Verbalized Events
A Dynamic Approach to Linguistic Relativity and Determinism[1]

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1. Thinking for speaking

For the past decade or so, I have attempted to present a modified form of linguistic relativity in terms of online processes: "thinking for speaking" (Slobin 1987, 1991, 1996a). The followers of Humboldt, Sapir, and Whorf have not succeeded in demonstrating a pervasive influence of languages on world-view or broad patterns of cultural practices[2]. In the trenchant summary of the American psycholinguist, Stephen Pinker: "there is no scientific evidence that languages *dramatically* shape their speakers' ways of thinking" (1994: 58, emphasis added). But there are "non-dramatic" influences that deserve scientific attention. It should be evident that one cannot escape the influences of language while in the process of formulating or interpreting verbal messages. On first consideration, this seems trivially obvious. On deeper examination, however, it seems that such online processes vary considerably from language to language, both for producers and receivers of messages. I will try to show that these differences have consequences for the nature of connected discourse, as well as implications for the representation and memory of reported events.

Central to the analysis is the fact that one cannot verbalize experience without taking a *perspective*, and, further, that the language being used often favors particular perspectives. The world does not present "events" to be encoded in language. Rather, in the process of speaking or writing, experiences are filtered through language into *verbalized events*. Here I will examine one type of event – human motion – and explore differences in thinking for speaking between two broad *types* of languages. My focus will be on descriptions of self-movement – that is, the typology of intransitive verbs of

motion predicated of animate actors. And I will consider data of picture-elicited oral narrative, creative fiction, translation, spontaneous conversation, parent-child discourse, mental imagery, and gesture.

2. Lexicalization of motion events

To set the stage, consider a pair of roughly equivalent sentences in English and French:

(1) a. He ran into the house.
   b. *Il est entré dans la maison en courant.*
      'He entered in the house by running.'

In English, the main verb, *run*, describes the manner of movement, and a particle, *in*, gives the path. In French, by contrast, the main verb, *entrer*, gives the path, and the phrase *en courant* describes the manner. As will be demonstrated, such manner phrases are often not used in languages like French. It is usually sufficient to say *Il est entré dans la maison*, or, most typically, *Il est entré*. And, in those instances when manner is at issue, such languages have a relatively small set of options to choose from. By contrast, languages like English have an abundance of manner-of-motion verbs, and use them with great frequency: *dash in, dart in, slip in, creep in, limp in*, and so forth.

The thesis of this paper is that descriptions of manner – in various sorts of discourse – are to a large part determined by the *lexicalization patterns* of the language; and, as a consequence, thinking for speaking varies systematically on the basis of such patterns. The ways in which French differs from English are part of a much more general organizational principle, cutting across language families, cultures, and literary traditions. Following Talmy (1985, 1991, Forthcoming) one can distinguish two types of languages – perhaps a universal split – in terms of whether they prefer to express *change of state* in verbs or in elements associated with verbs. The particular change of state in this instance is locative transition, and the two types differ in where they indicate the "core feature" of a motion event – the change of location. Talmy refers to languages like French as *verb-framed*, because PATH is indicated by the main verb in a clause: verbs such as 'enter,' 'exit,' 'cross,' and the like. He calls languages like English *satellite-framed*, because PATH is given by a satellite to the verb - in English, a verb particle. (For convenience, the two types are referred to as "S-languages" and "V-languages" below.) These two types of lexicalization pattern entail two types of gram-

matical construction for motion events, as shown in (2a) and (2b). Here I use Spanish, rather than French, to show that the pattern is general to the Romance languages, and not peculiar to French. But, further, the satellite-framed type apparently includes all the rest of Indo-European – certainly, in our work at Berkeley, all of the Germanic and Slavic languages – along with Finno-Ugric, and, in some ways, Chinese; Talmy's analysis adds many Amerindian languages to this type. The verb-framed types in our sample include Turkish, Hebrew, and Japanese, in addition to the Romance languages. Most of the discourse patterns we have explored apply across the board to all S-languages or all V-languages, showing a pervasive *typological determinism.*[3]

(2) a. Satellite-framed construction type:

MOTION, MANNER	PATH	SOURCE/GOAL
↓	↓	↓
VERB$_{finite}$	SATELLITE	N+(adposition,case)
↓	↓	↓
go, run	out	of the house
go, run	in	to the house

(2) b. Verb-framed construction type:

MOTION, PATH	SOURCE/GOAL	MANNER
↓	↓	↓
VERB$_{finite}$	N+(adposition, case)	VERB$_{nonfinite}$
↓	↓	↓
salir 'exit'	de la casa 'of the house'	corriendo 'running'
entrar 'enter'	en la casa 'in the house'	corriendo 'running'

My claim is that the preferred construction type in a language predisposes speakers to deal differently with the events encoded in the construction – in this instance, motion events. In a V-language, the verb slot is typically occupied by a path-verb, as in the above examples ('enter,' 'exit'). A manner verb is used as main verb only if the clause does not assert a change of state (Aske 1989, Slobin and Hoiting 1994), as in the following examples from novels written in several V-languages:

(3)   a. Spanish: *Corri a la calle*. (Sabato)
                       'I ran to the street'
       b. Turkish: *cami-ye kadar yürü-dü* (Pamuk)
                       mosque-DAT until walk-PAST
                       '(he) walked as far as the mosque'
       c. Hebrew: *'ani soxe 'ad Sidna 'Ali* (Keynan)
                       'I swim as far as Sidna Ali'

As I will show, sentences such as those in (3a-c) are relatively infrequent in V-language texts. The preferred pattern in such languages is to use the main verb to encode either simple motion (e.g., 'go') or directed motion (e.g., 'enter'), expressing manner in an optional adjunct phrase, in those instances when manner is at issue. When both manner and change of state are asserted, some sort of phrasal expression is required, as in (3d-e):

(3)   d. Spanish: *sali corriendo a la calle*. (Sabato)
                       'I exited running to the street.' [cf. *I ran out(side) to
                       the street*]
       e. Turkish: *ayakları-nın uçları-na basarak odasın-dan*
                       his.feet-POSS tips-DAT treading his.room-ABL
                       çık-tı (O. Kemal)
                       exit-PAST
                       'stepping on the tips of his feet (he) exited from the
                       room' [cf. *he tiptoed out of the room*]

By contrast, in S-languages direction is almost always encoded outside of the main verb, leaving that slot open for an array of manner verbs. As a consequence, these languages have elaborated the domain of manner of movement – presumably because this domain is routinely expressed in a syntactically obligatory component.

   Traditional psychological approaches to linguistic relativity and determinism (e.g., Brown 1958, Brown and Lenneberg 1954) made use of the notions of *codability* and *availability*. Brown (1958: 235-236) provided the following account:

   We shall speak of categories having single word names as more *codable* than categories named with a phrase. ...Zipf's Law [leads us to] propose that the length of a verbal expression (*codability*) provides an index of its frequency in speech, and that this, in turn, is an index of the frequency with which the relevant judgments of difference and equivalence are made. ... I will go further and pro-

pose that a perceptual category that is frequently utilized is more *available* than one less frequently utilized.

This analysis can be extended from categorical distinctions within a domain (Brown's examples) to the codability of an entire domain and its expression in connected discourse. The domain of manner-of-motion is highly codable in S-languages not only because it tends to be expressed by single lexemes rather than phrases, as in the examples in (3d-e), but also because the free expression of manner as a main verb in all types of directional clauses greatly increases its frequency of use. Therefore, in terms of thinking for speaking, the domain is more available in S-languages. I will offer examples of the expression of this domain in various types of discourse, and then return to the theoretical argument. To my knowledge, this is the first attempt to seek evidence for linguistic relativity and determinism in actual texts of connected discourse across languages.

