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Linguistic Relativity and the Boasian Tradition

The Boasian Tradition and its European Precursors

The Principle of Linguistic Relativity is a descriptive and theoretical axiom of the Boasian tradition, an American school of anthropological linguistics which flourished during the first half of the twentieth century. Contrary to its usual understanding by later scholars and some current reformulations, it was not seen by researchers in this tradition as an hypothesis, something to be proved or disproved by experimental procedures involving the usual distinction between dependent and independent variables (Hill and Mannheim 1992). Rather, it is more like a mathematical axiom, a shared postulate or assumed background of understanding, within which significant questions can be asked and valuable research work proceed. This is most clear in the work of Whorf, undoubtedly the most famous proponent of the Principle of Linguistic Relativity, who defined it as such (Whorf 1956:221):

> the "linguistic relativity principle" . . . 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.

Whorf, as a trained natural scientist, was thoroughly familiar with Einstein's Principle of Relativity and, thus, he chose its terms as metaphors in which to formulate his version of the Principle of Linguistic Relativity, namely, how an observer's frame of reference affects his observation of experience. For example, according to Einstein, two observers travelling at very different velocities, one close to the speed of light and one not, will have very different observations about the passage of time. Whorf's Principle of Linguistic Relativity is deliberately phrased in similar terms: speakers of

languages of very different grammatical constructions, what Whorf called "fashions of speaking" (Whorf 1956:158), are led by these linguistic frames of reference to different observations of the world and interpretations of observations. This, without the metaphorical appeal to Einstein's theories, is also the force of Sapir's famous statement (Sapir 1949:162):

> Human beings do not live in the objective world alone nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the "real world" is to a large extent unconsciously built up on the language habits of the group. No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached.

The Boasian tradition derives its name from Franz Boas. He was born and trained in Germany and, not surprisingly, many of the distinctive ideas of the Boasian tradition, including linguistic relativity, have precursors in German thought of the nineteenth century. All German thought of this period was, of course, within the shadow of Kant's great philosophical synthesis, so that his epistemological stance (i.e. that mental categories were imposed upon sensible experience) was widely accepted. But Kant's legacy was tied to a Romantic emphasis on free, individual creativity and its subjective meaning, leading to a heady neo-Kantian relativist mix, arguing for diversity among the mental categories of peoples according to culture, race, nation, with consequent differences in their experiences and expectations.

The earliest clear exponent of this neo-Kantian relativist mix is Johann Herder, a contemporary of Kant and the Romantic writers, Goethe and Schiller. Herder believed that language and thought stood in a relationship of mutual dependence and called language "a natural organ of the understanding." Human cognition is limited and mediated through one's language. For Herder, humans' experience and understanding differ to the extent that their languages do, each language and each culture reflecting the world in a particular way. Herder phrased this last idea in typically Romantic fashion in terms of an irreducible spiritual individuality of each language.

Herder's ideas were further developed by Wilhelm von Humboldt, one of the great intellectual titans of the nineteenth century. Humboldt's thought is a sophisticated blend of universalism and relativism. True to a relativist neo-Kantian vision, Humboldt held that language is an *a priori* framework of cognition, imposing organization on the total flux of sensations presented to our senses. As each language differs from any other, the resulting shape

of the experienced world is altered. Indeed, following Herder, Humboldt believed that a nation's and culture's mental quality determines the sort of language its people have; therefore, language determines the way they think and experience reality. However, Humboldt also believed that all languages share universal properties and therefore had to express *some* universal grammatical notions like parts of speech, case, mood, etc. If a given language overtly lacks these features, they would have to be added conceptually (Manchester 1985:77): "when a grammatical form possesses no designation in a language, it is nevertheless still present as a guiding principle of the understanding of those who speak the language." Each language, then, expresses only a part of the total possible thought available; it is a foray (*Versuch* "attempt") into the total potentiality of the world. All languages are such attempts and thus, ontologically incomplete, although Humboldt did believe that some languages, notably the classical inflecting languages like Greek, Sanskrit and Latin, were more successful attempts than others (for his reasons why, see Humboldt 1988[1836–9]:140–68).

Boas

Boas, trained in Germany, imported the German intellectual tradition of Herder and Humboldt to the United States, where he is a central figure in the American tradition of anthropology and anthropological linguistics. Boas, however, received his Ph.D. not in these disciplines, but in psychophysics, and had a strong feel for the necessity of grounded empirical work in anthropology and linguistics, parallel to the role of experimentation in the natural sciences. He found this in the comparative study and analysis of the manifold cultures and languages of the Native inhabitants of North America, the American Indians. He grounded anthropology and linguistics in fieldwork among these cultures and languages and, thus, really for the first time, the ideas of Herder and Humboldt were investigated on the basis of solid empirical facts.

As with earlier Kantian approaches, Boas pointed out the function of language in organizing our experience of the sensible world, emphasizing particularly its classificatory function. Because the range of individual personal experience is infinitely varied, but expressed by a limited number of lexemes and grammatical formatives, an extended classification of experience must underlie all speech. This is a rather straightforward version of structuralist thinking (see chapter 4). Furthermore, these classifications vary dramatically across languages, e.g. English verbs of consumption contrasting along a dimension of object ingested, *eat*, *drink*, *smoke*, versus a single Yimas verb root *am-* to cover all three. Boas, inaugurating a tradition followed by his successors, liked especially to emphasize the variability

of grammatical categories across languages, especially contrasting Indo-European languages like English with those of Native America. Consider his example *the man is sick* (Boas (1966[1911]:39). In English a number of grammatical categories are necessary: definiteness, number, tense, etc., so that the English sentence could perhaps be paraphrased as "a single man that I believe you can identify is at present sick." Kwak'wala, a Native language of British Columbia, on the other hand, requires some different categories like visibility and deixis, so that the English sentence would be rendered vaguely as "definite man near him invisible sick near him invisible" or more idiomatically, employing the locative grammatical categories common in Kwak'wala as "that invisible man lies sick on his back on the floor of the absent house." By comparisons such as this, Boas developed Humboldt's idea of language as *Versuch*: in each language only a part of the complete thought we have in mind is expressed. Linguistic variability entails that each language has a tendency to select only some of the individual concepts in the whole idea for expression. In other words, the relationship between language and thought is one way; linguistic categories may express (at least partially) those of thinking, but never the other way around: linguistic categories do not determine thought.

