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The Whorf Hypothesis as a Critique of Western Science and Technology

BENJAMIN LEE WHORF'S NAME IS ASSOCIATED WITH A THEORY OF LINGUISTIC relativity which is known by various titles—"the Sapir-Whorf Hypothesis," "the Whorf Hypothesis," "the Whorf-Lee Hypothesis." Simple cultural relativity states that every human being is born into a cultural milieu which determines what elements of the world will be important to the individual by its methods of child rearing and cultural reinforcement. Whorf's particular addition to this principle of cultural relativity was his assertion of the primacy of language in this process of selection. In a famous quotation from his article "Science and Linguistics," Whorf states this position succinctly:

We dissect nature along lines laid down by our native languages. 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 in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, **BUT ITS TERMS ARE ABSOLUTELY OBLIGATORY**; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees.¹

Whorf's untimely death at the age of 44 in 1941 prevented him from fully articulating his theory of linguistic relativity. Whorf's reputation and

¹*Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf*, ed. John B. Carroll (Cambridge: M.I.T. Press, 1964), p. 214, paperback; hereafter *LTR*.

an interest in the principle of linguistic relativity which he formulated flowered after World War II when anthropological linguists were reexamining the roots of their social science in order to chart possible postwar avenues for research. In 1952, some of Whorf's provocative late essays were published for the first time in a single volume by the Foreign Service Institute of the State Department.² In 1953, a conference of anthropologists, linguists, philosophers and psychologists was held at the University of Chicago, "To define, as clearly as possible, the problems raised by the attempt to interrelate language and other aspects of culture, particularly in reference to the hypothesis suggested in Benjamin L. Whorf's *Collected Papers on Metalinguistics*."³ The transcript of the conference reveals that only a few professional students of language were impressed by the depth and provocativeness of the famous amateur's methods and conclusions. The influence of Leonard Bloomfield's "anti-mentalism" among American students of language was still too dominant to allow a full and sympathetic examination of Whorf's ideas. In fact, the conference was so unrelieved by praise that John Carroll, when he edited *LTR* in 1956, found it necessary "to counteract the essentially negative, pessimistic tone which pervaded this conference."⁴ Not until the 1960s has it again become reputable for linguists to speak of problems of mind and meaning.⁵

As the "Whorf Hypothesis" begins to return to fashion in the linguistic community, a student of American civilization may properly enter the scene to locate this imaginative man's place in the broader intellectual currents of his day. Whorf, of course, claimed that his linguistic relativity hypothesis arose from the context of his study of the Hopi Indians. Yet a close reading of Whorf's articles reveals that his interpretation of the Hopi mind and culture was the offspring of concerns which originated much closer to Hartford, Connecticut than Taos, New Mexico. A novel entitled *The Ruler of the Universe* (1924) will be discussed in the opening section

²*Collected Papers on Metalinguistics*, Foreign Service Institute, Dept. of State (Washington, D.C.: GPO, 1952). George Trager (who studied linguistics with Whorf at Yale) was the moving spirit behind this Foreign Service Institute publication. The F.S.I. was abolished as soon as the Eisenhower administration took office.

³The conference papers and discussions were later published as *Language in Culture: Conference on the Interrelations of Language and Other Aspects of Culture*, ed. Harry Hoijer (Chicago: Univ. of Chicago Press, 1954), p. vii.

⁴John B. Carroll, "Introduction," p. 29.

⁵See Dell Hymes, "Linguistic Method in Ethnography: Its Development in the United States," in *Method and Theory in Linguistics*, ed. Paul L. Garvin (The Hague: Mouton, 1971), pp. 250-325. Hereafter referred to as "Linguistic Method in Ethnography." Hymes explains how Whorf's papers for a short time acted as "a spark in a charged atmosphere"; but that a change in the climate of opinion allowed the fires of interest to be extinguished (pp. 274-78). The renewal of attention to Whorf and the ideas associated with his name in recent years is also clearly explained (pp. 280 ff.). Mr. Hymes' criticisms of the first draft of this article were much appreciated and are here acknowledged.

of this article. During the Scopes controversy, Whorf wrote this novel to prove that the cause of religion could muster a sophisticated and even "scientific" defense. While at work on his novel, Whorf commenced his exploration of the labyrinth of language. The second section of this article will explore relevant ideas of the linguists who helped to shape Whorf's orientation toward the study of language. By engaging in a close reading of Whorf's famous statements about linguistic relativity, the third section of this article will attempt to show how interrelated Whorf's famous theory was with his deep concern about the threat which he felt science posed to religion. In sum, this article seeks to display that the famous Whorf Hypothesis was not simply a general statement about the effect of language upon perception. Whorf's statements about linguistic relativity were also aggressive critiques of the unacknowledged (and therefore dangerous) limitations of the world picture generated by Western science and technology.

Benjamin Lee Whorf was 28 when he began in 1924 to compose *The Ruler of the Universe*. Whorf had been raised in the Methodist church, but also trained as a chemist at the Massachusetts Institute of Technology. These two factors, plus his native genius, made him eminently qualified to speak out on the conflict between science and religion which was soon to reach a climax in the trial of John T. Scopes.⁶ Whorf had a host of special theories in his quiver concerning biology, physics and the history of science. While intensely sympathetic to orthodox Christianity, he believed that the numerous strident defenses of the "fundamentals" were doing a positive disservice to the intellectual and spiritual grandeur of Christianity. Consequently, he hoped that *The Ruler of the Universe* would attract adverse criticism from pundits like Mencken, because such attacks would immediately elevate him and his defense of orthodoxy to a national platform. As Whorf confided to a prospective publisher, "The work contains the elements of what might be the most hotly-contested literary discussion of recent times."⁷

Whorf's precise proofs cannot be detailed here, but the major points of his argument must at least be mentioned. After reading a number of popular volumes written by Sir Arthur Eddington and Sir James Jeans, Whorf became convinced that he could slay the dragon of uniform time. James Hutton's hypothesis of uniform time was, of course, a significant under-

⁶For a detailed description of Whorf's novel, see Peter C. Rollins, "Benjamin Lee Whorf: Transcendental Linguist," *Journal of Popular Culture*, 5 (1971), 673-96.

