BENJAMIN L. WHORF AND THE IDEA OF LINGUISTIC RELATIVITY[1]

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Die Grenzen meiner Sprache
bedeuten die Grenzen meiner Welt.
Wittgenstein.

1. INTRODUCTION

The present paper aims at a brief critique of Whorf's ideas concerning linguistic relativity. To compensate for the paucity of secondary sources, an effort has been made to let Whorf speak for himself, and to base each critical comment on original quotations. Whorf is an exciting thinker with a gift for the quotable statement and is thus a critic's delight. Owing to the nature of his thought, this paper will often stray from a strict linguistic focus in order to concentrate on some of the broader issues Whorf deliberately raises. Notice that no attempt has been made, for the moment, to trace his connection with Edward Sapir.

A note on the references to Whorf's work is in order here. In the text, each reference has the year in which the article was either written or published. This is done in order to give a rough chronology of some key ideas. Some of Whorf's contributions were unpublished and undated at the time of his early death. John B. Carroll determined the possible year of writing, sometimes with some degree of uncertainty. The page numbers refer to Carroll's edition —listed in the references—, the most accessible source for the study of Whorf.

2. LINGUISTIC RELATIVITY

Whorf seems to have been considering linguistic relativity for some time before he began his studies of American Indian tongues. In an unpublished article dated around 1927, Whorf has this to say when he rounds up a brief assessment of contemporary trends in psychology:

> One fact that stands out to a detached viewpoint, ..., is the great and perhaps basic importance of the principle we denote by the word "meaning". Meaning will be found to be

[1]The discussion that follows is partly based on my Ph. D. dissertation at present approaching completion. This is why I am writing in English; due apology is offered to any kind reader willing to wade through these pages.

intimately connected with the linguistic: its principle is symbolism, but language is the great symbolism from which other symbolisms take their cue (Whorf 1927: 42).

Two important aspects of Whorf's thought stand out in the quotation above: his emphasis on meaning and on the power of language to determine the other systems by which men describe reality and interact with it. Let us look at the former in some detail.

2.1. *Meaning and semantic fields.* According to Whorf, linguistics is essentially the quest for meaning. All the complex apparatus of articulatory description and grammatical modelling is at the service of casting light on "the thick darkness of the language, and thereby of much of the thought, the culture and the outlook upon life of a given community" (Whorf 1936c: 73). Elsewhere he states that "The very essence of linguistics is the quest for meaning". In the process of doing so, linguistics becomes involved in psychological and cultural issues while retaining its rigor and precision (Whorf 1936c: 79). How is meaning generated? Whorf maintains that meaning does not result from the isolated units of the language but from the patterned relations between words and morphemes. The latter are mere motor reactions, whereas the relations resulting in meaning are the outcome of "neural processes and linkages..., silent, invisible and individually unobservable". (Whorf 1936: 67-68). These processes establish the *rapport* (Whorf's own term) that leads to meaning.

Notice the emphasis on mental processes in the generation of meaning, rather than on observable S→r... S→R chains. Such an emphasis on the importance of mental activity not directly accessible to observation is in direct opposition to the views of Leonard Bloomfield, who discarded the study of meaning as almost beyond the reach of scientific inquiry. One might venture the notion that, in this respect, Whorf anticipates the concern of later linguists over the internal, cognitive processes involved in the acquisition and generation of language.

One particular aspect of Whorf's approach to meaning would fit very well in linguistic relativity. His studies of American Indian languages led him to postulate the existence of "oligosynthetic" languages. In these, the vocabularies are built up of what he called simple pieces of articulatory behavior ("phonemes" in modern terminology) plus a broad idea or a complex of related ideas that goes with that behavior. According to Carroll (1956: 25), this may well be a re-statement of the idea that sounds and meanings are somehow related. For instance, Whorf claims that in Maya a stem such as QI- was almost always associated with notions of 'burn', 'radiate', 'glow', 'scatter'. He went on to say that nearly all of the vocabulary in oligosynthetic languages could be accounted for in terms of a relatively limited number of roots or significant elements allocated to a few certain meanings (Carroll 1956: 12-13). Because of this postulate, Whorf's contribution has become associated with semantic field theory (see Waterman 1957 for a more detailed treatment of the subject).

