The Demise of the Whorf Hypothesis (A Major Revision in the History of Linguistics)
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In the course of the evolution of academic disciplines, it is imperative that open-minded scholars examine the roots of major controversies central to the history of those disciplines. This is especially true during periods which Thomas Kuhn characterizes in The Structure of Scientific Revolutions as the confusion which precedes paradigm-shifts. It has become increasingly obvious that linguistics in the late 1970's is in a state of both theoretical and methodological confusion, primarily brought about by the neglect of meaning and the omission of culture in the study of language. [1] Perhaps it is time to revisit ideas which intrigued pre-Chomskyan linguists, but were subsequently maligned and discarded.

Tonight I shall attempt to set the historical record straight concerning Benjamin Lee Whorf. Linguists today find themselves in a quandary regarding Whorf, intrigued by his suggestions yet forced to reject what has come to be known as the Whorf or Sapir-Whorf Hypothesis. Almost every discussion about Whorf in the literature of linguistics and related fields is negative in character, and argues for substantial rejection of this Whorf Hypothesis (although most of the harshest critics indicate desire to keep the question open).

As Paul Kay recently pointed out (personal communication), it is as much in vogue today to be anti-Whorf as it was to be pro-Whorf in the early '50s. Take, for example, the attitude of David Premack, who announced during the 1975 New York Conference on the Origins and Evolution of Language and Speech (Harnad 1976:606) that

> The Whorfian hypothesis is attractive, but not because of the evidence that supports it. As a matter of fact, most of the evidence goes in the opposite direction.... contra Whorf: all the evidence runs against Whorf...

Compare with Premack's attitude that of Harry Hoijer during a 1953 Whorf conference (Hoijer 1954:230) at the conclusion of Joseph Greenberg's argument against Whorf's supposed reasoning processes:

> I must enter again an objection to what I consider to be a vulgarization of Whorf's work, and I refer you to his material.

The objection is as valid today as it was then, and equally applicable to all mistaken identifications of

Whorf's stated views with the so-called "Whorf Hypothesis". Indeed, as this presentation will demonstrate, Whorf's own statements decisively refute the Whorf Hypothesis, which was generated only later in the critical writings. First let us examine the nature of the Whorf Hypothesis as it is discussed in the literature.

I. THE WHORF HYPOTHESIS

We must begin with the realization that Whorf never selected out of his vast number of provocative and intuitive insights into language, thinking, culture, behavior, psychology and consciousness, any specific few to be labelled "the Whorf Hypothesis". That such a narrowing of attention has taken place at all is both an injustice and a formidable barrier to new linguists--especially since almost all references to the Whorf Hypothesis are negative. Who narrowed the attention in this way? Roger Brown seems to think Eric Lenneberg was responsible, stating in his recent "Reference" article (1976:158):

> Lenneberg in 1953 really said all that was necessary. Whorf appeared to put forward two hypotheses:
>
> 1. Structural differences between language systems will, in general, be paralleled by nonlinguistic cognitive differences, of an unspecified sort, in the native speakers of the language.
> 2. The structure of anyone's native language strongly influences or fully determines the world-view he will acquire as he learns the language.

The first hypothesis does loosely correspond to Whorf's linguistic relativity principle. The second, however, is the basis of what has come to be called linguistic determinism. Cole and Scribner, in Culture and Thought: A Psychological Introduction (1974:41), elaborated these two hypotheses twenty years later, although reducing them to one hypothesis containing two propositions:

> The Whorfian hypothesis of the language-cognition relationship actually contains two propositions which are best analyzed separately. The first maintains that the world is differently experienced and conceived in different language communities. This proposition has come to be known as linguistic relativity. The second proposition goes beyond the simple statement that there are differences in cognition associated with differences in language to claim that language

> actually causes these differences. This doctrine of linguistic determinism is essentially a conception of a one-way causal sequence among cognitive processes with language playing the directing role.

We see how firmly this determinism is linked with Whorf's notion of relativity in Herbert Landar's Language and Culture text (1965:216):

> In advance confutation of Whorfian relativism, Sapir added, "Nor can I believe that culture and language are in any true sense causally related.

Leaving aside for the moment Whorf's stated principle of linguistic relativity, we shall label determinism the first doctrine of the Whorf Hypothesis. At issue here is whether Whorf himself espoused this determinism as, e.g., Dan Slobin claims in his book Psycholinguistics (1971:122):

> The strong form--often espoused by Whorf himself--holds that language determines thought and behavior patterns...