3. Thinking for speaking: Motion events in picture-elicited narrative

The first set of examples comes from elicited narratives. My colleagues and I have used a little picture storybook, *Frog, where are you?* (Mayer 1969), to elicit stories from children aged 3 to 11, and adults, in a wide range of languages (see Berman and Slobin 1994, as well as references cited there). The book presents a classic fairytale-type plot in 24 pictures without words. A little boy has lost his pet frog, and goes through the woods with his dog, searching for the frog. Let us consider one dramatic event: the boy climbs a tree to look in a hole, and an owl flies out and knocks him down out of the tree. (The preceding sentence is, as we shall see, typical of an S-language like English.) The examples in (4a) show descriptions of this event in several S-languages:

(4)   a. Satellite-framed

       English: *an owl flew out of here* [age 3]
                   the owl popped out [age 5]
                   an owl flew out of the hole in the tree [adult]
       German: *da kam ne Eule raus-geflogen* (=there an owl came
                   flying out) [age 5]
                   weil da eine Eule plötzlich raus-flattert
                   (=because there an owl suddenly flaps out) [age 9]

Dutch: *dan springt er een uil uit het gat*
          (=then an owl jumps out there from the hole) [age 7]
          omdat er een uil uitvliegt (=because an owl flies out of
          there) [age 9]

Russian: *iz duba vylezla sova* (=from oak out-crawled owl)
          [age 5]
          tam vyskočila sova (=there out-jumped owl) [age 6]
          iz dupla vyletela sova (=from hollow out-flew owl)
          [age 10]

Note that in all of these examples the main verb depicts MANNER – 'fly',
'pop', 'jump', 'crawl' – and the Germanic particles or Russian prefixes give
PATH. The same pattern of PATH expression is used even if a non-manner
verb of motion is chosen – expressions such as 'an owl came out' or 'came
out of the tree' in the Germanic languages.[4]

The patterns are distinctly different in V-languages. The descriptions in
(4b) are typical of the V-languages in our sample:

(4)   b. Verb-framed

French: *le hibou i sort de son trou* (=the owl he exits from his
          hole) [age 4]
          y a un hibou qui sort (=there's an owl that exits) [age 5]

Spanish: *sale un buho* (=exits an owl) [age 5]
          del agujero salió un buho (=from the hole exited an
          owl) [adult]

Turkish: *kuş çıkıyor yuvadan* (=bird exits nest-ABL) [age 4]
          ağaç kovuğunun içinden bir baykuş çıkıyor
          (=tree hole's inside-ABL one owl exits) [adult]

Hebrew: *pit'om yaca mišam yanšuf* (=suddenly exited from-there
          owl) [age 5]
          yaca mitox haxor yanšuf (=exited from-inside the-hole
          owl) [age 9]
          yanšuf kofec meha'ec (=owl jumps from-tree) [adult]

The last example, from an Israeli adult, is the *only* use of a manner verb for
this event *in all of our data from V-languages*, at all ages.

Table 1. "The Owl's Exit" in frog stories: Percentages of manner and path
verbs (numbers of verb tokens in parentheses)

	MANNER VERB	PATH VERB
SATELLITE-FRAMED		
English	32% (16)	68% (34)
German	18% (5)	82% (23)
Dutch	17% (4)	83% (19)
Russian	100% (18)	-
VERB-FRAMED		
French	-	100% (21)
Spanish	-	100% (64)
Turkish	-	100% (53)
Hebrew	3% (1)	97% (78)

As shown in Table 1, the pattern of distribution is markedly different be-
tween the two language types.[5] Although the S-languages differ among
themselves – for reasons that can't be delved into here – the V-languages are
remarkably consistent in *dis*preferring manner verbs to describe the owl's
emergence from the hole in the tree. Yet these languages do have verbs
meaning 'fly' and 'emerge suddenly' in various manners. Why should usage
be so different in this instance (and in many others)? I propose that speakers
of the two language types differ in their *habitual attention* to manner of mo-
tion – as evidenced, to begin with, in relative differences in frequency of
mention.

They also differ in their attention to the *internal structure* of this domain.
Speakers of S-languages have been trained, by their language, to make more
distinctions of motor pattern, rate, affect, and evaluation of movement, in
comparison with speakers of V-languages. To be sure, both language types
have "expressive" manner verbs, used when exceptional manner is in focus –
verbs with meanings such as 'limp' and 'dash' and 'jump' and the like. But –
to my initial surprise – I've discovered that V-languages seem to have far
fewer expressive manner verbs than S-languages. It is as if the availability of
the combined slot for MOTION and MANNER in S-languages has encouraged
speakers to elaborate the entries in this slot. There is no additional "cost" to
adding richer manner expressions, since the slot *must* be filled by some verb
or other in order for a syntactically complete sentence to be produced. By
contrast, the optional slot for a MANNER expression in a V-language has
some "cost", in that it adds an element or phrase to the sentence. Thus it is

retained for situations in which manner is truly at issue – because it is unexpected or unusual.

There are several sorts of evidence that can be offered in support of this claim. To begin with, one can simply compare the verb types occurring in comparable texts – that is, the frog stories. To simplify the presentation, let us consider only English and Spanish. We have 148 frog stories in English, gathered in Australia and the US, and 138 in Spanish, gathered in Spain and Chile. Both samples cover the age ranges 3-11 and adult. The lists of verb types in (5a) and (5b) represent all descriptions of self-movement, used in the entire story of 24 pictures, in the two languages. There are 32 different verb types in the English narratives, compared with 20 in Spanish.

(5) a. English (32 types): buzz, charge, chase, clamber, climb, crash, crawl, creep, escape, flap, fly, hop, jump, perch oneself, plummet, pop, race, run, scramble, slink, slip, sneak, splash, splat, spring, step, swarm, swoop, tiptoe, tumble, walk

     b. Spanish (20 types): main verb: *arrastrarse* 'crawl', *brincar* 'jump, leap', *caminar* 'walk', *chocarse* 'collide', *correr* 'run', *escapar* 'escape', *escurrirse* 'slip away', *huir* 'flee', *nadar* 'swim', *perseguir* 'chase', *precipitarse* 'rush, throw oneself', *saltar* 'jump', *toparse* 'bump, run into', *trepar* 'climb', *tropezar* 'stumble', *volar* 'fly'

        path verb + gerund: *caer precipitando* 'fall precipitously', *partir zumbando* 'leave buzzingly', *salir caminando/corriendo/galopando/huyendo/persiguiendo/volando* 'exit walking/running/galloping/fleeing/chasing/flying', *seguir corriendo/persiguiendo/volando* 'follow running/chasing/flying'

Note that, in some domains, English makes more fine-grained distinctions than Spanish. Compare, for example, *clamber* and *climb* versus *trepar* 'climb'; *crawl* and *creep* versus *arrastrarse* 'drag oneself'; *fly*, *flap*, and *swoop* versus *volar* 'fly'. This is a general difference between the two types of languages. For example, using translation equivalents given by Collins dictionary, with 250,000 entries, the meanings of four of the most expressive Spanish verbs are quite general in comparison with their English equivalents, as shown in (6a):

(6) a. Spanish-to-English:
         brincar = skip about, hop about, jump about
         escurrirse = slip (away), slide
         saltar = bound, dive, hop, jump, leap, spring
         tropezar = stumble, trip tumble

The picture is essentially the same if one starts with the English dictionary equivalents of the first four verbs and searches for Spanish translations: only two more Spanish verbs appear, *deslizarse* and *escabullirse*, as shown in (6b).