In brief, Whorf's view of linguistics as a science directed to the understanding of meaning —and hence to the understanding of a culture's whole view of the world— would lead him to the idea of linguistic relativity. The concept of oligosynthesis was also a step in that direction since it carried the implication that different languages could generate different sets of associated ideas and by consequence produce different classifications of experience.

2.2. *Languages and the classification of experience.* Mention has already been made of Whorf's early preoccupation with language as the basis for other symbolic systems. Whatever the value of this generalization, it is clear that it would fit comfortably within a scheme of patterned relations between words, as exemplified by oligosynthesis. About eight years after his 1927 manuscript, the first formulation of linguistic relativity appeared as a conclusion of a study of Hopi verbs:

> ... language first of all is a classification and arrangement of the stream of sensory experience which results in a certain world-order, a certain segment of the world that is easily expressible by the type of symbolic means that language employs (Whorf 1936a: 55)[2].

In Whorf's view, language parallels the function of science as a means of organizing and categorizing experience, although he admits that language is not as precise despite its greater versatility.

Whorf was quick to follow up one of the implications of his conclusions. If language is a medium through which man organizes and categorizes experience, then quite possibly different languages will render different accounts of reality. His analyses of Hopi, for example, pointed to radical differences in the treatment of time, resulting in a language that gets along perfectly well without tenses, among other distinguishing features. The conclusion is inevitable:

> Just as it is possible to have any number of geometries other than the Euclidian 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 (Whorf 1936b; 58).

Eventually Whorf would develop his analyses of Hopi into a comparison with all western European languages. The latter were subsumed under the label of Standard Average European (SAE), a label which seems to have appeared in 1941. Behind such a designation is the idea that most European languages share common traits as regards their treatment of time, space, substance and matter (Whorf 1941; 138).

In this manner, Whorf finally arrived at the hypothesis that languages divide experience in different ways while determining the speakers' view of reality. The tongues of the world classify and determine perception in at least two significant respects. Firstly, there is the categorization of objects and events, and here we find the examples most widely associated with linguistic relativity. The Hopi use the same word for insect, airplane, and aviator. Where we use the same term for snow, the Eskimo use at least three. To the Aztecs, cold, ice, and snow were all expressed by the same word with different endings. And so on (Whorf 1940a: 216).

Secondly and more subtly, the categories used to describe "reality", such as space and time, differ from language to language. These concepts are not the same for all men but "depend upon the nature of the language or languages through the use of which they have been developed" (Whorf 1941: 158). Ultimately, language is no mere passive reflection of a given view of the world; it is the element that actually conditions

[2]It is in this article that Whorf makes his famous statement that Hopi is "better equipped to deal with... vibratile phenomena than is our latest scientific terminology". Such a statement fairly invites the question: If Hopi is so suited to physics, why isn't there a Hopi wave mechanics or similar developments?

such a view of the world. Here is the classical formulation of the linguistic relativity principle:

> ...the background linguistic system (in other words, the grammar) of each language is not merely a reproducing instrument but rather is itself the shaper of ideas, the program and guide for the individual's mental activity, for his analysis of impressions, for his synthesis of his mental stock in trade. Formulation of ideas is not an independent process, strictly rational in the old sense, but is a part of a particular grammar, and differs, from slightly to greatly, between different grammars. We dissect nature along lines laid by our native languages. (Whorf 1940a: 212-213).

Clearly then, speaker and listener are tightly bound together in the grip of their language. The apparently free flow of speech is actually controlled by the grammar as regards both the contents of the communication, and also the view of reality shared by speaker and listener. To Whorf, the influence of the basic grammar of the language was tantamount to that of a law of nature, just as unconscious and inevitable as gravitation (Whorf 1940b: 221).

Such is the importance accorded to language in Whorf's system that it has primacy in the question as to which was first: the language or the cultural norms. He contends that they may have grown together but language changes much more slowly and consequently wields the decisive influence in its interaction with the culture.