This position was strongly bolstered by Boas's lifelong commitment to the doctrine of the psychic unity of humanity. He believed the range of individuals' abilities do not vary across cultures. Apparent differences in linguistic sophistication do not reflect cognitive differences, merely different emphases of their cultures (Boas 1966[1911]:63). Thus, the fact that some Papuan languages of New Guinea have few basic numerals, *one*, *two*, and maybe *three* reflects nothing about the cognitive abilities of speakers of these languages, merely the lack of need for higher numerical expressions because there are not many things they need to count. That Boas is undoubtedly correct in this assertion is demonstrated by the ease with which these peoples borrow or innovate complex numerical systems when culture contact makes them necessary, for example, counting kina (the national currency in modern Papua New Guinea) in bride price payments. Boas, forever the anti-racist, continually argued that all languages are equally viable vehicles for the expression of thought, in spite of their formal differences, which might reflect differences in cultural interests (see his famous discussion of words for "snow" in Eskimo (Boas 1966[1911]:21–2)). There is in this vision a clear role for linguistic universals as the result of the psychic unity of humanity, but an equally strong rejection of Humboldt's view of some languages as being more successful attempts (*Versuch*) than others.

The final important point that Boas made about linguistic classifications is their unconscious and automatic character; the principles of a language's construction remain largely unknown to its speakers. This is generally not true of other ethnographic phenomena, and Boas argued that this gives

linguistic classifications a uniquely privileged position in gaining access to the symbolic world of culture. Boas argued that because many types of ethnographic behavior can rise to consciousness, they may be subject to secondary reasonings and reinterpretations. Boas (1966[1911]:64–5) provided the example of the variability of table manners across cultures versus that of grammatical categories across languages; the rationale for the propriety of the former is subject to conscious reasoning within a culture, e.g. if we stick meat on the end of our knife and put it into our mouth, we might cut our tongue. Therefore, it is not proper. But the categories of language are not subject to explanations of this type. What average speaker is even aware of the anomaly, much less able to provide an explanation, of why the causative of *ripe* is *ripen*, but *large* is *enlarge*, not **largen*. Boas argued that the unconscious formation of categories, linguistic or ethnographic, is a fundamental fact about human life, but that the investigation of linguistic categories is of foremost importance because they always remain unconscious and can be studied for what they reveal about the culture's symbolic constructions (see, for example, the earlier discussion of the cultural models of anger and love expressed in the metaphors used in American English) without too great a distortion from secondary explanations.

Sapir

Edward Sapir was Boas's most brilliant linguistics student and probably the most illustrious American linguist of the twentieth century. He continued many of Boas's themes, but added a structuralist vision of language as a coherent system of interlocking sets of subsystems to his teacher's Kantian ideas of linguistic categories as classifications of experience. As such, each language is a formally complete system, the diversity of which makes languages incommensurate with each other to some degree (Sapir 1964:128):

> Inasmuch as languages differ very widely in their systematization of fundamental concepts, they tend to be only loosely equivalent to each other as symbolic devices and are, as a matter of fact, incommensurable in the sense in which two systems of points in a plane are, on the whole, incommensurable to each other if they are plotted out with reference to differing systems of coordinates.

Further, in contrast to Boas, Sapir emphasized the conventional, social function of these shared and systematized linguistic classifications, arguing, as the quote from him at the beginning of this chapter does, that linguistic classifications are not labels applied by an individual knower/speaker to a pre-given objective world (Grace's (1987) "mapping view"), but that the

experienced world is socially and culturally mediated, one "to a large extent unconsciously built up on the language habits of the group" (Sapir 1949:162) (Grace's (1987) "reality-construction" view). Indeed, possibly through influence deriving from Durkheim and the Année Sociologique and Saussurean structuralism, Sapir viewed linguistic classifications as systematic collective representations, "social facts," in contrast to the individualist focus of Boas, for whom they were basically mental ideas.

Sapir closely followed Boas in upholding the latter's doctrine of the psychic unity of humanity. Although Sapir did claim that languages were systematically incommensurable to each other (see above quote), so that passing from one to another requires a major shifting of the coordinates of experience, he also believed that such shifting is well within the abilities of all humans, a version of psychic unity. The basic psychological processes of humans everywhere are identical, thereby making such shifting possible (Sapir had a keen interest in the "personality psychology" of his day, an area from which he hoped for insights into these basic universal psychological processes (Sapir 1949:507–97)). Like Boas, Sapir viewed variation across languages as indicative, not of cognitive deficiencies, but of cognitive predispositions. An excellent example is found in his famous paper *The grammarian and his language* (Sapir 1949:150–9), in which he discusses the problems of translating Kant's *Critique of Pure Reason* into Eskimo or Hottentot. The reasons, he points out, that these languages lack terms to translate Kant's abstruse philosophical concepts are not in the languages themselves, but in the speakers, whose interests are not oriented in the direction of this particular type of intellectual culture. Having had no occasion to speculate on the nature of causation, the speakers of these languages simply lack a term for it. But, Sapir emphasizes, the gap is strictly lexical; both languages have the notion of causation strongly developed in their processes of lexical derivation or syntactic construction formation, such as *the ice melted* versus the causative forms *fire melted the ice* or *the fire made the ice melt*. They both also have processes that derive abstract nouns from verbs, *speech* < *speak*, *laughter* < *laugh*, so there is absolutely no reason why the languages cannot derive *causation* < *cause*; it is simply that the speakers have no interest in such a word. Thus, the expression of causation is independent of both an intellectual understanding of the concept and the possession of a word for it. Indeed, in a typically Boasian vein, Sapir argues that our own intellectual understanding and use of the word is an example of secondary reasoning and interpretation, developed late in our own intellectual tradition; how many English speakers actually use the word?

