certain Factors Varied

Where a hybrid has different initial and final forms, a hearer will modify her processing of it somewhat if there are certain variations in the referent-based final setting.

The reembodied setting is fictive Consider first the case where such a setting has no physical existence, but only a fictional one. Suppose that a particular fantasy novel includes a map of its invented realm "Ecalpon." A speaker who has already read the book then points successively to two spots on the map while saying (9) to a friend.

(9) The hero rides a horse from here to there.

Unlike in the "France" example, the hearer here has no pre-existing mental representation of the realm in her knowledge store. She can generate a representation-based final setting for Ecalpon only from the map she is looking at.

Further, since she knows that no physical land of Ecalpon exists, she cannot support a genuine referent-based final setting. The most she can do is imagine a fictive referent with virtual existence in a cognitive domain she establishes for that purpose (perhaps to be viewed as a Fauconnierian mental space [Fauconnier, 1985]). We will say that the hearer here has a **fictive referent-based final setting**. The metacognition of different hearers at different times regarding the state of such a fictive referent-based final setting can range from full awareness of its virtuality to perhaps nearly forgetting that it does not exist. In the latter case, the hearer may almost assimilate it to familiar instances of real referents.

In the current variation, though, the hearer continues to perform the reembodiment operation. She still transforms the initial targets within the initial setting—the dots and lines on the book's map—into final targets—concepts of sites and routes—in both the representation-based and the fictive referent-based final settings.

The reembodied setting is perceived In a second variation, the speaker—now outside on a street with a map of the local terrain in his hand—says (10) to his companion,

while first pointing to a spot on the map and then moving his finger along a line. The hearer here might shift her gaze from the map to her immediate location and up along the street she is on.

(10) We are here and we need to go this way.

This new “map” example is most like the teeth example with the man at another table. In both cases, the hearer not only perceives the initial setting and its contained target(s), but then, shifting gaze direction, also directly perceives the corresponding final setting and its contained target(s). Unlike in the mother and earlier map examples, the final setting is not a referent understood to exist elsewhere, but one actually perceived. In both cases, further, any intermediary representation-based final setting that the hearer may form conceptually might play a minimal role.

But in the cited teeth example, the initial setting, the speaker, had the same type of physical form as the final setting, the man at the neighboring table. The hearer could readily overlay the structure of the former onto that of the latter.

Here, though, the initial and final settings have different types of physical form. The hearer must now again perform a reembodiment operation. She must translate the initial setting, the map that she has just perceived, into the final setting, the cityscape that she now perceives before her. As for the contained initial and final targets, comparably, she must translate the spot and line on the map into the structurally homologous elements of the cityscape, the location beneath her feet and the street in front of her.

14.3 The Initial Target Is Fictive

In all the hybrid examples so far, the initial target indicated by the anomalous cues of the speaker’s communication was factive. The hearer could directly perceive it as well as its setting. But here, the initial target is fictive. Although the speaker does gesturally indicate the initial target’s location, nothing physically manifests there. There is no tangible initial target or setting for the hearer to perceive.

The final target is factive, but it can relate to the fictive initial target in two ways, treated next in order. Either it has or will occupy the indicated location of the initial target, or it never does so.

14.3.1 The Final Target at Some Point Occupies the Indicated Location

In the circumstance considered here, the final target is a physical entity, one that exhibits a change of location. It is not presently at the location that the speaker is gesturally indicating for the initial target. Rather, it is at some other location where it cannot be perceived. However, it either did occupy that indicated location at some point, does occupy it customarily, or will occupy it at some point—three cases considered next in

order. The hearer is generally assumed to have previously perceived the final target and so to be aware of its identity.³

In principle at least, the speaker could speak and indicate the location at the very time that the targeted entity did or will occupy it. The entity would then not be the final target but simply the target. In effect here, though, the entity's current temporal displacement from that past or future time gives rise to its present spatial displacement from the currently indicated location and to its status as a final target.

The final target had been at the indicated location To illustrate the first case, suppose that the speaker and hearer are in a hallway. At the end of the hallway is the entrance to an auditorium. Initially, a man is standing beside the entrance, but then he disappears inside the auditorium. To begin as before with two unconflicted baseline examples, the speaker could point to the man while he is still standing there and say (11a), using the entity-indicating trigger *that*. Or she could point to the location after he left it and say (11b), using the locative trigger *there*.

- (11) a. That's the new dean.
- b. The person that was standing there is the new dean.

But the speaker can also produce a conflicted hybrid communication by pointing to the location the man had occupied—doing so after he had already left it—and saying (12), while still using the entity-indicating trigger *that*. The speaker can use the present tense of (12a) if the man had entered the auditorium just before her communication, while the past tense of (12b) allows for a greater time lag. In either case, though, the referent of the trigger *that*, at the time of the utterance, has no visible manifestation at the indicated location—it is fictive.

- (12) a. That's the new dean. b. That was the new dean.

In the assessment phase of his processing, the hearer first performs the consistency-checking operation. He finds that the communication fails the noncontradiction condition at least due to the gestural and co-form cues, which indicate that the target is respectively an empty space and a person serving as dean. And it fails the plausibility condition through its seeming claim that an empty space is a dean. He thus concludes that the communication is a hybrid with conflicting cues.

The clustering and evaluation operations then yield the following results. The valid cues that pertain to the factive final target are the co-form cues indicating that that target is a person serving as a dean, and the epistemic cues from the hearer's knowledge that such a target can (unlike, say, a building) readily change locations and be elsewhere.

For their part, the anomalous cues ascribe characteristics to the fictive initial target, that is, to a target not perceivably there. One of these is the gestural cue from the speaker's finger, pointing at a location that is beside the entrance and occupied by the

unperceivable target. Another is the core cue from the trigger *that* that ascribes the properties of being a uniplex distal entity to that same initial fictive target.

In addition, there are the environmental cues that indicate the space beside the entrance as the initial setting, as well as what might be treated as targetive cues from the section of wall visible at that space.

As for what the initial target specifically consists of, by one interpretation, it is a fictive entity at the indicated location invested with the hearer's current imaginal representation of the man as he had been perceived standing at that location in the past. This interpretation accords well with the ready use of the past tense in (12b).

The hearer now undertakes the resolution phase of processing. As with the earlier mother example, the hearer can be thought to maintain in cognition both a representation-based final target and a referent-based final target, but we focus on the latter. The hearer maps the fictive initial target onto the referent-based final target. That is, he maps the fictive entity invested with his remembered image of the man he had seen standing beside the entrance onto the corresponding man that he knows to be inside the auditorium and out of sight. As with mappings in the teeth examples, the initial target, which the hearer had earlier perceived directly, enriches the referent-based final target, itself unperceived, through this superimposition.

The hybrid communication must meet two conditions to be felicitous. First, the speaker must be sure that the hearer had in fact perceived the man when he was still standing beside the entrance and so had a chance to form an imaginal representation of him there.

Second, no other person can now occupy the indicated location vacated by the original man. If another person does now occupy it, then the hearer will construe (12a) as an unconflicted communication targeting the person now standing there and will interpret the past tense of (12b) to mean that the person now standing there was formerly the dean but no longer is. The principle underlying this second condition is that, if there is a way to construe a communication as unconflicted, that construal has priority over one in which the communication is a hybrid with conflicting cues.

We can note that the second baseline example in (12b) that targets a current location is not subject to either of these conditions. The phrase *the person that was standing there* refers to the same man that the speaker has in mind regardless of whether the hearer had originally seen him, or whether another person is now standing in his place.

The final target is customarily at the indicated location In the second type of temporal displacement, with its accompanying spatial displacement, the speaker's intended target is customarily at the location that the speaker is currently indicating, but is not there now. To illustrate, suppose a company personnel officer has dropped in on a department manager to ask about the staff. To begin as before with two unconflicted baseline examples, the manager might point a finger out the window at a woman just

walking past and say (13a), using the entity-indicating trigger *she*. Or the manager might point at an empty chair and say (13b), using the locative trigger *there*.

- (13) a. !-She's off work today.
b. The woman who usually sits !-there is off work today.

But the manager can also produce a related hybrid with conflicting cues. The manager now points to an empty chair but still says (13a) with its entity-indicating trigger *she*.

Proceeding much as in the “dean” case, the hearer’s processing begins with the consistency-checking operation. He finds that two cues fail the noncontradiction condition—the core cue from the trigger *she* indicating that the target is a uniplex female entity and the gestural cue indicating that the target is the space defined by an empty chair. And he finds that the cues fail the plausibility condition since, taken together at face value, they suggest a scrambled image in which a woman is both absent and present as an empty space.

The hearer completes his processing of the cues, now ascertained to be in conflict. He realizes that what the speaker is pointing at and referring to as a female entity is actually a fictive initial target. He in turn conceptually maps this onto a factive final target, an actual woman currently at some other location. Epistemic cues from his knowledge of the work situation lead him to understand that the factive final target is customarily at the indicated location in the chair when she is at work.

The two previously seen conditions on a fictive initial target apply here as well. First, the hearer must have perceived the targeted woman at some previous time and hence have some sense of her unique identity. If this were not the case, the speaker would have begun not with (13a)’s *she* but with (13b)’s *the woman who usually sits there*.⁴ The hearer thus invests the fictive entity at the indicated location with his imaginal representation of the woman as he had perceived her previously sitting in the chair.

Second, no other person can now be occupying the indicated chair space. This is the case even if a man were sitting in the chair. If the speaker were to say (13a) while pointing to a woman or man in the chair, the communication would indeed be a hybrid with conflicting cues, but it would now be unresolvable. A range of cases of this sort could be assembled for future research into the principles governing which cue conflicts can or cannot be resolved. Note that, much as before, the speaker could without problem say (13b) with another person occupying the chair, since the utterance refers to the usual occupant of the chair and the gesture correctly indicates that occupant’s usual location.⁵

The final target will be at the indicated location In the third type of temporal and concomitantly spatial displacement, the speaker’s intended target will be—that is, is expected or planned to be—at the location she is currently indicating, but is not there now. For illustration, we again start with two unconflicted baseline examples. Suppose

that a professional events organizer is with her assistant on the empty outdoor grounds where a company plans to hold its annual employee gathering. She might say the two parts of (14) as she first walks over to and points at one location on the grounds, and then does the same with another location. She uses the locative trigger *here* for both these instances of targeting.

- (14) The refreshments table will go !-here . . .
and the stage for the awards will go !-here.