⁷Letter to Putnam's Sons, Sept. 8, 1925. This letter is doc. #11, App. A of Peter C. Rollins, "Benjamin Lee Whorf: Transcendental Linguist," Diss. Harvard Univ. 1972. Hereafter referred to as Rollins Thesis.

pinning for the theory of Darwinian evolution. For many, it was also a formidable obstacle to belief in the cosmology of Genesis. The "new physics" of Einstein and Heisenberg (as filtered through the popularizations by Eddington and Jeans) convinced Whorf that the spirit of religious wonder had returned to the world after a long exile during the reign of Newton and Darwin. The universal poetic images and metaphors of the Bible were once more authoritative, for the modern mind had suddenly reverted back to the mysterious relationship with reality which the author of Genesis had felt as he described the creation:

We live in an unknown universe. How vast, how dark are the abysses around the little circle of knowledge that is lit by the light of the lamp of science . . . that circle of light was much narrower forty years ago, and the things that could be seen within it then were less amazing, less mystifying, than can be seen within it now. The universe seen within that lesser circle seemed simpler and more tightly regulated, and that more restricted but clear-cut prospect was more comfortable and more calculated to induce the cocksure attitude than are the dim outlines of immense and unknown country that appear beyond the lighted circle today. Mysteries of space, mysteries of time, mysteries of gravitation, mysteries of light, of electricity, of radio-activity, mysteries of the constitution of the elements, mysteries of life, mysteries of heredity, mysteries of species-formation, of psychology, of personality, of the so-called telepathic and psychic and super-psychical. How little do we know of what this universe contains!⁸

While the metaphysics of Whorf's novel bear little relation to our concerns in 1972, his defense of the doctrine of original sin is of great interest, for he rests his case on contemporary experience rather than biblical authority. Whorf concedes that the doctrine of original sin may at first sound like a horse-and-buggy notion for a technological age. Nevertheless, Whorf cautions that complacency about the success of science and secularism is possible only for those who avert their eyes from modern man's perverse misuse of science and technology. Because so many moderns are willing to accept this superficial viewpoint, Whorf proclaims that the defense of original sin is "the only warfare that means anything, the only issue worth taking sides on."⁹ Whorf's ironic (and bold) conclusion is that the doctrine of original sin, rather than belonging to the never-never land of religious superstition, is actually a viable intellectual generalization concerning the contemporary world:

Considered as a doctrine of religion, this doctrine of the Fall of Man was

⁸*The Ruler of the Universe*, p. 24. This unpublished novel is doc. #17, App. A, Rollins Thesis. For a telling critique of the popularizations by Eddington and Jeans, see L. Susan Stebbing, *Philosophy and the Physicists* (London: Methuen, 1937).

⁹Whorf, *Ruler*, p. 142.

probably the least mystical and most matter-of-fact truth in religion. . . . It could be derived directly, like gravitation, from the closest familiarities of experience, and quite agreed with scientific method in its manner of compression of a world of facts into a compact generalization.¹⁰

Whorf's keenest criticisms are directed at the symbiotic relationship which he sees between science and war. War research and war strategy are actually the most representative activities of modern, liberal man: once man has new instruments to control the natural forms at his disposal, he inevitably turns these tools against his fellow men. John Landon, the central figure in this novel, has a long prophetic nightmare in which he sees the world destroyed by the kind of holocaust which has haunted the mind of every thinking man since August 1945. Because the peoples and leaders of the world have lost the insights of Christianity, they are pulled along by the aimless and destructive drift of events. An arms race which exacerbates international tensions eventually explodes in a cataclysmic war of all against all. At first, new and more destructive gases and other (what we blithely call "conventional") weapons are thrown into the battle. But gradually, all nations devote their remaining resources toward the development of a doomsday weapon. From Whorf's perspective, there is an extreme irony involved when scientists in a bombproof laboratory finally succeed in splitting the atom. To these scientists, such a discovery seems to represent the culmination of man's scientific search to comprehend and master the fundamental forces of the universe. As a Christian moralist concerned with God's judgment of man, Whorf sees this development in an entirely different light. As the initial fission process accelerates into a runaway chain reaction, the reader learns that the superintending deity is withdrawing from man's world, thus allowing the dispersion of energy described by the second law of thermodynamics (entropy) to return the universe to the chaos from which it had been formed. Instead of a culminating step in scientific progress, the splitting of the atom ironically represents the final stage of man's alienation from God.

As the forms of our three-dimensional world are burst asunder in this chain reaction, God's creation returns to the original building block of the universe, light. The apocalypse recapitulates, in reverse order, the stages by which God created the world out of formlessness:

That degeneration of matter which he had seen begun was cumulative, like water rushing through a dike. . . . The earth would spout lava from 10,000 volcanoes; the earth's green coat of vegetation would char, smoke, and blaze; the earth would become red hot, orange hot, golden hot, white hot, *blue* hot; liquify, gasifying,

¹⁰*Ibid.*, p. 130.

expanding with the rush of broth boiling over; now an enlarging sun bigger and hotter than the old sun, now enveloping that sun and its planets. The nebula explodes; all its energy becomes rectilinear; it flashes into pure light. When that mighty blast of energy reaches the nearest stars they likewise expand and explode; the disturbance is propagated from star to star to the farthest outposts of the universe, and *bodiless light* is all that remains.¹¹

The Ruler of the Universe, Benjamin Lee Whorf's attack upon the easy conscience of secular, modern man closes with this vision of the beautiful universe which God created, but man perverted, returning in judgment to its preformed state of chaos.

Benjamin Whorf began his study of language in 1924, the same year in which he completed *The Ruler of the Universe*. In his introduction to Whorf's collected papers, John Carroll admits that "Whorf's interest in linguistics stemmed from one in religion," but Carroll is extremely apologetic about this nexus.¹² Carroll sees it as a youthful eccentricity which Whorf outgrew once he came into contact with mature levels of scholarship.