Slobin's statement introduces an important set of contrastive terms--the strong versus weak versions of the Whorf Hypothesis. Major critics contend that the strong version corresponds to Whorf's views and is untenable, whereas they themselves subscribe to the weak version which is, in Slobin's words, "usually held today in one way or another" (cf. Brown 1976; Berlin and Kay 1969; Cole and Scribner 1974; Leech 1974; Slobin 1971; Taylor 1976.) Geoffrey Leech demonstrates a popular tactic in his Semantics text (1974:31):

> Various arguments can be advanced against the Sapir-Whorf position. If we took up an extreme version...

He then refutes the extreme or strong version and never returns to the objective of advancing arguments against the Sapir-Whorf position per se; this is normally called the strawman technique of argumentation. At issue here is whether Whorf espoused what critics have called the strong version(s) of the Whorf Hypothesis.

The second doctrine we shall call perception-shaping. Premack made this the sole basis of his vehement denunciation of Whorf:

> As a matter of fact, most of the evidence goes in the opposite direction, that linguistic skill depends very, very heavily upon a pre-existing perceptual capacity.

According to Premack, then, Whorf claimed that perception is linguistically shaped. More than likely, Premack had in mind Berlin and Kay's Basic Color Terms experiments, which are often cited as having disproved

the strong form of the Whorf Hypothesis. Berlin and Kay state in their opening paragraph (1969:1):

> The prevailing doctrine of American linguists and anthropologists has, in this century, been that of extreme linguistic relativity. Briefly, the doctrine of extreme linguistic relativity holds that each language performs the coding of experience into sound in a unique manner. Hence, each language is semantically arbitrary relative to every other language. According to this view, the search for semantic universals is fruitless in principle. The doctrine is chiefly associated in America with the names of Edward Sapir and B. L. Whorf. Proponents of this view frequently offer as a paradigm example the alleged total semantic arbitrariness of the lexical coding of color.

The footnote to this passage demonstrates with relevant quotations that Verne Ray, H.A. Gleason, Bohannan, Eugene Nida and others discuss in their interpretations of the Whorf Hypothesis the arbitrariness of the segmentation of the color spectrum as proof of the Whorfian principle of linguistic relativity. Conspicuously absent are citations from either Sapir or Whorf, with whom this doctrine is claimed to be chiefly associated. At issue here is whether Whorf indeed ever espoused the linguistic shaping of perception.

The third doctrine of the Whorf Hypothesis often found in the critical literature is that of language nontranslatability. Briefly, Cole and Scribner (1974:43) state the strong version as holding that "the absence or presence of a lexical distinction can be taken as an indicator of a corresponding perceptual or conceptual distinction," after which they argue that this is patently false by Whorf's own linguistic behavior in his ability to translate the many Eskimo terms for snow into English phrases. We shall examine later Whorf's statements about translations between languages.

The fourth doctrine of the Whorf Hypothesis concerns the charge that Whorf was guilty of circularity of evidence. Roger Brown (1976:304) voices this common complaint as:

> The problem with Whorf's data is simply that they are entirely linguistic; he neither collected nor reported any non-linguistic data and yet all of his assertions...imply the existence of non-linguistic cognitive differences. [2] As the case stands in Whorf's own writings, differences of linguistic structure are said to correspond with differences of a non-linguistic kind, but the only

evidence for these latter is the linguistic evidence with which he began.

To recapitulate: we have seen four major doctrines of the Whorf Hypothesis found in the critical literature. Whorf stands accused of the following: a) espousing causal determination and strong forms of the Whorf Hypothesis in opposition to the critics' weak versions; b) espousing that language shapes color perception; c) espousing absolute nontranslatability between widely different languages because of the lack of lexical distinctions; and d) presenting only linguistic data, which leads to circularity of evidence.

Whorf's linguistic relativity principle CANNOT be considered a part of the Whorf Hypothesis since, to my knowledge, not a single critic has discussed this principle per se without confusing it with one of these four doctrines of interpretation. Let us from this point on clearly distinguish Whorf's own stated linguistic relativity principle from the Whorf Hypothesis doctrines found in the critical literature written after his death. Now we shall see from Whorf's own words--written a generation or more before the Whorf Hypothesis doctrines were formulated--that he stands innocent of all four critical accusations.