In the second baseline example, the speaker is in the warehouse for stored events items and says (15) to her assistant while moving along and successively pointing at two such items.

- (15) !-This is the refreshments table . . .
and !-this is the stage for the awards.

But the organizer can also produce a conflicted hybrid while on the empty outdoor grounds. She walks and points as in the first baseline example (14), but now she says (15) as in the second baseline example. In what may be judged as a vernacular register, she uses the entity-indicating trigger *this* while pointing to locations devoid of entities.

As earlier, the hearer will assess the cues of this communication as inconsistent since, if taken at face value, they fail the plausibility condition by seeming to maintain that a portion of empty space is in fact a particular tangible object. And, to abbreviate the now familiar procedure, the hearer—for each instance of targeting—will map the invisible initial target onto the final target, a particular item he has previously seen in storage. In this case, though, he may additionally envisage the future physical translocation of that item to the currently indicated location.

14.3.2 The Final Target Never Occupies the Indicated Location

In the circumstance considered now, the final target (which now can be either an entity or a location) is never at the location that the speaker is gesturally indicating. Its spatial displacement from that location is intrinsic to the situation, not a function of when the speaker communicates. The initial target that the speaker indicates thus corresponds to the final target continuously at some other location. The hearer need not have previously perceived the final target (unlike in the preceding circumstance) and so may learn of its specific identity and other characteristics from the speaker's communication alone.

As before, the initial target is fictive with nothing for the hearer to perceive. But the speaker uses gestures to indicate its fictive location and often other characteristics such as its shape and movements. She also uses gestures to suggest a fictive initial setting as an aid to indicating the initial target's location. Two types of such gestures are treated next in order.

Stance indicates the initial setting We will use the term “stance” for how a speaker positions her body in relation to the ground and her articulator in relation to her body. To illustrate its function, suppose that a speaker has offered the use of her office in another building to a friend and explains how to illuminate it by saying either version of (16) (example suggested by Eve Sweetser, p.c.). She stands upright, stretches her right arm across her chest so that the right hand is just over her left shoulder, and aims her forefinger backward as if pointing behind herself, perhaps looking in that direction as well.

- (16) As you enter the office,
 a. this is the light switch. b. the light switch is here.

In his processing, the hearer gathers that the speaker’s communication is a hybrid with conflicting cues because, besides other evidence, no light switch is apparent where she is pointing. He concludes that the valid cues are all the co-form cues, as well as the epistemic cues from his knowledge that he is now away from her office but will proceed to it at some future point. The anomalous cues include the gestural cue provided by the extended finger pointing to empty space; the core cues from the trigger *this* or *here* that, in conjunction with this gestural cue, indicate a nonexistent object or an unoccupied location; and the targetive and environmental cues, both of which here consist of empty space.

But the speaker had arranged her stance in a way that suggests the layout of a setting, as well as the target’s location within that. On perceiving her stance, in turn, the hearer uses it to generate an imaginal representation of a setting and a location within it. In particular, based on the initial clause in (16) about entering the office, he takes the speaker to be facing into the office and the left-to-right plane of her body to be parallel to the office doorway, perhaps just past it. The position of her right arm suggests that an inside wall extends leftward from the doorway, also parallel with it, and that the switch is at shoulder height just left of the left jamb.

He then maps this initial fictive construct onto the referent-based final setting and target location. He expects that, on his future physical entry of her office, he will find the room laid out and the switch to be positioned as suggested by the speaker’s current stance.

Target modeling. In the preceding example, the speaker simply pointed at the initial target, whether this was (16a)’s entity or (16b)’s location. But as an alternative to pointing, she can form her hand as if touching or gripping the light switch and move her hand as if toggling it upward. The form and motion of the articulator here thus suggests the shape and movement of an entity. Where the target is a location, as in (16b), this entity is the Figure, and the gesture exhibits the Figure modeling described in

section 5.10.2 for the “helmet” example of (69). Where the target is itself the entity, as in (16a), the gesture can by extension be said to exhibit “target modeling.”

The earlier helmet example and the modified “light switch” example here can now be seen as comparable. In both cases, the gesture models the shape and movement of a fictive entity to indicate an initial Figure or target. In turn, that imaginal construct corresponds to the shape and movement of a factive entity—the physical helmet or light switch—functioning as the final Figure or target.

Temporal nondisplacement. The preceding light switch examples were understood to unfold through time. The hearer was to encounter the final target and setting at a moment temporally displaced from—specifically, later than—that of his encounter with the initial target and setting. But a factive final target and setting can also be represented as concurrent with a fictive initial target and setting. For example, a speaker can execute her stance exactly as for example (16), but now say (17), which describes an initial-final correlation without temporal displacement.

- (17) In every office of the new building, as someone enters,
the light switch is here.

Traces indicate the initial setting A second type of gesturing that a speaker can employ to suggest a fictive initial setting is to form traces (compare the “depicting” of Clark, 2016). To illustrate, suppose that a speaker—explaining to a visiting organist how to access the organ loft—says the three sentences of (18) in sequence.

- (18) a. !-This is the concert hall. b. !-This is the front.
c. The stairway to the organ loft is !-here.

As the speaker says (18a), she traces out some of the hall’s rectangular interior perimeter with both forefingers. The two fingertips first meet at a central point some twenty inches in front of her abdomen; then they move respectively left and right some ten inches horizontally to each side; and then—forming sharp right angles that represent two corners—they are drawn straight horizontally back some twelve inches toward the plane of the speaker’s torso. While saying (18b), she next places her right forefinger a bit higher up to point down toward the trace representing the initial left-right line. And while saying (18c), she carefully lowers her right fingertip as if to have it touch a spot on that initial left-right trace line, some two inches rightward from the left corner.

With respect to the speaker’s overall communication, understood as a conflicted hybrid, the hearer regards the first two sets of gestures as establishing the fictive initial setting. He treats the gestures of (18a) as tracing out the main contours of the setting and the gesture of (18b) as orienting it. In turn, he regards the gesture produced during (18c) as providing the actual gestural cue that, in association with the trigger *here*,

indicates the location of the stairway to the loft relative to the just-depicted geometry of the setting. He understands that the fictive initial setting and locative target represented by the speaker can be mapped onto their factive final counterparts elsewhere.⁶

14.4 Resolution of Conflicting Cues to a Speech-Internal Target

So far, targeting with conflicting cues in a speaker's communication has been speech-external, but we turn now to the case where it is speech-internal. The speech-internal domain does have certain forms of such conflicts and of their resolution. But unlike the speech-external domain, its targeting procedure may have only minimal provision for the speaker to use cue conflict as constructive discrepancy, and hence for the hearer to resolve a conflict through the processes outlined to this point. In particular, cue conflict in speech-internal targeting lacks gestures as a source of anomalous cues—a possibly criterial component of the speech-external cases. And it may fail to establish an initial-final target distinction. In speech-internal targeting, rather, cue conflict may consist mainly of different cues indicating different targets, with resolution consisting of a prioritizing system that privileges one cue type over another (see Talmy, 2000b: chapter 5, Semantic conflict and resolution).

To illustrate, we first reprise an example from section 9.3.1, where the speaker says either (19a) or (19b) and either (19c) or (19d).

- (19) a. The Romans were near the barbarians. /
- b. The barbarians were near the Romans.
- c. They were tired. /
- d. Luck was with them.

This example was designed to reduce potentially confounding factors. Thus, given their core cues, the triggers *they* and *them* in (19c) and (19d) can target the referent of either nominal constituent in the initial sentence, whether this sentence is (19a) or (19b). Comparably, the co-form cues from the constituents *be tired* and *luck be with* in (19c) and (19d) ascribe particular attributes to the target, but both the referents can have such attributes. Even the constituent *be near* in each initial sentence expresses a symmetric spatial relation between the two referents and so does not provide co-form cues with a bias toward either referent (apart from Figure/Ground assignment).

Still, for either trigger, the hearer assigns target status to the referent of the subject nominal—hence, of *the Romans* if the speaker says (19a) and *the barbarians* if he says (19b). This assignment rests on what we have interpreted as a speech-internal environmental cue. In particular, an environmental structure cue is provided by the formal circumstance that each of the initial sentences has a subject slot; that subject status, among grammatical relations, accords the most salience to the referent of the nominal in that slot; and that such salience is an environmental cue to target status. Consider

now, though, the next example, where the speaker says either (20a) or (20b) and either (20c), (20d), or (20e).

- (20) a. The Romans were near the apples. /
 b. The apples were near the Romans.
 c. They were hungry. / d. They were ripe. / e. They ate them.

As before, any of the *they* or *them* triggers in (20c), (20d), or (20e) can target either nominal referent in either (20a) or (20b). And the symmetric referent of the constituent *be near* does not have a bias toward either its prior or following referent. However, the constituent targeted by any of the triggers is now not determined by environmental cues pertaining to its having subject status or indeed by its grammatical relation at all. Instead, it is determined by co-form cues. The predicates in (20c), (20d), and (20e) all provide co-form cues ascribing certain attributes to their targets, but the two target candidates this time differ with respect to these attributes. Only the Romans can be hungry or eaters and hence be targeted by the trigger *they* in (20c) or (20e). And only the apples can be ripe or eaten by such eaters and hence be targeted by the triggers *they* or *them* respectively in (20d) or (20e).

What is relevant here is that this example can be viewed as having conflicting cues. On the one hand, environmental structure cues promote target status for the referent of the subject nominal. On the other hand, co-form cues promote target status for the referent having certain qualitative attributes. The hearer must resolve this cue conflict. The resolution procedure here does not rest on distinguishing between anomalous cues and valid cues and mapping the former onto the latter, as in the speech-external domain. It rests, rather, on a prioritizing system that ranks different cue types and privileges certain of them over others when conflict occurs. In the present example, co-form cues have priority over environmental cues. The target indications of the former override those of the latter.

14.4.1 Conflict and Resolution in Tropes

Although the assessment and resolution of conflict outlined in sections 14.1.3 and 14.1.4 may not extend from the speech-external to the speech-internal domain with respect to targeting, they may well do so in a hearer's processing of tropes. We discuss this briefly now to show that some of the analysis built up here to account for targeting can extend as well to other linguistic areas.

