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## **Language and the Mediation of Experience: Linguistic Representation and Cognitive Orientation**

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It is obvious that there are relationships between language, thought, and culture, but saying exactly what these relationships are constitutes a puzzle of huge fascination and baffling complexity, and, despite a long history of debate, many points are unresolved. Often the question has been tackled by philosophers or psycholinguists. Here I will discuss the value of rethinking the question from a sociolinguistic point of view. I will emphasize its social significance, by giving examples from legal, scientific, and sexist and racist language. I will emphasize the need to look not (just) at language structure but at different uses of language. And after some initial conceptual discussion, I will emphasize an empirical approach based on text and corpus analysis.

### **1. The structure of the argument: Whorf and others**

Two essential concepts are *categorization* and *selection*. Every time we talk about anything, the words we use select some features of the world and ignore or play down others. This is simply unavoidable. Of course, the categories of language and of thought are not necessarily the same. This connection is what we have to discuss, and the everyday concept of the *stereotype* recognizes dangers. People are labelled and put into categories such as "immigrant" "working mother" or "teenager". It is then all too easy to jump to the conclusion that these individuals share group characteristics.

Many positions on the relation between language and thought have been formulated. These include

- (1) that cognition is dependent on language (Whorf, see below)
- (2) that language is dependent on prior cognitive development (Piaget)
- (3) that cognition simply *is* language, in the form of subvocal speech (a behaviorist position, as in Bloomfield)
- (4) that language and cognition are parallel or
- (5) that they are initially separate in children's linguistic and cognitive development and later converge (Vygotsky).

Nelson (1991: 278ff.) discusses these positions with reference to children's language acquisition.

Here I have space only to start from the well-known Whorfian position, and, on this basis, to develop some sociolinguistic approaches. Basic arguments and counter-arguments are well known:

***Argument.*** All languages refer to the same world, all people have much the same basic experiences and perceptions, and all languages have the same broad functions. Human reasoning relies on universal logical principles.

***Counter-argument.*** Different languages "cut up" the world in different ways, imply different worlds, and influence perception. Language and thought are therefore intimately related. Strong forms of this view have been succinctly formulated as: "The medium is the message"; "Our language does our thinking for us"; "If Aristotle had spoken Nootka (an American Indian language), then we would have a different logic."

***Counter-counter-argument.*** But languages are not incompatible. We can translate between them. And bilinguals speak different languages, but they do not perceive the world differently when they switch from one language to another.

And so the arguments continue. Translation is never perfect. Subtleties are always lost. Yes, agreed, but translators are aware of the challenge, and paraphrase is always possible.

In addition, such arguments have confusing characteristics. The arguments frequently slide between (exaggerated?) strong versions and (more plausible?) weak versions. Does language determine and mold thought, or merely facilitate and support it?

The arguments are often emotional, because they question common-sense world views, and because linguistic and cultural relativity is often felt to imply moral relativity.

Many different terms and metaphors are used. Does language "construct," "mediate," "code," or "represent" reality? To talk of the linguistic "construction" of reality implies a very active role for language. "Mediation" implies a weaker position. "Coding orientation" emphasizes that choice is possible among different codings, and that things are a question of frequency and habit. And metaphors can be misleading. A language is said to "cut up" nature, or to "reflect" or "mirror" reality. The mirror metaphor, in turn, implies that language passively expresses reality, rather than actively creating it (cf. section 2.4).

It is often difficult to tell the chicken from the egg. Do languages provide us with cultural categories? Or do they encode what is culturally important? But then, once the categories are established, they are imposed on speakers in following generations. A famous formulation of this puzzle was made by Marx (1852), who radically unified the individual and the social:

Human beings make their own history, but they do not make it of their own free will ... The tradition of all the dead generations weighs like a nightmare on the minds of the living.

Possibly the most fundamental problem with such arguments is the difficulty of breaking out of a vicious circle. It is *observed* that languages differ, and it is *concluded* that the thought of their speakers also differs. But what is the *evidence* that their thought differs? Well, the language that they use! We want to investigate the relation between language and thought. But in almost any situation we can imagine, the only access we have to thought is via language.

### 1.1 Some brief history: linguistic relativism

Academic debates about language and thought are often traced back to 1757, when the Berlin Academy of Sciences asked: "What is the influence of people's opinions on the language, and of the language on the opinions of the people?" The prize-winning essay is thought to have influenced Herder (1744-1803) and in turn Humboldt (1767-1835), whose ideas underlie the concepts of *Sprachgeist* and *Volksseele* which became so important in nineteenth-century German Romanticism, that a language embodies the spirit of the people who speak it. Humboldt (1825) went on to develop a theory of "the genesis of grammatical forms and their influence on the development of ideas" (G. Williams, 1992: 30ff.).