Having dutifully asserted and argued for the psychic unity doctrine, Sapir also defended a version of the Principle of Linguistic Relativity. While all languages can do the same work of symbolic expression, the different techniques of expression are salient and indicate relativities of

understanding. This led him to reverse Boas's view, drawn from Humboldt, that language reflects thought, each language through its categories reflecting only a part of the complete thought in mind, in favor of a position that language categories guide thought, but not absolutely. Lucy (1992b:19) uses the verb "channels" to describe Sapir's position, i.e. language channels thought, and this seems a good choice to capture the open-endedness and non-determinism of the relationship between them in his formulation. For Sapir, it is only in language that the full potential of thought is unfolded; true conceptual thinking is impossible without language because it is symbolically mediated and not a simple mapping of sensible experience, a position remarkably prescient of Geertz (1973:76). Because grammatical categories vary across languages, resulting in mutual incommensurability, different languages must channel conceptual thinking in different ways (Sapir 1949:159):

> The upshot of it all would be to make very real to us a kind of relativity that is generally hidden from us by our naïve acceptance of fixed habits of speech as guides to an objective understanding of the nature of experience. This is the relativity of concepts or, as it might be called, the relativity of the form of thought . . . For its understanding the comparative data of linguistics are a *sine qua non*. It is the appreciation of the relativity of the form of thought which results from linguistic study that is perhaps the most liberalizing thing about it. What fetters the mind and benumbs the spirit is ever the dogged acceptance of absolutes.

It is important to emphasize that the relativity here is of "concepts" or "the form of thought," not the process of thinking, which is neurological in base and hence universal, part of the psychic unity of humanity. What is relative is the interpretation of sensible experience in conceptual terms, such as viewing electricity as a flowing fluid. Different "concepts," as reflected in contrasting "habits of speech" of languages, have crucial effects on the inferences their speakers draw from sensible experience, in the same way that those who hold the flowing water or teeming crowd models of electricity draw different inferences about batteries and resistors.

Sapir illustrated his Principle of Linguistic Relativity in typically Boasian fashion with contrastive examples; his own exposition is clearer than anything I could hope to write, so I will just quote it at length (Sapir 1949:157–9):

> This brings us to the nature of language as a symbolic system, a method of referring to all possible types of experience. The natural or, at any rate, the naive thing is to assume that when we wish to communicate a certain idea or impression, we make something like a rough and rapid inventory of the objective elements and relations involved in it, that such an inventory or analysis is quite inevitable, and that our linguistic task consists merely of the finding of the particular words and groupings of words that correspond to the terms of the objective analysis. Thus, when we observe an object of the type that we call a "stone" moving through space towards the earth, we involuntarily analyze the phenomenon into two concrete notions, that of a stone and that of an act of falling, and, relating these two notions to each other by certain formal methods proper to English, we declare that "the stone falls." We assume, naïvely enough, that this is about the only analysis that can properly be made . . . In the Nootka language the combined impression of a stone falling is quite differently analyzed. The stone need not be specifically referred to, but a single word, a verb form, may be used which is in practice not essentially more ambiguous than our English sentence. This verb form consists of two main elements, the first indicating general movement or position of a stone or stonelike object, while the second refers to downward direction. We can get some hint of the feeling of the Nootka word if we assume the existence of an intransitive verb "to stone," referring to the position or movement of a stonelike object. Then our sentence, "The stone falls," may be reassembled into something like "It stones down." In this type of expression the thing-quality of the stone is implied in the generalized verbal element "to stone," while the specific kind of motion which is given us in experience when a stone falls is conceived as separable into a generalized notion of the movement of a class of objects and a more specific one of direction. In other words, while Nootka has no difficulty whatever in describing the fall of a stone, it has no verb that truly corresponds to our "fall."

This illustration of the Principle of Linguistic Relativity is obviously very close, if not identical to, Grace's (1987:10–11) "reality-construction" view of language; indeed, it would be hard to find a better case exemplifying the latter. Speakers of English and Nootka experience the world differently because their contrastive grammatical categories provide them with distinctive understandings and beliefs about the nature of things in that world (a strongly Quinean point about ontological relativity (Quine 1969)). English construes this event as involving an object, an entity, which undergoes displacement in space, but this view of the world is not shared with Nootka. For Sapir, a language was a constraining channel through which its speakers construe experience, analogous to one of the models of electricity, not a reflection of some independent pre-given reality, either physical or mental.

Whorf

And so we come to Benjamin Lee Whorf, undoubtedly the most unusual of the great triumvirate of the Boasian tradition. Unlike Boas and Sapir, Whorf was not a professional academic; having received a degree in chemical engineering, he worked as an investigator for an insurance company and

studied linguistics as an avocation in his spare time. He came into contact with Sapir after the latter came to Yale University in 1931 and kept up intensive contact with professional linguists from then until his death in 1941. Whorf is the name most intimately associated with the Principle of Linguistic Relativity, although much of his thought was directly inspired by Sapir. However, Whorf's training as a natural scientist and his own unusual interests led him to develop it in his own way. He followed Boas in viewing linguistic categories as inherently classificatory and Sapir in his insistence on the systematicity of these categories, but he introduced a new and important distinction between two types of categories: overt and covert. An overt category is one with ever present formal markers, for example, plural in English, for nearly every plural noun in English takes some morphological marking for its number status. Covert categories are those without an ever present formal marker, but are indicated by their possibilities of combination with other words in various constructions. Intransitive verbs are a covert category in English because they bear no formal marking but as a group may not occur in the passive construction: **the stone was fallen.* Covert categories are of especial relevance to Whorf because, lacking any overt marker of their membership, they must be organized around some common feature, typically semantic, which will be revealing of some organizational principle of the language's grammar. Covert classes with such subtle elusive meanings, only detectable by their combinations with other words in constructions, Whorf called *cryptotypes*. He illustrated some cryptotypes in English by their failure to occur with *up*, otherwise freely combinable with mono- or disyllabic verbs (Whorf 1956:70–1): dispersion without boundary (**scatter/spread/smear it up*), oscillation without agitation of parts (**rock/wave/wriggle it up*), or non-durative impact with a psychological reaction (**tap/strike/stamp/stab it up*). Cryptotypes were especially important to Whorf because they uniquely reveal the guiding force of semantics in linguistic categorization: "as outward marks become few, the class tends to crystalize around an idea – to become more dependent on whatever synthesizing principle there may be in the meanings of its members" (Whorf 1956:80). Semantic organization is central to the Principle of Linguistic Relativity, because it is really in alternatives of meanings or interpretations that diverse languages differ.