Whorf's first exposure to the study of language came through the works of an early 19th century French Theosophist, Antoine Fabre d'Olivet. Whorf was excited by Fabre d'Olivet's hieratic use of linguistics to "translate" the biblical account of creation. Students of Whorf have discussed Whorf's response to Fabre d'Olivet the linguist, but nothing has been said to date about Whorf's interest in Theosophy. Theosophy attracted Whorf because it promised to help him throw off the oppressive doctrine of original sin which had been so central to his novel and its critique of modernity. At the same time, it allowed him to sustain the reconciliation of science with religion which he had achieved in *The Ruler of the Universe*: Theosophy seemed to offer a nondenominational affirmation of the powers of religious perception; Theosophy also seemed to be up-to-date in its reading of the physical and psychological sciences, without losing the ability to integrate these new insights with the aspirations of the soul.¹³

The works of Frederick Max Müller broadened and refined the interest

¹¹Whorf, *Ruler*, p. 205.

¹²John B. Carroll, "Introduction," *LTR*, p. 7.

¹³Whorf's interest in the occult as a substitute for traditional Christianity was not as insular as it might at first appear. For an autobiography describing such a conversion to Theosophy by a man who (conveniently) was a spiritual mentor to Whorf, see Claude Bragdon, *More Lives Than One* (New York: Knopf, 1938). For a discussion of the attractions and beliefs of occultism in an age of science, see *The Occult: Studies and Evaluations*, ed. Robert Galbreath (Bowling Green, Ohio: Bowling Green Univ. Press, 1972). This pamphlet is also incorporated as a supplement to *Journal of Popular Culture*, 5 (1971), 627-754.

in language which Fabre d'Olivet had excited. Müller's writings are also full of defenses of religion—even Theosophy.

Müller's *Science and Thought* (1887) explains that, in the discussion of language, all roads lead back to the controversy between Locke and Kant: "Locke's work, in spite of all its imperfections is, as Lange in his *History of Materialism* perceived, a 'Critique of Language' and together with Kant's *Critique of Reason* it forms the true starting point of modern philosophy."¹⁴ Like Fabre d'Olivet and the later Whorf, Max Müller intensely resented Locke's dissection of the perceptual process. Müller refused to grant that man's linguistic formulas can be surgically detached from the so-called "things" which he perceives. According to Müller's alternative model, "sensations" cause men to have "perceptions" which in turn give rise to "concepts" which are given "names." This entire process, from the initial "sensations" to the final "concepts" must be considered as an organic unit. (In Locke's model, a name is a convenient symbol arbitrarily affixed to a sublinguistic idea.) Müller admires Kant for combating Locke's pernicious sensationalism. As Müller dramatically recounts this chapter in the history of philosophy, in "a world-wide struggle . . . for . . . primacy between mind and matter . . . Kant stood forth to stem and turn the tide."¹⁵

Like Fabre d'Olivet, Müller was contemptuous of the approach to man taken by empirical science. The coldness of such an intellectually detached method caused it to tear heartlessly at the living body of experience. The science of language, as *the* science of man, would not be so insensitive. On the other hand, the science of language would be "scientific" in a sense in which Kant's work never was. Distinguishing the methodology of the linguist from the approach of a traditional philosopher like Kant is indeed one of the major purposes of *The Science of Thought*. Kant's basic position, that man perceives the world only through (and never around) the basic categories of his consciousness, is not rejected. Müller tries to build a basis for an objective science of consciousness upon this fundamental insight. Whereas Kant postulated the existence of vehicles of mental organization such as the concepts of time, space and the idea of cause, Müller thinks that he can develop an objective science by restricting his focus to the external cultural data provided by the elements of language: "Without these categories man would indeed be *ἄλογος*, that is, not only speechless, but mad. . . . The difference between Kant's view of the categories and my own is that Kant takes them as the *sine qua non* of thought in the abstract,

¹⁴Frederick Max Müller, *The Science of Thought* (London: Longmans, Green, 1887), p. 295. Müller figures large in Whorf's reading lists. For a partial view of Whorf's reading in this period, see "Library Books Read," doc. #24, App. B, Rollins Thesis.

¹⁵Müller, p. 134.

while I take them as the *sine qua non* of thought, as embodied in language."¹⁶

Whorf's progression from Fabre d'Olivet to Max Müller was assisted by more than the similarities between the linguistic theories of these two Europeans. F. Max Müller, it should be remembered, was as concerned with the evolution of the religions of the world as he was with the science of language. In fact, after Müller delivered the Gifford lectures on mysticism at the University of Glasgow in 1892, he gave the resulting volume the provocative title, *Theosophy: or, Psychological Religion*. *Theosophy* must have intensified Whorf's interest in mysticism, especially Indian mysticism. As Müller explains, the philosophy of India bypasses Western Christianity's obstacles of sin and conversion, teaching rather "that beatitude requires no bridges, it requires knowledge only, knowledge of the necessary unity of what is divine in man with what is divine in God. The Brahmins call it self-knowledge, that is to say, the knowledge that our true self, if it is anything, can only be that self which is All in All and beside which there is nothing else."¹⁷ To an anguished modern believer like Whorf, these must have been comforting words!

Unlike Fabre d'Olivet, however, Müller never "bends the knee" in his studies of religion. Müller conveys to his reader that no single tradition is broad enough for modern man. Instead, the highest form of spiritual contemplation is attained by the intellectual historian who can vicariously identify with the achievements of religious spirits, without becoming committed to the specific beliefs of any one sect. Thus, for Whorf, the appeal of anthropology was added to the appeal of linguistics. In both cases, the investigator was not merely promised that his scientific curiosity would be enlivened; in addition, the student could expect an intensification of his own personal spiritual awareness. With the insights of Fabre d'Olivet and F. Max Müller behind him, Whorf was to be an unusually well-prepared student for Edward Sapir when this leader of what has been called the "American School" of anthropology moved from the University of Chicago to Yale in 1931.

It is impossible to discuss the influence of Whorf's teacher, Edward Sapir, upon Whorf's linguistic studies without discussing first the significant work of Franz Boas, founder of what has been called the "American School" of anthropology.

Boas' classic, *The Mind of Primitive Man* (1911) claims that all approaches to the evolution of civilization prior to that of the American

¹⁶Müller, pp. 476-77. Note how close this comes to making man fully dependent upon his language. If languages differ in structure and organization, then thinking will differ between language groups—hence we have a germ of linguistic relativity in Müller.

¹⁷*Theosophy: or Psychological Religion* (London: Longman's, Green, 1893), p. 93.