Another major source is Saussurean structuralism, which leads almost inevitably to the view that the language system itself creates meaning. There are two opposed positions. The first is that meanings are external to language. They are prior to their linguistic expression, which passively reflects external reality. Deriving from the work of Saussure, there is a contrary position. Meanings are internal to language: They depend on the oppositions and contrasts within a language, which actively construct a social reality.

The most explicit source is work by Sapir (1884-1939) and Whorf (1897-1941), who are usually (not entirely accurately) lumped together in this matter. The "Sapir-Whorf" hypothesis is usually quoted via statements in Whorf's papers, published from 1927 to 1941 collected posthumously (Whorf, 1956), and often taken as the classic source of the view that the grammatical categories of language construct implicit theories of the world. Famous passages in Whorf (1956) include:

We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way – an agreement that holds throughout our speech community and is codified in the patterns of our language. (p. 213)

This is a claim about linguistic relativity. (Note the metaphor about "cutting nature up." Black (1959) criticizes Whorf's "vocabulary of the operating theatre.") But a view that languages embody conventions which "codify" thought slides easily into determinism:

The agreement is, of course, an implicit and unstated one, *but its terms are absolutely obligatory*; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees [pp. 213-14, emphasis in original] ... the forms of a person's thoughts are controlled by inexorable laws of pattern of which he is unconscious. (p. 252)

There were historical reasons for Sapir and Whorf being interested in such questions. Systematic investigation of Amerindian languages had shown them to be just as complex as classical European languages, but their categories seemed very different. The Sapir-Whorf version(s) of linguistic relativism were in fashion in the 1940s and fifties. They then went very much out of fashion, and seemed indeed to have the racist implication that different groups of people might have different cognitive capacities determined by their different languages. This turnaround was ironic, given the anti-racist stance which had motivated much of the study initially – that the native population of North America could not be dismissed as "primitive."

Fishman (1980, 1982) provides important summaries of various versions and criticisms of the Whorfian hypothesis. There are good accounts of Whorf within a critique of sociolinguistics (G. Williams, 1992) and within feminism (Cameron, 1992: 134ff.). And recently several more sympathetic interpretations of Whorf have appeared, e.g., Lakoff (1987: 304-37) and Lucy (1992a, b). Psychological and perceptual studies have often had extreme difficulty in deriving experiments to confirm or contradict specific Whorfian hypotheses. Progress has been made in some well defined areas, such as color vocabulary, where it is possible to design experiments to show possible behavioral effects of language. However, it is notoriously difficult in such areas to distinguish linguistic effects from social and cultural factors, such as the requirements of technological societies (for expanded color vocabularies) or of formal education. In addition, the semantic areas discussed are generally very narrow. Lucy (1992a, b) provides a substantial and very clear account of the history and logic of the argument from eighteenth-century Germany, via Boas and Sapir, to Whorf and his successors, plus his own case study of Yucatec Maya.

There are many other relevant lines of work, especially within phenomenological traditions in philosophy (e.g., Husserl) which argue that society is always mediated by experience, and that meaning is constructed in human consciousness. Much in the later work of Wittgenstein is Whorfian in tone. Phenomenology has in turn influenced sociological views on the social construction of reality. And versions of discourse analysis have studied how discourse practices systematically form the objects whereof they speak: We don't speak a language, the language speaks us (Foucault, 1980; G. Williams, 1992: 248-58).

A famous contribution to the theory of codes is provided by Bernstein (e.g., 1973,1990), who acknowledges Whorf (along with Marx and Vygotsky) as an important early influence. Bernstein (1990: 94) has characterized his work as tackling the classic sociological question: "How does the outside become the inside and how does the inside reveal itself and shape the outside?" His work, on how uses of language regulate both cognitive orientations and social identities, is a major theory of symbolic control and cultural reproduction, and a thorough discussion is well beyond the scope of this article. (See Atkinson, 1992, for an interpretation of Bernstein's work as a structuralist program which goes far beyond his work on language.) Halliday is the linguist who has consistently expressed sympathy with Bernstein's views, and who has developed, with Bernstein, a theory of coding orientations. I will restrict myself to a discussion of Halliday's text-based version of coding theory below (section 2.3).