Like Boas and Sapir, and contrary to the beliefs of many later commentators, Whorf had a strong commitment to universals and the psychic unity of humanity: "there is a universal, *Gefühl*-type way of linking experiences, which shows up in laboratory experiments and appears to be independent of language – basically alike for all persons" (Whorf 1956:267). But also like Boas and Sapir, he was not interested in this type of controlled, highly self-aware type of thinking, but the unconscious, automatic, habitual thinking of people in everyday life. Like Sapir, Whorf believed that thought, inasmuch

as it is a cognitive understanding of the world, is linguistically mediated: "thinking . . . contains a large linguistic element of a strictly patterned nature" (Whorf 1956:66). Because linguistic patterns differ, the Principle of Linguistic Relativity naturally follows, as in this famous quotation (Whorf 1956:212–13):

> It was found that the background linguistic system (in other words, the grammar) of each language is not merely a reproducing instrument for voicing ideas 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 part of a particular grammar, and differs, from slightly to greatly, between different grammars. 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.

In some ways, the interpretation of this passage within Whorf's corpus is rather problematic. Some of the sophistication of Sapir's vision of linguistic categories as conventionalized understandings, symbolic guides to social reality, is lost in favor of a neo-Kantian appeal to linguistic systems as the organizer in the mind of the kaleidoscopic flux of impressions presented to us through our senses – overall, a view quite reminiscent of Boas. But Whorf himself is rather unsure of this neo-Kantian commitment; in the lines immediately following the previous quotation he presents a view much more in sympathy with that of Sapir:

> We cut nature up, *organize it into concepts, and ascribe significances* [my emphasis] 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.

Whorf's vacillation in this regard probably reflects tension between his professional training as a natural scientist and his apprenticeship with Sapir as a social scientist; the methodologies and assumptions of these two types of sciences are commonly seen as being quite different (see the discussion in Part I of Hiley, Bohman and Shusterman (1991), and Taylor (1985b)).

Whorf's is the most explicit formulation of the Principle of Linguistic Relativity (Whorf 1956:221):

> the "linguistic relativity principle" . . . means, in informal terms, that users of markedly different grammars are pointed by the 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.

A formulation carefully phrased, as pointed out at the beginning of this section, in terms similar to Einstein's Relativity Theory. Whorf was primarily interested in how large scale systems in individual languages, his "fashions of speaking," have effects on the understanding of concepts, especially the equivalents of our Western scientific concepts of "matter," "space," and "time" (again his natural scientist predilections suggest themselves). He approached the empirical demonstration of his Principle into two ways: firstly, the typical Boasian method of contrastive analysis of individual examples in particular languages, already illustrated in the earlier discussion; and second, and highly innovatively, a detailed comparison of a set of linguistic systems, fashions of speaking, in two languages, with a view to drawing global conclusions about the differences in habitual thinking, the conceptualization of experience, for their speakers.

As an example of the first, consider his contrast between Shawnee, an Algonkian language of eastern North America, and English. Shawnee has two verbs, *ni-kwaškwi-tepē-n-a* and *ni-kwaškwi-ho-to*, both based on the same root *kwaškwi-*, meaning roughly "condition of force and reaction." The two words translate into English as "I push his head back" and "I drop it in the water and it floats," respectively, two sentences which seemingly have nothing in common because they are organized around different verbs, "push" and "drop." According to Whorf, because of these differences in verbal selection, English speakers are not likely to conceptualize these events as having much in common, a view well in accord with most native speakers' intuitions. However, in Shawnee, the same verb root *kwaškwi-* is used, predisposing Native speakers to conceptualize these events as quite similar. The differences are provided by the meanings of the other co-occurring morphemes:

ni – kwaškwi – tepē – n – a
I – force and reaction – head – by hand – act on animate object
"I act with force with my hand on an animate object, a head, followed by its reaction"
"I push his head back"

ni – kwaškwi – ho – to
I – force and reaction – on water – act on inanimate object
"I act with force on an inanimate object on the surface of the water followed by its reaction"
"I drop it in the water and it floats"

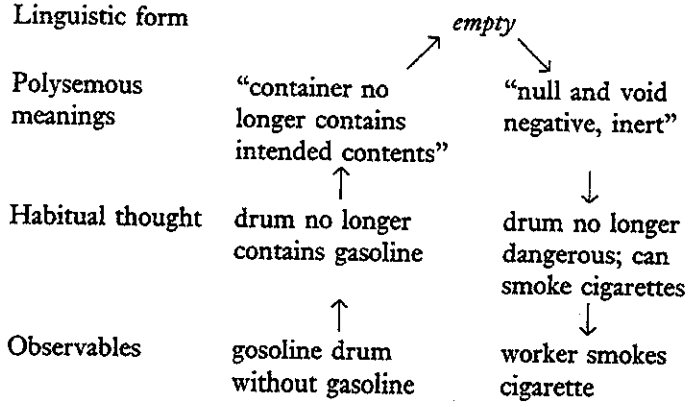
According to Whorf's Principle, the grammatical differences in the way these events are talked about will actually predispose speakers of Shawnee and English to conceptualize them in different terms, Shawnee as alike, English as unlike: "facts are unlike to speakers whose language background provides for unlike formulation of them" (Whorf 1956:235).

Whorf's Theory of "Cognitive Appropriation"

The most thoroughgoing example of Whorf's second approach to demonstrating the viability of the Principle of Linguistic Relativity, a global comparison of linguistic systems in two languages and habitual ways of thinking demonstrated in cultural practice, is found in his essay, *The relation of habitual thought and behavior to language* (Whorf 1956:134–59), written for the Sapir memorial volume and originally published in 1941 (Lucy (1992b) sees this paper as central to Whorf's corpus). In this paper Whorf contrasts the linguistic patterns and habitual thought or experience of Hopi with what he calls Standard Average European (SAE), regarding the differences among English and other European languages as trivial with respect to the features he is investigating. The semantic domains he is concerned with are those of mass and time. The gist of Whorf's argument is that these abstractions are not cognizable directly, but only through experience, and experience, as per the Principle of Linguistic Relativity, is interpreted through categorizations ultimately derived from the grammatical systems at work in the language. Just how Whorf makes this argument is especially ingenious.