II. WHORF REFUTES THE WHORF HYPOTHESIS

It must be remembered that Whorf's death in 1941 precluded any direct answers to his critics of the 1950s, '60s and '70s. That the Whorf Hypothesis doctrines were formed so long after Whorf's final words were written suggests, at the very least, that its formulators were guilty of seriously biased misinterpretation. How this kind of misinterpretation may so consistently come about concerns not just conceptual filtering, but multi-layered filtering as critics interpret and add to other critics' interpretations, until finally dependence on the original thoughts is abandoned altogether.

A. CAUSAL DETERMINISM AND STRONG VERSIONS

Although Whorf named and stated (formally and informally) the linguistic relativity principle, [3] there is no record of his so stating an equivalent principle of determinism. Had Whorf espoused causal determinism as charged earlier by Cole and Scribner, Landar, and Slobin, he would have found it necessary to conceptually separate language from culture in order to claim that one determines the other in a sequentially causal way. We find, instead, that Whorf always defines language as a cultural phenomenon--two

inseparable sides of a single coin, as it were:

> [T]he problem of thought and thinking in the native community is not purely and simply a psychological problem. It is quite largely cultural. It is moreover largely a matter of one especially cohesive aggregate of cultural phenomena that we call a language. (:65)

> Which was first: the language patterns or the cultural norms? In the main, they have grown up together, constantly influencing each other. (:156)

> And every language is a vast pattern system, different from others, in which are culturally ordained the forms and categories by which the personality not only communicates, but also analyzes nature, notices or neglects types of relationships and phenomena, channels his reasoning, and builds the house of his consciousness. (:252)

Whorf sensed something "chicken-and-egg-y" about the language-culture interaction phenomenon. He sensed its paradoxical unity and attempted to maintain a very difficult stance which would respect the paradox by not choosing one over the other as preexisting or causal. In stating (:138-9), "I should be the last to pretend that there is anything so definite as a 'correlation' between culture and language....", Whorf does not contradict, but instead carefully follows in the steps of his teacher Sapir who said, as we have seen, "Nor can I believe that culture and language are in any true sense causally related." Lenneberg and others have been unusually misguided in ascribing causal determination to either Whorf or Sapir, given these very explicit statements.

It must be noted that one of the main reasons critics have found it so difficult to understand Whorf is that he argued from a non-traditional epistemological viewpoint. His writings are filled with comments regarding Einsteinian relativity and quantum theories, Jungian psychoanalysis, and Gestalt psychology--all more concerned with the holistic appreciation of the cosmos and the individual than with the causal, linear and reductionist modes more usual in the academic disciplines such as linguistics. [4] [5] Imputing causal determinism to Whorf, as we have already seen critics attempt to do, is the basis of the "strong vs. weak" dichotomy so often encountered, and is an indication of how one's own prejudices can color one's interpretations of the ideas of others. This is how Brown can

state that (1976:134):

> [I]t became fairly common to hear that the Whorf thesis had been confirmed in its weak form but not in its strong form. Presumably, the weak form was a correlation between linguistic structure and cognition, and the strong form was a causal developmental relation...

To take statements made from the viewpoint of Jungian acausal synchronicity and read causality into them does NOT amount to strong versus weak versions respectively. Just the opposite: the critics' weak-form confirmations nonetheless espouse a weak causality whereas Whorf's acausal views are weaker still. [6]

B. LINGUISTIC SHAPING OF COLOR PERCEPTION

Premack and Berlin and Kay seemed to believe that the evidence for preexisting perceptual capacity constituted a significant disconfirmation of Whorf's work--even though Berlin and Kay did not produce a single quotation from Whorf indicating that he advocated the extreme views held by Ray, Gleason, Nida, and others on the arbitrariness of color terms. We have here guilt by association.

A close reading of Whorf confirms that in not a single instance did Whorf suggest that the so-called arbitrary segmentation of the color spectrum had anything to do with his principle of linguistic relativity. In fact, he is quite clear in stating that perception (which he calls Jungian sensation) is clearly distinct from conception and cognition, or language-related thinking (:66):

> Thinking may be said to be language's own ground, whereas feeling deals in feeling values which language indeed possesses but which lie rather on its boundaries. These are Jung's two rational functions, and by contrast his two irrational functions, sensation and intuition, may fairly be termed nonlinguistic.