School have been little more than covert forms of Western self-congratulation. Boas had studied the languages and cultures of the American Indians. He discovered that primitive man, far from being a mental vegetable, or at most an overexcited child, lived in an exceedingly complex and emotionally fulfilling cultural world. Western theories of cultural development, Boas concluded, had been premised on the unwarranted assumption that material complexity is an infallible index of cultural complexity. Basing his complaint on his field studies, Boas objected: if we properly view the development of world civilization on an extended time-scale, the advantage currently held by the West will be seen to be the product of specific historical circumstances and not the inspiration of some afflatus inherent in the culture itself.¹⁸

Boas' respect for the integrity of the perceptions and cultures of primitive peoples made the study of non-Western languages more than of mere exotic interest. Occasionally, Boas makes gestures toward the importance of finding a unifying configuration in culture.¹⁹ He was also fascinated by the contributions which language study might make to the unearthing of these cultural patterns.²⁰ Nevertheless, Boas did not assert (as both Sapir and Whorf would) that there was a causal relationship between the subliminal assumptions of a culture and the unexamined structure of language.

Whorf may have concluded that Boas was responsible for the "recognition that American [ie., American Indian] . . . and other exotic languages exemplify different kinds of thinking."²¹ But this conclusion is true only in a very qualified sense. As an outspoken fighter of racial and cultural prejudice, Boas was merely indicating that primitive men think in different categories, and that their mental processes must therefore be judged by different standards. While Boas was extremely critical of injustices in contemporary Western society, he was decidedly a friend of Western rationalism. Thus, we must conclude that Whorf derived an exaggerated notion of the portent of Boas' statements: according to Whorf, Boas' defenses of non-Western modes of thinking meant that the perceptions of non-Western cultures were on a par with those of Western peoples. A potential corollary of such an *incorrect* conclusion would be that if non-

¹⁸*The Mind of Primitive Man*, rev. ed. (New York: Macmillan, 1938), pp. 19-35. For a detailed examination of Boas' intellectual development, see George W. Stocking Jr., *Race, Culture, and Evolution: Essays in the History of Anthropology* (New York: Free Press, 1968). Mr. Stocking's criticisms of the first draft of this article were much appreciated and are here acknowledged.

¹⁹*Ibid.*, p. 159.

²⁰*Ibid.*, p. 159. Similar tentative remarks can be found in his "Introduction," *Handbook of American Indian Languages* (Washington, D.C.: GPO, 1911).

²¹Whorf, "Outline of the Historical Development of Linguistic Theory," doc. #1, App. B, Rollins Thesis.

Western cultures saw more, then Westerners must swallow their pride and listen.

Edward Sapir was both intellectually and aesthetically fascinated with the process by which language becomes a symbolic system characterized by an autonomy and creativity of its own. Sapir likened this ever greater autonomy to a pyramid "called civilization." The pyramid of civilization was distinctly separate from raw experience. Carrying out the implications of his metaphor of civilization as a man-made monument, Sapir noted with some pride that "in this structure, very few bricks touch the ground."²²

Sapir believed that "a speech sound is not merely an articulation of an acoustic image, but material for symbolic expression in an appropriate linguistic context."²³ Prepared as Whorf was to look for patterns in nature and language, it is no surprise that he would remember that Sapir emphasized the "necessity of getting behind the sense data of any type of expression in order to grasp the intuitively felt and communicated forms which alone give significance to such expression."²⁴ In his unpublished "Outline of the History of Linguistics," Whorf notes that Sapir's "untimely death in 1939 prevented his making the direct and overwhelming integrated statement that would have eventually come."²⁵ It probably need not be said that Benjamin Whorf believed that his linguistic relativity principle was a very close approximation of what Sapir's "overwhelming integrated statement" would have been.

The Sapir-Whorf relationship is extremely problematic. As Dell Hymes has noted, "there is no point or publication in his career that can be safely taken as representing 'Sapir's view.' Sapir's view of the relation between language and culture, between linguistics and anthropology, was a continuously changing one."²⁶ It cannot be denied that Sapir (during one of his many phases) demonstrated enough interest in correlations between language and culture to prompt many to name the linguistic relativity principle the "Sapir-Whorf Hypothesis."²⁷ Nevertheless, much evidence can be adduced to prove that Sapir shared Boas' view that while languages may lack certain concepts, they are creative systems which can be manipulated

²²"Sound Patterns in Language," *Selected Writings of Edward Sapir on Language, Culture, and Personality*, ed. David G. Mandelbaum (Berkeley: Univ. of Calif. Press, 1968). Hereafter *Selected Writings*.

²³Sapir, p. 44.

²⁴Whorf, "Outline . . .," doc. #1, App. B, Rollins Thesis, p. 6.

²⁵*Ibid.*, p. 6.

²⁶Hymes, "Linguistic Method in Ethnography," p. 268. For views of the evolution of Sapir's thought which use the same elements, but arrange them into different configurations, contrast Hymes (above, pp. 258-68) with Rollins Thesis, pp. 231-74.

²⁷The *locus classicus* for this interpretation is Sapir, "The Status of Linguistics as a Science," in *Selected Writings*, pp. 160-66.

by native speakers to generate such concepts: "all languages are set to do all the symbolic and expressive work that language is good for, either actually or potentially."²⁸ For example, if Kant's *Critique of Pure Reason* would be difficult to translate into primitive languages, the fault does not lie with the languages as symbol systems: "If these languages have not the requisite Kantian vocabulary, it is not the languages that are to blame but the Eskimo and the Hottentots themselves. The languages as such are quite hospitable to the addition of a philosophic load to their lexical stock-in-trade."²⁹ In other words, every language may have its unique manner of manipulating its phonetic sound symbols, but all have the potential to describe every facet of the world known by man.

My conclusion (summarily stated here) is that a close study of Edward Sapir's entire corpus reveals that as Sapir's career progressed, he became ever more suspicious of the kind of typological analysis of cultures that we find in Whorf's last articles. Speech became important to Sapir not so much as a key to a new philosophy, or as a cryptotype which would reveal the hidden assumptions of a *weltanschauung*, but as a "personality trait."³⁰ It seems that Benjamin Whorf took up Sapir's promises about the possibilities of a psychology guided by linguistics and loaded those promises with the maximum metaphysical freight that they could carry.