He makes use of what Lucy (1992b:46) calls "cognitive appropriation," "the use in thought for its own ends of a structure of relations deriving from some other domain." This reads remarkably like metaphorical or metonymic extension, discussed in the previous chapter. Whorf's natural scientist vocation led him to look for physicalist source domains for cognitive appropriation, and his job as a fire insurance investigator provided him with no shortage of good examples (Whorf 1956:135–7). Perhaps his most famous example concerns empty gasoline drums. Full gasoline drums are handled with great care, but empty ones are not, people are sometimes found smoking around them, tossing cigarette butts about, etc. But empty drums are possibly the greater hazard, containing highly explosive vapor. Physically, the situation is dangerous, but, Whorf points out, speakers of English are led astray by the polysemy of the word *empty*: (1) "applied in analysis of physical situations without regard to, e.g. vapor, liquid vestiges, or stray rubbish, in the container" (Whorf 1956:135) and (2) "null and void, negative, inert" (Whorf 1956:135). The "empty" label on the drum is meant in the sense of (1), but is understood by speakers through metaphorical extension in the polysemous sense of (2), with potentially disastrous consequences. Lucy

10.1



(1992b:50) diagrams this example, shown in 10.1. Whorf's point is that the organization of this whole is determined by the meanings residing in the descriptive term *empty* applied to the drums; people behave to the world as their linguistic categories predispose them to do. They "shape" thought in that the metaphorical and metonymic extensions implicit in them guide us in our interpretation of experience, exactly as discussed in chapter 9.

Whorf argues that very similar extensions apply within grammatical categories and that global differences in the way these extensions occur or do not occur across languages are responsible for differences in habitual conceptualizations of experience for speakers of these languages. Lucy (1992b:50–62) presents an especially clear summary of Whorf's arguments in this regard. Whorf contrasts English (for SAE) and Hopi with respect to the grammatical category of number, pointing out that the plural category in English applies to both perceptually tangible objects, like *men* and imaginary groupings, such as cycles, like *days*, which are never perceptually tangible. Whorf's discussion of this is clear (Whorf 1956:139):

> In our language . . . plurality and cardinal numbers are applied in two ways: to real plurals and imaginary plurals. Or more exactly if less tersely: perceptible spatial aggregates and metaphorical aggregates. We say "ten men" and also "ten days." Ten men either are or could be objectively perceived as ten, ten in one group perception – ten men on a street corner, for instance. But "ten days" cannot be objectively experienced. We experience only one day, today; the other nine (or even all ten) are something conjured up from memory or imagination. If "ten days" be regarded as a group it must be as an "imaginary," mentally constructed group. Whence comes this mental pattern? Just as in the case of the fire-causing errors, from the fact that our language confuses the two different situations, has but one pattern for both. When we speak of "ten steps forward, ten strokes on a bell," or any similarly described cyclic sequence, "times" or any sort, we are doing the same thing as with "days". CYCLICITY brings the response of imaginary plurals. But a likeness of cyclicity to aggregates is not unmistakably given by experience prior to language, or it would be found in all languages, and it is not.

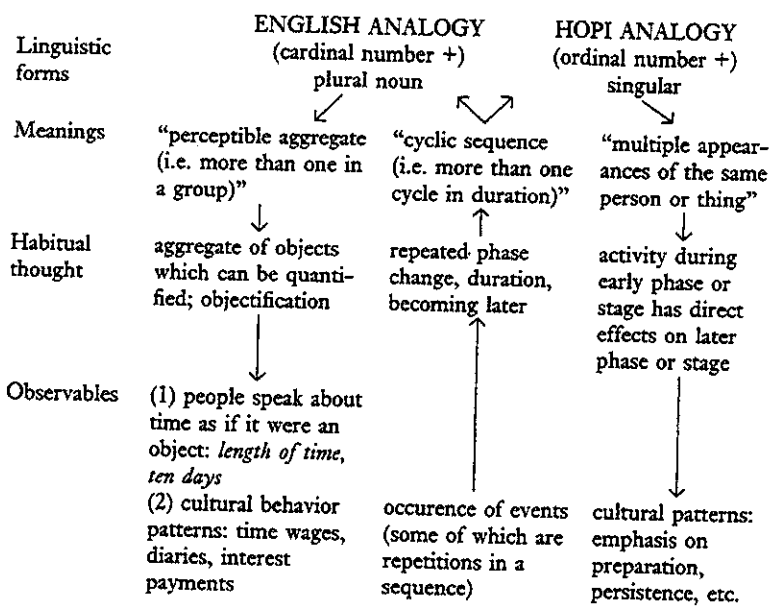
Note Whorf's invocation of cognitive appropriation to account for the use of the plural category to express the repetition of cycles: they are seen as being like plural groupings of a physical object – an extension, however, that is neither objectively grounded in the physical world nor found in all languages. This process of extension is very like the process of grammatical expansion illustrated in chapter 9, in which Trique body parts become spatial prepositions. Here cycles of time are quantified in parallel fashion to multiple tokens of the same physical object. This has cognitive consequences for speakers of European languages like English in that they will conceive of temporal intervals like days in terms rather like concrete objects and be predisposed to experience time in this way (Whorf 1956:140):

> Habitual thought then assumes that in the latter the numbers are just as much counted on "something" as in the former. This is objectification. Concepts of time . . . are objectified as counted QUANTITIES, especially lengths, made up of units as a length can be visibly marked off into inches.