3. Evidence and critiques

Linguistic relativity is also known as the Sapir-Whorf *hypothesis*. As such, one may well wonder whether it has ever been put to the test. In the pages that follow, three main lines of evidence are discussed, in the full realization that they are a very small fraction of what has been published about the subject. The first is mainly neurological while the other two are linguistic. While linguistic relativity is explicitly stated to be relevant to the first, the remaining two are included because of my own interpretation of their relevance to the topic of this paper. The third part of this section is devoted to some general considerations.

3.1. *Brain encoding and second languages.* A recent overview of research into the way languages are stored in the brain (Benderly 1981) indicates that two or more languages share some brain space but each also has areas of its own. The evidence is considered that different languages actually imprint themselves differently on the brain, possibly owing to their *physical* differences (pitch, ratio of vowels to consonants, type of alphabet, lay-out of symbols on the page, etc.). Evidence is also quoted to the effect that Hopi and English are encoded differently: bilingual Hopi-English children show more activity on the right hemisphere while they are using Hopi. According to the researchers quoted by Benderly (p. 12), the conceptual differences Whorf pointed to ("appositional" Hopi v/s "propositional" English) might explain the differences observed.

On the "con" side, Benderly brings in other data indicating that order of language learning may affect differentiation in the brain. Also "socially subordinate individuals generally show greater right-hemisphere involvement", so the social status of Hopi can also be invoked as an alternative explanation. Further complicating evidence involves other bilinguals —including speakers of American Indian languages— who appear to process both languages on the same side.

Summing up, research into brain encoding has revived interest in the Sapir-Whorf hypothesis without turning up any conclusive evidence for or against it.

3.2 *The non-SAE speaker through a SAE medium.* Although evidence from neurology is inconclusive, some applied linguistic data appear to be more positive. The rationale for the interpretation of the data is as follows: if the Sapir-Whorf hypothesis is true, then some important aspects of the non-SAE worldview should show through in the performance of non-SAE speakers using a SAE language. Discounting the more obvious departures from native standards in pronunciation, vocabulary and syntax, the idea is to look for possible influence of non-SAE ways of organizing and presenting information and impressions in the SAE performance of non-natives. Two investigations are briefly discussed below.

Kaplan (1972: 33 ff) conducted a study of written work by university students coming from no fewer than 16 native language backgrounds, and analyzed the organizational structure of 600 written compositions. After studying the deviations from acceptable paragraph development in English, Kaplan was able to trace some of the deviations to the rhetorical traditions into which some members of the group had been educated in their native countries. For example, the parallel constructions found in paragraph development in Arabic were also found in the English compositions of Arabic-speaking students. Similarly, Kaplan detected strong elements of Chinese classical rhetoric in the written work of Chinese-speaking students. This allowed him to conclude that "each language and each culture has a paragraph order unique to itself, and that part of the learning of a particular language is the mastering of its logical system" (Kaplan 1972: 63). The connection with Whorf's ideas is obvious.

Evidence to the contrary is not hard to find. In his analysis of the specialized scientific paper and lecture, Ewer (1978: 6) notes that "the discourse structure of formal science is register-specific, not language or national culture-specific". Preliminary analyses of scientific papers translated from Japanese suggest that their organization is virtually identical with that of papers by native speakers of English. Studies of work in English written by speakers of tongues as different as Spanish (Mage 1978), Macedonian (Konečni 1978), and Japanese (Sugimoto 1978), all of them in Trimble, Trimble and Drobnic (1978) confirm Ewer's assertion. In other words, formal scientific discourse tends to display the same rhetorical characteristics regardless of the writer's nationality or cultural background. Thus Whorf's hypothesis is tentatively confirmed by Kaplan but possibly weakened by Ewer. What is one to make of these apparently contradictory results?