Fabre d'Olivet had taught Whorf to search for patterns within language. Along with Fabre d'Olivet, F. Max Müller had encouraged Whorf to hope that linguistics could be a distinctively anti-positivistic "science" of the human spirit. At least as Whorf understood the implications of the works of Franz Boas and Edward Sapir, the American School of anthropology had discovered that non-Western peoples perceived the world differently, and that their perceptions, although different, were as valuable as ours.

The famous articles in which Benjamin Whorf states his hypothesis of linguistic relativity are more than dispassionate inquiries into the structure of language. They are persuasive, polemical documents addressed to the problem of the conflict between science and religion. Their polemical

²⁸Sapir, "The Grammarian and His Language," *Selected Writings*, p. 155.

²⁹*Ibid.*, p. 154.

³⁰Readers familiar with discussions of the Sapir-Whorf relationship will recognize that this conclusion is at variance with most of the literature on the subject. For an extended attempt to explain why Sapir turned away from broad cultural configurations to focus upon individual perceivers, see Rollins Thesis, pp. 231-74. For Sapir's discussion of how individual personalities learn to adapt to the cultural patterns presented to them by their societies, and the problems associated with such an investigation, see "The Emergence of the Concept of Personality in a Study of Cultures," "Why Cultural Anthropology Needs the Psychiatrist," "Psychiatric and Cultural Pitfalls in the Business of Getting a Living," "Culture, Genuine and Spurious." All of these articles can be found in the *Selected Writings*.

thrust is directed against the West's slavish surrender to the pretensions of science. The gentler arts of persuasion are invoked by Whorf to convince his readers that unpopular ways of knowing have been given a new dispensation because of recent discoveries by physical scientists and linguists.³¹

Boas (as interpreted by Whorf) and Sapir (at least in one phase of his career) had taught Whorf that study of patterns in language could produce keys to larger patterns in any given culture. Boas and Sapir considered language to be especially useful in this search for patterns because, of all cultural phenomena available to the anthropologist, the deep structure of language was least subject to self-conscious analysis by normal, native speakers. It was thus part of the "background material of culture."³² By uncovering these patterns (which Whorf calls either "cryptotypes" or "covert categories") Whorf believed that he could unveil the hidden assumptions and subliminal associations built into the "habitual thought of a culture."³³ Because Whorf conceived of human thought as a product of the interplay between the great minds of a culture and the cryptotypical categories embedded in the structure of language, his studies of the contrast between the world view of the Hopi Indians and the world view developed by the West inevitably amount to an unearthing of the cryptotypes hidden in each language system. The color of Whorf's famous articles comes from the elements which he selectively excavates from each system to prove that "the Hopi observer conceives events in a different manner from one whose native language is English."

Whorf tries to show that Western man is a prisoner of the overt and covert categories imposed upon him by the structure of the Indo-European language. In the process of his explanation, Whorf adopts a clever and effective stylistic device. He lumps all of the Western languages into an anagram, "SAE," which he then proceeds to use throughout his discussion to represent the general characteristics of the "Standard Average European" languages. Such a capsulization may seem insignificant at first, but the rhetorical effectiveness of the anagram soon becomes apparent. At every stage of the discussion, the Hopi tongue is seen as superior to its competitor, "SAE." Within the confines of Whorf's discussion, the use of the anagram effectively drains the honorific associations which

³¹The following discussion will draw very heavily from Whorf's clearest contrastive articles. His arguments in his *Technology Review* series ("Science and Linguistics," "Linguistics as an Exact Science," "Languages and Logic") and in "Language, Mind, and Reality" follow the same lines, but, because of their polemical nature, are less useful for a clear, concise summary of his position. My discussion here will try to help you to be a more sensitive reader of these minor masterpieces of periodical literature. Readers interested in a close reading of Whorf's last famous articles are referred to the Rollins Thesis, pp. 275-366.

³²Boas, *The Mind of Primitive Man*, p. 209.

³³Whorf, "The Relation of Habitual Thought and Behavior to Language," *LTR*, p. 147.

would otherwise prevent the reader from accepting Whorf's claims for the language of a small, primitive culture. By stealing from the reader his casual sense of superiority over the backward peoples of the American continent, Whorf can persuade the reader that those who have lived within the mental boundaries defined by the structure of SAE have seen only a fraction of the mysteries of the universe. The reader, I believe, is far more ready to accept Whorf's argument about the narrowness of the West's view of nature when it is described as belonging to those who speak "SAE." "SAE" looks and sounds colorless, devoid of depth and vitality, while "Hopi" provides rich and rather romantic associations.

The cryptotypical pattern which has for so long provided the guiding light for the habitual thought and the developed science of the West is described by Whorf as a "binomial formula." This binomial formula not only guides the creation of individual sentences; it also provides the basis for analogous integrations of experience. Ever since Aristotle codified the use of subject and verb, the Western mind has been obliged to divide reality into an agent-acting, and a thing acted upon. Whorf's criticism here is that because we are compelled to segment nature's (or our own) behavior into these categories we are forced to arrive at certain conclusions about the operation of nature which are not given by nature herself: "The SAE microcosm has analyzed reality largely in terms of what it calls 'things' (bodies and quasibodies) plus modes of extensional but formless existence that it calls 'substances' or 'matter.' It tends to see existence through a binomial formula that expresses any existent as a spatial form plus a special formless continuum related to the form as the content is related to the outlines of its container. Nonspatial existents are imaginatively spatialized and charged with special implications of form and continuum."³⁴

At this point, some translation of Whorf's idea of the binomial formula may be in order. In his analysis of the Western manner of dealing with the concept of time, Whorf contends that the structure of SAE is such that it violates the scheme of nature. SAE is prone to "objectify" or "reify" what in the case of "time" is a flowing reality, a sense of "getting later." For example, when I say "I have been working on my thesis for ten months," I have created false "metaphorical aggregates." As Whorf explains the situation, our actual perception of the passage of time involves in part the direct, present experience, and in part it involves the memory of past experiences, but it never involves "ten months." This latter expression, according to Whorf, "Must be [regarded] . . . as an imaginary mentally constructed group."³⁵ Westerners make this artificial

³⁴Whorf, "The Relation of Habitual Thought and Behavior to Language," *LTR*, p. 147.