Whorf's description presents Hopi as being fundamentally different. The grammatical category of plural is only used with nouns referring to object-like entities, denoting groupings of such entities. Words denoting time intervals belong to a special word class called tensors, which never pluralize. Rather, the counting of tensors is done by ordinals: "first day," "second day," "third day," etc. According to Whorf, this is not the counting of tokens of an object in a group, but counting successive *reappearances* of the same thing, which cannot cohere into a group. This use of ordinal numbers applies to nouns as well as tensors. Whorf summarizes the situation thus (Whorf 1956:140, 148).

> In Hopi there is a different linguistic situation. Plurals and cardinals are used only for entities that form or can form an objective group. There are no imaginary plurals, but instead ordinals used with singulars.
>
> Time is mainly reckoned "by day" . . . or "by night" . . . which words are not nouns but tensors, . . . The count is by ORDINALS. This is not the pattern of counting a number of different men or things, even though they appear successively, for, even then, they COULD gather into an assemblage. It is the pattern of counting successive reappearances of the SAME man or thing, incapable of forming an assemblage. The analogy is not to behave about day-cyclicity as to several men ("several days"), which is what WE tend to do, but to behave as to the successive visits of the SAME MAN.

10.2



Lucy (1992b:52) summarizes Whorf's exposition (10.2). Note that the crucial difference between English and Hopi concerns the assimilation with respect to grammatical categories of the words denoting temporal intervals, marking the occurrence of events. How these are to be conceived is not straightforwardly given in the physical world, and their assimilation/classification with other grammatical categories is virtually assured due to the necessary classificatory function of language so highlighted by Boasians. In English the grammatical class of countable nouns is extended to include time words, with one set of cognitive consequences for the way time is experienced, while in Hopi, they belong to the class of tensors, which are counted with ordinal numerals, and this has different cognitive and experiential results.

Whorf presents a cluster of evidence to argue that speakers of English conceive of units of temporal intervals as countable tangible objects. He notes that the "fashions of speaking" (i.e. metaphors) that English speakers use to talk about time clearly exhibit this conceptualization (Whorf 1956:152–6): we *spend/save/lose/buy* time; *time is money* (i.e. dollars, cents); I never *have enough* time; a *long/short* time. Further, Whorf argues that our very conception of history is due to our conception of objectivized time, derived from our linguistic categorization (Whorf 1956:153):

> But OUR objectified time puts before imagination something like a ribbon or scroll marked off into equal blank spaces, suggesting that each be filled with an entry. Writing has no doubt helped toward our linguistic treatment of time, even as the linguistic treatment has guided the uses of writing. Through this give-and-take between language and the whole culture we get, for instance:
>
> 1. Records, diaries, bookkeeping, accounting, mathematics stimulated by accounting.
> 2. Interest in exact sequence, dating, calendars, chronology, clocks, time wages, time graphs, time as used in physics.
> 3. Annals, histories, the historical attitude, interest in the past, archaeology, attitudes of introjection toward past periods, e.g. classicism, romanticism.

Hopi culture embodies a different conceptualization according to Whorf. Remember that their view of time intervals is of cycles repeating the same essence. Thus, each day is not inherently different from the last (contrast English: "tomorrow is another day!"). The culture emphasizes continuity and persistence, rather than change. Given this view, it is not surprising that Hopi show little interest in careful documentation of past ages, e.g. our history with its necessarily detailed record of change through the ages. Because each day carries the essence of those before, one can affect the future by careful preparation here and now ("Well begun is half done" is one English proverb the Hopi would understand, Whorf asserts). But this idea of preparation always applies within a backdrop understanding of cultural persistence and constant repetition.

On the basis of his comparative study of English and Hopi linguistic and cultural patterns, Whorf is led to the following conclusion (Whorf 1956:158):

> Concepts of "time" and "matter" are not given in substantially the same form by experience to all men but depend upon the nature of the language or languages through the use of which they have been developed. They do not depend so much upon ANY ONE SYSTEM (e.g. tense, or nouns) within the grammar as upon the ways of analyzing and reporting experience which have become fixed in the language as integrated "fashions of speaking" and which cut across the typical grammatical classifications, so that such a "fashion" may include lexical, morphological, syntactic, and otherwise systemically diverse means coordinated in a certain frame of consistency.

It is vitally important to understand correctly Whorf's claim of linguistic appropriation in this quote. First of all, he is not talking about thought *per se*, but about concepts, i.e. the kinds of conceptual systems used to construe experience are created in the way people talk, not in some pre-given pre-linguistic reality (as also, in his "empty" drum example). Second, the conceptual systems do not reside in any particular grammatical category, but are a result of the entire organization of the grammatical systems of the language and its metaphorical/metonymic extensions, "the fashions of speaking." It is configurations within the grammar which frame the conceptual systems of the language's speakers, resulting in particular construals of

10.3 linguistic patterning as fashions of speaking

↓

conceptual systems/construal of experience

↓

cultural practices and beliefs

experience and resulting cultural practices and beliefs. We could summarize this as shown in 10.3 (see Lucy 1992b:64). Note that in Whorf's formulation there is an implicit neo-Kantian assumption that communal knowledge (cultural practices and beliefs) is underlain by individual acts of knowing (conceptual systems/construal of experience), although the latter are in fact at least in part acquired through a communal resource (grammatical systems). There is a certain degree of tension in this formulation (as there is generally in Whorf's thought in this regard), but it can be profitably reinterpreted in an enactionist framework so that conceptual systems and cultural practices and beliefs are a unitary knowledge network, with individual and culture joined in indissoluble structural coupling. There is no statable boundary between individual knowing and cultural knowledge. The systems of linguistic patterning in this reformulation are as Sapir viewed them: a public sedimentation and unfolding of this knowledge, through which it is transmitted across generations (see chapter 17). Ultimately, Whorf is of central importance not so much for his formulation of the Principle of Linguistic Reality (Sapir's is probably more insightful), but for the ground-breaking empirical study he did of the relationship between the linguistic patterns of a people and their habitual conceptual systems of interpretation. Indeed, until very recently, no one had even progressed as far as he in this regard.