Later in the article (:85) he clarifies what is meant by the term "sensation" when he says, "...seeing presents a sensation, 'red'...". Quite clearly, he established in the 1930s his position that the perception of color was an irrational, nonlinguistic, nonintellectual act, anticipating Maurice Merleau-Ponty's later assertion that perception is not an intellectual act (1964:15). And how could anyone mistake Whorf's meaning when he says, "visual perception is basically the same for all normal persons past infancy and conforms to definite laws..."? (:163) Whorf refers to synesthesia, which is the identification of the

properties of one sense modality in terms of another, as a fundamental nonlinguistic mode of perception which underlies metaphor (:155). At a Whorf conference in 1953, Fearing noted that (Hoijer 1954:52):

> [I]n another place, Whorf refers to "experience more basic than language." This seems to suggest that there are mental processes which transcend and occur prior to language. This problem is critical with respect to the hypothesized relationship between language and perception.

Premack's denunciation of Whorf is therefore groundless, since he is restating (albeit unknowingly) Whorf's own words. All color studies attempting to disprove Whorf are, in the final analysis, totally misconceived since Whorf is innocent of the charge of espousing the linguistic shaping of perception. In fact, Whorf can now be seen as agreeing with Taylor (1976:305), who concludes that there is more opportunity for linguistic relativity to be important as the domain of discourse becomes more abstract and removed from perception. Cole and Scribner also agree with this in an important statement (1974:59):

> It may very well be that the "filtering effect" of language is greatest in respect to domains of phenomena that are definable, not in terms of physical properties, but in terms of attributes that are culturally specified....consider the area of ideology or theoretical work in general, where concepts largely acquire their meanings through their being embedded in explanatory verbal networks. It is here that language may play the greatest role in shaping the person's view of reality, in influencing his memory and thinking processes, and in contributing to his understanding and misunderstandings of other cultures.

C. ABSOLUTE LANGUAGE NONTRANSLATABILITY

We have seen that Cole and Scribner believe that Whorf's own linguistic behavior in his ability to translate Eskimo terms for snow into English phrases is evidence contrary to what they assume his position is. Brown also seems to have a peculiar notion about Whorf's position regarding translation, stating (1976:129):

> Careful analysis of Whorf's examples of linguistic contrast always shows that the contrast is not absolute. It is never the case that something expressed in Zuni or Hopi or Latin cannot be expressed at all in English. Were it the case, Whorf could not have written his articles as he

[3] "We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated." (:214)

"From this fact proceeds what I have called the 'linguistic relativity principle' which means, in informal terms, that users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world." (:221)

[4] Anttila (1977:1) argues that:

> Modern scientists tend to foster 'a militantly doctrinaire "reductionism", which axiomatically prescribe[s] that all the relevant macroinformation about nature must, and eventually will, be derived completely from adding up and piecing together the microinformations about the smallest sample units. Never mind that physics had to give up that claim gradually as Bolzmann's thermodynamics, Planck's quantum theory, and Heisenberg's uncertainty principle came on the scene' (Weiss 1971:19). Also modern linguistics still attempts to support reductionism as the only viable theory. (The tendency has always been clearest in America, witness its structuralism and transformational-generative grammar.)

[5] Just how unfamiliar the non-linear mode of processing reality is has been described by physicist Lawrence LeShan as that necessarily used by a relativity physicist when he is going about his daily work (1976:17):

> In this particular reality, there is no such thing as a separate object; all things and events flow into each other so that it is impossible to say where one leaves off and the other begins. It is often not possible to say that two events occurred in the same place or the same time or, frequently, to say which one occurred first and which second. Further, cause and effect often do not operate in making things happen...in this reality.

[6] For completeness, I must add that there is a single phrase which, taken out of context of Whorf's total work, might lead one to believe this determinism charge against him: "Thus our linguistically determined thought world..." (:154). However, one must read this in relation to an earlier statement about meaning (:67-8):

did entirely in English.

That Whorf did not advocate absolute nontranslatability is obvious from his discussion of "An American Indian Model of the Universe" (:58):

> In order to describe the structure of the universe according to the Hopi, it is necessary to attempt--insofar as it is possible--to make explicit this metaphysics, properly describable only in the Hopi language, by means of an approximation expressed in our own language, somewhat inadequately it is true...