In fact, there is no contradiction. Kaplan's sample consisted of university students in ESL classes in the United States whereas Ewer's non-native users were mature, fully-qualified professionals, presumably with extensive formal and informal exposure to the language of specialized scientific communication. Moreover, the topics in Kaplan's sample included the perennial favorites of composition teachers: "What I think of America", "A famous person in my country", "My grandmother", etc. Evidently, both sets of results refer to two different types of learners or, to be more precise, to non-native users of English at two different stages in their mastery of the foreign language. Thus, the conventions of native rhetorical patterns may initially create cultural dissonance in learners from non-Western cultures. Increased maturity and

exposure to technical communication in English tend to wear down cultural barriers and to lead to the culturally-neutral features observed by Ewer. As a matter of fact, Whorf himself was aware of transculturation through science and had a reply ready in defense of his thesis. It is only fair then that he should be granted the last word on the issue:

> That modern Chinese or Turkish scientists describe the world in the same terms as Western scientists means, of course, only that they have taken over bodily the entire Western systems of rationalizations, not that they have corroborated it from their native posts of observation (Whorf 1940a: 214).

3.3. *Some qualifications.* The central postulate of Whorf's theory is that language determines the categories by which we describe reality and interact with it. Even the experience of time and matter is determined by the nature of the language through which they have been developed (Whorf 1941: 158). This postulate is defended on the basis of contrastive examples from SAE and non-SAE languages. Basically, our view of "reality" is conditioned by our language.

Now, if the above summary is not a gross misrepresentation, then Whorf may be guilty of a truism of sizable proportions. In contrasting the Hopi and SAE world-views, Whorf is actually comparing a rural, prescientific, non-technological community with an urban, technological society, just to mention the more ostensive differences. Apart from the general similarities in physiological needs and constitution, there are large sectors of social experience in which an urban white-collar or blue-collar worker has little in common with a hunter-farmer in a desert environment. In turn, the latter shares few social and environmental traits with a member of a fishing community in the South Pacific. And so on and so forth. The languages are different because the *realities* are different. The physical environment and the constellation of social and individual roles are sufficiently far apart to give rise to fundamental differences in the ways each language organizes the raw data of experience. Each community selects from its environment those facts and concepts most relevant to its survival and welfare and includes them in the language. To attempt a bit of shorthand, it is experience that determines the language, and not the other way around. Let us see how this operates by turning some of Whorf's own examples against his theory.

The Eskimo distinguishes different conditions of snow and assigns a separate word to each. Now, arguing that this distinction originates in the categories of the language is not very convincing. After all, it can be countered that such precise distinctions are essential to a community whose very sustenance and mobility depend on a knowledge of various snow conditions, among other environmental factors.

Again, the Hopi language does not distinguish between insect, airplane and aviator, Whorf tells us. Why should it? The Hopi in their original culture had no need to discriminate between those objects. On the other hand, it does not take a great deal of imagination to picture the resulting catastrophes if SAE speakers failed to make such distinctions[3].

[3]Further negative evidence has been produced by various researchers, particularly Berlin and Kay (1969), Heider and Olivier (1972), Rosch (1972). The main thrust of these investigations has been to weaken the Whorfian hypothesis precisely in the domain where it made its strongest claims, i.e., that of colors. Thus,

Whorf clearly states that "We dissect nature along lines laid by our native languages". Well, not quite. Experience plays a more determining role, a fact for which there is good evidence. Important aspects of perception are independent of language. In effect, Milgran (1974, quoted in Morain 1976: 214-215) has discussed mental maps, i.e., "the picture of a city that a person carried in his mind: the streets, neighborhoods, and squares that are important to him; the way they are linked together; and the emotional charge attached to each element". Consequently, different people have different mental maps which differ not only from individual to individual but also from the topographical map of the city. Milgran found that social class and life experience play a decisive role in these mental maps. For example, he interviewed 200 Parisians of the professional and blue-collar classes and noted that while 84% of the professionals could identify the UNESCO complex, only 24% of the workers knew it. These differential perceptions exist despite the common native language background of the subjects. Contrary to Whorf's argumentation, we act upon the world, experience shapes perceptions, and these are reflected in the language.

Vocabulary is then a weak spot in Whorf's theory, and further criticism is possible, if time permitted. Instead, let us turn to the subtler distinctions incorporated in the syntax of various languages. Whorf accumulated impressive evidence of the wealth and complexity of Hopi, for example, and how it operates in ways totally different from SAE. And yet, further investigation shows interesting similarities underlying the differences in surface structure. To take just one case, let us consider his interpretation of the Hopi system of modality.