Neo-Whorfianism: The Empirical Studies of Lucy

Boas, Sapir, and Whorf all died within five years of each other. This, plus the disruption of World War II, led to the decline of the Boasian tradition as a dominant integrative research agenda within American anthropological linguistics. During the 1950s and 1960s some individual research projects investigating the role of the Principle of Linguistic Relativity (Bright and Bright 1969; Brown and Lenneberg 1954; Carroll and Casagrande 1958; Hoijer 1964; Lenneberg 1953; Lenneberg and Roberts 1956; Mathiot 1964, 1969) were undertaken, often under somewhat different assumptions from those of Sapir and Whorf (Lucy 1992b). It was during this period and through these studies that the Principle of Linguistic Relativity was reformulated as a hypothesis, to be *tested* by experimental methods, involving the usual understanding in terms of dependent and independent variables. This

was not Sapir and Whorf's view, for whom this Principle was an axiom; the language of experimental science, such as independent and dependent variables, is *never* found in Whorf's corpus (Hill and Mannheim 1992), demonstrating that he did not view Linguistic Relativity as a hypothesis whose validity could be determined by these methods. The rephrasing of Linguistic Relativity as a hypothesis led to rather disappointing research results, and its vitality as a guiding principle of intellectual discovery gradually declined. This was aided and abetted, no doubt, by the rise of strong universalist theoretical trends in anthropological linguistics, inspired by the work of Chomsky, and Berlin and Kay. However, since around 1980, tentative new growth has begun to emerge in the Boasian tradition, especially at the University of Chicago around Paul Friedrich and Michael Silverstein, and their students. Silverstein's papers (Silverstein 1976, 1979, 1981, 1985, 1987, 1992) articulate a sophisticated re-working of Sapir and Whorf's ideas, but the most extensive study of the Principle of Linguistic Relativity since Whorf appears in important work by John Lucy (1992a, b), in which he offers a revised and more psychologically rigorous reformulation for it.

Lucy diverges from Sapir and Whorf and follows later researchers in viewing Linguistic Relativity as a hypothesis to be tested. He parameterizes the hypothesis by separating language and thought as autonomous domains and then determines how systems in the former have detectable effects in the latter, chiefly through psychological cognitive testing administered to speakers of different languages. It is not clear that this operational separation of language and thinking is consonant with Whorf's own views, for whom the relationship between language and habitual thought was apparently much more direct and unmediated, but in any case, Lucy's work can stand on its own as a valuable contribution in its own right. Lucy's (1992a) work revolves around a contrastive study of the grammatical category of number in English and Yucatec Maya, a language of Mexico. Both English and Yucatec mark plural on nouns, but they differ with respect to the distribution of the inflections. English contrasts count nouns like *man* and *book* with mass nouns like *milk* and *rice*. All count nouns are pluralizable, and this inflection is obligatory, if semantically called for; mass nouns may not be inflected for plural; so: *men*, *books*, but **milks*, **rices*. In Yucatec, pluralization is optional and, even then, is only available for nouns denoting animate beings. Using the features [± animate] for animacy and [± discrete] for the count/mass noun distinction, the three classes of nouns in the two languages can be defined as in 10.4. Note that the crucial group of nouns is class B, whose behavior contrasts in the two languages: like group A in English, but like group C in Yucatec. Globally, pluralization is more salient in English: a wider range of nouns is pluralized (groups A and B) than in Yucatec, and pluralization is obligatory when semantically required, whereas group A nouns in Yucatec are only optionally pluralized. Under the general

10.4

	noun type A [+ animate]	B [− animate, + discrete]	C [− animate, + discrete]
Yucatec	plural (optional)	—	—
English	plural	plural	—

rubric of the Linguistic Relativity Hypothesis, this implies a number of specific hypotheses about the habitual cognitive functioning of English as opposed to Yucatec speakers: (1) English speakers should attend to the number of various objects perceived more often than Yucatec speakers; (2) they should attend to the number of more sorts of objects (those referred to by both groups A and B) than Yucatec speakers (only group A); and (3) speakers of the two languages should differ in the way they attend to the number of objects denoted by nouns in group B, English speakers being more attentive than Yucatec speakers.

Lucy administered a number of cognitive experiments to test these predictions and found that they were indeed confirmed. In a range of nonverbal experimental tasks, involving the sorting and recall of pictures of scenes of everyday Mexican village life, English speakers and Yucatec speakers performed differentially as expected: English speakers attended to the number of objects more frequently and did so more saliently for those referring to animate beings (group A) and objects (group B) than those referring to substances (group C); Yucatec speakers were mainly sensitive to number for objects denoted by animate nouns (group A) and this less consistently. Furthermore, the differential for group B nouns was also detected: the salience of number for objects denoted by this group was significantly higher for English speakers than Yucatec speakers.

A second important linguistic difference between English and Yucatec concerns enumeration. English nouns can be counted and indefinitized directly: *three men*, *a man*, but Yucatec, being a numeral classifier language (see chapter 12), requires a classifier *'óoš-túul máak* three-classifier man "three men." Numeral classifiers typically provide information about the shape or other perceptual qualities of the referent of the noun. This is rather like the treatment in English of nouns denoting substances (group C), *three bottles of milk*, *two kilos of rice*; note that the counting words here tell us about the shape, amount, or other perceptually bounding qualities of the substance denoted by the mass noun. Lucy suggests that Yucatec contrasts with English in that its nouns are all semantically rather like mass nouns, denoting a substance, some stuff, rather than an object, and that the classifier provides materially bounding criteria for this stuff in any particular physical manifestation. If English nouns predominantly denote objects but Yucatec nouns, stuff, then the following hypothesis about the habitual cognition of the speakers of these languages presents itself: English speakers should have a relative preference for classifications based on shapes, but Yucatec speakers should have one for materials. Again Lucy performed some cognitive experiments and found the hypothesis confirmed. For example, speakers of the two languages were presented with a cardboard box usually used to hold cassette tapes and asked whether it was more like a plastic box of similar shape or a small piece of cardboard. English speakers consistently opted for the former, and Yucatec speakers for the latter.