(6) b. English-to-Spanish additions:
         deslizarse = creep, glide, slide, slip, slither
         escabullirse = scurry off, scuttle away/off, slip away

In all, 6 Spanish verbs correspond to 15 English verbs. Thus, in each of these domains of manner, Spanish provides one or two general verbs, while English provides speakers with a more fine-grained analysis. In preliminary comparisons of this type, it appears that the Germanic and Slavic languages, along with Hungarian and Mandarin Chinese, have huge lexicons of manner of motion verbs in comparison with the Romance languages, Turkish, and Hebrew.

4. Thinking for writing (and reading): Motion events in creative fiction

Another way to examine the issues of "discourse typology" is to look at works of literary fiction, where authors are free to be as expressive as they please – without the constraints of the pictures of the frog story or the task of spontaneous oral narration. At Berkeley we are in the midst of looking at novels written in several languages of the two types. We can thus add "thinking for writing" to the analysis, turning to a mode of expression that does not have the online time pressure of speaking. Table 2 presents preliminary findings, comparing written fiction with the oral frog story narratives. We have data from seven novels in each of the four languages: English and Russian as S-languages, Spanish and Turkish as V-languages.[6] (Note, too, that these languages represent different language groups.) The procedure is to randomly pick 20 motion events from each work, tracking the movements of a human protagonist from a starting point until the protagonist stops

moving in order to do something else. The figures in Table 2 are based on all intransitive verbs of self-motion in these segments, including verb complexes such as the equivalents of 'exit running' and 'approach stumbling.'[7] The patterns are remarkably similar. In the two S-languages, on average, about half of the motion verbs express manner; in the two V-languages, fewer than one quarter of the verbs are manner verbs. The works of written fiction are like the elicited oral narratives, although the genres are quite different. And the patterns are independent of language family, reflecting only the typology of lexicalization patterns.

Table 2. Intransitive verbs of self-motion in narratives: Percentage of manner verbs out of total verb tokens (total number of verb tokens in parentheses)

	Written Fiction	Oral Frog Stories (adults)
Satellite-framed		
English	41% (416)	45% (640)
Russian	56% (186)	79% (346)
Verb-framed		
Spanish	19% (298)	18% (516)
Turkish	21% (369)	23% (188)

It is instructive to examine the actual lexical items represented in these figures. Table 3 gives numbers of monomorphemic and phrasal verb types for three of the languages (the Russian data are not yet complete). It is evident that English is markedly different from Spanish and Turkish.

Table 3. Number of types of intransitive verbs of self-motion in novels

	Monomorphemic	Phrasal	Total
Satellite-framed			
English	51	11	62
Verb-framed			
Spanish	23	4	27
Turkish	15	5	20

The actual lexical items are listed in (7), (8), and (9)

(7)   English: monomorphemic verbs (51 types): *bolt, brush, bump, burst, climb, crawl, creep, cut, dart, dip, dive, drift, drop, edge, flee, glide, grope, hasten, hurry, jump, leap, limp, loiter, march, plod, plunge, race, roll, run, rush, rustle, scramble, skitter, slide, slip, sneak, spring, sprint, step, stride, stroll, struggle, stumble, thread, tiptoe, tramp, trip, wade, walk, wander, work*

Phrasal verbs (11 types): *drag oneself, edge one's way, grope one's way, hurl oneself, make one's way, pick one's way, push one's way, strike a path, take a step, thread one's way, work one's way*

(8)   Spanish: monomorphemic verbs (23 types): *andar* 'go, walk', *arrastrarse* 'drag oneself', *atropellarse* 'hasten', *caminar* 'go, walk', *chocar* 'bump', *cojear* 'limp', *correr* 'run', *deslizarse* 'slip, creep', *echarse* 'throw oneself', *escabullirse* 'slip, scurry', *escapar* 'escape', *flotar* 'float', *gatear* 'crawl on all fours', *huir* 'flee', *irrumpir* 'burst in', *lanzarse* 'throw oneself', *pasear* 'walk, promenade', *pedalear* 'peddle [bicycle]', *pisar* 'step', *rodar* 'roll', *saltar* 'jump', *trepar* 'climb', *tropezar* 'stumble'

Phrasal verbs (4 types): *abrirse paso* 'force one's way', *apretar el paso* 'increase the pace', *correr en puntas de pie* 'run on tiptoe', *estar al galope* 'be at a gallop'

(9)   Turkish: monomorphemic verbs (15 types): *atılmak* 'leap', *atlamak* 'jump', *çarpmak* 'bump', *dalmak* 'plunge', *dolanmak* 'wander', *dolaşmak* 'wander', *emeklemek* 'crawl', *fırlamak* 'rush, leap', *kaçmak* 'flee', *koşmak* 'run', *saldırmak* 'charge at', *sıçramak* 'leap', *sürüklemek* 'drag oneself', *tırmanmak* 'climb', *yürümek* 'walk'

Phrasal verbs (5 types): *adım atmak* 'take a step', *at kendini* 'throw oneself', *ayakları ayaklarına dolanmak* 'wander about on foot', *ayaklarının uçlarına basmak* 'tread on tiptoe', *hamle yapmak* 'make a great leap forward'

All three languages have basic verbs of going on foot, meaning little more than 'go'; all have a basic verb for rapid motion on foot (equivalents of 'run'); and all have a basic verb for ascending by means of the limbs

(equivalents of 'climb'). Beyond that, it is clear that English is highly differentiated with regard to motor patterns of movement, often combined with rate or attitude.[8]

Use of expressive verbs is not limited to creative fiction in S-languages. A similar range of vocabulary is found in newspaper reports, and not only in the tabloid press. Consider the following quite ordinary examples:

(10) a. But he seemed unimpressed by the videotapes taken shortly after the killings, in which police officers are seen *trampling and tromping* nearby. (*New York Times* 1995)
   b. As the University of California at Berkeley's 29,000 students *traipsed* off yesterday to their first day of fall 1995 classes... (*San Francisco Chronicle* 1995)

A comparison of news stories reporting the same event in the two types of languages is instructive:

(11) a. ENGLISH: Squads of troops ...*stormed* the Greenpeace flagship Rainbow Warrior II... 15 commandos *clambered* on board... Greenpeace defied warnings not to *breach* the 12-mile exclusion zone to *power* across the lagoon in Greenpeace dinghies. (*Manchester Guardian* 1995)
   b. FRENCH: Les commandos de marine *arraisonnent* le *Rainbow Warrior*... Le *Rainbow Warrior* est passé à la offensive dès l'aube, *franchissant* la limite des eaux territoriales françaises... ('The marine commandos *boarded* the Rainbow Warrior... The Rainbow Warrior switched over to the offensive at dawn, *crossing* the limits of French territorial waters...') (*Le Figaro* [Paris] 1995)
   c. SPANISH: Pero cada vez que una embarcación se atreve a *atravesar* la zona de exclusión... ('But each time that an embarcation dares to *cross* the exclusion zone...') (*ABC* [Madrid], 1995)

Clearly, manner-of-motion verbs are a salient aspect of written texts of various sorts in S-languages. This fact influences the reader as well as the writer. Consider again the English verbs from novels in example (7). These verbs are drawn from the writing of only seven authors, sampling 20 trajectories from each. Yet, in order to comprehend the motion events presented by these authors, it is necessary to make a number of distinctions that may not occur to writers or readers using Spanish or French or Turkish. For example, con-

sider one way of grouping a number of the verbs in (7), attending to the *conceptual* structuring that is part-and-parcel of becoming an English-speaker (or reader).