³⁵*Ibid.*, p. 139.

analysis of nature because they use "perceptible spatial aggregates" (for example, "ten men over there") and extend them to cover verbalization of "metaphorical aggregates" (as in my example, "ten months"). The result is that "A length of time is envisioned as a row of similar units, like a row of bottles."³⁶

The linguistic patterns of SAE lead the Western mind to misconceive another significant category of physics. Physical "matter" or "substance" becomes a part of our background assumptions because of the manner in which we manipulate mass nouns. Because our mass nouns are so unwieldy, we are led to a hypostatization similar to that which was made with respect to the crucial concept, "TIME."³⁷ Whorf ridicules "our whole scheme of OBJECTIFYING—imaginatively spatializing qualities and potentials that are quite nonspatial" in a razor-sharp *reductio ad absurdum*: "I 'grasp' the 'thread' of another's arguments, but if its 'level' is 'over my head' my attention may 'wander' and 'lose touch' with the 'drift' of it, so that when he 'comes' to his 'point' we differ 'widely,' our 'views' being indeed so 'far apart' that the 'things' he says 'appear' 'much' too arbitrary, or even 'a lot' of nonsense!"³⁸ This impulse to push the Western mind off its much vaunted pedestal is not peripheral to Whorf's concerns, as any reader of *The Ruler of the Universe* will know. Whorf's argument gradually works its way to a protest against the constricting bonds that have been imposed on consciousness by the Western cryptotype of binomialism and the resulting objectification. The intuitive wisdom of the ages (religious wisdom, of course, figuring large in this inheritance) has been ignored by the West because of built-in linguistic resistances. The "revelations" of relativity physics have called the omniscience of the Newtonian system into question, and a reassessment of the basic concepts of the Western mind is in order:

monistic, holistic, and relativistic views of reality appeal to philosophers and some scientists, but they are badly handicapped in appealing to the "common sense" of the Western average man—not because nature herself refutes them (if she did philosophers could have discovered this much), but because they must be talked about in what amounts to a new language. "Common sense" as its name shows, and "practicality" as its name does not show, are largely matters of talking so that one is readily understood. It is sometimes stated that Newtonian space, time, and matter are sensed by everyone intuitively, whereupon relativity is cited as showing how mathematical analysis can prove intuition wrong. This . . . laying the blame upon intuition for our slowness in discovering mysteries of the Cosmos, such as relativity, is . . . wrong. . . . The

³⁶*Ibid.*, p. 140.

³⁷*Ibid.*, p. 141.

³⁸*Ibid.*, p. 146.

answer is: Newtonian space, time, and matter are no intuitions. They are receipts from culture and language. That is where Newton got them.³⁹

Given his dual insights into the related issues of linguistic structure and physics, Whorf's conclusion is that the Western mind must seek new means of articulation: "But what lies outside this spiral? Science is beginning to find that there is something in the Cosmos that is not in accord with the concepts we have formed in mounting the spiral. It is trying to frame a NEW LANGUAGE by which to adjust itself to a wider audience."⁴⁰

Before we can adequately understand the qualities which make Hopi a superior language to SAE, we must recall Whorf's fascination with the implications of the so-called "crisis of modern physics." Viewing the breakthrough which precipitated the "crisis of modern physics" as a linguist rather than as a chemist or physicist, Whorf is more impressed by the importance of linguistic factors than he is with the accumulation of new facts: "the new facts themselves of course have been many and weighty; but, more important still, the realms of research where they appear . . . have been marked to an unprecedented degree by radically new concepts, by a failure to fit the world view that passed unchallenged in the great classical period of science."⁴¹ Whorf concludes that the breakthroughs in modern physics should help us to understand that the West's way of describing the universe is only one among many equally valid modes: "Just as it is possible to have any number of geometries other than the Euclidean which give an equally perfect account of space configurations, so it is possible to have descriptions of the universe, all equally valid, that do not contain our familiar contrasts of time and space. The relativity viewpoint of modern physics is one such view, conceived in mathematical terms, and the Hopi Weltanschauung is another and quite different one, nonmathematical and linguistic."⁴² The assumption which holds Whorf's theoretical scheme together is that "language does in a cruder but also in a broader and more versatile way the same thing that science does."⁴³ Such a statement of the parity of language and science as organizers of experience leads us back to the importance of the covert categories deeply embedded in language.

It is properly at this moment that we can commence our explanation of the means by which the language of the Hopi Indians assists them in achieving a clearer perception of those basic concepts "time," "matter"

³⁹*Ibid.*, pp. 152-53.

⁴⁰*Ibid.*, p. 154.

⁴¹"Linguistics as an Exact Science," *LTR*, p. 220.

⁴²"An American Indian Model of the Universe," *LTR*, p. 58.

⁴³"The Punctual and Segmentative Aspects of Verbs in Hopi," *LTR*, p. 55.

and "space," which had been so recently clarified for Westerners by the new physics. The Hopi language is far less prone than SAE to violate the wholeness and energism of the physical world as the new physics sees it. Rather than wrenching the universe into substances and actors, the Hopi language can bring into play subtle mechanisms such as "tensors," "aspects" and "validity forms." In addition to avoiding this pitfall on the physical plane, Hopi has a uniquely accurate way of dealing both with "time," and the mind's subjective relationship with the world—means from which the Western mind is totally debarred in an age when science has arrogated to itself the right to be the only legitimate form of knowledge.