Historically, Whorfian views were also part of broader traditions of thought , which debunk human freedom, and see humans condemned to the mercy of their evolutionary origins (Darwin), socioeconomic forces (Marx), the unconscious (Freud), or language (Whorf) (see Fishman, 1982). But the whole question remains unresolved. This is only to admit that we do not yet fully understand the relations between language, experience, reality, culture and the human mind.

## 1.2. "The great Eskimo vocabulary hoax"

One myth (for which Whorf (1956: 210) is partly responsible) should immediately be disposed of. This is the view that "Eskimo has dozens of words for snow." Snow, so runs the argument, is important to Eskimos, so they have a fine-grained category system and lots of words for it. Well, they don't: they have a dozen or so (Pullum, 1991: 171). But then, so does English – *snow, frost, ice, slush, sleet, blizzard, avalanche, cornice* – not to mention compounds such as *snowfall, snowfield, snowflake, snowdrift, snowstorm, snowball, snowman, snowshoe, snowplow*, etc. In fact, such compounds show how impossible it is to count the words for snowy things in English. And the counting problem is much worse in dialects of Inuit and Yupik, since they are highly polysynthetic.

Even if these languages did have many words for snow, this would not be especially interesting. Groups usually have technical terms for things important to

them. Cooks have terms for kitchen equipment and cooking methods; linguists have hundreds of linguistic terms (and specialist dictionaries); and skiers and mountaineers have even more words for different snow conditions.

What can be concluded from this? First, once such a myth is embedded, it is very hard to shift it. Like urban legends, it is "too good to be false." This is itself one effect of language on thought: Clichés take hold of people's imaginations, and are almost impossible to shift. Second, there is an implicit racism involved in the repetition of such stories. "We are prepared to believe almost anything about such an unfamiliar and peculiar group" (Martin, 1986, quoted by Pullum, 1991: 162). One should be especially wary of arguments about language and thought which are illustrated only from the language of some far-away "exotic" group about whose thought we have no independent evidence.

This myth shows the kind of argument we do not want. It is not sufficient to point to a loosely defined set of words, which are not fundamental to the conceptual system. Words for snow are as isolated as many words relating to cuisine in French, or to music in Italian. We need more interesting ways of looking for links between language and cognition.

### 1.3. Grammaticalization

The interesting arguments (as Whorf himself emphasized) concern not individual words, but lexical sets and syntactic constructions. There is particular interest in conceptual categories which are grammaticalized (Hopper and Traugott, 1993) in languages, since such categories are obligatory, and become automatic, habitual, effortless, unconscious, and therefore apparently "natural" (Lakoff, 1987: 319).

There are certainly areas of experience which are both abstract and differently grammaticalized in different languages, for example, in systems of tense, aspect, mood and modality, and evidentiality. It is common for such meanings to be marked in the grammar as obligatory categories, but languages differ considerably in what can and must be encoded. For example, in English, every finite verb must be marked for tense. But, like many other languages, standard modern Chinese has no tense system: Chinese is quite capable of specifying when an event takes place, but this is not obligatory. Other languages have tenses which distinguish between the remote past ("more than a few weeks ago"), the recent past ("but not today"), and earlier on the day of speaking, or employ aspect to encode events which have happened exactly once or repeatedly. Such distinctions may sound "exotic," but English has a tense form, sometimes known rather dramatically as the "hot news perfect." As opposed to English simple past forms (*he went*), perfect tense forms (*he has gone*) encode the present relevance of past events. So, when referring to single past events, a speaker has to choose between the two forms: The concept "current relevance" must be encoded in the morphology. (Although German has two similar forms, they do not encode this meaning distinction.)

In many languages it is obligatory to encode in the verb morphology the source of a speaker's evidence for what is said. The Papuan language Fasu encodes whether a statement is known or thought to be true because "I see it," "I hear it," "I infer it," "Somebody (I don't know who) says so," "Somebody (I know who) says so," or "I suppose so" (Trask, 1993: 95). And Lakoff (1987: 313ff.) similarly discusses the conceptual organization of space in Mixtec, an Otomanguean language.

However, it is difficult to know what to make of such examples. It is plausible that if speakers of a language have to encode time, space, or evidentiality every time they use a verb, then they will automatically think of the world in these categories. (And Nelson [1991: 292], for example, argues that coding of tense makes concepts of time salient for children.) But it is difficult to see what concrete, observable effects this could have on behavior.

Possibly the most convincing studies discuss not only such grammatical *potential* of different languages, but also the effect of systematic *selections* from this potential in actual language use in important social contexts. I will give such an example below, from work by Berk-Seligson (1990).