(12) Some semantic fields in English manner-of-motion verbs:

   Rapid motion: bolt, burst, dart, plunge, race, run, rush, scramble, skitter, sprint
   Leisurely motion: drift, loiter, stroll, wander
   Smooth motion: brush, glide, slide, slip
   Obstructed motion: stumble, trip
   Furtive motion: crawl, creep, sneak
   Manners of walking: march, plod, step, stride, tiptoe, tramp, walk
   Manners of jumping: jump, leap, spring

It is a psycholinguistic truism that the process of learning labels for categories first contributes to the formation of those categories, and then serves to make those categories more salient. Distinctions such as those in (12) are formed in the process of learning English, and are accessed, online, in speaking and writing, hearing and reading English. The frequency of their use provides at least indirect evidence for their cognitive status. Direct evidence is hard to come by, but two lines of research are promising: analysis of translations between languages of the two types, and experiments on mental imagery and memory for motion events. However, before turning to these topics, it is useful to reassure ourselves that we are not dealing with a phenomenon that is limited to relatively formal uses of language, whether picture-elicited narratives or literary products. We have preliminary evidence that similar patterns of attention to manner of motion are found in natural conversation as well.

5. Thinking for talking (and listening): Motion events in conversation

The same range of expressive manner verbs is found in informal English conversations. I have searched for such verbs in the Lund Corpus of British speech and in the Berkeley Disclab of American conversations. The verbs listed in (13) are the 34 types that were found in a first search of these corpora:

(13) Manner-of-motion verbs in English conversational data (34 types): *clamber, climb, crawl, dash, dive, drag oneself, drift, drive, flee, float, flop, fly, glide, hike, jump, leap, march, poke, plunge, run, rush, slide, sneak, stagger, step, stride, stumble, toddle, totter, trot, trudge, walk, wander, zoom*

This is a rather remarkable list. Apparently it is quite normal, in natural English conversation, to say things like the examples in (14).

(14)   ...and then you *clambered* up on the platform... [British]
...well, you've got to *plunge* into London... [British]
...Miranda was played as a very gauche girl who sort of *staggers* around... [British]
...I *wandered* around to this one main area... [American]
...we all *dove* under the table... [American]
...as you *trudge* off to work to support them... [American]

The necessary comparisons remain to be made for V-languages, but it is my impression that vocabulary of this sort is exceedingly rare in Spanish[9] and Turkish[10] conversations. Clearly, this is a domain that English-speakers are "experts" in.

The same seems to be true of German-speakers. Snell-Hornby (1983), in her detailed study of "verb-descriptivity" in German and English, notes: "The descriptive verbs belong essentially to everyday language. They are common in dialect and slang" (p. 72). She cites a German study of the human modes of walking, quoting Kietz (1956: 49, in Snell-Hornby 1981: 76):

Allein durch gelegentliche Beobachtungen der volkstümlichen Sprechweise in Leipzig konnte ich 59 Zeitwörter ermitteln, von denen jedes eine ganz bestimmte Art des Gehens bezeichnet, sowie außer den unmittelbar auf sie zurückgehenden Ableitungen noch 67 Eigenschaftswörter, die verschiedene Gangarten kennzeichnen... Diese Gangbezeichnungen sind in ihrer Bedeutung so fein gegeneinander abgestimmt, daß nicht zwei von ihnen stellvertretend gebraucht werden können.[11]

Detailed attention to manner of movement is not limited to adult conversation in English. Our studies of preschool children, aged 2-4, show a remarkable early development of this portion of the lexicon (Chouinard 1997, Mucetti 1997).[12] The verbs listed in (15) come from the speech of one American girl of this age (Naomi, in the CHILDES archive). The data represent natural conversations at home with the child's parents. Note that manner-of-motion is elaborated both for verbs of self-movement, as examined here, and also verbs of caused movement.

(15)   Manner verbs used by an English-speaking child in a sample of 1,186 motion clauses: *self-movement (18 types)*: boom, bump, climb, crawl, creep, dive, fall, flop, jump, run, ski, skip, sled, slide, slip swim, tumble, walk; *caused-movement (13 types)*: bounce, drag, dump, knock, push, pour, spill, spit, splash, sprinkle, squeeze, throw, tip

It is clear that English-speaking children become experts in this domain quite early – providing additional suggestive evidence that language plays a role in organizing conceptual space for purposes of thinking for speaking. The child thus learns to think for speaking in terms of the patterns of the exposure language. (For detailed exposition of this argument, see Bowerman 1996a, 1996b, 1997, Forthcoming, Bowerman and Choi Forthcoming, Choi 1997, Choi and Bowerman 1991, Slobin 1997.)

With regard to child speech, we also have data on three V-languages – Spanish, French, and Italian – gathered in similar home circumstances (CHILDES data). The patterns are strikingly different, as shown in (16), (17), and (18):

(16)   Manner verbs used by two Spanish children in a sample of 596 motion clauses: *self-movement (8 types)*: *bailar* 'dance', *caer(se)* 'fall', *correr* 'run', *chocar(se)* 'crash', *escaparse* 'escape', *nadar* 'swim', *saltar* 'jump', *volar* 'fly'; *caused-movement (3 types)*: *empujar* 'push', *tirar* 'throw', *tumbar* 'knock down'

(17)   Manner verbs used by two French children in sample of 456 motion clauses: *self-movement (6 types)*: *courir* 'run', *faire du ski* 'ski', *glisser* 'slip', *nager* 'swim', *sauter* 'jump', *voler* 'fly'; *caused-movement (4 types)*: *jeter* 'throw', *lancer* 'throw', *rouler* 'roll', *trainer* 'drag'

(18)   Manner verbs used by two Italian children in sample of 317 motion clauses: *self-movement (6 types)*: *ballare* 'dance', *cadere* 'fall', *camminare* 'walk', *cascare* 'tumble down', *scapare* 'escape', *tirarsi* 'throw oneself'; *caused-movement* (2 types): *buttare* 'throw', *spingere* 'push'

The vocabularies of all six of these children, in three V-languages, are quite similar, being limited to a set of basic, minimally expressive verbs of manner of movement.

These children are clearly not being trained by their language to distinguish, for example, between crawling and creeping, or falling, flopping, and tumbling. I suspect – on the basis of preliminary data on mental imagery, discussed below – that these children simply do not attend to these distinctions in a *categorical* way. That is, outside of thinking for speaking and understanding, there is no reason to treat these various sorts of movement as distinct conceptual types. The movements themselves exist in a graded and multidimensional psychological space, including factors of force dynamics, muscular pattern, rate, and social-emotional evaluation. English has divided up this complex space into lexical concepts, probably due to its satellite-framed typology. But these are not "natural" divisions of motion events. Indeed, Snell-Hornby shows in detail that even English and German differ considerably in their lexical treatment of this domain. She notes, for example, that German has no close equivalents in the field that English divides up as *scuttle, scurry, scamper, scramble*, and *clamber*, while German is more elaborated than English with regard to firm, heavy walking: *stapfen, stiefeln, trampeln, stampfen*. Her discussion of verbs of crawling gives one of many subtle examples of the varying ways in which this multidimensional space can be apportioned by language, making it clear that it does not fall into natural categories (Snell-Hornby 1981: 142):

> The verbs denoting crawling are divergent in English and German. English *crawl* emphasizes slow, laborious motion, focussing on the active use of arms and legs: like *krabbeln* it denotes the movement of a baby or an insect and like *kriechen* it can be used of traffic to emphasize excessive slowness, and in a figurative sense it can denote servile behaviour. *Creep* on the other hand focusses on movement that is not only slow but above all quiet or secretive, as of someone wanting to escape attention: it can be used of an inanimate vehicle where this is soundless, thus combining elements of *kriechen* and *schleichen*.

The domain of motion is thus an ideal arena for the Whorf Hypothesis – in ways in which the color domain was not – because there are no biologically-determined concepts here waiting to be labeled. Whorf may have gone too far in making claims about how we "dissect nature", but the domain of manner-of-movement falls appropriately under his famous dictum (Whorf 1940b: 5, 1956: 213):

> The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face: on the contrary, the

world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds – and this means largely by the linguistic systems of our minds.