Unlike the Western mind, the Hopi mind can commune with the pervasive forces of the universe in an enviably poetic way. It is not surprising, considering Whorf's ever present concern with the new physics, that he speaks of the process as one of "Events (or better, eventing)" and describes objects as "manifesting" themselves. This is the language of the new physics, with its focus upon the quantum renewal of physically stable objects and its interest in the atom as an electrical energy unit: "The Hopi microcosm seems to have analyzed reality largely in terms of EVENTS (or better, eventing) referred to in two ways, objective and subjective. Objectively, and only if perceptible physical experience, events are expressed mainly as outlines, colors, movements, and other perceptible reports. Subjectively, for both physical and nonphysical events are considered the expression of invisible intensity factors, on which depend their stability and persistence, or their fugitiveness and proclivities."⁴⁴

Because SAE objectifies "time" into units "like bottles in a row," it is amenable to a system of three tenses: past, present and future. The Hopi are more fortunate: "The duties of our three-tense system and its tripartite linear objectified 'time' are distributed among various verb categories, all different from our tenses; and there is no more basis for an objectified time in Hopi verbs than in other Hopi patterns; although this does not in the least hinder the verb forms and other patterns from being closely adjusted to the pertinent realities of actual situations."⁴⁵

In dealing with another crucial category, "matter," or "substance," Hopi is free from the tortuous linguistic structure which in SAE is created by the existence of "a binomial that splits the reference into a formless item plus a form."⁴⁶ As with the concept of "time," the special manner with which the Hopi language organizes the concept of "matter" fits directly into Whorf's persistent contrast between the old and new physics. While the "aspects," "voices" and "tensors" have the negative virtue of

⁴⁴Whorf, "The Relation of Habitual Thought and Behavior to Language," *LTR*, p. 147.

⁴⁵*Ibid.*, p. 145.

⁴⁶*Ibid.*, p. 141.

avoiding the suggestion of analogies for an imaginary space in which objects sit, they also have the positive ability to convey properly the energetic qualities of firm objects which quantum mechanics has so recently discovered. In fact, the Hopi seem to speak of the primary physical world in the language of Planck and Schrödinger: "our 'matter' is the physical subtype of 'substance' or 'stuff' which is conceived as the formless extensional item that must be joined with form before there can be real existence. In Hopi there seems to be nothing corresponding to it; there are no formless extensional items; existence may or may not have form, but what it also has, with or without form, is intensity and duration, these being nonextensional and at bottom the same."⁴⁷

The facility of Hopi for dealing with emotional and spiritual factors seems to attract Whorf even more than does its nimbleness in handling the vibratile phenomena of the new physics. Here we begin to see how Whorf has wed his scientific to his religious thinking. Not only does Hopi operate in its "objective" plane to describe physical occurrences without interjecting linguistic categories, but it also frees the wellsprings of the human soul to rush forth and mix with the larger forces in the universe. In his description of the development of the "subjective" element in the Hopi language, Whorf, a scientific linguist, is providing a structured route for the traditional oceanic feelings of mysticism. The "subjective" or "manifesting" dimension of the Hopi language not only relates to our concepts of "time" and "matter," it binds the human spirit within the circle of these aspects of reality, and thus reunites spirit and matter which are isolated in separate categories by the Western mind: "The subjective or manifesting comprises all that we call the future, BUT NOT MERELY THIS: it includes equally and indistinguishably all that we call mental—everything that appears or exists in the mind, or, as the Hopi would prefer to say, in the HEART, not only the heart of man, but the heart of animals, plants, and things, and behind and within all the forms and appearances of nature, in the heart of nature, and by an implication and extension which has been felt by more than one anthropologist, yet would hardly ever be spoken of by a Hopi himself, so charged is the idea with religious and magical awesomeness, in the very heart of the Cosmos itself."⁴⁸

We know how impressed D. H. Lawrence was by the subjective richness of the Hopi culture. Lawrence saw in the Hopi religion an emblem of his own drive toward unification of the blood with matter, a unification which eliminated the intellectual self-consciousness nurtured by Western culture. Whorf's interpretation, growing as it does out of his Christian background,

⁴⁷*Ibid.*, p. 158.

⁴⁸Whorf, "An American Indian Model of the Universe," *LTR*, p. 59.

plus certain Theosophical accretions, is closer to what we would call "prayer." In Whorf's eyes, what for the modern man is a private state of impotent urgency is converted by the religious Hopi into a transcendental unification of the private spirit with forces of the universe. Whorf's explanation of the centrality of this spiritual impulse of the Hopi culture is all the more revealing in the light of those characteristics which he has singled out as imperfections of the Western world view. Where Lawrence used the Hopi in his war against the intellect, it is obvious that Whorf is using the emotive intensity of the Hopi culture to combat a cultural manifestation of intellect, science: "Every language contains terms that have come to attain cosmic scope of reference, that crystallize in themselves the basic postulates of an unformulated philosophy, in which is couched the thought of a people, a culture, a civilization, even of an era. Such are our words 'reality,' 'substance,' 'matter,' 'cause' . . . Such a term in Hopi is the word most often translated 'hope'—*tunatya*. . . It refers to the state of the subjective, unmanifest, vital and causal aspect of the Cosmos, and the fermenting activity toward fruition and manifestation with which it seethes—an action of HOPING; i.e. mental-causal activity, which is forever pressing upon and into the manifested realm."⁴⁹

Especially after his exposure to Theosophy as explained by Max Müller, Whorf was fascinated by the Hopi assumption of the linkage between man's emotions and the physical universe. At times, he is so fascinated that he makes an outright defense of such Hopi schemes, not merely as justifiable within the Hopi world view, but as legitimate in an objective sense. Because they believe in the power of Hope, the Hopi stress "inner preparing" which "is use of prayer and meditation, and at lesser intensity good wishes and good will, to further desired results. Hopi attitudes stress the power of desire and thought. . . . Moreover, to the Hopi, one's desires and thoughts influence not only his own actions, but all nature's as well."⁵⁰ Up to this point in the passage, Whorf is speaking as a subtle and discerning anthropological linguist. However, he goes on to make certain generalizations which (as in his earlier reflections of "time") seem to link Whorf with the Hopi on the ultimate philosophical issue involved:

This is wholly natural. Consciousness itself is aware of work, of the feel of effort and energy, in desire and thinking. Experience more basic than language tells us that, if energy is expended, efforts are produced. We tend to believe that our bodies can stop up this energy, prevent it from affecting other things until we will our BODIES to overt action. But this may be so only because we have our own linguistic basis for a theory that formless items like "matter" are things in

⁴⁹*Ibid.*, pp. 61–62.