In our terms, a speaker's communication includes a trope (i.e., figure of speech) if its components, taken at face value, indicate one conceptual complex, but it is designed to initiate processing in the hearer that yields a different conceptual complex. Within this characterization, we here limit our discussion to those types of tropes, presumably the majority, that depend solely on what a speaker says, not on anything outside such speech. At least for the present discussion, we extend the term "speech-internal"

to such tropes. We then further limit the discussion to types of tropes in which some components of the communication—hence, certain linguistic constituents—conflict semantically. Thus, the original conflict between cue indications here becomes a conflict between constituent meanings.

A type of trope within these limitations is that of metaphors. We illustrate one here to show how the processing it requires resembles that for a targeting hybrid with conflicting cues. Thus, in a discussion of semester-long university class assignments, a speaker might say (21).

(21) My brother is lurching along in his term paper.

A consistency-checking operation As with the cue conflict procedure, the hearer might first put this expression through the assessment phase and begin with the consistency-checking operation. She would find that it fails the plausibility condition since, taken literally, the meanings of the constituents together yield a surreal image, perhaps one in which a person moves physically through a large abstract body of writing. It comparably fails the noncontradiction condition in that the notions ‘lurching’ and ‘in his term paper’ are out of accord.

A clustering operation The hearer goes on to the second operation of clustering to segregate the constituents into two distinct clusters that are each internally compatible but incompatible with each other. These two clusters of constituents are shown in (22).

(22) a. My brother is . . . -ing . . . in his term paper.
b. . . . lurch- . . . along . . .

Cluster semantics at two levels. The hearer must consider the meanings of the two clusters of constituents to process them further. And these meanings can be characterized at two levels, one more general and one more specific.

At a more general level, the (22a) cluster refers to a purposeful agent executing a finite enterprise. And at a more specific level, it refers to the speaker’s brother acting with respect to his term paper.

In turn, at a more general level, the (22b) cluster refers to a Figure entity moving in a particular manner along a linear path in space. And at a more specific level, it refers to a person on foot stepping jerkily ahead in short irregular bursts punctuated by halts, typically with some side-to-side motion, along a non-straight path.

An evaluation operation and a resolution phase The hearer proceeds to the third operation of evaluation to judge one of the two constituent clusters as valid and the other as anomalous. But here, this operation can be best examined by considering it together with the ensuing resolution phase.

As with cue conflict, the hearer can consider the two alternative ways to assign values. She might first check the alternative in which she treats the “lurch” cluster of (22b) as anomalous and the “term paper” cluster of (22a) as valid. In this alternative, the “lurch” cluster thus represents an initial conception, one to be altered, while the “term paper” cluster represents a final concept, one to be kept intact.

The hearer will map certain structural aspects of the former onto the structure of the latter. This process—here familiar from our earlier analysis of cue conflict—corresponds to the process in conceptual metaphor theory (e.g., Lakoff, 1992; Grady, 1999) in which a source domain is mapped onto a target domain.

This mapping by the hearer can also be considered at both semantic levels. At a more general level, she maps the concept of linear spatial advance in the domain of motion onto the concept of accomplishment in the domain of enterprise.

At a more specific level, she maps some of the particulars of lurching already cited onto paper writing. At their endpoint, these particulars may be reconceptualized as short irregular bursts of activity, punctuated by periods of inactivity, and without progression in a concerted thematic direction. The particulars of lurching that she leaves behind in her mapping may include the left-right footstep alternation and the side-to-side sway. This processing parallels the reembodiment seen earlier in mapping from an initial to a final target and setting.

The hearer might next check the alternative in which the term paper cluster is anomalous and the lurch cluster is valid. She would then map certain structural aspects from the former onto the latter. She might, for example, select a term paper’s division into sections and subsections as well as its trajectory of argumentation and transform them respectively into a physical division of the area that an act of lurching passes through and into the path that it moves along.

The hearer will clearly adopt the former alternative, where lurching is anomalous, but what determines this choice? We consider three bases, the first two familiar from cue conflict and the third specific to metaphor.

A greater-benefit principle. One basis might be the greater benefit principle, under which a speaker’s use of anomalous forms avoids certain problems that would be engendered by the use of solely valid forms. To check this basis, we here construct two utterances, one for each alternative—the equivalents of the earlier baseline examples—in which all the cues are valid and can be taken at their literal face value. A literal version for where the term paper cluster is valid might be that in (23).

- (23) My brother worked on his term paper
 with short irregular bursts of activity,
 punctuated by periods of inactivity
 and without progression in a concerted thematic direction.

And a literal version for where the “lurch” cluster is valid might be that in (24).

(24) My brother lurched along a path through a physically divided area.

In a comparison between these two literal versions, the former is more unusual, lengthy, and awkward. Thus, a greater benefit accrues to simplifying the former literal version, which is exactly what is accomplished through the introduction of “lurch” interpreted as anomalous.

A priority principle. Another basis for the choice might be a counterpart to the earlier priority principle. That principle held that, among cue types, co-form cues are the likeliest to be valid. The principle here might hold that, among constituent types, nominals are the likeliest to be valid and verbs the likeliest to be anomalous. Such a principle would indeed favor the alternative in which lurching is anomalous.

A broader-pattern principle. A third basis for the choice, not adduced for targeting, might be cited. A particular alternative is favored if the hearer can associate it with a broader pattern that she has frequently encountered previously or that can be regarded as an inherent component of language. We cite two such patterns.

First, in the present example, the alternative where lurching is anomalous accords with the very broad pattern proposed in conceptual metaphor theory that the source domain (the initial anomalous reference) tends to be more concrete, while the target domain (the final valid reference) tends to be more abstract.

For a second pattern, English seems to have a regular metaphorical subsystem in which the referents of Manner verbs for an event of Motion (in the sense of Talmy, 2000b: chapter 1) are mapped onto activities, and certain aspects of those manners are mapped onto certain dimensions of those activities. One aspect of such manners is the apparent degree of ease in their realization, which is then mapped onto the degree of ease of an activity’s execution. This subsystem can represent a number of such degrees, but we here exemplify great ease in (25a) and great difficulty in (25b).

(25) My brother a. sailed b. slogged through his final exams.

We thus end this chapter with a glimpse at how an analysis of targeting can open out to a wider compass of language structure.

14.5 In Sum

Elsewhere in this book, the cues of a speaker’s communication in the speech-external domain are all compatible with each other. But such cues can also partly conflict in a well-formed pattern of constructive discrepancy, which is designed to prompt the hearer to resolve the conflict and form a coherent conceptual complex.

A hearer processes a conflicted communication of this sort by putting it through an assessment and a resolution phase. In the assessment phase, the hearer first uses a consistency-checking operation to determine that the communication is indeed conflicted. This operation rests on a plausibility principle and a noncontradiction principle. If the communication is determined to be conflicted, he puts it through a clustering operation that segregates its cues into two clusters that are each internally compatible but that are incompatible with each other. He then puts these two clusters through an evaluation operation that assigns opposite states of validity to them. It designates the cues of one cluster and the target they indicate as valid, while designating the cues of the other cluster and the target they indicate as anomalous. This operation rests on a greater benefit principle and a priority principle.

In the resolution phase, the hearer first performs a precedence operation that designates the anomalous cues as indicating an initial target and the valid cues as indicating a final target—the speaker's overall intended target. Through a mapping operation, he lastly puts certain structural aspects of the initial target in alignment with the structure of the final target.

Certain differences in the initial target's relation to the final target entail differences in the hearer's processing. The initial target can have a similar form as the final target, have a dissimilar form, or be a fictive construct that nevertheless corresponds to the final target.

The cues of literal discourse in the speech-internal domain can also exhibit conflict, but its resolution tends to consist of a prioritizing system that privileges one cue type over another. In nonliteral discourse such as that involving metaphor, however, the conflict is often between two different clusters of constituents, and their processing largely follows the assessment and resolution phases of cue conflict.

Notes

1. Given this analysis, we might revisit the original hybrid example of (3). Though the final setting there was the hearer's own body and the final target was located in his own teeth, it is unlikely that he would look down to view his body and impossible for him to view his teeth. Accordingly, though fully embodied in the scene, specifically in the hearer's own person, the final setting and target are actually more likely to be cognized by the hearer as a mental representation, much as in the present example where the mother is wholly absent from the scene.
2. Relative to the same-form teeth examples of the preceding section, the different-form travel example of the present section differs in yet another way. In the former case, the structural homology of the initial to the final setting occurred naturally. But here it is by design: the map was configured so as to correspond (through reembodiment) to France's topography. This difference, though, seems not to bear on the processes of assessment and resolution that the hearer must undertake.

3. This circumstance is akin to Liddell's (2001) "real space blend" for signed language, where the viewer's correct interpretation of a sign rests on blending the currently perceived space with the conceptual space of an event occurring at another time. But that analysis emphasized a cognitive process of blending. The present analysis, by contrast, emphasizes a reverse process of differentiation that proceeds sequentially. In it, the hearer uses specific operations to separate the indications into two groups, one corresponding to an initial fictive target in perceived space and one to the final fictive target in conceptual space, and then maps the former onto the latter.

4. If a speaker does say (13a) to a hearer known to be unfamiliar with the target, she is using trigger assertion (see section 3.3.3). The trigger *she* in this case informs the hearer for the first time that the target is female.

5. For a seemingly comparable example that might at first be considered a conflicted hybrid, a speaker might say (ia) while pointing at an empty chair at a restaurant table that the hearer is approaching to join.

- (i) a. My sister is sitting there. b. I can't talk now—I'm working.

By our interpretation, though, the example has no conflicting cues. The speaker's gestural cue validly indicates the location occupied by the Figure entity, the sister. The needed leeway is provided by the progressive aspect of the verb, which does not require an uninterrupted manifestation of the referent action (sitting), but allows breaks in it (the sister might be in the bathroom). Comparably in (ib), while saying that she is working, the speaker is actually interrupting her work to answer the phone caller. This "discontinuous progressive aspect" thus resembles the habitual aspect, which is generally understood to let an action be intermittent—as when a speaker points to an empty chair at the dining room table and says *My sister sits there*.

6. The speaker's establishment of this initial setting also has internal structure, including two further instances of targeting. In particular, (18a) includes the trigger *this* that indicates as an initial target what can be interpreted as a self-targeting gesture (see section 7.4.1). This gesture is of the moving-stationary type that represents a specific final target (here, the concert hall). In turn, this representation functions as a fictive initial setting with respect to (18b). In (18b), a second *this* indicates a fictive initial target (the front), while the gesture indicates the location of this target relative to the setting depicted in (18a).