It remains for us to find some influences of lexicalization patterns beyond thinking for speaking and learning to think for speaking.[13] Within the realm of language, we can examine what happens when a language of one type confronts a language of the other type – that is, the study of translation (and, eventually, of bilingualism). And, one step beyond, we can ask what happens to the content of a linguistic message after it passes into memory.

6. Thinking for translating: Moving motion events from one language type to the other

The translator always faces the problems of thinking for reading and thinking for writing. It is necessary to go from the mental image produced by reading the source language to an appropriate rendering of that mental image in the target language. Translation reveals the extent to which the target language can accommodate itself to the source language, versus assimilating the original to its own patterns of thinking for writing. In an earlier study of translations of novels between English and Spanish, I found that only 51% of English manner verbs were translated into Spanish manner verbs (Slobin 1996b). The other half were either replaced with non-manner verbs, or were simply omitted. For example, (19a) shows a neutralization and (19b) shows an omission:

(19) a. English original: They...*plunged* across the road into the long grass on the other side. (Lessing)
Spanish translation: ...cruzaron *el camino hacia la hierba alta del otro lado*.
'(they) *crossed* the road towards the high grass of the other side'
b. English original: ...he...*ran splashing* through the water... (Anaya)
Spanish translation: ...corrió *por el agua*...
'...(he) *ran* through the water...'

These patterns find support in a larger, ongoing study at Berkeley, examining novels in English, Spanish, and Turkish, along with their translations into each of the other two languages.[14] When an English manner verb is used with a particle that corresponds to a path verb in a V-language, translators prefer

to omit manner and use the appropriate path verb, as in the following trans-
lations from English into Spanish and Turkish:

(20) English original: ...she *walked in*... (McCullers)
Spanish translation: ...*ella* cruzó *el umbral*... (= 'she *crossed* the
threshold')
Turkish translation: ...*içeri girip*... (='*inwards entering*')

In order to systematically compare translations of the same text, we have
done detailed analysis of translations of a chapter from *The Hobbit*, by Tol-
kien, into a number of languages of the two types.[15] Manner verbs tend to be
retained in translations into other S-languages: German, Dutch, Russian, and
Serbo-Croatian in our sample; and they tend to be neutralized, diminished, or
omitted in translations into verb-framed languages: French, Spanish, Italian,
and Portuguese; Turkish; and Hebrew. Consider, for example, French trans-
lations of expressive manner verbs. The translator of a dramatic and fanciful
book like *The Hobbit* must certainly be trying to make use of the full expres-
sive resources of the target language. But (21) shows a number of English
distinctions that are apparently not easily conveyed in French. As in the ex-
amination of Spanish dictionary entries above, a small number of French
verbs corresponds to a larger number of English verbs.

(21) French equivalents of English verbs in a translation of chapter 6 of
The Hobbit:

jump, leap → *bondir*
run, scuttle → *courir*
sweep, swoop → *fondre*
crawl, creep, slide → *(se) glisser*
clamber, climb, scrable, swarm → *grimper*

When manner verbs are used in translation, the two types of languages also
differ with regard to the *degree of expressiveness* of verbs. For example, in
one episode of *The Hobbit* some dwarves flee into trees in order to save
themselves from an attacking horde of wolves. Tolkien uses an expressive
verb of climbing, *scramble up*, and translations into the other S-languages
use comparably expressive verbs: German *hinaufkrabbeln*, Dutch *omhoog-
klauteren*, Russian *vs-karabkat'sja*, and Serbo-Croatian *pentrati-se*. The V-
language translations use a neutral, non-expressive verb of climbing: French
grimper, Italian *arrampicarsi*, Spanish *trepar*, Hebrew *le-tapes*, Turkish
tırmanmak. (Portuguese omits manner entirely, simply using *subir* 'ascend'.)

Translators going from a V-language into an S-language face the opposite
problem. Often the source language form is too "bland" for the target lan-
guage. If a simple path verb is involved, the translator will at least pick a
neutral or basic manner verb, as in the following translation from French into
Dutch:

(22) French original: ...*lorsque le comte de Buondelmonte* entra *dans sa
chambre*. (Sand)
'...when the Count of Buondelmonte *entered* his room.'
Dutch translation: ...*toen graaf de Buondelmonte zijn kamer bin-
nen*stapte.
'...when the Count of Buondelmonte *stepped* into his room.'

A German translator of *Don Quixote*, in similar fashion, adds a basic manner
verb – knowing that Don Quixote left the inn on horseback:

(23) Spanish original: ...*cuando don Quijote* salió *de la venta*... (Cer-
vantes)
'...when don Quixote *exited* from the inn...'
German translation: ...*als Don Quixote aus der Schenke* ritt...
'...when Don Quixote *rode* out of the inn...'

And when the *narrative context* of a path verb in a V-language suggests
more dramatic manner of movement, a translator into an S-language often
creates more colorful expressions, such as the following English translation
of Spanish. What counts as highly expressive writing in Spanish, is not col-
orful enough for English.

(24) Spanish original: ...*luego de diez minutos de* asfixia y empujones,
legamos *al pasillo de la entrada*... (Vargas Llosa)
'...after ten minutes *of asphyxiation and pushes*, (we) *arrived* at the
entry-way...'
English translation: ...after ten minutes *of nearly being smothered
or crushed to death*, we finally *fought our way* to the exit...

Translations from Turkish into English show similar cases of increasing the
level of "verb descriptivity":

(25) Turkish original: *Akşam iyice hava kararınca usulca evlerinden
çıkıp birbirlerinin camına vurdular*. (Tekin)

'When the evening got quite dark, they quietly *exited* from their houses and *knocked* on each other's windows.'
English translation: But when it was quite dark they quietly *slipped* out of their homes and *tapped* on each other's windows.

We have now surveyed a range of situations in which verbalized events vary systematically with regard to the lexicalization pattern of the particular language, and, more broadly, with the type of language. To elaborate on Whorf (1940a/1956: 221), producers and receivers of S-languages and V-languages "seem to be pointed by their grammars [and the consequent lexicalization patterns – DIS] toward different types of observations and different evaluations of externally similar acts of observation". This seems to be clear with regard to online attention to manner of motion, while speaking or writing, listening or reading in conversation, narrative, and news report. It also seems to be clear that the language-acquiring child is pointed towards different "types of observation" while formulating and interpreting everyday utterances. But Whorf goes on to add that "users of markedly different grammars ... are not equivalent as observers, but must arrive at somewhat different views of the world". Decades of debate have been devoted to a proper understanding of "observer", "observation", and "view of the world". The dynamic, thinking-for-speaking approach is certainly a kind of "observation" and "view of the world" – but it is called into play only in the process of producing and understanding verbalized events. I think it is not "trivial" that this process can shape the individual sufficiently so that a particular semantic field will be relatively more elaborated in a particular type of language, resulting in more frequent and varied use and a more differentiated course of acquisition; nor is it uninteresting that language type serves as a clearly definable type of filter in translation between languages of opposite types. Thinking for speaking English, for example, must leave its traces in a different sort of conceptual organization than, say, thinking for speaking Spanish. The fascination with linguistic relativity and determinism, at least since the eighteenth century, has been in the search for influences on processes that go beyond thinking for speaking. I suggest that we can go at least one step beyond online production to examine the *memory* that remains after receiving and processing a verbalized event. That is, the listener or reader responds not only to the actual linguistic components of a message, but constructs an internal representation that is congruent with a lifetime of attention to the dimensions of experience that are *habitually verbalized* in the language. Thus, while the speaker thinks for speaking, the listener listens for understanding and, ultimately, remembering.