Whorf (1956: 88-9) pointed out that only some grammatical categories are overtly marked. Others, which he calls *cryptotypes*, are covert. Such covert categories must be internalized as semantic categories, otherwise they could not be manipulated automatically. Halliday (1990) gives the example that the idea "bigger is better" is "engraved into our consciousness" because of the way the grammar of English makes us ask questions. If we have no preconceptions about the size or length of a thing, we say *how big is it?* not *how small is it?* or *how long is it?* not *how short is it?* Again, perhaps it is when such concepts are not directly encoded that they reveal speakers' underlying assumptions I will also give such examples below (cf. Halliday and Martin, 1993: 9,113).

## 2. A sociolinguistic version of the argument

I will now concentrate on a sociolinguistic formulation of the puzzle, and will assume that deterministic theory is untenable. I cannot believe that the limits of language are the limits of thought: Human intellectual history is full of examples of people finding new ideas and new ways to express them. However, language *mediates* our experience. There are many areas of human life of which we can have no direct experience at all, and where all our knowledge comes to us via language. It is therefore plausible that language *influences* thought, for most of us, at least some of the time. The question is: Can we pin down the linguistic mechanisms at work?

Nelson (1991) points out that a great deal of our knowledge of the world is acquired through language, and that many cultural concepts which children

acquire early do not exist independently of the ways in which we talk about them: "home," "family," "work." Giddens (1991) provides a detailed sociological discussion of the consequences of virtually all human experience being mediated by other people's linguistic representations. Bell (1991) and Fowler (1991b) provide linguistic analyses of this mediation by the mass media.

Furthermore, the Sapir-Whorf hypothesis is untenable if it sees a language as homogeneous and static. Languages vary internally and change historically (and can *be* changed by some kinds of language engineering; see below), and they can be *used* in different ways. This is the point of most relevance to sociolinguistics. I will assume in fact that Whorf asked the right basic question, but formulated it wrongly. Rather than talking about the influence of language on thought, we can talk about the influence of uses of language on assumptions taken for granted. We can discuss

- not language structure, but language use in discourse
- not grammar, but systematic selections from the grammar
- not cognitive determinism, but coding orientations
- not cognitive potential, but habits of thought
- not causation, but mediation.

These are the fruitful emphases for sociolinguists, not individual psychological versions of the Whorfian hypothesis, but versions which emphasize cognitive orientations. I will therefore concentrate on text- and corpus-based studies. There are many such studies within what is now often referred to as critical linguistics or critical discourse analysis: Fowler (1991a) is an authoritative definition of this field by one of its originators. And see Hodge and Kress (1993) on "language and ideology"; Fairclough (1989) on "language and power"; and Fowler (1991b: 1) on how newspaper language can "form ideas and beliefs."

So much, then, for the complex and sometimes highly abstract structure of the arguments. I will now discuss concrete examples from four socially important areas.

### **2.1. Case 1: racist discourse: lexical sets**

The choice of lexis often reveals different moral points of view: *George isn't stingy, he's thrifty*. Such lexical choices can be especially important in political debate: The Same groups can be referred to as *terrorists* or *freedom fighters*. And depending on the point of view, one might talk of the settlement *or* invasion of Australia by Whites; the defence *or* invasion of Viet Nam by the Americans; the discovery of America *or* the genocide of Native Americans.

Sometimes sets of terms are involved. A recent student newsletter in my University in Germany criticized right-wing activities: One argument concerned



fixed expressions which have become very frequent, such as *Fremdenhass* ("hatred of foreigners"), *Scheinasylanten* ("apparent/sham political asylum seekers"), and *kulturelle Überfremdung* ("cultural infiltration by foreigners"). It is argued that such lexical creations crystallize thoughts, make them easy to refer to, presuppose the existence of such things, and therefore facilitate stereotyped reactions. For example, the coinage *Ausländerfeindlichkeit* (a second term for "hatred of foreigners") brings together the concepts of "foreigner" and "enemy" (*Feind*). Constantly used collocations lexicalize an area of experience, and give credence to the concept "foreigner-hatred." Wodak (1992, 1993) studied such racist discourse in Austria and concluded (1993: 226) that, although such discourse cannot be held responsible for causing racism, it "offers arguments and metaphors which can serve to legitimate prejudiced attitudes." It is plausible that constantly repeated formulations mediate and support ways of thought.

