

**Language and culture**

**1000 words**

Languages differ in fundamental ways: their phoneme inventories vary from 11-141 (Maddieson 1984), they may have elaborate or no morphology, may or may not use word order or constituent structure or case to signify syntactic relations, may or may not have word roots of fixed grammatical word class, may make use of quite different semantic parameters, and so on (see TYPOLOGY OF LANGUAGE). There are an estimated 6000 distinct languages in the world, each a cultural tradition of thousands of years in the making, and there are at least twenty (how many is controversial) language families across which relationships cannot be demonstrated. Each is adapted to a unique cultural and social environment, with striking differences in usage patterns (Bauman & Sherzer 1974). This constitutes the cultural capital of language. On the other hand language is a biological capacity, instantiated in the anatomy of our vocal tract and the corresponding acuity of our hearing, and in dedicated areas of the brain (see NEUROBIOLOGY OF LANGUAGE). In fact, language provides the best evidence for the thesis of coevolution, whereby cultural replication and genetic replication became intertwined, each providing the context for the evolution of the other (see EVOLUTION OF LANGUAGE; also Durham 1991). Cultural variation also requires that the biological capacity for language be malleable (see PLASTICITY), e.g. able to learn and parse speech of quite different sound and structural type (see PSYCHOLINGUISTICS, NATURAL LANGUAGE PROCESSING), although this malleability is progressively lost during maturation of the individual.

Most models of human cognition abstract away from variation, whether cultural or individual. But in the case of language, the capacity to handle the variation is a central property of cognitive ability. Consider for example that language ability is modality independent; according to cultural tradition it can be not only spoken or signed (see SIGN LANGUAGES), but also represented visually by reference to sounds, meanings or both (according to the writing system), or signed with the hands as in auxilliary hand sign systems. In this modality independence it is very unlike any other sensory input or motor output system.

Current linguistic theory proceeds by positing universal hypotheses across all languages, and workers in other branches of cognitive science may therefore be led to think that large numbers of universals of language have been established. In actual fact these have proved very hard to formulate, and nearly all successful generalizations are either very abstract (and correspondingly difficult to test) or of the form 'if a language is of a certain type T, then it has property P' (see TYPOLOGY of LANGUAGE, Greenberg 1978), usually with exceptions rapidly discovered. Most data bases for extrapolation cover less than 10% of the world's languages; the great majority of languages have never been described, let alone carefully analyzed.

Through language, and to a lesser extent other semiotic systems, individuals have access to the large accumulation of cultural ideas, practices and technology which instantiate a distinct cultural tradition. The question then arises as to what extent these ideas and practices are actually embodied in the language in lexical and grammatical distinctions. Humboldt, and later Sapir and Whorf, are associated with the theory that a language encapsulates a cultural perspective and actually creates conceptual categories (see CONCEPTS, LINGUISTIC RELATIVITY, Gumperz & Levinson 1996). In some respects this seems clearly true (consider notions like 'tort' or 'manslaughter' which reflect and constitute part of the English legal tradion, not an aspect of culture-independent reality), in other respects it seems to be false ('black' appears to be a universal concept, reflecting aspects of PSYCHOPHYSICS). Yet many cognitive scientists assume that basic semantic parameters are universal, culture-specific notions like 'tort' being constructed from such universal semantic primitives (an influential exception is Fodor, who claims that all such notions are univeral unanalysed wholes in the LANGUAGE OF THOUGHT). Current work on semantics however makes it clear than even apparently fundamental notions may vary cross-linguistically, and children learning language do not invariably appear to make the same initial assumptions about meaning (Slobin 1985). Take for example spatial notions: the readers are likely to think of the things on the desk before them in terms of things in front of themselves, to the left, or to the right. But some languages do not

lexicalize these notions at all. Instead one must refer to things as e.g. to the north, the east or the west, etc., as appropriate. Consequently speakers of these languages must keep their bearings, and they can be shown to conceive of spatial arrangements differently in non-verbal memory and inference (Levinson, 1996).