Whorf (1938: 118-124) categorized a variety of Hopi particles which have the function of indicating various attitudes of the speaker to what he is saying. Some of these particles correspond to the English modals, other to expressions such as "they say", "may nevertheless", etc., all of them reflecting the listener/speaker's assessment of the truth, probability or credibility of utterances. He concludes that the Hopi system of modality is particularly striking both in its variety and finesse. He goes to great lengths to stress the very large range of meanings Hopi can express through these structures.

Naturally, it can be objected that English modals are also capable of a broad spectrum of distinctions going well beyond the mere lists of functions found in most grammar books. The subject is too complex to be discussed in detail here, but one example can illustrate this point. In a recent study of the modals in formal scientific discourse, Ewer (1979) has found no fewer than 43 primary meanings distributed in only 16 modal verbs and combinations. These exemplify a variety of *observed* writer/speaker attitudes. In addition to these primary meanings, Ewer has detected special uses at least equal in finesse to anything Whorf found in Hopi. Such functions as "value-lowering" and "value-raising" (plus their attendant component functions) reveal that ultimately there seems to be no qualitative difference in this respect between Hopi

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Berlin and Kay produce evidence that undermines the idea that the color terms of languages determine how people categorize colors. Their observations point to the existence of language-independent color categories. Again, Rosch investigated the learning of color categories, which she found to be determined not by the mother tongue but by the universal salience of focal colors (i.e., prototypical colors). Thus, it is the perceptual categories that determine linguistic categories, and not the other way around, as Whorf claims. Further negative data are discussed in the pages above.

and English — and SAE, by extension (Ewer 1979: 19-24). All this is very much in conformity with the principle of affability; what can be said in one language, can be said in another. Languages may differ in structure at the more observable levels but there may well be a large degree of similarity in the speech acts performed. In fact, both speech-act theory and the concept of linguistic universals are useful tools for further critical analysis of the Sapir-Whorf theory[4].

Conclusion

The preceding discussion has been skeptical about the philosophical aspects of Whorf's hypothesis. Quite possibly even more serious reservations have been made in the literature. Why is it then that linguistic relativity still manages to attract academic interest? There seem to be two main reasons for this.

Firstly, Whorf's ideas cannot be considered to be a hypothesis in a very strict sense of the term. Linguistic relativity does not offer models or make predictions in any scientific sense, despite Whorf's own allegiance to linguistics as a science. Thus, it does not lend itself to the more or less rigorous procedures used at present to verify linguistic generalizations. What linguistic relativity does do, however, is to provide *informed speculation* about language and behavior, and to make challenging judgements about their relationship. Speculation is of course a perfectly legitimate attitude in a scientist as long as it is recognized as such and no more. It speaks well of Whorf and his followers and commentators that in practice linguistic relativity has never been conferred the status of a proven theory but has been looked upon as an imaginative and yet plausible extrapolation of certain linguistic data.

Secondly and finally, Whorf is possibly unique among modern linguists in his capacity for stating a highly suggestive theory about human behavior *and* for stating it in language easily accessible to the non specialist. Whorf is alone among major linguists in his ability to be understood without recourse to commentators and analysts, a striking figure in a field not noted for the esthetic quality of its writing[5].

In summary, the combination of informed speculation and memorable statements will continue to ensure for Whorf's ideas the fame accorded to those theories more noted for their beauty than for their truth.

[4]One instance of criticism based on universals is that by Emmon Bach. In defending his contention that nouns should be introduced into English sentences by way of relative clauses, Bach suggests that a system of logical rules underlies the distinctions individual languages make between the parts of speech. His conclusion is that through this system "it is possible to convey any conceptual content in any language, even though the particular lexical items available will vary widely from one language to another —a direct denial of the Humboldt-Sapir-Whorf hypothesis in its strongest form" (Bach 1968: 122).

[5]On the negative side, Whorf's accessibility has gained him a permanent place in the ideology of those who profer the trivia on "culture" teaching so often found in many foreign language teaching journals in the U.S. and elsewhere.

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NOTE: The quotation from Ludwig Wittgenstein at the beginning of this article is proposition 5.6. in the *Logisch-Philosophische Abhandlung (Tractatus Logico-Philosophicus)*.