Notorious examples come from Nazi Germany, when a term from chess, *Endlösung* ("final solution"), was used to refer to the extermination of the Jews. Perhaps no one is fooled by such euphemistic newspeak? Yet such terms must have a function (dissimulation from self?) or they would not constantly be coined, in many different regimes, to avoid expressing the moral implications of actions. In the Gulf War, *collateral damage* meant "civilians killed." The perpetrators in the Balkan war seemed to find it easier to talk of *ethnic cleansing* than of populations being brutally tortured and murdered. The same types of examples keep recurring, as areas of meaning are relexicalized in ways which make genocide seem banal (Ehlich, 1989, provides analyses of language in Nazi Germany).

Phillipson (1992: 38ff.) analyzes terms (such as *nation*, *tribe*, *underdeveloped*, *developing*, *emergent nation*, *aid*, *culture*, *civilization*) which describe countries from a Western point of view and which characterize a racist, colonial, and postcolonial discourse (however benevolent its intentions might be).

## **2.2. Case 2: The construction of reality in courtrooms: lexis and grammar**

Consider more detailed cases where lexical choices create frames of reference with their own internal logic, and influence perception and memory. Courtroom examples are of crucial social importance.

Danet (1980) analyzes an American case where a doctor who had carried a late abortion was convicted of manslaughter, and where vocabulary was an explicit topic in the trial itself. The same event can be talked about in different ways. For example, one might say: *the fetus was aborted* or *the baby was murdered*. Although each phrase can refer to the same external reality, very different moral points of view are encoded, and different assumptions about offence and guilt are implied. During the trial, the lawyers negotiated the different connotations of terms such as *products of conception*, *fetus*, *male human being*, *male child*, *baby*

*boy* (and many others). When, as here, the meaning of an act is itself ambiguous (when does life begin? what do we mean by a "person"?), then it is impossible to separate what happened from the language used to talk about it. And such semantic choices are crucial to the outcome of the trial: If no "person" existed, then no manslaughter could have occurred.

There is always a category shift when one moves from ways of talking to ways of thinking. And it is impossible to discover what effect such lexical choices actually had on the jury. But one can analyze the points of view from which such lexical choices are made, the incommensurable frames of reference they assume, and the presuppositions they make. For example, *baby boy* connotes helplessness, within a caring frame of reference which presupposes that there is a life to be saved. Words such as *fetus*, *abortion*, and *termination* assume a medical frame of reference, rather than a criminal one. No terms are neutral.

In a famous experiment, Loftus and Palmer (1974) provided empirical evidence that lexical choices can influence perception and memory. They showed people a film of a traffic accident, and then asked questions such as *How fast were the cars going when they hit each other?* But they varied the question by using different verbs, and this influenced people's estimates of the speed. Higher estimates were given with verbs such as *smash* and *collide* than with *bump* and *contact*. Furthermore, when they were asked *Did you see any broken glass?* (there was none in the film), people who had been asked about the cars smashing into each other were more likely to say "yes." That is, using the word *smash* triggered preconceptions about both speed and likely consequences (broken glass). Individual words evoked a frame of reference in which various default assumptions were made. In this experimental case, subjects had direct access to the event itself, in the form of the film, yet language still influenced their perception and memory. In a real trial, of course, the jury has no such access: The members have nothing but the words used in the courtroom. It is therefore even more plausible that words will influence assumptions. It is a cliché to lawyers that the law "is a profession of words," and that a case is tried not on "facts," but on testimony, the representation of "facts" in language.

It is important to emphasize that the connotations of words do not arise from nowhere. They are constructed and maintained by frequent collocations across millions of words of language in use, and methods of text and corpus analysis can be used to identify the very different collocational profiles which words have. Consider again the Loftus and Palmer (1974) example. From a corpus of 120 million words I extracted the most frequent collocates of words in the lexical field of "hit." (Clear, 1993, describes the methods in detail.) *Hit* itself has a wide range of uses, often metaphorical: This is shown by collocations with *earthquake*, *hard*, *jackpot*, *recession*. *Bump* connotes slow clumsy movements: Its collocates include *accidentally*, *lurch*, *stumble*. *Collide* co-occurs almost exclusively with large vehicles, including ships and aircraft. *Smash* connotes crime and violence: Its collocates include *bottles*, *glass*, *looted*, *window*, *windscreen*. *Strikes* has

metaphorical uses and is used with natural diseases: Its collocates include *blow*, *disaster*, *earthquake*, *lightning*, *suddenly*, *tragedy*.

These studies show that recurrent wordings can fix and transmit cultural meanings. Collocations, fixed phrases, idioms, catch phrases, clichés, and various prefabricated chunks of language can encode stereotypes and shared assumptions. They can be both linguistic and cultural units, and show that learning a language involves learning a culture, and not merely alternative labels for the same things.