7. Listening/reading for remembering

It is well known in the psychology of eyewitness testimony that the form of a question can influence the content of the answer. For example (Loftus and Palmer 1974) after viewing a video of an automobile accident, witnesses estimate a higher rate of speed of the vehicles involved if the question includes an expressive manner verb ("About how fast were the cars going when they smashed into each other?") in comparison with a more neutral verb, such as "hit each other" or "contacted each other". They are also more likely to agree that there had been broken glass on the pavement if they had earlier been asked the question with "smashed" – although, in fact, there had been no broken glass. Thus it is clear that listening for remembering is an active, language-guided process. It is more difficult to demonstrate the overall effect of linguistic typology on memory, but we are beginning to gather suggestive data at Berkeley: We ask an individual to read a short passage from a novel, with no particular expectation of the purpose of the task. The passages are picked because they describe movement of a protagonist from one place to another, without explicit description of manner. After reading, the subject is asked to describe his or her mental imagery of the protagonist's manner of movement. Preliminary results suggest that S-language speakers tend to experience more mental imagery of this sort, in comparison with V-language speakers. I will report on one passage, studied in English and Spanish; ongoing work includes Turkish.[16]

The sample passage is drawn from a novel by the Chilean writer, Isabel Allende: *La casa de los espíritus* ('The house of the spirits'). It is selected because it describes the physical terrain, the path, and the mood of the situation – but does not explicitly describe the protagonist's manner of movement. English readers were given a literal translation, not adding any verb types to the original. The prediction is that English readers will unconsciously add manner information more regularly, and in richer detail, than Spanish readers. The English version is given in (26); the original Spanish is in footnote 17.[17]

(26) He got off the train at the station of San Lucas. It was a wretched place. At that hour of the morning there was not a soul on the wooden platform, its roof eaten away by inclement weather and ants. From there, one could see the whole valley through an impalpable mist that rose from the earth the night rain had soaked. He combed the landscape for the town of San Lucas, but was only able to make out a far off hamlet that was faded in the dampness of the morning. He walked around the station. There was a padlock on the door to the only office. There was a penciled note tacked on it, but

it was so smudged that he could not read it. He heard the train pull out behind him, leaving a column of white smoke. He was alone in the silent landscape. He picked up his bags and started to walk through the mud and stones of a path that led to the town. He walked for more than ten minutes, grateful that it was not raining, because it was only with great difficulty that he was able to advance along the path with his heavy suitcases, and he realized that the rain would have converted it in a few seconds into an impassable mud-hole. Upon nearing the hamlet, he saw smoke in several of the chimneys and breathed a sigh of relief, because at the beginning he had the impression that it was so lonely and decayed that it was a ghost town. He stopped at the edge of the village and saw no one.

Out of 21 American subjects, 20 (=95%) reported mental imagery of the protagonist's manner of movement. A great variety of verbs and adjectives were used to describe manner. Consider the segment describing the protagonist's movement from the train station towards the village. In the source description, we are told that he "started to walk through the mud and stones of a path" and that "it was only with great difficulty that he was able to advance along the path with his heavy suitcases". American readers automatically infer that his manner of motion was slow and impaired in various ways, as shown in the following descriptions. The items in italics are added in the process of reading for remembering. They are drawn from our now familiar list of English verbs of expressive manner, along with adjectives of a similar variety.

(27) *dodge* occasional hazards in the trail; move *clumsily*; *rock* from side to side; *slosh* through; *stagger*; *struggle*; *stumble*; *slow, sluggish* movement, *stumbling* over the rocks on the path; *slowly edge* his way down the trail; make *slow* progress; *slow* his pace; *take each step slow and difficult, tiring and never-ending; trek; trench* through a muddy path; *trudge*; walk *apprehensively/at a slow pace/ slowly; slowly hobbling; slowly and arduously; a very jerky process*

Only one subject reported: "It's strange but I remembered the description of the town and the feelings of the man but not very much movement." And one other said: "I visualized emotion and location much more than manner of movement."

Such responses, by contrast, are typical of subjects from Spain, Mexico, and Chile. By and large, only five verbs are used in the Spanish reports – all of them quite neutral: *andar* 'walk', *caminar* 'walk', *moverse* 'move', *avan-*

zar 'advance', and *llegar* 'arrive', with no adverbs of expressive manner of movement. Only 2 of 14 informants (14%) reported any imagery of manner of movement, as shown in (28); the first is quite elaborate, while the second is minimal.

(28) *"Lo veo caminar dificultamente, con cuidado de no tropezar o res-balar, haciendo movimientos especialmente lentos, como si le costara especial esfuerzo mover los pies o trajen un lastre en ell-os."* (= 'I see him walking with difficulty, with care not to stumble or slip, making especially slow movements, as if it cost him special effort to move his legs or was carrying a weight in them')
"Le costaba caminar por ese lodazal." ('It was hard for him to walk through that mudhole')

What is striking is the repeated report from Spanish-speakers, from all three countries, that they had no mental imagery of manner of movement at all, although they visualized the path, the physical details of the surroundings, the protagonist's inner state, and his trajectory of movement. The following reports are quite remarkable from the point of view of a speaker of an S-language:

(29) *"No lo imagino bajándose del tren sino parado en el andén y no lo veo recorriendo un trajecto muy largo para llegar al pueblo; más bien lo veo a una distancia ya del mismo, mirándolo. Reitero que no lo observo moverse en dirección al pueblo sino como imágines estáticas, más como fotografías."* (= 'I don't picture him getting down from the train but rather standing still on the platform and I don't see him going along a very long trajectory in order to arrive at the village; rather I see him at a distance from it, looking at it. I repeat that I don't observe him moving in the direction of the village but rather as static images, more like photographs.') [Chilean]
"Pareciera que se mueve, camina, pero no miro ninguna clase de acción detallada de parta de él. Se que camina y debe de lasti-marse los pies con pedregal pero miro más las piedras y el camino que la manera en que camina. ... Pareciera que flotara por veces como si estuviera sentado en un carro." (= 'It would seem that he moves, walks, but I don't see any sort of detailed action on his part. I know that he walks and must have his feet burdened with the stony ground but I see the stones and the path more than the manner in which he walks. ... It would seem that he were floating at times as if he were seated in a cart.') [Mexican]

A number of subjects spoke of "a series of still photographs", or a sense of directional movement without manner. The responses of Spanish-English bilinguals in California were especially interesting. Although there were only a few such subjects, they reported distinctly different imagery in the two languages, with more manner imagery in English – but still much less than that reported by native speakers of English. For example, the Mexican subject quoted in (29) is a student who had spent seven years in the U.S. She repeated the task in English, already knowing that the interview dealt with manner of movement. She reported:

(30) "I'm still seeing very little manner of movement but I see more concrete walking and I can sort of make out a pace. I see less of the surroundings. The story feels different. There is less detail in regards to the scenery."

Another bilingual student provided a full manner description in English (first test), with no carry-over to Spanish (second test):

(31) English test: "Trudgingly, sighing with great difficulty. Lugging his things, stumbling through the muddy path. Not quickly, dragging." Spanish test: "Still pictures: he's here, then there. No movement image."