There are many aspects of the cultural patterning of language that may be fundamental to its role in cognition. One is special elaborations of linguistic ability, e.g. highly skilled performance as in simultaneous translation or rapid sports commentary which can be delivered at twice the speed of the fastest conversation. Perhaps the majority of the world's population are multilingual, and multilingualism is a capacity largely beyond current psycholinguistic understanding. Another is the elaboration of technologies of language, of which writing is the most fundamental (Goody 1977), NATURAL LANGUAGE PROCESSING the most advanced. Natural languages are learnt in and through social interaction, probably the most complex cognitive task that humans routinely undertake (and quite plausibly the major pressure for brain evolution in our species; see Byrne & Whiten 1988, COOPERATION & COMPETITION). Many aspects of natural language can only be understood in relation to this interactional context, including DEIXIS, SPEECH ACTS, and conveyed politeness (Brown & Levinson, 1987).

Cognitive scientists are not interested in all aspects of language (their history for example). Four aspects though are of particular importance. One is how language is learnt (see LEARNING IN MAN & MACHINE). A second is how language is processed (viewing the mind or the brain as an information processing device), both in comprehension (Tyler 1992) and production (Levelt 1989). A third is how language interfaces with other cognitive abilities, and how semantic representations are related to other conceptual representations (Nuyts & Pederson in press). A fourth concerns how linguistic ability is instantiated in neurophysiology (see NEUROLINGUISTICS).

In all four aspects, the complex interplay between culture and biology in language is crucial to our understanding of the phenomena. In language acquisition, the cultural variability makes learning a fundamental puzzle; even if there are significant universals, the child must still pair sounds and meanings, where the analysis of neither is given by first principles. For language processing, again language variation is highly problematic: it is hard to see how the same mechanisms can be involved in radically different languages. For example, languages with verbs in medial or final position in the sentence allow one to start speech production before the sentence is fully worked out; but languages with verbs in initial position, fully marked for agreement with subject and object, would seem to require a different production strategy. Similarly, parsing strategies for comprehension would seem necessarily divergent in languages with fixed word order or no fixed word order, with rich morphology or none. Thirdly, fundamental variation in semantic parameters makes the interface between language and general cognition look much more problematic than is commonly assumed. Not all concepts are directly expressible in a language. Further the semantic distinctions obligatorily required by the grammar are not necessarily of the kind that would universally be noted and memorized for future possible linguistic expression (e.g. was the referent visible at event time, was the participant to be described of greater or lesser rank than the speaker and the addressee, was the referent a singleton or not, etc.). This points to the likelihood that to speak a particular language, experience must be coded in the appropriate categories, and raises questions about the universality of the LANGUAGE OF THOUGHT. Finally, with regards to brain and language, there is evidence from selective brain damage (see APHASIA, BRAIN LESIONS, CLINICAL NEUROPSYCHOLOGY) that linguistic abilities are localized partly in accordance with the structure of a particular language (Bates & Wulfreck 1989).

#### RECOMMENDED FURTHER ENTRIES:

LEARNING IN MAN & MACHINE  
LANGUAGE ACQUISITION  
(possibly CRITICAL PERIOD)  
NEUROLINGUISTICS  
APHASIA/BRAIN LESIONS, CLINICAL NEUROPSYCHOLOGY

## **References**

- Bates, E. & Wulfrek, B. 1989. Crosslinguistic studies of aphasia. In B. Macwhinney & E. Bates (eds) The crosslinguistic study of sentence processing. CUP. pp. 328-374
- Bauman, R. & Sherzer, J. (eds) 1974. Explorations in the ethnography of speaking. CUP
- Brown, P. & Levinson, S. 1987. Politeness. CUP.
- Durham, W. 1991. Coevolution: genes, cultures and human diversity. Stanford.
- Goody, J. 1977 The domestication of the savage mind. CUP
- Greenberg, J. 1978. Universals of language, Vols I-IV. Stanford.
- Gumperz, J. & Levinson, S. 1996. Rethinking linguistic relativity. CUP
- Levelt, W. 1989. Speech production. MIT Press.
- Levinson, S. 1996. Frames of reference and Molyneux's question. In P. Bloom et al. (eds.), Language and Space. (pp. 109-170). MIT Press.
- Maddieson, I. 1984 Patterns of Sounds. CUP
- Nuyts, J. & Pederson, E. (eds) in press. Linguistic and conceptual representation. CUP.
- Slobin, D. 1985. The crosslinguistic study of language acquisition. Vol 1 & 2. Hillsdale, NJ:Erlbaum.
- Tyler, L. 1992. Spoken language comprehension. MIT Press.