⁵⁰Whorf, "The Relation of Habitual Thought and Behavior to Language," *LTR*, p. 149.

themselves malleable only by similar things, by more matter, and hence insulated from the powers of life and thought. It is no more unnatural to think that thought contacts everything and pervades the universe than to think, as we all do, that light kindled outdoors does this. And it is not unnatural to suppose that thought, like any other force, leaves everywhere traces of effect.⁵¹

After demonstrating in specific terms Hopi's superiority as both a scientific and religious language, Whorf steps back to generalize about the resulting attitude of the Hopi civilization toward the mysteries of the universe. *The Ruler of the Universe* had described with lurid detail how the Western mind had perverted the active forces in nature. In the novel, however, man's immersion in original sin had been seen as the root cause of his perversity. In these articles on language, Whorf's critique of SAE forms a basis for a somewhat different criticism: the "binomialism" which has shaped Western conceptions of "matter" and "time" has also inured Western man to the depths of mystery which surround him. Using field reports from his casebook as an industrial fire insurance inspector, Whorf seeks to prove how insensitive Western man has become. Our rigid language structure has helped us to establish a sense of "routine" in the vast mysteries of time and space. Our language has also given us an inordinate capacity to manipulate intellectual concepts and material objects. But the West has been forced to pay a high price for its special powers in the form of emotional poverty and an almost complete loss of a poetic-religious sense of wonder.

In contrast, the Hopi culture has preserved a relationship between man and nature (as well as between man and man) which serves as a pointed contrast to the social world described by *The Ruler of the Universe*:

In Hopi history . . . we . . . find a different type of language and a different set of cultural and environmental influences working together. A peaceful agricultural society isolated by geographic features and nomad enemies in a land of scanty rainfall, arid agriculture that could be made successful only by the utmost perseverance (hence the value of persistence and repetition), necessity for collaborations (hence emphasis on the psychology of teamwork and on mental factors in general), corn and rain as primary criteria of value, need of extensive PREPARATIONS and precautions to assure crops in the poor soil and precarious climate, keen realization of dependence upon nature favoring prayer and a religious attitude toward the forces of nature, especially prayer and religion directed toward the ever-needed blessing, rain—these things interact with Hopi linguistic patterns to mold them, to be molded again by them, and so little by little to shape the Hopi world-outlook.⁵²

⁵¹*Ibid.*, p. 149.

⁵²*Ibid.*, p. 157.

The Hopi weltanschauung which Whorf describes certainly contrasts vividly with that determined by the language and culture of the West. The Hopi is always in contact with the primary processes of nature, and is thus not capable of the brutalization which Western man has repeatedly displayed in his use of science and technology to find ever more efficient weapons of death. The Hopi language's strong subjective dimension (which, significantly, does not interfere with Hopi "science") seems to provide a channel through which the social and transcendental affections can flow without the kind of conflicts which constantly confront the believer and the poet in an age of science.

In his last four famous articles (which are not analyzed here), Whorf musters his contrastive studies to condemn the poverty of the Western spirit, and to link that poverty to the tyranny of science. In the first three articles ("Science and Linguistics," "Linguistics as an Exact Science," "Languages and Logic") Whorf assembled the various critiques which we have discussed. In addition to attacking science, Whorf emphasized the leadership role which linguists must assume if Western science is to progress. Given our understanding of Whorf's preoccupation with the conflict between science and religion, we can see the rhetorical significance of the corollary which Whorf drew from his linguistic relativity hypothesis. This corollary is that "From each unformulated and naive world view an explicit scientific world view may arise by a higher specialization of the same basic grammatical patterns that fathered the naive and implicit view. The world view of modern science arises by higher specialization of the basic grammar of the Western Indo-European language." Whorf argues that really significant breakthroughs of the foreseeable future will depend upon our capacity to create new languages with which to think and say new things about the external world.⁵³

Whorf believed that the Western mind could not increase its perceptual capacities by sharpening and polishing its traditional logic. Instead, it must reach out (as it were, paradoxically, *around* the principle of linguistic relativity) for the exotic means of organizing experience which have been developed by non-Western peoples: "Western culture has made, through language, a provisional analysis of reality, and, without correctives, holds resolutely to that analysis as final. The *only* correctives lie in all those other tongues which by eons of independent evolution have arrived at different, but equally logical, provisional analyses."⁵⁴

The nature of Whorf's audience in the *Technology Review* series forced him to follow a tack which was tight and close to the prevailing wind of

⁵³Whorf, "Linguistics as an Exact Science," *LTR*, p. 220.

⁵⁴Whorf, "Languages and Logic," *LTR*, p. 336.

scientific opinion. In his final article, "Language, Mind, and Reality," Whorf makes it clear that his audience, because it consists of Theosophists, invites him to allow his imaginative sails to run free on a breezy spiritualist course.⁵⁵ In this final article, Whorf unites his religious and scientific passions in a sophisticated and culminative way. Gone are the apocalyptic visions of retribution wrought upon the world by a vindictive God. In their place is a vision which provides for balancing intellect with emotion, science with piety—what an earlier New Englander who despaired of such a balance symbolized as an irreconcilable contrast between the Dynamo and the Virgin. Shortly before his untimely death at the age of 44, Benjamin Lee Whorf had finally resolved the pressing demands of these contrary forces. In doing so, we might note, he speaks more like the Transcendentalist Emerson than the representative modern, Henry Adams:

Yoga is defined by Patanjali as the complete cessation of the activity of the versatile psychic nature. We have seen that this activity consists largely of personal-social reactions along unperceived tracks of pattern laid down from the *Arupa* level functioning above or behind the focus of personal consciousness. The reason why the *Arupa* level is beyond the ken of consciousness is not because it is essentially different (as it were *e.g.*, a passive network) but because the personality does focus, from evolution and habit, upon the aforesaid versatile activity. The stilling of this activity and the coming to rest of this focus, though difficult and requiring prolonged training, is by reliable accounts from widely diverse sources, both Eastern and Western, a tremendous expansion, brightening, and clarifying of consciousness, in which the intellect functions with undreamed-of rapidity and sureness. The scientific study of languages and linguistic principles is at least a partial raising of the intellect toward this level.⁵⁶

⁵⁵In Whorf's day, the *Technology Review* aspired to be an intellectual clearinghouse as well as M.I.T.'s alumni magazine. Whorf's last famous article, "Language, Mind, and Reality," was first printed in the *Theosophist*, the official journal of the Theosophical Society, Madras, India.

⁵⁶Whorf, "Language, Mind, and Reality," *LTR*, pp. 268–69.