Glossary

action As one subcategory of ontology, a dynamic process realized through time.

activation condition The requirement that, for an element to serve as a cue for a particular trigger, the two entities must occur sufficiently close to each other in time so that the earlier entity is still activated in the hearer's working memory when the later entity occurs.

adjacently sequential Pertaining to units of time both successive and contiguous on the timeline.

adverbial proclause An adverbial trigger in the second clause of a compound sentence that targets the first clause.

ambient area The targeted portion of space immediately surrounding the spot where a gestural projection intersects with an object.

animacy As a property category, the dichotomy as to whether an entity is or is not alive.

anomalous Pertaining to those cues in a set of inconsistent cues that apply only to an initial target and so are to be altered during a resolution phase.

antecedent marking A syntactic device apparently absent from language in which a constituent is grammatically marked to indicate that it will function as the antecedent of an upcoming anaphor.

articulator The portion of a speaker's body most directly engaged in forming a targeting gesture.

articulator-movement sequel See "sequel."

articulator-movement trail See "trail."

assessment phase The phase in a hearer's processing of an instance of targeting in which he judges whether the cues are compatible with each other and, if not, segregates and evaluates them.

attained perceptual access The access to a cue that a hearer gains by moving to a location from which he can perceive it.

attentional route The sequence of events by which a speaker's or hearer's attention comes to be on the target.

augmented contact In a target-contacting gesture where an articulator is already in contact with an entity, the placement of an additional articulator into contact with the entity to mark it as the target.

augmented trace Within a fictive chain, a structure formed by the imaginal addition of fictive filler to an already-established trace.

axial ambiguity The underspecification by a speaker's gesture as to which of two or more entities, arrayed at different distances along a straight line away from the speaker's location, is her intended target.

axial organization of environmental structure A conceptual partitioning of the environment based on differences in distance from the speaker's location.

axial tracking The type of target tracking in which a speaker's articulator progressively increases its outstretch so as to indicate the increasing distance of a target moving away.

background cue categories The environmental and epistemic cue categories, a two-member group whose information about the target comes from the continuum respectively outside the speaker and within her cognition.

base The referent of a constituent other than the trigger, serving as the reference entity for a speech-internal target's degree of remove.

base location The location within speech-internal space at which a base entity is situated.

base moment The moment on the speech-internal timeline at which a base event, conceptualized as point-durational, occurs.

bias The direction along a grading in which a designated factor increases in quantity.

biexhibitive Involving the combination of a corporal cue with one other exhibitive cue.

bodily cue categories The gestural and corporal cue categories, a two-member group whose information about the target is provided by the speaker's or hearer's body.

boundary A portion of space or time that encloses a portion of one dimension higher and separates it from the remainder.

boundary crossing As an operation within a fictive chain where the articulator is in contact with the target, the imaginal passage of a fictive construct from the articulator to the target.

bounding The process by which a hearer conceptually establishes an outer boundary around a vicinal region or choral interval.

brevity salience The salience that an entity has for a hearer due to the short duration of its existence or perceivability.

brightness salience The salience that an entity has for a hearer due to its brightness in his vision.

category checking The process in which a hearer further examines a subeffective category in his knowledge store to find a previously overlooked feature to try in a renewed target search.

centering The process in which a hearer conceptually positions an excerpted region or interval so that the corporal or choral cue is at its center.

centrifugal Pertaining to a target located before or after a temporal reference point that can be interpreted as having reached its location by moving fictively away from that reference point.

centripetal Pertaining to a target located before or after a temporal reference point that can be interpreted as having reached its location by moving fictively toward that reference point.

change The pattern in which an entity has different properties at different points on the timeline.

channeled construct Within a fictive chain, the moving linear fictive construct that a target-beholding gesture is imagined to guide toward the target.

channeling Within a fictive chain, the operation by which a target-beholding gesture is imagined to guide a moving linear fictive construct toward the target.

chronal cue Information about the target provided by the trigger's location on the timeline.

chronal instant A chronal interval whose duration is conceptualized as only a zero-dimensional point of time.

chronal interval The interval of time targeted by a chronal trigger that contains or coincides with it.

chronal trigger A trigger that, in its current reading, is lexicalized to require the use of its own temporal location as a chronal cue.

cleft trigger construction A complex trigger whose formal realization consists of a simplex trigger, a copula, and a free relative.

closest-cue condition The requirement that, if a particular trigger meets the proximity condition with two or more different cues, the hearer must at least associate it with the nearest cue.

closest-trigger condition The requirement that, if a particular cue meets the proximity condition with two or more different triggers, the hearer must at least associate it with the nearest trigger.

clustering The second operation in an assessment phase, in which the hearer segregates inconsistent cues into distinct groups that are each internally compatible but that are incompatible with each other.

co-form A linguistic constituent in the discourse around a given trigger.

co-form cue Information about the target provided by a linguistic constituent in the discourse around a given trigger.

collateral cue categories The hearer-focus and targetive cue categories, a two-member group whose information about the target is provided by the entities that the speaker respectively talks to and about.

commonality trigger A trigger lexicalized to indicate that, at the moment of its utterance, the hearer's attention is on the target together with that of the speaker.

common attention The pattern in which two or more individuals are attending to the same entity at the same time.

communicative salience The salience that an aspect of discourse can be posited to have for a collocutor because of its greater significance within the goals of communication.

compact That state of compactness in which a targeted region is construed as smaller, bounded, and precisional.

comparison operation In a hearer's reasoning about the intended target, the use of a factor to rank target candidates differently.

complementation One of the two compatible concordance relations that two cues can have to each other, in which the cues provide different information about the target.

componential representation A formal itemization of the syntactic, semantic, and pragmatic features that a particular trigger exhibits.

componential trigger A trigger whose formal realization consists of a semantic component within a single morpheme, joined there by semantic components without a targeting function.

composite gesturing Gesturing in which the speaker concurrently aims different articulators one-to-one at the different components of a compound target so as to indicate the entire target.

compound category An effective feature category that a hearer forms on the spot by combining two or more effective feature categories already in his knowledge store.

compound target A target, referred to by a single trigger, which consists of two or more components.

conceptual complex The conceptual content associable with linguistic material larger than a single morpheme.

concordance relation Any of the three information-based relations that two cues can have to each other, namely, corroboration, complementation, and conflict.

concurrence condition The requirement that, for an element to serve as a cue of certain types to a particular trigger, it must be concurrent with that trigger.

conflict One of the three concordance relations that two cues can have to each other, in which the cues provide incompatible information about the target.

consequentive postextension The events conceptualized by a hearer as arising from a past punctual event referred to by a verb phrase with punctual aspect.

consistency checking The first operation in an assessment phase, in which the hearer judges whether or not all the cues in an instance of targeting are compatible with each other.

constituent-stipulating form A lexical form other than a trigger that is lexicalized to direct a hearer to a particular constituent outside itself.

constructing hearer In a cross-speaker discourse, the collocutor that hears an expression in the other's speech for the first time and must first process it so as then to target it.

constructive discrepancy An incompatibility among cues that, by the speaker's design, initiates processing in the hearer to resolve the conflict.

contactive Pertaining to the first two degrees of remove, in which the target is either coincident with or adjacent to a particular reference point.

contingent property A property ascribed by a trigger to a target that depends on the target's current circumstances or conceptualization by the speaker.

contrastive target distance The comparative distance in space of two different targets from the speaker's location.

cophrasal Pertaining to a chroral interval that temporally coextends with a phrase containing the trigger.

coprogressive Pertaining to a path whose progression is both coaxial and codirectional with another path.

copunctual condition The requirement that, for an element to serve as a cue of certain types to a particular trigger, it must be copunctual with that trigger.

core cue Information about the target provided by a trigger.

core-cue subinventory Within the inventory of concepts and conceptual categories expressed crosslinguistically by closed-class forms, the portion expressed by closed-class triggers.

corporal cue Information about the target provided by the trigger's location on the timeline.

corporally based region A region of space determined in part by a corporal cue, namely, a vicinal, extravincinal, hyperextravincinal, or extravincinal region.

corporal target Any target requiring the use of a corporally based region in the speaker's selection of a trigger or in the hearer's determination of that target.

corporal trigger A trigger that, in its current reading, is lexicalized to require the hearer's use of a corporal cue.

corroboration One of the two compatible concordance relations that two cues can have to each other, in which the cues provide the same information about the target.

cosentential Pertaining to a chroral interval that temporally coextends with a sentence containing the trigger.

co-sequencing condition If a speaker produces *n* cues in roughly the same period as *n* triggers, the requirement that the hearer associate the first cue with the first trigger, the second with the second, and so on.

co-targeting The circumstance in which two nearby triggers both refer to the same target.

counterfactual principle In a hearer's reasoning about the speaker's intended target, the exclusion of certain interpretations of the speaker's utterance through the use of linguistic or discourse rules.

covert Pertaining to a step in an interaction sequence consisting of a cognitive state entered or cognitive process executed by one collocutor that the other collocutor cannot directly perceive.

criterion category A conceptual category in a hearer's cognition specifying a criterion that an entity must meet for it to be the target.

criterion search A hearer's search for an entity that meets a certain lexically specified criterion and hence might be the target.

cross-actor sequence An inner or outer sequence whose steps are executed by two or more different actors.

cross-speaker case The case in which a speaker's trigger targets a constituent in her collocutor's discourse.

cue An element of information that the hearer uses to help him narrow down to the speaker's intended target.

cue adequacy One of the three cue felicity requirements, by which cues must be sufficiently numerous and informative for the hearer to determine the target.

cue adequacy processes The three processes a speaker can engage in to ensure cue adequacy.

cue accessibility One of the three cue felicity requirements, by which a cue must be accessible to the hearer.

cue accessibility types The six forms of accessibility that a cue can have to a hearer.

cue accessing One of the three cue felicity requirements, by which the hearer must exercise his capacity to access a cue.

cue accessing processes The six processes that a hearer can engage in to access a cue and that correspond to the six cue accessibility types.

cue codetermination The process in which an interaction between two underspecific cues helps the hearer settle on what those cues specifically are.

cue-determining stage An alternate term for the trigger-to-cues stage.

cue felicity requirements The three requirements that elements of information must meet for them to function as cues to a target, namely, adequacy, accessibility, and accessing.

cue processing The processing that a hearer performs on the collection of cues he has ascertained so that he can use their information to determine the target.

