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Language as a Model for Culture: Lessons from the Cognitive Sciences

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In the anthropological soul-searching of the past couple of decades, a core worry has been over the dismemberment (or "deconstruction") of the traditional anthropological concept of culture (see, for example, Sperber 1996; Kuper 1999; compare Kroeber and Kluckhohn 1952). Still, anthropologists for the most part agree that culture (whatever it is) plays a key role in the development (both phylogenetic and ontogenetic) of humans. While anthropologists have been distracted by their culture wars, the wider scientific community has not been idle: the culture concept has been put to use to argue the *opposite* of the anthropological claim for the dominant role of culture in the development of human beings. Culture is being usurped by cognitive science.

Although anthropology was originally taken to be a contributing member of the cognitive sciences (Gardiner 1989), few sociocultural anthropologists have paid much attention to developments in those fields. Therefore, I have construed my task here as one of characterizing the perspectives toward culture that arise in the cognitive sciences, particularly those that take language, the quintessential cultural phenomenon, as their object of study. To do justice to this assignment would require a serious undertaking in the history of ideas, quite beyond what I can present here. But I will try to sketch the range of presuppositions about culture among this diverse set of theorists and explain why, for some views (including my own), the concept of culture cannot be done away with. Laying my cards on the table at the outset, I see two needs for a concept of culture: we need it in order to talk about

comparison (we need the term "cross-cultural"), and we need it in order to talk about thematic and functional links across different domains in the social/semiotic life of a particular group of people. So mine are unfashionably functionalist arguments: we need the culture concept to capture a degree of symbolic unity across the parts and a degree of functional dovetailing of parts across different domains of social life. It is these connections, I argue, that in many detailed ways help children to learn culture.

My interest in addressing cognitive scientists' concepts of culture arises from my preoccupation with a problem at the intersection of the disciplines of anthropology, linguistics, and psychology: how to account for the distinctive cognitive style of a group of Mayan Indians. The specific problem I wrestle with concerns spatial language and cognition across languages and cultures. Space is fundamental to human life, involving much taken-for-granted knowledge and invoked in many everyday activities: reckoning where one is—one's internalized geographical map—navigating and route finding, giving route directions, indicating where to find things one is looking for, tracking locations and travels in a narrative, spatial reasoning, and much more. There is much controversy over the respects in which spatial language and thinking are universal (as most cognitive scientists assume they are), to what extent they can vary cross-linguistically and cross-culturally, and whether variations in spatial language can influence spatial thinking. In short, what are the implications of variability in spatial language for the nature of universals and for the role of language and other aspects of culture in human thinking?

My corner of this problem lies in the Mayan community of Tenejapa, in southern Mexico.[1] There we find a distinctive linguistic repertoire for talking about spatial relations, a distinctive frame of reference for calculating them—based on the uphill-downhill slope of the land—and a distinctive cognitive style associated with these. That cognitive style consists of ways of thinking about, talking about, remembering, and reasoning about space that are, in crucial respects, different from those found in many other societies. Underlying this conclusion are observations on things such as the following:

What people routinely say (in their own language, Tzeltal):

- Someone requests a machete, saying, "Give me the machete uphillward of the door"

What people routinely do and do not do:

- Gesture and pointing are "absolutely" oriented in relation to physical places

- People avoid sleeping with head oriented toward "downhill"
- Ritual life is organized into "uphill" and "downhill" ceremonial sectors

The abstract knowledge that people demonstrate in what they can and cannot do:

- Adults are absolutely oriented at all times (amounting effectively to always knowing where north is)
- There is a complete absence of linguistic left-right distinctions in spatial description
- There is a consonant left-right symmetry in household layout, artifact design, and weaving patterns

How people perform on interactional and cognitive tasks:

- People talk about and remember spatial arrays, whether in large-scale (geographic) or small-scale (tabletop) space, in an absolutely oriented fashion.