Moreover, these critics have overlooked the fact [7] that one of Whorf's chief topics concerned the phenomenon of ordinary or habitual thinking and consciousness (i.e., the way we are forced to conceive of a geocentric universe when we use frozen lexical idioms such as "sunrise" and "sunset"). Whorf felt there were certain ways of getting out of such language traps: by precise terminology ("earthturn" more precisely describes what happens in a heliocentric solar system), and through the insights of comparative linguistics

> It is the "plainest" English which contains the greatest number of unconscious assumptions about nature....We handle even our plain English with much greater effect if we direct it from a vantage point of multi-lingual awareness. (:224)

> The person most nearly free in such respects would be a linguist familiar with very many widely different systems. (:214)

To imply that Whorf's ability to translate is evidence contrary to his "hypothesis" is therefore indefensible, since Whorf was a comparative linguist cognizant of the traps of habitual language by his awareness of alternate language world-views--something quite beyond the average monolingual. Aware of the world-view which language and culture continually and unobtrusively present in forms of prepackaged consciousness--beliefs about the nature of reality (including notions of time and space, causality, matter and energy, subject and object, animacy, etc.)--one has the potential for getting free of language traps. This is the basic premise of the principle of linguistic or semantic relativity. It demands that translations never be simple, never be given in the "plainest" English, but in precise terminology which takes into account the existence of differing world-views.

The other argument advanced by Cole and Scribner, that "the absence or presence of a lexical distinction can be taken as an indicator of a corresponding

perceptual or conceptual distinction", can be shown to be false in at least two ways--one of which, perception, we have already seen. Narrowing this to only lexical distinctions is ludicrous, since Whorf stressed repeatedly in his writing (e.g., :158) that the analyzing and reporting of experience becomes fixed in the language in ways which cut across typical grammatical classifications--including lexical, morphological, syntactic, and other considerations.

This charge against Whorf, and this doctrine of the Whorf Hypothesis, is perhaps the most difficult to understand when one reads Whorf closely.

D. CIRCULARITY OF EVIDENCE

Brown, as we saw, claims that "as the case stands in Whorf's own writings", "he neither collected nor reported any non-linguistic data." Insup Taylor, discussing Whorf in Introduction to Psycholinguistics (1976:304), reiterates the accusation in a typically deterministic way:

> Still other psychologists...point out that there is a circularity in the arguments for linguistic relativity: "the language determined the outlook which determined the verbal behavior--thus the circularity of evidence."

It is conceivable that a cursory reading of Whorf might allow one to miss his important presentations of non-linguistic behavioral data, especially those in his article clearly entitled "The Relation of Habitual Thought and Behavior to Language." In it, Whorf describes his experiences as an insurance company representative (:135):

> [A]round a storage of what are called "gasoline drums," behavior will tend to a certain type, that is, great care will be exercised; while around a storage of what are called "empty gasoline drums," it will tend to be different--careless, with little repression of smoking or of tossing cigarette stubs about. Yet the "empty" drums are perhaps the more dangerous, since they contain explosive vapor. Physically the situation is hazardous, but the linguistic analysis according to regular analogy must employ the word "empty," which inevitably suggests lack of hazard.

It is incredible that one must still defend Whorf from this circularity charge, since Fearing stated at the Whorf conference twenty-five years ago (Hoijer 1954:41):

> I would like some further discussion on this question of the difficulties of the observation of

nonlinguistic behavior. Those difficulties are probably very great, but it is also easy to exaggerate them, and I think we tended to when we discussed this earlier. There are examples of this in Whorf; one follows his discussion of time (1952:41):

> It is clear how the emphasis on "saving time" which goes with all the above and is very obvious objectification of time, leads to a high valuation of "speed," which shows itself in a great deal of our behavior.
>
> Still another behavioral effect is that the character of monotony and regularity possessed by our image of time as an evenly scaled limitless tape measure persuades us to behave as if that monotony were more true of events than it really is. That is, it helps to routinize us. We tend to select and favor whatever bears out this view, to "play up to" the routine aspects of behavior.

What he is doing here is, in a rough and general way, describing nonlinguistic behavior as correlated with linguistic analysis.

III. CONCLUSIONS AND IMPLICATIONS

We have seen that the four major objections encountered in the literature concerning the so-called Whorf Hypothesis are strawman arguments insofar as they pretend to represent the views of Benjamin Whorf. They reflect, instead, the prejudices and misinterpretations of their authors.

I regret that, because of time limitations, I have not been able to explicate the principle of relativity itself, showing how closely its wording corresponds to statements of Einsteinian relativity (which no critic has yet perceived) [8]: nor have I had time to explore what is probably by far the deepest reason for the rejection of Whorf during the Chomskyan era--the fundamental clash between notions of semantic relativity and the ethnocentric quest for semantic universals. These are topics for future discussion.