cues-to-target stage The second stage in the hearer's three-stage targeting procedure in which he combines and processes the cues he has ascertained so as to determine the target.

deep trigger The semantic component that is definitional of and present in all triggers.

degree As one subcategory of ontology, the scalar amount of some attribute exhibited by an entity.

degree of affective/perspectival remove As one type of the degree of experiential remove, the degree to which a speaker regards a target more positively or negatively, or imagines herself closer to or farther from it.

degree of attentional remove As one type of the degree of experiential remove, the dichotomy as to whether the hearer's attention is already or is not yet on the target when the trigger is uttered.

degree of conscious remove A variant of the degree of memorial remove in which a target's different degrees of attenuation in memory are interpreted as different states of consciousness.

degree of engagement In a fictive chain, the sum of the articulator's proximity to, effect on, and identification with the target.

degree of experiential remove As one type of the degree of remove, the conceptual distance that a speaker experiences a target as having from a central point in her cognition.

degree of memorial remove As one type of the degree of experiential remove, the degree to which a previously mentioned target has become attenuated in the hearer's memory.

degree of offset The amount of separation that a fictive enclosure has from the boundary of the target.

degree of personal remove As one type of the degree of remove, the incremental distance along the "person" parameter of the target from the speaker, ranging through the first, second, third, and fourth person.

degree of precision The extent of detailedness with which a targeting gesture is executed along a parameter ranging from approximate to precise.

degree of recognitional remove As one type of the degree of experiential remove, the dichotomy as to whether the hearer is or is not familiar with a particular constituent's referent, itself the target of the trigger.

degree of remove As a property category, the literal or figurative distance of a target from a particular reference point.

degree of social remove As one type of the degree of remove, the increment of social separation that a second-person target has from the speaker.

degree of spatial remove As one type of the degree of remove, the distance in space of a target's location from the location of a particular reference entity.

degree of syntactic remove As one type of the degree of remove in which the target is a speech-internal constituent, the target's syntactic distance from the trigger, understood in terms of the number of constituent boundaries that must be crossed.

degree of temporal remove As one type of the degree of remove, the distance in time of a target's occurrence from the occurrence of a particular reference entity.

diffuse That state of compactness in which a targeted region is construed as larger, unbounded, and approximative.

direction of remove As a property category, where a target is at a noncoincident degree of remove from a reference point, the direction of that remove relative to a particular grid of directional distinctions.

direction of spatial remove As one type of the direction of remove, the spatial direction in which a target is located relative to a spatial reference point.

direction of syntactic remove As one type of the direction of remove in which the target is a speech-internal constituent, the occurrence of the target either before or after the trigger.

direction of temporal remove As one type of the direction of remove, the occurrence of a target either before or after a temporal reference point.

directive Pertaining to a cue that directs a hearer's attention from itself to the target, or a trigger that indicates the presence of such a cue.

discourse location The current moment in a speaker's discourse through time, when analogized to the current location in a speaker's path through space.

discourse space The time through which a discourse progresses, when analogized to the space through which a path proceeds.

displacement The spatial or temporal relation of a Figure to the vicinal region or choral interval that it is outside of and that has been conceptually reduced to a point.

displacement trigger A trigger lexicalized to specify a Figure's displacement.

distance between As one subcategory of ontology, the spatial distance between two objects, one or both of them body parts of the speaker.

domainality As a property category, the dichotomy as to whether a target is in the speech-external domain or in the speech-internal domain, or the dichotomy as to whether a trigger currently refers to the one or to the other type of target.

domainality neutral Pertaining to a trigger able to refer to targets in either the speech-external or the speech-internal domain. See "dual domainality."

domainality specific Pertaining to a trigger able to refer only to speech-external targets or to speech-internal targets but not to both.

doubly heightened stress A level of stress on a word that is one increment greater than heightened stress and two greater than primary stress.

dry reduction The type of reduction process in which a hearer simply picks a portion of the total environment to search for the target in and, not finding it there, searches for it through the now reduced environment.

dual domainality The capacity of a trigger to refer to targets whether they are speech-external or speech-internal. See “domainality neutral.”

eccetive Pertaining to a trigger indicating a target that two or more collocutors had discussed as being of joint interest and that one collocutor has just spotted.

eccetive sequence The variant of the basic interaction sequence in effect when a trigger is eccetive.

effective Pertaining to a feature category in a hearer’s knowledge store with enough information about an entity for him, on perceiving the entity, to recognize it definitively as an instance of the category.

elaboration salience The salience that a speech-internal entity has for a hearer because additional information about it is provided.

elicitation parameter As one common-attention parameter, the dichotomy as to whether or not one individual has elicited another individual’s attention on an entity.

ellipsized trigger A trigger that is not overtly present in a clause exhibiting a particular triggering function, but that a hearer can supply either semantically or in a corresponding imagined clause with the trigger present.

elongation The increase in a projection’s length that is indicated by an articulator’s outstretch.

enclosing Within a fictive chain, the operation by which a fictive line or plane forms closely or exactly around an entity to mark it as the target.

enclosure As a structure within a fictive chain, the fictive line or plane that surrounds an entity to mark it as the target.

enclosure-to-target relation In a fictive chain, the positioning of a linear enclosure around the middle of a volumetric entity as the canonical location to mark it as the target.

entity As one subcategory of ontology, an individuated phenomenon that can range from the concrete to the abstract but whose prototype is a physical object.

environment The continuum extending speech-externally out from the speaker or speech-internally out from the trigger.

environmental bounding cue An environmental cue that helps the hearer determine the outer boundary of the target.

environmental content cue An environmental cue arising from the identity or other intrinsic property of an entity or action in the environment.

environmental cue Information about the target that comes from the environment.

environmental locating cue An environmental cue that helps the hearer narrow down to a region that the target is located within.

environmental salience Salience that a portion of the environment has for a hearer and that it confers to a target located within it. See “special-region salience.”

environmental structure cue An environmental cue arising from a relationship or delineation among entities or actions in the environment.

epistemic cue Information about the target that comes from the hearer’s knowledge or beliefs.

epistemic parameter As one common-attention parameter, the basis on which one individual comes to believe or not believe that another individual is attending to an entity.

evaluation The third operation in an assessment phase, in which the hearer judges which of two mutually incompatible groups of cues is valid and which is anomalous.

event As one subcategory of ontology, prototypically, an entity’s execution of an action.

excerpting The process by which a hearer conceptually separates out one portion of space or time from the remainder to serve as a vicinal region or chroral interval.

exhibitive Pertaining to a speech-external cue that the hearer must perceive exteroceptively (e.g., a gestural, corporal, targetive, or hearer-focus cue), or a trigger that indicates such a cue.

exclusive-cue condition The constraint on a trigger that it can be associated with only one cue out of two or more in proximity if those cues are incompatible with each other.

exclusive-trigger condition The constraint on a cue that it can be associated with only one trigger out of two or more in proximity if the plural-trigger condition is not met.

explicitness salience The salience that a concept has for a hearer because it is the entire referent of a linguistic constituent, rather than just one component within such a referent.

extrabivincinal region The portion of space outside both the speaker-centered and the hearer-centered vicinal regions.

extraction Within a fictive chain, the operation by which a fictive line emanates from a source elsewhere and imaginably progresses to the speaker’s articulator, itself moving away from that source.

extrapolation A hearer’s use of his knowledge about the physical structure of the world to imagine a targeted location within an unperceived portion of space by extension from the perceived portion.

extrapolative Pertaining to a nonostensive trigger under the constraint that, although its target need not be perceivable, the hearer must be able to conceptually extrapolate to the target's portion of space from his own.

extravincinal region The region of space that extends out from a vincinal region indefinitely (unless in turn bounded by a hyperextravincinal region).

factive Pertaining to a perception or conception that a hearer assesses as being veridical.

feature category A conceptual category in a hearer's knowledge store specifying features that an entity must have for it to be the target.

feature search A hearer's search for an entity that has certain lexically specified features and hence might be the target.

fictive Pertaining to a perception or conception that a hearer assesses as being nonveridical.

fictive articulator Within a fictive chain, a construct that copies the look, configuration, and orientation of the speaker's articulator, but imaginally moves to another location.

fictive articulator updating Within a fictive chain, the operation by which a fictive articulator, after it has already been imaginally relocated, continues to copy new movements by the speaker's physical articulator.

fictive chain A succession of fictive constructs (structures and/or operations) that a hearer conceptualizes as progressing from a speaker's targeting gesture to (and through) the target.

fictive-chain contraction In a targeting gesture where the articulator normally sends a fictive chain through space to target a location elsewhere, the shortening of that chain to accommodate a version of the gesture in which the articulator now contacts the location.

fictive chaining The cognitive process in a hearer of imaginally constructing a fictive chain.

fictive construct An imaginal structure and/or operation serving as a component in a fictive chain.

fictive motion The linguistic representation of motion by or among phenomena that a hearer assesses as actually being stationary.

fictive referent-based final setting A referent-based final setting that has been fabricated and lacks a physical counterpart.

Figure An entity in space or event in time whose site or path is at issue.