These cases involve lexis. Berk-Seligson (1990) discusses legal cases where choices from the grammatical system may affect how meanings are represented. A central area of meaning in any courtroom concerns cause and effect, blame and responsibility: Who is guilty of doing what to whom? English has various constructions which can make agency more or less explicit. For example, a verb such as *break* allows several syntactic options, including:

<i>He broke the glass.</i>	[transitive]
<i>The glass got broken.</i>	[passive 1]
<i>The glass was broken.</i>	[passive 2]
<i>The glass broke.</i>	[intransitive]

The transitive expresses a chain of causation: The syntax NP-V-NP corresponds to the semantics of agent-action-effect. Passive 1 expresses action with no mention of agent. Passive 2 expresses either an action (cf. *The glass was broken by my brother*) or a state (*It was broken when I arrived*). The intransitive implies that something happened spontaneously through no one's fault. Every language has ways of talking about such things, but the syntactic means may differ. Berk-Seligson's research is on American courtrooms in which Spanish-English translation was being used. The key point is that Spanish also has several ways of encoding such meanings, but the distinctions do not correspond to those in English. The passive is very common in English courtroom discourse: It also exists in Spanish, but is much more formal and therefore tends to be avoided. But Spanish has reflexive constructions:

<i>Se rompió el vaso.</i>	"The glass broke."
<i>Se me rompió el vaso.</i>	"The glass broke on me."

Whenever the interpreter translates, she or he is forced by the language to take (probably unconscious) decisions about exactly how blame is attributed.

In Summary: The syntactic and semantic systems of different languages cannot always be mapped directly onto each other. Different distinctions are obligatory in different languages. And meanings may be skewed if certain selections are systematically made from the potential of the language.

O'Barr (1982) is an influential discussion of the relation between the language used in the courtroom and the outcome of legal decisions. Hodge and Kress (1993) discuss how causal processes are expressed directly or obliquely in choices from the transitivity system; Stubbs (1994) discusses how the frequency distribution of transitivity choices in two schoolbooks contributes to the "clause by clause synthesis of a world view."

### **2.3. Case 3: The construction of scientific reality: lexis and grammar**

Scientific language provides a case of an area where concepts and syntax seem to have developed together, and where this development is amenable to empirical text analysis. Halliday and Martin (1993) discuss the functions of lexis and grammar in scientific language. They start from two clear facts. (1) Scientific and everyday language are very different: e.g., it is well known that certain syntactic features, such as passive and nominalization, are common in scientific language. (2) Scientific and everyday world views are very different, indeed science often rejects common-sense understandings. They then look for the relation between these two facts.

In detailed textual studies, they analyze the scientific language used by Chaucer, Newton, and Darwin, and the language of contemporary school science books. They regard lexis and syntax as a "semiotic technology" (p. 221) which allows a "scientific reconstruction of the world" (p. 183). Classification is fundamental to science. Halliday and Martin give several examples of everyday and technical taxonomies from geography, biology, ornithology, and anatomy, and of the functions of technical names and classifications. Taxonomies organize the world as if all phenomena, including processes, were things: Technical verbs are rare. It is the job of science to construct different interpretations of the world, based on different organizing criteria. It is not possible to do science in everyday language. Technical terms are not just jargon: They organize the world differently.

Their argument is based mainly on analysis of different registers within a single language. Note that the case of science is itself a refutation of an extreme cross-linguistic Whorfian view, since the very different ideas of common sense, and of Newtonian and Einsteinian physics, represent radical shifts of world view *within* English and other West European language communities. (Their comparative analysis of English and Chinese scientific language, pp. 125-32, shows similarities, rather than differences.)

Their argument has other important characteristics. (1) It is evolutionary: "scientific language has evolved so that it can accumulate information" (p. 186). (2) It is functional: They are looking for a cognitive explanation of the heavily nominalized style of science. (3) It is probabilistic: It depends on the relation between language potential and language use. They argue that the cognitive effect comes from increased use of resources already present in the language. A new

register is created by reconstructing the probabilities of use of, for example, passives and nominalizations. (4) And it is based on text analysis. Nominalizations have the discourse function of allowing information to be packaged: The grammar is used to encode things so that they can be referred to conveniently and used in arguments.