Linguistics, as I began, is in a period of confusion again: as it was in the early 1930s when Bloomfield battled Sapir for discipline supremacy, when structuralism won out over mentalism and semantics; as it was in the late 1950s when Whorf's semantic relativity momentum was broken by Chomsky's neostructuralism and notions of universal grammar. Both Bloomfield and Chomsky believed that they could study language as an AUTONOMOUS creature apart from both semantics and culture-- that a true split could be made

between linguistics and anthropology; that linguistics was essentially the study of lifeless forms. Sapir and Whorf believed the opposite: that language and culture are two sides of a single coin; that, in Whorf's words, linguistics is essentially the quest of that "golden something" called MEANING, and that its real concern is to light up the thick darkness of language and thereby much of the thought, culture, and outlook upon life of a given community. To do this requires a holistic, gestaltic approach rather than the linear approach more suited to studying monadic forms.

Whorf envisioned linguistics at the epistemological pinnacle of academe when he wrote (:232):

> We all know now that the forces studied by physics, chemistry, and biology are powerful and important. People generally do not yet know that the forces studied by linguistics are powerful and important, that its principles control every sort of agreement and understanding among human beings, and that sooner or later it will have to sit as judge while the other sciences bring their results to its court to inquire what they mean.

I've attempted here to clear away the profuse underbrush of fuzzy criticism which has distinctly tainted Whorf's reputation, in order to encourage linguists to examine Whorf in the original. Whorf will probably not teach linguists to be better language technicians. But if one's goal as a linguist is to understand the larger issues of how human language, knowledge, culture, behavior, meaning, and consciousness interact: I, with Hoijer, refer you to his material.

FOOTNOTES

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[1] R. Anttila (1977) has also pointed out this deficiency in the study of language: e.g., "Wegener [1885] threw out the assumption of word-level meaning invariance, and embedded his Sprechsituation into the total Kultursituation." (see also [4] below)

[2] Brown here seems to have missed the point of Whorf's assertions: most human cognition--where this includes thinking but excludes perception or intuitive awareness--is indeed linguistic in nature.

> It is not words mumbled, but RAPPORT between words, which enables them to work together at all to any semantic result. It is this rapport that constitutes the real essence of thought insofar as it is linguistic... (emphasis mine).

--indicating that not all thought is linguistically bound. In another potentially damaging statement he says "But in this partnership [between language patterns and cultural norms] the nature of the language is the factor that limits free plasticity and rigidifies channels of development in the more autocratic way." But he qualifies immediately with "This is so because a language is a system....Large systematic outlines can change to something really new only very slowly, while many other cultural innovations are made with comparative quickness." (:156). Notice also in this regard his excellent discussion on Hopi architectural terms (:201) where he distinguishes between things which CAN be said but are not in Hopi (e.g., "my door"), and those which absolutely CANNOT be said at all (e.g., "my room") even were such things in existence in the Hopi world.

[7] despite Stuart Chase's claim (in the Foreward to Carroll's collection of Whorf's writings) that one of Whorf's cardinal hypotheses was that "the structure of language one habitually uses influences the manner in which one understands his environment." (:iv)

Of course, Chase felt Whorf's other cardinal hypothesis--and here is perhaps the basis of the non-translatability charge--was that "all higher levels of thinking are dependent on language." I believe this is a bad interpretation of what Whorf meant. Cf. Jurgen Habermas' recent statement that "Although always bound up in language, reason always transcends particular languages; it lives in language only by destroying the particularities of the languages through which alone it is incarnated." (Dallmayr 1977:336)

[8] Compare with footnote [3] above a widely quoted statement of Einsteinian relativity: "all the phenomena of nature, all the laws of nature, are the same for all systems that move uniformly relative to each other." (Barnett 1957:46)

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"An American Indian Model of the Universe" (:57-64)

"A Linguistic Consideration of Thinking in Primitive Communities" (:65-86)

"The Relation of Habitual Thought and Behavior to Language" (:134-59)

"Linguistic Factors in the Terminology of Hopi Architecture" (:199-206)

"Science and Linguistics" (:207-19)

"Linguistics as an Exact Science" (:220-32)

"Languages and Logic" (:233-45)

"Language, Mind, and Reality" (246-70)