Figure modeling As an operation within a fictive chain, the shaping and positioning of an articulator to indicate the size, shape, and position of a Figure that occupies a targeted location.

filler As a construct within a fictive chain, a fictive line, plane, or volume that imaginally appears or spreads along/over/through a target or between entities.

filler spread As an operation within a fictive chain, the imaginal motion of a fictive filler from a static target sample to the entirety of the target.

final target Where cues conflict, the target intended by the speaker as her overall attentional goal—what is indicated by the valid cues and what the initial target is mapped onto.

flange As a structure within a fictive chain, a fictive plane that is imagined to emerge perpendicularly from the linear boundary of a planar target and, once in place, to block any further progression of another fictive construct.

flange formation Within a fictive chain, the operation by which a fictive flange forms progressively in a hearer's mental imagery.

flap/flapping thrust The type of thrust in which the articulator can be schematized as a plane and moves forward just once in the direction of that plane's front face to launch a projection.

focusing behavior Overt behavior produced by a hearer to facilitate his attending to an entity, which the speaker can perceive and use to determine that entity.

further-knowledge level The third level in a hearer's processing of an expression's meaning, in which he adds certain aspects of his general knowledge to enrich the conceptual complex associated with the expression.

gap crossing As an operation within a fictive chain, the imaginal motion of a fictive line, plane, or volume across a space between two entities in a direction that gets it closer to the target.

gap filling As an operation within a fictive chain, the imaginal appearance of a fictive line, plane, or volume in the space between two entities.

gender As a property category, a language's grammatical division of its nouns into a particular set of classes or one of these classes.

gender-ascribing In a language with gendered nouns, the option by a speaker to target a speech-external entity with a trigger specific to the gender of a noun that might refer to the entity.

gender-transcending In a language with gendered nouns, the option by a speaker to target a speech-external entity with a trigger neutral to the gender of nouns that might refer to the entity.

gestural cue An element of information about the target provided by a targeting gesture that the speaker produces.

gestural target A target that consists of a gesture produced by the speaker. See "self-targeting gesture."

gesture-category constraint If a gestural cue is already associated with one trigger, the constraint that it can additionally be associated with a second trigger only if it there functions as a member of the same gestural category.

gesture-generated path As a structure within a fictive chain, an imaginal path suggested by the movement of a target-coprogressing gesture that helps a hearer single out another path as the target.

gesture salience The qualities of a speaker's gesture that attract a hearer's attention to it.

grading A one-dimensional array of points with the property that the quantity of a certain factor increases incrementally in one direction along the array.

greater-benefit principle The rule by which a hearer—who has considered both alternatives in treating two mutually incompatible groups of cues as valid or anomalous—selects the alternative that most avoids problems.

Ground A reference entity with respect to which a Figure's site or path is characterized.

hearer-centered corporal cue A corporal cue when it constitutes the bodily location specifically of the hearer.

hearer-focus cue A hearer's surmise that his own current object of attention may be the speaker's intended target.

hearer-focus sequence The variant of the basic interaction sequence in effect when a trigger calls for a hearer-focus cue.

hearer-response synchronizing A speaker's intention that the hearer's response to a prosodic trigger uttered by her is as coincident with it as possible.

hearer salience The salience that a hearer has to himself due to being the speaker's addressee, as well as the center of his own spatial and other experience.

hearer ventity The case where a ventive or nonventive path is characterized with respect to the vicinal region specifically around the hearer.

hybrid articulator An effectively larger articulator in which certain separated elements of the physical articulator are imaginally connected by fictive lines or planes.

hyperextravincinal region The region of space that extends indefinitely out from an extravincinal region.

imaginal Consisting of mental imagery that one has cognitively constructed.

imagine To represent (something) in cognition in the form of mental imagery.

immediate-pragmatic level The second level in a hearer's processing of an expression's meaning, in which he adds to the literal meaning only the knowledge and inferences that make the expression conceptually viable.

immediate reduction The type of reduction process in which a hearer, through cues, can at the outset narrow down to the subenvironment that the target is located in.

inclusion construction A linguistic construction that represents a part-whole relation, where the "whole" is a complex of diverse components with different identities and the "part" is one of those components.

inferential accessing A hearer's determination of a perceptually inaccessible cue through inferential processes.

initial target Where cues conflict, the target intended by the speaker as an attentional way station—what is indicated by the anomalous cues and is mapped onto the final target.

inner sequence The succession of events that, in some cases, the referent of a morpheme consists of.

interaction sequence A discourse sequence (specifically, a cross-actor outer sequence) whose successive steps are alternately executed by the one and the other of two collocutors.

interoceptive accessibility/accessing A temporal cue's accessibility to or accessing by a hearer through his own internal sense of temporal progression.

intersectee insertion Within a fictive chain, the operation by which a fictive construct, for example, a plane, is imagined to appear at an otherwise unoccupied location in space as something that a projection can intersect with and terminate at.

intersection Within a fictive chain, the operation in which a fictive projection, after progressing through space, hits a target.

intrinsic directedness The property unique to time in which adjacent points along its one-dimensional extent become successively active in the direction of its grading bias.

intrinsic property A property ascribed by a trigger to a target that is taken to be permanently valid for that target.

intrusive-target sequence The variant of the basic interaction sequence in effect when the target is at the highest degree of the perceptual ease parameter.

isolability salience The salience that an entity has for a hearer because it occurs alone in separation from comparable entities that themselves are grouped together.

jab/jabbing thrust The type of thrust in which the articulator can be schematized as a line and moves sharply forward just once along that line to launch a projection.

joint attention The form of common attention in which all four of the pertinent parameters—the participation, recognition, elicitation, and epistemic parameters—are at their highest settings.

joint domainality The type of domainality exhibited by a trigger that refers to a compound target with both speech-external and speech-internal components or to a target wholly in one domain but where the other domain must be taken into account.

largeness salience The salience that an entity has for a hearer because it is relatively great in size.

lateral ambiguity The underspecification by a speaker's gesture as to which of two or more entities, arrayed laterally with respect to each other when viewed from the speaker's location, is her intended target.

lateral disambiguation The resolution of a lateral ambiguity through a nongestural cue or a more specific gestural cue.

lateral organization of environmental structure A conceptual partitioning of the environment into fictive corridors extending straight out from the speaker's location and arrayed up/down/right/left with respect to each other.

lateral tracking The type of target tracking in which the articulator moves laterally so that the projection from it continues to intersect with a laterally moving target.

lateral use of a projection As an operation within a fictive chain, the use of a projection's sideways motion, rather than end-on motion, in identifying a target.

launch For an articulator's thrust to imaginably set in motion a projection from that articulator.

lexical cue categories The core and co-form cue categories, a two-member group whose information about the target is provided by linguistic constituents.

lexical trigger A trigger whose formal realization consists wholly of lexical forms composed of segmental phonemes.

literal-semantic level The first level in a hearer's processing of an expression's meaning, consisting solely of the basic meanings of its constituents in composition.

location modeling As an operation within a fictive chain, the shaping and positioning of an articulator to indicate the size, shape, and position of a targeted location.

loudness salience The salience that an entity has for a hearer due to the volume of the sound it produces.

magnification A cognitive operation in which an entity first experienced as being at a lower dimensionality is reconceptualized as being at a higher dimensionality.

magnitude In a linguistic reference to a one-dimensional extent of space or time, the length of the extent between two points.

manner As one subcategory of ontology, a variation in an action not criterial to the action's identity.

mapping operation The process by which a hearer conceptually transfers certain aspects of an initial target and cues to a final target, either imposing them on it or aligning them with corresponding aspects already there.

monomorphemic trigger A trigger whose formal realization consists of a single segmental morpheme.

motion The pattern in which an entity exhibits change with respect to its location in space.

movement transfer As an operation within the fictive chain from a target-affecting gesture, the so-conceived transfer of the articulator's movement to the target.

multimorphemic-word trigger A trigger whose formal realization consists of a single word composed of two or more morphemes.

multiplex Pertaining to an entity consisting of two or more equivalent elements. See “plexity.”

nested feature search A hearer’s use of successively smaller feature searches to single out a target, each search based on different features of the target.

nested reduction The type of reduction process in which a hearer, once or successively, uses cues to search for a subenvironment containing the target.

nesting of remove The case in which a trigger characterizes a target in terms of two different degrees of remove, one embedded within the other.

newsworthiness A property of information in accordance with which a speaker avoids presenting as new something that the hearer would be assumed to know already.

no-competition condition The circumstance in which a hearer associates a separated cue and trigger with each other because the immediate discourse contains only that one trigger and that one cue of its cue type.

no-crossing condition If a cue is to be associated with a particular trigger, the requirement that it cannot occur during or on the farther temporal side of a neighboring trigger.

noncommonality trigger A trigger lexicalized to indicate that, at the moment of its utterance, the hearer’s attention is not on the target together with that of the speaker.

noncontradiction condition One basis for consistency checking, which is unmet if any two cues in an instance of targeting are contradictory.

nondirective Pertaining to a cue that does not direct a hearer’s attention from itself to the target or to a trigger that indicates such a cue.

nonexhibitive Pertaining to a speech-external cue that the hearer ascertains without using his external perception.

nonostentive Pertaining to a trigger that can be used whether or not its target can be perceived by the hearer.

nonprogressive gesture The type of targeting gesture that is held stationary or is simply mobilized with a thrust or on sweep, so that a hearer need attend to it only once before following its indications.

nonprogressive target mapping The type of target mapping that results all at once from a nonprogressive gesture.

nonprototypicality salience The salience that an entity has for a hearer due to its divergence from the prototype within the category that it belongs to.

nontargeting gesture A gesture by a speaker not produced in association with a trigger as a cue to the target.

nonventive Pertaining to a path that begins inside the speaker’s or hearer’s vicinal region or outside it without progressing toward it.

offerative Pertaining to a trigger that indicates a target that the speaker physically offers to a hearer with the aim that he accept it.

offerative sequence The variant of the basic interaction sequence in effect when a trigger is offerative.

onsweep Within a fictive chain, the operation in which a projection first passes to one side of a target, then sweeps laterally through space, and ends by intersecting with the target.

ontology As a property category, the particular class of phenomena that a target is treated as belonging to.

open ontology The property of targets that they can seemingly consist of anything, without constraints as to category or range.

ostentive Pertaining to a trigger that can be used only if its target can be perceived by the hearer.

outer sequence The succession of steps in a discourse at a certain step of which a particular morpheme is lexicalized to appear.

outstretch The positioning or movement of an articulator further from the speaker's body to indicate that the target is at a great or greater distance from the speaker.

outward-targeting gesture A targeting gesture produced at a location different from that of the target it indicates.

overt Pertaining to a step in an interaction sequence that is a perceivable voluntary action, whether verbal or nonverbal.

participation parameter As one common-attention parameter, the number of individuals concurrently attending to an entity.

path The cumulative directed set of an entity's locations when it occupies different adjacent points of space at different adjacent points of time; as a subcategory of ontology, a straight form of such a set.

path cutting The process in which a linear articulator is anchored on a fictive plane and swings toward it to suggest a fictive line extending along the plane.

path-following conceptualization The notion that the path of a moving object is the result of the object following along a fictive line already in place.

path-forming conceptualization The notion that the path of a moving object is the direct result of its motion, like a trail laid down behind it.

path specifiers A linguistic system of constituents, in construction with a trigger or nominal referring to a spatial location, that specify a path taken with respect to that location.

perceivability As a property category, the dichotomy as to whether a target can or cannot be perceived by the speaker and hearer from their current position.

perceptual accessibility/accessing A cue's accessibility to or accessing by a hearer through his external perception.

perceptual ease parameter The scale representing how little effort a hearer must use to perceive a target.