Silverstein's Reformulation

Lucy's (1992a) study is important empirical work which will hopefully help to reinvigorate research within the Boasian tradition. He has forged a new rigor into the study of Linguistic Relativity by his careful joining of thorough linguistic analysis and contrastive typology with experimental cognitive psychology. Silverstein's work represents a return to probably more traditional understandings of Linguistic Relativity in the Boasian tradition. In contrast to Lucy's psychological slant, with its deductive hypotheses for testing through the standard metrics of dependent and independent variables, Silverstein's pursuit is an interpretive, rather hermeneutic one, that envisages the Principle of Linguistic Relativity as a guiding framework within which the interaction between linguistic form and function and wider cultural beliefs and practices can be profitably investigated. Silverstein broadens the Principle of Linguistic Relativity beyond its normal focus on the propositional, referential function of language, the domain of semantics, to its indexical functions in the enaction of discourse contexts, the domain of pragmatics. Silverstein sees Whorf's most valuable insight to be the proposal of a principled relationship between the systems of grammatical categories in a language and "an ideology of reference, an understanding at the conceptual level of how . . . language represents 'nature'" (Silverstein 1979:202), in other words, the propositional referential function of language. But Silverstein's aim is to go beyond this, to generalize Whorf's claim "from the plane of reference to the whole of language function" (Silverstein 1979:194). Silverstein claims that Western theoretical treatments of language have tended to reduce all meaning to reference, but that this is an impoverished view of language functions. Indeed, as Rumsey (1990) has argued (discussed in chapter 9), this Western emphasis on reference may be a Whorfian effect itself, due to our linguistic "fashions of speaking" distinguishing wording from meaning and the cultural model of the conduit metaphor, an understanding not shared with other cultures, such as Australian Aboriginals, with different linguistic conventions.

Thus, Silverstein's project is fundamentally the broadening of the Principle of Linguistic Relativity beyond the referential value of grammatical categories to include their indexical pragmatic properties. He combines this with another theme inherited from earlier work in the Boasian tradition, the relative inaccessibility to conscious awareness of linguistic categories and any consequent secondary explanations. Silverstein (1981) develops a typology of grammatical categories in terms of their accessibility to conscious awareness. Silverstein claims that speakers can more readily become aware of bits of speech which have a high referential component (i.e. relative ease in metasemantic glossing) to their meaning, for example, nominal and verbal root lexemes. Bits of speech whose meaning is more pragmatic and indexical, for example, particles like *there*, pronouns with politeness differences such as French *tu* and *vous*, or grammatical categories like subjunctive mood, are much more opaque to speakers' conscious awareness. A second parameter is segmentability; units which are coherent when segmented are more accessible than those which are not. So, discontinuous morphemes like Yimas near future *na- . . . -kiak* or grammatical categories whose exponents are not clearly segmentable, such as case signalled by mutating the initial phoneme of a noun root (in Nias, a language of Indonesia), should be less accessible than the English plural category, e.g. *book-s*. Still a third parameter concerns the degree to which the linguistic forms transparently carry their contextual presuppositions. Deictic forms like *this* or *that* are highly transparent in that the context for their usage is readily apparent in the external world, "close/near self" versus "distant/near other." This contrast should be relatively accessible to awareness, but not that between French *tu* and *vous*. In that case the context for their use is actually dialogically created by their ongoing usage; their presuppositions are not particularly transparent contextually, so this contrast will be relatively opaque to awareness. Silverstein (1981) also proposes two further parameters which are mainly concerned with the ease with which the speaker may restate the indexical value and conditions of the linguistic form; the greater the ease, the higher the conscious awareness. Note that in many ways, Silverstein's ideas about parameters of conscious awareness of grammatical categories are a development and more rigorous formulation of Whorf's (1956) concept of covert categories and cryptotypes. He states it as follows (Silverstein 1981:1):

> the point I wish to make is that it is extremely difficult, if not impossible, to make a native speaker take account of those readily-discernible facts of speech as action that he has no ability to describe for us in his own language.

The notion of limits of awareness is crucial to Silverstein's work because the higher the conscious awareness of a form and its functions by speakers the more likely it will be seized upon as a locus for conscious reflection and

hence a source for Boas's (1966[1911]) secondary explanation and ideological refashioning, especially ideologies and folk theories or cultural models about the nature of language. For example, because nominals and, in particular, proper names are maximally referential, segmentable and transparently presuppositional, it is no surprise that they have served as the basis for our Western ideologizing about language, in particular, Western philosophical theories about language which are predicated on referential theories of meaning, for example, truth conditional semantics. Rumsey's (1990) work demonstrates that such ideologies, however, may not be universal. Further, because of constraints of awareness on grammatical categories, the outcome of conscious reflection on language will be skewed in favor of those which are more accessible: they will be more likely sources for conscious reflection than those less accessible. This has far-reaching implications for Whorf's principle of cognitive appropriation, the structuring or construal of a given domain in terms of a more familiar one. In the context of Silverstein's thought, this entails that more accessible grammatical categories will be the structuring domains through cognitive appropriation for those less accessible. Because semantic (more accessible) and pragmatic (less accessible) meanings are parcelled out among grammatical categories in different ways in different languages, the sources of cognitive appropriation will differ correspondingly. The Principle of Linguistic Relativity then turns out to be a statement about how these different parcellings of meaning among grammatical categories (and other parameters such as segmentability) in various languages lead to different patterns of cognitive appropriation and ultimately different systems of ideologizing about the "world," i.e. the construal of experience. The fact that cycles of time are linguistically treated with respect to the grammatical category of number like objects in English leads both cycles and objects to be understood through cognitive appropriation to be alike meaningwise in certain ways. This is then projected from conscious reflection into ideologies and conceptualizations that model recurring intervals of time in ways like multiple tokens of a kind of object (see Whorf 1956:134–59). The crucial contribution of Silverstein here is to outline a theory of linguistic structure and meaning that can be parameterized with respect to the likelihood and direction of such processes of cognitive appropriation; note that plural in English scores highly in terms of the parameters of accessibility to awareness. Ultimately, Silverstein's ideas boil down to another claim that features of structure within language lead to concepts about the structure of the "world" – a wholly Whorfian outlook.

Summary

The Boasian tradition in anthropological linguistics is intimately associated with the Principle of Linguistic Relativity, the idea that speakers of different