In short, members of this community demonstrate an acquired way of thinking and talking about space, a distinctive cognitive style that is evident not only in communicative behavior (speech, gesture) but also in many other aspects of life (weaving styles, house construction, ritual performances). The everyday, taken-for-granted nature of this nonegocentric spatial system flies in the face of claims made in cognitive science that the universal basis for spatial language and thinking lies in our common human egocentric visual system, which strongly constrains how we can think about space. And in many respects, the contexts for learning and using the linguistic system at the heart of this style do not correspond to what has been presumed to be universally necessary for children to learn a language.

I am convinced that I need a notion of culture (including the culture-specific details of the language) in order to talk about how children come to acquire this quintessentially cultural way of thinking. More generally, I believe that culture—despite the current resistance to this idea in the cognitive sciences—has much to do with the processes of language acquisition and the socialization through language of the distinctive cognitive and ideological habits that characterize members of this community. "Culture," in the form of semantic specificity in Tzeltal verbs, in community-specific patterns of verbal interaction, in gesture, and in many other respects, plays a deeper role than most cognitive scientists want to allow.

But culture *in what sense?* And *how* does culture have this effect? I address these questions first by considering the views of culture implicit in different approaches to the study of language, perhaps the preeminent

cultural property of humans and a prerequisite for the rest of (human-style) culture. At the same time, language is the property that has been taken by many to be the most self-contained, most dissociable from the rest of culture. Thinking about culture from the perspective of language raises questions distinct from those preoccupying the anthropological critics of the culture concept—those objecting to the idea of culture as shared, integrated, and transmitted intact across generations. Language is a highly integrated symbolic system; as cultural knowledge and behavior it is (usually) part of the automatized, taken-for-granted background of everyday life. In these respects it is quite different from systems of consciously held values and beliefs. The perspective from the language sciences therefore provides a contrast and a foil to the issues central to the culture debates among anthropologists. Later in the chapter, I describe an approach that aims to contribute directly to cognitive science by investigating precisely the relationship between mind, language, and culture.

The View from Linguistics and Cognitive Science

Cognitive scientists are a loose coalition of linguists, psychologists, and computational modelers who share the view that cognition is a set of mental computations. Among many of these theorists, a view of culture has become the publicly dominant view; it has captured the journals and appeared in a number of popularizing books (e.g., Pinker 1994, 1997). The view is of Culture with a capital *C*, a monolithic concept with unspecified content—it is simply that property which distinguishes humans from other animals. Along with this view of culture goes a view of language as a universal property of humans that has a detailed genetic base; it is (in Pinker's words) an "instinct." From this perspective, the idiosyncrasies of specific languages or cultural groups—including my Tzeltal Mayas—can be of no interest whatsoever because they are presumed not to matter.

But if it can be shown that cultural variability is deeper than superficial and can have a fundamental influence on how people think, then the cognitive sciences will have to begin to include *cultural differences* as well as Culture in their understanding of human thinking. This is where anthropologists, with their comparative perspective, are in a position to make an important contribution.

Linguistic scholars, like people everywhere, tend to see the world through the lens of what they know about. Hence, they tend to take language as the model for the way culture is to be construed. Yet they

can hold radically different views of culture, and of the role of culture in explanations, depending on which kind of linguistic theory they adhere to. Many linguists, to be sure, ignore culture altogether; it is not considered relevant to their field of operations. For those who do invoke culture, we can identify five broadly characterizable "ideal-type" notions of culture. These are distinguished according to the degree to which, and in what sense, they take culture to be relevant to the object of study and, in particular, according to the views of their proponents concerning the nature of language, of meaning, and of mind.