perceptual inaccessibility The circumstance in which a corporal or targetive cue is inaccessible to a hearer's perception, requiring his inference to determine it.

perceptual process The cue adequacy process in which the speaker, by perceiving that a particular cue to the target is indeed present, ensures its availability to the hearer.

perichronal cue Information about the target provided by a temporal property of an element other than the trigger.

plenary location A targeted three-dimensional portion of space that a gesturally indicated Figure object can occupy. Contrasted with "support location."

phrasal trigger A trigger whose formal realization consists of an idiomatic phrase composed of two or more constituents.

plausibility condition One basis for consistency checking, in which a hearer judges whether all the cues in an instance of targeting, taken together at face value, yield a cognitive representation consonant with his understanding of the world.

plexity The state of an entity's articulation into equivalent elements.

plural-cue condition A hearer's license to associate two or more different cues with the same trigger if the cues are compatible with each other.

plural-trigger condition A hearer's license to associate the same cue with two or more different triggers if the pre-cue and gesture-category constraints are met.

post-cue A cue occurring after the trigger that it is associated with.

post-gesture As one type of post-cue, a targeting gesture occurring after the trigger that it is associated with.

post-target A speech-internal target occurring after the trigger that it is associated with.

precedence operation The first operation in a resolution phase, in which the cues and target that had been evaluated as anomalous, and the cues and target evaluated as valid, are now sequenced respectively as initial and final.

pre-cue A cue occurring before the trigger that it is associated with.

pre-cue constraint If a cue is already in association with one trigger, the constraint on it that it can additionally be associated only with a later trigger, not with an earlier one.

pre-gesture As one type of pre-cue, a targeting gesture occurring before the trigger that it is associated with.

preparative preextension The events conceptualized by a hearer as leading up to a future punctual event referred to by a verb phrase with punctual aspect.

presumptive process The cue adequacy process in which the speaker surmises that the hearer can find a particular cue to the target in his own cognition.

pre-target A speech-internal target occurring before the trigger that it is associated with.

principle As one subcategory of ontology, a pattern adhered to by a particular natural condition or process.

priority principle Where the cues in an instance of targeting are incompatible, the rule-of-thumb that the co-form and epistemic cues are the likeliest to be valid.

problem avoidance The practice by which a speaker opts to use inconsistent instead of consistent cues in targeting because they bypass certain difficulties.

productive process The cue adequacy process in which the speaker herself produces a cue to her target.

progression The property unique to time by which each point on the timeline exactly once becomes “the present,” followed in turn by the adjacent point in the direction of the timeline’s “lateness” bias.

progressive gesture The type of targeting gesture that changes through its duration in a way that a hearer must attend to it more than just once to follow its indications.

progressive target mapping The type of target mapping that results cumulatively from a progressive gesture.

projection As a construct within a fictive chain, an imaginal line, plane, or volume that emanates from the front of the speaker’s articulator.

projection widening Within a fictive chain, the operation by which a projection is imagined to become progressively wider in its progress from the articulator to the target.

property category A category consisting of mutually exclusive properties, each of which some trigger, through its core cues, can ascribe to a target.

prosodic trigger A trigger whose formal realization consists of a prosodic effect.

prototype pointing A target-intersecting gesture in which the straightened dominant forefinger aims directly at the target.

proximity condition The requirement that, for an element to serve as a cue for a particular trigger, its occurrence must be sufficiently close in time to that of the trigger.

proximity salience The salience that an entity has for a hearer due to its spatial proximity to him.

quality As one subcategory of ontology, a variation in an entity not criterial to the entity’s identity.

quantity As one subcategory of ontology, the amount of a mass or number of items in a set.

quiddam Our most generic term for anything serving as a target, whether an entity, action, or other phenomenon; whether concrete or abstract; whether discrete or continuous; whether uniplex or multiplex; and so on.

radial contraction As an operation within a fictive chain, the motion of a fictive enclosure inward across the margin separating it from the target until it coincides with the target's perimeter.

radial expansion As an operation within a fictive chain, the motion of a fictive construct radially outward until it encloses an entity to mark it as the target.

radial repositioning The type of repositioning in which a fictive construct moves from one position to another by radially expanding or contracting.

reason As one subcategory of ontology, a conception that motivates a sentient Agent to enact a particular behavior.

reattend What a hearer does when a trigger directs his attention to a target that he had already once attended to.

recalling hearer In a cross-speaker discourse, the collocutor who has produced an expression that the other collocutor next targets and so needs only to recall his own expression to find the target.

recency salience The salience that an entity has for a hearer due to the recency of its appearance in the environment.

recognition parameter As one common-attention parameter, the extent to which individuals realize that they are attending to the same entity.

reduction A cognitive operation in which an entity first experienced as being at a higher dimensionality is reconceptualized as being at a lower dimensionality.

reduction process A cognitive process by the hearer in which he uses cues to narrow down from the current total environment to a particular subenvironment that the target is located in.

reembodiment operation Where an initial target and a final target have different physical realizations, an operation in which the hearer, while mapping, conceptually shifts the perceived composition of the initial target and setting into what he believes should be that of the final target and setting.

referent-based final target The type of final target whose form is a physical embodiment in the spatiotemporal environment.

reflective accessibility/accessing A hearer-focus cue's accessibility to or accessing by a hearer through his metacognitive awareness of his own direction of attention.

reflective mapping A mapping operation in which a hearer conceptually moves an image of the initial target, along with its cues, as if it were a mirror reflection, so as to align it with the final target.

regularized description A description of cognitive processing that, for clarity or to reflect logical relationships, is cast in terms of discrete ordered steps, but that awaits experimentation for the actual particulars.

repeat-targeting sequence The variant of the basic interaction sequence in effect when a hearer's attention is finally on the target in common with that of the speaker, after a failed attempt by the speaker to get it there.

repositioning As an operation within a fictive chain, the imaginal motion of a fictive construct—for example, a fictive articulator or trace—from one position to another.

representation-based final target The type of final target whose form is a mental representation in a hearer's cognition.

resolution phase After an assessment phase in which a hearer has found the cues to a target to be incompatible and has grouped and evaluated them, the phase of processing in which he reconciles them.

rotational mapping A mapping operation in which a hearer conceptually rotates an image of the initial target, along with its cues, so as to align it with the final target.

salience-associated parameter A qualitative parameter such that the more of its quality that an entity exhibits, the more salient that entity is to a hearer.

salience search A hearer's search for an entity that is highly salient and hence might be the target.

sample-to-target relation The canonical location within a target that a speaker tries to position her target sample at.

sapience As a property category, the dichotomy as to whether an animate target does or does not exhibit higher-level cognitive faculties.

scalability The dichotomy as to whether a linguistic form is scalar or nonscalar and hence respectively accepts or rejects modifiers expressing magnitude.

scale shift The process in which the magnitude of the path an articulator moves through, or the distance away from the body it is held at, indicates a different (usually greater) magnitude in the fictive construct it generates.

schematization The cognitive process by which the perception or conception of a bulk form is imaginably reduced to the closest corresponding geometric abstraction.

scope ambiguity The underspecification by a speaker's gesture as to which of two or more entities, one enclosing another, is her intended target.

search space That portion of the total environment that, on the basis of certain lexical cues, a hearer can limit himself to examining so as to find the target.

selective attention The process by which a hearer, on viewing a complex targeting gesture with some elements relevant to the targeting function and some irrelevant, attends only to the relevant elements.

self-targeting gesture A targeting gesture produced so that its form, or what that form represents, constitutes the target. See “gestural target.”

self-termination Within a fictive chain, the operation by which a fictive projection is imagined to stop in its forward progression, though not intersecting with any entity.

sensitization A cognitive process in a hearer by which he lowers thresholds or loosens criteria so as to check for targetive salience cues missed on a prior salience search.

separable cue An element that can serve as a cue for a particular trigger whether it is concurrent or nonconcurrent with that trigger.

separative Pertaining to the third or a greater degree of remove, in which the target is out of contact with a particular reference point.

sequel When a speaker’s articulator stops executing a particular pattern of movements, the ensuing fictive extension of that pattern in the hearer’s mental imagery.= articulator-movement sequel.

sequel cessation Within a fictive chain, the operation by which the progressive formation of a sequel in the hearer’s mental imagery stops due to exhaustion or blockage.

sequel formation Within a fictive chain, the operation by which a fictive sequel forms progressively in a hearer’s mental imagery.

sequentiality In serial gesturing that is aimed along a linear compound target, the requirement that the speaker’s successive pointings follow the order in which the target’s components are arrayed.

serial gesturing Gesturing in which the speaker aims a single articulator successively at some of or all the distinct components of a compound target.

serial targeting A speaker’s use of successive triggers to indicate distinct nonoverlapping targets, where these targets are regarded as comparable elements within a single larger consideration.

setting cue A type of environmental cue provided by the portion of the environment that immediately surrounds a target.

setup gesture A nontargeting gesture that leads a hearer to imagine a particular linguistic referent at a certain spatial location, where it will serve as the target of a subsequent targeting gesture.

sex As a property category, the dichotomy as to whether an animate target is male or female.

shape completion Within a fictive chain, the operation by which the whole of a geometric structure is formed in a hearer's mental imagery by the imaginal addition of fictive filler to parts of the whole that were already indicated.

shared value effect Where one cue in a group of compatible cues is judged to be valid or anomalous, the assignment of the same evaluation to the other cues in the group.

single-actor sequence An inner or outer sequence whose steps are executed by the same actor.

single domainality A trigger's capacity to refer to either speech-external or speech-internal targets, but not to both kinds of targets.

single-speaker case The case in which a speaker's trigger targets a constituent in her own discourse.

slide As an operation within a fictive chain, the imaginal movement of a transect along the surface of a target in correspondence with the sweep of a projection along that target.

sociality salience The salience that a living entity has for a hearer due to its social engagement with him.

so-forth gesture A type of gesture that the speaker makes to indicate that the hearer should imaginably extend the speaker's immediately preceding pattern of gesturing.

space When taken as a conceptual construct in our cognition, a three-dimensional matrix in which physical objects and material can move or be located.

spacetime The conceptual conjunction of space and time—needed, for example, for the concepts of stationariness and motion.

spatial fictivity An extensive system proposed to exist in human cognition that generates the perception or conception of fictive phenomena in space.