The Spanish speakers report richer imagery for the *setting* (and the mood of the situation) than for the movements of the protagonist. This is consistent with earlier findings in the frog-story research. There we found that V-language narrations had a much higher occurrence of static scene-setting, in which trajectories of movement could be inferred, whereas S-language narrations were characterized by more detailed descriptions of trajectories, generally with manner verbs (Berman and Slobin 1994, Slobin 1996a, 1996b, 1997). In the frog-story task, the stimulus is a series of still pictures, and perhaps V-language subjects oriented to the stimuli more as static frames than as a dynamically continuous event. Compare two typical descriptions of a scene in which a deer, carrying a boy on head, drops the boy; the boy and his dog fall into a river. The English description presents a continuous, dynamic trajectory, while the Spanish provides a series of "stills" from which the trajectory can be inferred:

(32) a. English: And he starts running. And he tips him off over a cliff into the water. And he lands.

b. Spanish: *Se acerca hacia un barranco, por debajo del cual corre un río. Le da un empujón y le tira. Y el perro también se cae con él. Claro que el niño se queda sentado en el centro del río.*
'[The deer] approaches a ravine, below which there flows a river. He gives him a push and he throws him. And the dog also falls with him. Of course, the boy ends up seated in the middle of the river.'

These differences are typical, with a great deal of static scene setting in V-languages (Spanish, French, Portuguese, Hebrew, Turkish), contrasted with very rare use of such descriptions in S-languages (English, German, Dutch, Swedish, Icelandic, Polish, Russian, Serbo-Croatian). Taken together, these various sorts of data suggest a different balance of attention to setting and motion in the two types of languages.

Returning to the test passage from Allende, note also that the protagonist's trajectory is first predicated of the *path* rather than of his own actions: *un sendero que conducía al pueblo* 'a path that led to the town'. This sort of physical path description is frequent in V-language novels, and it is introduced in translations from S-languages to V-languages. The following is a typical example. Whereas du Maurier describes her protagonist as going "*down* the path *through* the trees *to* the beach", her Spanish translator describes a path that "*traverses* the grove and *descends* to the beach":

(33) English original: Then I, too, went down the steep twisting path through the dark woods to the beach below. (du Maurier)
Spanish translation: *También yo tomé entonces el pendiente y tortuoso sendero que, atravesando la arboleda oscura, bajaba a la playa...*
'Then I, too, took the steep and twisting path that, traversing the dark grove, descended to the beach.'

In interviews with speakers of various V-languages, again and again I have found a conceptual dichotomy between the *region* in which motion occurs and the motion itself. In one way or another, these speakers report that they conceive of manner verbs as referring to *activities*, with directionality left to inference or indicated by an associated path expression. To cite just a few of many such reports:

(34) Spanish speaker: "I never use manner verbs when I have some kind of a path in mind; manner verbs are *activity* verbs." (Enrique Palancar, pers. comm. 1996)

Hebrew speaker: "To do something 'from X to Y' is not directional for me. It just means that you are engaged in an activity while you are located (and implicitly moving) on a stretch of path." (Roni Henkin, pers. comm. 1997)

Japanese speaker: "...manner-of-motion verbs do not entail a *geographical* change of location... Verbs like *hashiru* ['run']...focus on the activity of the running motion and not on the change of location that results from the activity." (Matsumoto 1996: 193).

By contrast, S-language users seem to conceive of manner and directed motion as *a single conceptual event*, making it difficult to have a mental image of one without the other.

Intriguing supportive evidence comes from recent work on the gestures that accompany narratives, conducted by David McNeill and Susan Duncan at the University of Chicago, and Sotaro Kita and Asli Özyürek at the Max Planck Institute for Psycholinguistics in Nijmegen (pers. comm. from all of the above 1996-97, McNeill and Duncan Forthcoming). Although the data are still quite preliminary, there are three features of the gestures of V-language speakers that are consistent with the themes being developed here. Speakers of Spanish, Japanese, and Turkish do gesture about manner of motion – at least when relating an event that they have experienced directly or in film. These manner gestures tend (1) not to have directionality, (2) to be relatively non-specific, and (3) to be spread across many words of a description. For example, in describing a cat climbing up a drainpipe, the verbal part of the message may have a simple path verb such as 'ascend' and the speaker's hands may indicate a climbing activity. But (1) the hands do not move upwards, but rather indicate an alternating movement in situ; (2) the handshapes are open, with curved fingers; and (3) the repeated jiggling of the hands continues throughout an utterance such as 'he ascended the drainpipe'. That is, the attention to manner is not finely categorical (as in distinctions between *climb, clamber, crawl, scramble*) and is not "conflated" with the verb of motion. The gesture data thus tend to reinforce the suggestion that speakers of the two language types differ in their conceptualizations of motion events. For V-language speakers, manner of motion is a general kinetic activity that accompanies directed motion; for S-language speakers, manner of motion is finely categorized and is an inherent component of directed motion.

8. Conclusion

Pulling these various strands together, it seems that users of V-languages build mental images of physical scenes with minimal focus on manner of movement, and with rather different conceptualizations of manner when it *is* in focus. Thus, when they hear or read stories, or newspaper reports, or gossip, they might end up with quite different mental representations than users of S-languages. These differences are exceptionally difficult to pin down, but the considerable range of evidence examined here is at least suggestive of rather divergent mental worlds of speakers of the two language types.

A dynamic approach to linguistic relativity and determinism allows us to explore the intimate relation between experience and its expression in language – with Sapir's caveat that we can only study what he called "the relativity of concepts" at this interface (Sapir 1924/1958: 153):

> [The forms of language] establish a definite relational feeling or attitude towards all possible contents of expression and, through them, towards all possible contents of experience, in so far, of course, as experience is capable of expression in linguistic terms.

This small exploration of one corner of a semantic domain, across language types, leads to the discovery of different ways – perhaps significantly different ways – of conceptualizing the dimensions of motion events. As Sapir pointed out over 60 years ago (1933/1958: 10):

> It is highly important to realize that once the form of a language is established it can discover meanings for its speakers which are not simply traceable to the given quality of experience itself but must be explained to a large extent as the projection of potential meanings into the raw material of experience.

Notes

1. This paper is dedicated to Roger Brown, who first taught me about linguistic relativity and determinism. The research summarized here owes much to the support of the University of California at Berkeley (Committee on Research, Institute of Cognitive Studies, Institute of Human Development) and the Max Planck Institute for Psycholinguistics in Nijmegen. It is a pleasure to acknowledge that support, along with valuable discussions with colleagues and students at both institutions.
2. See Gumperz and Levinson (1996), for recent attempts at "rethinking linguistic relativity".
3. There are additional factors of inflectional morphology and word order that seem to be implicated in subtypes within the overall dichotomy – but that would require a longer

paper. Serial-verb languages like Chinese may represent a third type of lexicalization pattern, lying between S-languages and V-languages (Slobin and Hoiting 1994).

4. It is not clear why a number of German speakers use a phrasal expression with *kommen*, as in the above example (*kam rausgeflogen*). Note, however, that the Germanic pattern of directional particle + manner-of-motion verb is maintained in such forms (*rausfliegen*).

5. The figures in Table 1 represent all narrators who mentioned the scene of the owl's exit: *English*: ages 3-11, adult; US [data of Marchman, Renner], Australia [data of Wigglesworth]. *German*: ages 3-9, adult; Germany [data of Bamberg, Carroll and von Stutterheim]. *Dutch*: ages 5-9; Netherlands [data of Verhoeven]. *Russian*: ages 5-10, adult; Moscow, San Francisco [data of Durova and Yurieva, Slobin and Antlovich, Smoczyńska]. *French*: ages 3-10, adult; Lyon [data of Jisa and Kern]. *Spanish*: ages 3-11, adult; Madrid [data of Sebastián], Santiago de Chile [data of Aura Bocaz]. *Turkish*: ages 3-9, adult; Istanbul [data of Aksu-Koç, Küntay]. *Hebrew*: ages 5-11, adult; Israel [data of Berman and Ne'eman].

6. *English*: Anaya, du Maurier, Fowles, Hemingway, Lessing, McCullers, Steinbeck; *Russian*: Aksenov, Dostoevsky, Gorky, Izmailov, Filatov Neznanskii, Vainers and Vainers...; *Spanish*: Allende, Cela, Donoso, García Márquez, Muñoz Molina, Vargas Llosa; *Turkish*: Atay, Başar, Füruzan, Karasu, O. Kemal, Y. Kemal, Pamuk.