This discourse function relies heavily on grammatical metaphor. Metaphor is the substitution of one word for another. Grammatical metaphor is the substitution of one grammatical class or structure for another. Halliday and Martin (1993: 54-68) give an example of the progressive nominalization of a concept in the course of a scientific article on the fracturing of glass. Early expressions such as *a crack grows* give way to *the rate of crack growth* and finally to *the glass crack growth rate*. This nominal group can then act as subject or object of a verb: *we can decrease the glass crack growth rate 1,000 times*. Thus "the text itself creates its grammar, as it goes along" (p. 56). The "clausal variant precedes the nominal one" (p. 18), both in individual texts and also historically, in the development of scientific English. Note that this immediately disposes of Whorf's (1956: 215) idea that if our language classifies something as a verb then we will conceive of it as an event (or if as a noun then as an object). The language can encode the same phenomenon as a verb (*grows*) or as a noun (*growth*) for different discourse purposes.

Halliday's work on language as social semiotic is therefore a main contender for a radically revised Whorfian theory. Halliday takes the view – explicitly related to Whorf – that the lexico-grammar is "a theory of human experience" (p. 8), and that "the language of science has reshaped our whole world view" (p. 10). Grammar "construes reality," since every clause is a representation of the world, and clause by clause a world view is synthesized. But Halliday emphasizes language change and variation. We are not stuck with the grammatical categories of our language, since the potential of the grammar can be taken up in consistently different ways, and the development of science shows that the resources of the grammar can be used to interpret the world from different points of view.

The case of scientific language also emphasizes the cognitive effects of writing as a medium. There is a large literature which argues that writing is merely spoken language written down, but that it facilitates certain kinds of (especially syllogistic) thinking which require chains of reasoning. Popper (1972) provides a famous discussion of this documentary world, which supports certain kinds of knowledge.

#### **2.4. Case 4: Sexism: Patterns of frequency and distribution**

Sexist language (see chapter 8) uses lexical and grammatical resources to represent the world from the point of view of the male. Feminist scholarship (e.g., Cameron. 1992) has rejected the mirror metaphor. Language does not "reflect"

society: It is part of the social, it reproduces society, language change is social change. And feminist campaigns have attempted (often successfully) to change how language is used. However, this language engineering has been more successful at some linguistic levels than others, usually at the level of words and phrases. For example, the term *sexual harassment* is now widely used. It does not create the behavior referred to. This already exists, but naming something can bring it to consciousness, give it a social identity, and facilitate its identification (e.g., if necessary, for the law).

Features of surface morphology and grammar, such as the asymmetrical use of *he* and *she*, are also relatively easy to see, though often a matter of habit and less easy to control. However, there are more subtle aspects of their patterns which are more difficult to observe. It is easy to find examples of specific sexist usages, but more difficult to investigate the distribution of forms. Using computer assisted methods, I studied half a million words of spoken educated British English. I extracted all occurrences of *someone*, *somebody*, *anyone*, *anybody* (over 400) and looked for occurrences of pronouns referring to the same person in the immediate context:

- |                                   |                        |
|-----------------------------------|------------------------|
| (a) they, them, their, themselves | i.e., sex neutral;     |
| (b) he or she, him or her, etc.   | i.e., explicitly both; |
| (c) he, him, his, himself         | i.e., male;            |
| (d) she, her, hers, herself       | i.e., female.          |

Examples of each type were:

- (a) By the age of sixteen *anybody* who is going to be an academic should have done *their* general reading.
- (b) *Someone* describing *himself* or *herself* as a middle-aged viewer.
- (c) Why should *somebody* move here when *he* has to pay fifty thousand pounds ... for a house?
- (d) When *somebody* gets sufficiently ... neglectful of *herself* - as my grandmother's now become.

Example (d) refers to a specific individual person that the speaker has in mind: I will call this a *definite* reference. Examples (a), (b), and (c) are references to hypothetical or unknown persons or to groups: I will call these *indefinite*.

The non-sexist *they* pattern was the most common. The forms *they* or *he or she* were much more common in indefinite sentences, though still used in four definite cases. However, *she* was used only in definite cases, whereas *he* was equally distributed between definite and indefinite. The overall distribution was still sexist.

Lakoff and Johnson (1980) write about metaphors and their effect on thought, and one might expect that they would be particularly sensitive to such aspects of

language use. Yet in their example sentences, their own use of male and female pronouns is very asymmetrical. Males are mentioned over five times more often than females. There are about 40 examples of phrases such as *his argument*, *his ideas*, *his theory*; there are no such examples for *her*. But there are many examples as *crazy about her*, *she cast her spell*. Lakoff and Johnson appear to have unthinkingly encoded a series of stereotypes: men are mentioned more often than (are more important than) women; men have ideas and theories, women evoke emotions.