spatial location As a subcategory of ontology, a bounded-off portion of space in which an entity can appear and which has particular relations to the whole matrix of space or to other bounded-off portions in the matrix. See "temporal location."

speaker-centered corporal cue A corporal cue when it constitutes the bodily location specifically of the speaker.

speaker salience The properties of a speaker that attract a hearer's attention.

speaker ventivity The case where a ventive or nonventive path is characterized with respect to the vicinal region specifically around the speaker.

specification conflict Where a target has two distinct features that would call for different triggers, the competition in the hearer's cognition as to which trigger to choose.

speech-external Occurring elsewhere than within discourse.

speech-external intrusion Where the target is speech-internal, a trigger's indication of the target's degree of spatial or temporal remove speech-externally from the speaker or trigger.

speech-internal Occurring within discourse.

speech-internal timeline The timeline established conceptually by a particular discourse in the narrative world it depicts.

special-ambit salience The salience that an entity has for a hearer because its immediate surroundings are distinctive.

special-region salience The salience that a subenvironment has for a hearer because it is distinctive and that it confers to a target located within it.

stasis The pattern in which an entity has the same properties at all consecutive points of a particular interval on the timeline.

state of compactness As a property category, the dichotomy as to whether a target is construed as compact or diffuse.

stationariness The condition in which an entity exhibits stasis with respect to its location in space.

storage accessibility/accessing An epistemic cue's accessibility to or accessing by a hearer in his long-term memory.

structural alignment The circumstance in which the target's relation to its surroundings is the same as that of the speaker or trigger to his/its surroundings, knowledge of which can help a hearer zero in on the target.

subeffective Pertaining to a feature category with less than enough information about an entity for a hearer, on perceiving the entity, to recognize it definitively as an instance of the category.

subenvironment A portion of the total environment within which the hearer has determined that the target is located.

subject salience The greater salience that subject status can be posited to have over other grammatical relations.

subsential Pertaining to a choral interval that temporally coincides with a choral trigger.

substantiality As a property category, the dichotomy as to whether a perceived physical entity is substantial, like a solid or liquid, or insubstantial, like a sound or smell.

suddenness salience The salience that an entity has for a hearer due to the steepness of a change in one of its characteristics.

supersential Pertaining to a choral interval that is longer than and includes the sentence that the trigger appears in.

supplied trigger Where a just-uttered clause has an ellipsized trigger, the semantically appropriate trigger that a hearer mentally inserts in that clause or includes in a corresponding imagined clause.

support location A targeted two-dimensional portion of a surface that a gesturally indicated Figure object can rest on. Contrasted with “plenary location.”

sweep Within a fictive chain, the operation in which a projection moves laterally through space in alignment with a swing by the articulator that emits the projection.

swelling thrust The type of thrust in which the articulator can be schematized as a plane that swells out from a flat form to a convex form to launch a projection.

swiftness salience The salience that an entity has for a hearer due to the rapidity of its motion through space.

swing The gestural movement in which an articulator that is schematized as a straight bounded line or plane pivots laterally about its anchored end.

swinging thrust The type of thrust in which the articulator can be schematized as a plane, and swings forward edgewise just once to launch a projection.

syntactic location As a property category, the location of a targeted speech-internal constituent, understood in terms of the larger constituent that contains it as well as of its degree and direction of syntactic remove from the trigger.

target Something in either the speech-internal or speech-external environment that the speaker has her attention on and that she wants the hearer to place his attention on jointly with her own at the point in her discourse where she places a trigger.

target-accessing gesture The type of targeting gesture that generates a contoured fictive trace that guides the hearer’s attention to an occluded location to mark it as the target.

target-affecting gesture The type of targeting gesture in which the articulator, already in contact with an entity, moves or alters it to mark it as the target.

target-altering gesture A type of target-affecting gesture in which the articulator changes the form of the target.

target-back-to-trigger stage The third stage in the hearer’s three-stage targeting procedure in which, having determined the target, he maps his concept of it back onto the trigger for integration into the sentence’s overall reference.

target-beholding gesture The type of targeting gesture that is aimed underneath an entity and is imagined to channel a linear fictive construct toward the middle of that entity to mark it as the target.

target-contacting gesture The type of targeting gesture in which the articulator touches an entity, though without further affecting it, to mark it as the target.

target-codirectional gesture A targeting gesture which suggests a path that moves codirectionally and in parallel, though not coaxially, with another path to mark it as the target—thus differing by one feature from a target-coprogressing gesture.

target-coprogressing gesture The type of targeting gesture that suggests a path that moves coprogressively with another path to mark it as the target.

target-determining stage An alternate term for the cues-to-target stage.

target distance The distance in space of the target from the speaker's location.

target-enclosing gesture The type of targeting gesture that produces a fictive construct that encloses an entity to mark it as the target.

target filling as an operation within a fictive chain, the imaginal spread of a fictive line, plane, or volume from a target sample to the whole of the target.

targeting The linguistic/cognitive system that underlies both deixis and anaphora in which the speaker uses a trigger to initiate the hearer into a three-stage targeting procedure.

targeting gesture A gesture produced by the speaker in association with a trigger as a cue to the target.

targeting sequence The interaction sequence that a trigger is lexicalized to occur in.

target-insertion stage An alternate term for the target-back-to-trigger stage.

target-intersecting gesture The type of targeting gesture that emits a fictive projection that hits an entity to mark it as the target.

targetive criterion cue A targetive cue consisting of a criterion that a target is assessed as meeting.

targetive cue Information about the target provided by the target itself.

targetive feature cue A targetive cue consisting of a property possessed by a target other than its exhibiting salience or meeting a criterion.

targetive salience cue A targetive cue consisting of the salience that a target is perceived to exhibit.

target mapping The process in which a speaker deploys her targeting gesture so that it indicates the most salient structural delineation in the target's geometry.

target-maneuvering gesture A type of target-affecting gesture in which the articulator moves the target without changing its form.

target-neighboring gesture The type of targeting gesture in which the articulator is placed close to an entity, though without touching it, to mark it as the target.

target-parallel gesture The type of targeting gesture that produces a fictive construct positioned so as to be parallel to an entity, one with corresponding dimensionality and contouring, to mark it as the target.

target-pervading gesture The type of targeting gesture which emits a projection that extends or moves laterally through the whole of an entity to mark it as the target.

target sample That subportion of a target that the speaker directly indicates with a targeting gesture with the aim that the hearer's processing will yield the entire target.

target sighting The type of target-intersecting gesture in which the eye is the articulator that emits the projection.

target tracking The process in which a speaker moves her articulator so that it continues to indicate the location of a moving target.

task salience The salience that an aspect of discourse can be posited to have for a collocutor because, by the rules of his language, he must produce it or otherwise attend to it.

temporal cue categories The choral and perichoral cue categories, a two-member group whose information about the target is provided by temporal factors.

temporal location As a subcategory of ontology, a bounded-off portion of time in which an event can occur and which has particular relations to the whole matrix of time or to other bounded-off portions in the matrix. See "spatial location."

term Where a trigger indicates certain increments of temporal remove, the duration of a particular entity's role.

terminate Within a fictive chain, for a projection to cease its advance when and where its front intersects with the target.

thrust A quick short movement by an articulator that the hearer treats as launching or adding impetus to a projection emerging from it.

time When taken as a conceptual construct in our cognition, a one-dimensional matrix in which events can occur.

timeline The matrix of time when explicitly characterized as one-dimensional.

topicality salience The salience that a speech-internal entity has for a hearer because additional information about it was previously provided.

total environment The combination of the speech-external and speech-internal environments extending out respectively from the speaker and from the trigger in a given instance of targeting.

trace As a structure within a fictive chain, a fictive line, plane, or volume formed progressively as the direct or mediated result of motion by a speaker's articulator.

trace formation The operation within a fictive chain in which a fictive trace forms progressively in a hearer's mental imagery.

trail A type of trace formed directly by the motion of a speaker's articulator, conceptualized as a trail that it leaves behind. = articulator-movement trail.

transect As a structure within a fictive chain, the cross-sectional outline of a projection on the surface of the target where the projection intersects with that target.

translational repositioning The type of repositioning in which the fictive construct moves from one position to another in a straight path without changing.

trigger A linguistic constituent, prototypically a closed-class form, that the speaker places at a certain point in her discourse to initiate the three-stage targeting procedure in the hearer.

trigger assertion The process in which a trigger provides additional information about the target that the hearer cannot use to narrow down to that target.

trigger construction A more complex linguistic construction that functions as a trigger.

trigger ellipsis The linguistic phenomenon in which a clause with an ellipsized trigger still exhibits a triggering function.

trigger form A trigger whose formal realization consists of one or more whole morphemes—whether segmental or prosodic, and whether forming a word or phrase.

trigger instant A trigger moment whose duration is conceptualized as only a zero-dimensional point of time.

trigger moment The moment on the speech-external timeline at which a particular trigger is uttered by the speaker.

trigger-to-cues stage The first stage in the hearer's three-stage targeting procedure in which the trigger leads him to determine all available cues to the target.

type of extension One of a projection's three ways to extend—stopping through self-termination, stopping through intersection, and continuing on indefinitely.

uncommonness salience The salience that an entity has for a hearer due to its overall rarity.

unexpectedability salience The salience that an entity has for a hearer because it is unusual for the context it is in.

unfamiliarity salience The salience that an entity has for a hearer due to its unfamiliarity to him.

unified feature search The procedure in which a hearer in one step combines all the information he has about a target's features for a single feature search to single out the target.

uniplex Pertaining to an entity consisting of a single element. See "plexity."

uniqueness salience The salience that an entity has for a hearer due to its uniqueness relative to its current environment.

valid Pertaining to those cues in a set of inconsistent cues that correctly apply to the final target and so are to be retained during a resolution phase.

ventivity The linguistic category whose members are the ventive and the nonventive.

ventive Pertaining to a path that begins outside the speaker's or hearer's vicinal region and progresses toward (and into) it.

vicinal region The portion of space immediately surrounding a corporal cue.

visibility The type of perceivability that rests on visual stimuli and visual perception.

wave/waving thrust The type of thrust in which a flap (flapping thrust) is produced two or more times in quick succession.

within-window condition The requirement that, for an element to serve as a cue for a particular trigger, it must occur within a certain interval centered on that trigger's occurrence.

working-memory accessibility/accessing An earlier cue's accessibility to or accessing by a hearer in his working memory of it.

zero trigger See "ellipsized trigger."

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