7. The Russian data represent a smaller sample, because 20 trajectories have not yet been analyzed for all 7 novels.

8. German is similar to English in this regard. See Snell-Hornby (1983) for an insightful analysis of dimensions of "verb-descriptivity" in English and German, showing differentiated analysis of semantic fields for human behavior, movement and position, sounds, and facial expression and light. The crosslinguistic treatment of manner of motion thus falls into a larger typological patterning of the expressive lexicon. In the domain of self-movement, Snell-Hornby lists and compares 138 English verbs and 106 German verbs, in the following semantic fields: *Walking and running*: leisurely, aimless; measured, laborious; clumsy, unsteady; nimble, with energy; *Movement in air and water*: speed; flying, smoothness; diving, falling; turning; to and fro; sudden movement. I estimate that there are about 50 such verbs in Spanish and in Turkish.

9. A Spanish conversation of about two hours, recorded in Colombia (data of Laura Mayorga), has 115 intransitive verbs of motion. There are nine types (97% of tokens) of non-manner verbs: *ir* 'go', *venir* 'come'; *alcanzar* 'reach', *bajar* 'descend', *entrar* 'enter', *llegar* 'arrive' *pasar* 'pass', *salir* 'exit', *volver* 'return'. There are three instances of manner verbs: two indicate manner of movement without direction: *caminar* 'walk', *pasear* 'walk'; the third refers to going to heaven after death: *echar pa arriba*, which indicates going upward in some sort of sudden or forceful manner.

10. Turkish conversations of about two hours, recorded in Berkeley (data of Ayhan Aksu-Koç, İskender Savaşır), have 54 *non*-manner intransitive verbs of motion and one manner verb, indicating movement without direction: *yürü* 'walk'. There are five types (98% of tokens) of non-manner verbs: *gitmek* 'go', *gelmek* 'come', *çıkmak* 'exit/ ascend' (both senses used), *dönmek* 'return', *geçmek* 'cross/pass'. However, a 20-minute conversation recorded in Istanbul (data of Ayhan Aksu-Koç), dealing with a violent confrontation between students and police, has five types of manner verbs (25% of tokens) and seven types of non-manner verbs. Note that although the situation is highly dramatic, the manner verbs are not dramatic from the point of view of an S-language:

fırlamak 'rush/dash', *gezmek* 'wander about', *koşmak* 'run', *kaçmak* 'flee', *temizlemek* 'clean' (referring to police clearing students off of the campus).

11. 'Simply on the basis of chance observations of colloquial expressions in Leipzig, I was able to determine 59 verbs, each of which designates a quite specific manner of walking, as well as – in addition to immediate derivations from these verbs – another 67 adjectives that characterize various types of gait... These designations of gait are so finely tuned in their respective meanings that no two of them can be used as equivalents.'

12. The coding of child language data is supported by the Institute of Human Development and the Committee on Research of the University of California, Berkeley. The following students have taken part in the work: Michelle Chouinard, Justin Covey, Stacey Favella, Viviane Goldenberg, Amy Hsiao, Shira May, Sumi Morikawa, Rosanna Mucetti, and Gail Solomon.

13. I owe the term "learning to think for speaking" to Letitia Naigles and Ann Eisenberg.

14. This research is being conducted with Şeyda Özçalışkan, with partial support from a Humanities Research Grant from the University of California, Berkeley. A new project is underway, working with novels in Russian, German, and French, assisted by Timothy Horeczko, Jelena Jovanović Natalia Perelman, and Alain Samson, with support from the Undergraduate Research Apprentice Program, University of California, Berkeley.

15. This research has produced a manual for the coding of motion events in narrative texts, with support from the Institute of Cognitive Studies and the Committee on Research, University of California, Berkeley. The following people have participated in various phases of the work: Rutie Adler, Collin Baker, Heike Behrens, Lucinda Camões, Eve Clark, Aleksey Dumer, Jane Edwards, Joe Grady, Roni Henkin, Annette Herskovits, Timothy Horeczko, Jelena Jovanović, Reyna Lindert, Kevin Moore, Kyoko Ohara, Şeyda Özçalışkan, Enrique Palancar, Natalia Perelman, Paula Rogers, Jonathan Segal, Sarah Shull, Gail Solomon, Sabine Stoll, Eve Sweetser, and Sarah Taub.

16. The Spanish work is carried out in conjunction with Aura Bocaz, University of Santiago de Chile, who has gathered data in Chile; I have gathered data in Spain and from Mexicans in the U.S. The Turkish work is being done by Şeyda Özçalışkan, gathering data in Istanbul and Berkeley, partly supported by a Mellon Grant from the Center for Middle East Studies, University of California, Berkeley. Reyna Lindert has assisted in gathering English data in Berkeley, at the Institute for Human Development.

17. Bajó del tren en la estación San Lucas. Era un lugar miserable. A esa hora no se veía ni un alma en el andén de madera, con un techo arruinado por la intemperie y las hormigas. Desde allí se podía ver todo el valle a través de una bruma impalpable que se desprendía de la tierra mojada por la lluvia de la noche. Buscó con la vista el pueblo de San Lucas, pero sólo divisó un caserío lejano, desteñido en la humedad de la mañana. Recorrió la estación. Estaba cerrada con un candado la puerta de la única oficina. Había un aviso escrito con lápiz, pero estaba tan borroso que no pudo leerlo. Oyó que a sus espaldas el tren se ponía en marcha y comenzaba a alejarse dejando atrás una columna de humo blanco. Estaba solo en ese paraje silencioso. Tomó sus maletas y echó a andar por el barrial y las piedras de un sendero que conducía al pueblo. Caminó más de diez minutos, agradecido de que no lloviera, porque a duras penas podía avanzar con sus pesadas maletas por ese camino y comprendió que la lluvia lo habría convertido en pocos segundos en un lodazal intransitable. Al acercarse al caserío vio humo en

algunas chimeneas y suspiró aliviado, porque al comienzo tuvo la impresión de que era un villorrio abandonado, tal era su decrepitud y su soledad. Se detuvo a la entrada del pueblo, sin ver a nadie. [English translation basedon version by M. Bogin, New York, Bantam Books, 1985]

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Universal Ontological Knowledge and a Bias toward Language-Specific Categories in the Construal of Individuation

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1. Introduction

There is virtually an infinite number of ways to classify entities, relations, and events in the world. Yet some ways of grouping seem to be fundamental to human cognition, reflecting our natural, almost instinctive, ways of partitioning the world. Such partitioning includes the divisions between concrete entities and events and relations, between animate entities and inanimate entities, and between individuated entities and non-individuated entities. These conceptual distinctions seem so fundamental to us that the conceptual classes which result from these divisions are referred to as ontological categories. By definition, ontological categories are assumed to be universal among humans.

Not surprisingly, these ontological distinctions are marked by grammar in many languages in the world. For example, concrete entities are usually encoded as nouns, and relations and events are encoded as predicates. Within the realm of concrete entities, many languages grammatically mark a conceptual distinction with respect to animacy or with respect to individuation in grammar. On the other hand, however, there is a lot of crosslinguistic variation. Some languages mark both conceptual distinctions, some languages mark only one of the two, and other languages mark neither. In some languages, the grammatical marking is obligatory, in other languages it is optional, and so on.

Given the intuitive naturalness of these ontological categories on the one hand and crosslinguistic variation in marking these categories in the grammar on the other hand, two important questions immediately arise. The first question has to do with the issue of linguistic relativity. Does language influence the formation of these ontological concepts at all? More specifically, do

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