Baker and Freebody (1989) analyze distributional patterns in books for children. In a corpus of initial reading primers, they find that words for individual children are always sex-specific: The singular sex-indefinite word *child* is entirely absent. The words *boy/boys* are more frequent than *girl/girls*. The word *boy* is more likely than *girl* to be singular: Boys appear more often as individuals, girls more often in groups. Some verbs occur only with *boy/s* as subject; no verbs occur only with *girl/s*: The implication is that boys engage in a wider range of activities than girls. Such a use of language itself constitutes and legitimates a concept of childhood. The language system provides resources which can be used in different ways, but the selections made are sexist.

These studies show that assumptions may be conveyed not only by individual words and phrases, but by the frequency and asymmetrical distribution of choices from the language system. Such features of language use are subject to habit, and are impossible to observe directly.

### **3. Conclusions: Agenda for Future Research**

Much of the puzzle posed by Whorf and others remains unresolved: it is particularly difficult to escape the circularity of arguments where language is both cause and evidence. But I should attempt a conclusion, however cautious.

Few scholars these days argue that there is an ideal realm of thought which exists entirely independent of its expression in texts. There is widespread consensus that language is never neutral and texts are never innocent. Things can always be formulated differently, any linguistic expression of "the facts" selects some aspects of reality, and all selections are ideological. Such choices are not usually explicit, and are often denied (because they express group interests).

There are many variants of the view that language and thought are related. We know how Whorf's question can be reformulated to apply to the choices available within a language; and therefore apply not (only?) to language structure, but also to language use. It is plausible that if the world is repeatedly talked about in certain ways, then such "semantic habits" can influence thinking. These semantic habits are often not directly observable, because they are a matter, not of individual words, but of patterns of distribution and frequency.

There is no convincing evidence that language determines thought in any absolute way. On the contrary, all languages provide resources which are being constantly developed to express new ideas. However, there is evidence that linguistic choices can make people jump to unjustified conclusions. And it is highly plausible that, if these resources are constantly exploited in recurrent codings, then habits of language can lead to stereotyped thought. It is becoming clearer how such codings can be studied in texts and corpora. Also, the written medium can itself facilitate certain kinds of thinking: This is particularly relevant in the development of scientific thought.

As well as purely conceptual analysis, it is important to do empirical studies, which might concentrate on: (1) Socially important cases where language may influence assumptions, perceptions and stereotypes. (2) Corpus-based analyses of the frequency and distribution of fixed phrases and collocations. (3) Forms of language engineering which encourage speakers to change their language use. This has happened with success in scientific registers and in non-sexist language. (4) Forms of language education which teach students how to identify implicit points of view in texts, and how to express things in different ways.

Experience shows that educational approaches cannot make people avoid prejudiced and stereotyped thinking. But they can perhaps contribute "just that extra critical edge of consciousness" (R. Williams, 1976: 21).

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Language and the mediation of experience: Linguistic representation and cognitive orientation. In E. Coulmas (Ed.), *The handbook of sociolinguistics* (pp. 358-373). Oxford, MA: Blackwell Publishers. has been cited by the following article: TITLE: Discourse and Intercultural Academic Rhetoric. AUTHORS: Fethi Helal. KEYWORDS: Contrastive Rhetoric; Discourse Analysis; Academic Writing/Genres; Intercultural. JOURNAL NAME: *Open Journal of Modern Linguistics*, Vol.3 No.2, June 18, 2013.Â A Review of Principles of Linguistic Change: Cognitive and Cultural Factors.Â The Application of Cognitive Linguistic Theories to English-Chinese Translation. State University Volume 1 *Cognitive Exploration of Language and Linguistics*, 2nd rev. ed.Â The evolution within cognitive linguistics rather tends to go in depth: scholars reveal ever deeper insights into the nature and functioning of language and its relation to cognition, culture, and communities. Since this book is an introduction, this second edition must stick to the great basic insights of (cognitive) linguistics and can only reflect a few insights gained in the newer evolutions within cognitive linguistics such as construction grammar (see Goldberg 1995, 1996), mental space theory (see Fauconnier 1997; Fauconnier and Sweetser 1996), blending theory (see Coulson 2000) The study deals with linguistic and functional cognitive aspects of language use in the media with a focus on typical actualisation of linguistic units in continental European business and political press which contain borrowings from the English language alongside original words and collocations, vividly shown by the examples taken from French sources. In the course of communication, the problem of transferring and understanding information arises, thus involving pragmatic and functional cognitive aspects of research. This raises the problem of notions and concepts, particularly in differenti