Stance 1: Culture as Ethnic or Linguistic Group

The first stance, common among linguists, takes culture to be a shorthand way of referring to social groups who share a language. Most of us employ this concept of culture some of the time (talking of culture *X* versus culture *Y*), but for many linguists of a typological or comparative persuasion, it is the only concept of culture at hand. People who share a language are taken to be members of a social group, with social barriers to communication across groups and with boundaries subject to historical change. "Culture" is equated with such groups in an unexamined way. For some, the uniqueness of the language amounts to the same thing as the uniqueness of the culture, which is considered irretrievably lost if the language is lost. For these scholars, languages differ within typologically describable patterns; there are linguistic universals, but by far the majority of these are "conditional" universals of the form, "If a language has feature *X*, then it will have *Y*." Mind is not, for the most part, an explicit focus of interest (except when features of mind are presumed to explain universals). Grammatical meaning is seen as based on a universal repertoire of distinctions (e.g., tense, aspect, person), although lexical meaning is seen as culture specific, varying with the language or the language type.

Besides being politically sensitive, this "culture-equals-language-group" stance—implying, as it does, for example, that an English-speaking Australian Aboriginal is no longer an Aboriginal—is sociolinguistically naive. There simply is no one-to-one mapping of language and social group; instead, social networks, corporate groups, and language interdigitate in very complex ways. Indeed, the concept of language is as problematic as that of culture (in terms of boundedness, holism, etc.). Language typologists do acknowledge certain phenomena that undermine their language-equals-cultural-group stance: for example, they recognize "language areas" where there is structural influence across

unrelated languages in an intercommunicating area (as in India or Mesoamerica). To the extent that they try to account for such areal patterns, it is by invoking a "traits" explanation: a set of linguistic traits (e.g., particular grammatical morphemes) diffuses, owing to a particular set of cultural traits (e.g., trade, political dominance, intermarriage).

Stance 2: Culture as Mental Module

A second view of language employs a correspondingly different model for culture. In this stance, founded in Chomsky's generative school of linguistics, culture—if it is considered at all—is construed, by analogy to language, in a very special sense. The distinctive property of language is taken to be syntax, and the abstract core of syntax (Universal Grammar, or UG) is a mental module that is universal and biologically innate. Syntax is taken to be autonomous from meaning, and meaning is seen as being parasitic on a universal human conceptual structure that is also taken to be innate. The innateness argument rests on the problem of how a person can acquire "knowledge of a language," since that knowledge is too abstract to be directly perceived. The answer offered is genetic endowment.

Several theorists have explicitly applied this model to culture. The psycholinguist Steven Pinker, the great popularizer of this stance (Pinker 1994, 1997), states quite bluntly that all the interesting properties of language are universal and are innately specified in our genes, down to the details of UG (phrase structure, nouns and verbs, subjects, case, etc.). Any differences are trivial variations on this fundamental structure (Pinker 1994: 18–19).

He takes the same line toward the rest of culture (1994: 411): "At first glance, the ethnographic record seems to offer a stark contrast [to UG]. Anthropology in this century has taken us through a mind-broadening fairground of human diversity. But might this carnival of taboos, kinship systems, shamanry, and all the rest be as superficial as the difference between *dog* and *hundt* [*sic*], hiding a universal human nature?"

Pinker points out (with some justice) that the culture of anthropologists themselves gives one cause to worry, because they tend to glorify cultural difference ("Be merchants of astonishment," says Clifford Geertz [Pinker 1994: 411]). The argument for the universality of culture and its genetic basis is developed at length in Pinker's book *How the Mind Works* (1997), which is based essentially on the ideas of evolutionary psychologists such as John Tooby and Leda Cosmides (1992).

In this book, Pinker extends the image of mental modules to include a module for culture (1997: 21). Again, his use of the culture concept is solely to make claims about the set of traits that all humans, or all human subgroups of a certain type (namely, "foragers"), share. For example:

> All human cultures ever documented have words for the elements of space, time, motion, speed, mental states, tools, flora, fauna, and weather, and logical connectives . . . . They combine the words into sentences and use the underlying propositions to reason about invisible entities like diseases, meteorological forces, and absent animals. Mental maps represent the locations of thousands of noteworthy sites, and mental calendars represent nested cycles of weather, animal migration, and the life histories of plants . . . . All foraging peoples manufacture cutters, pounders, containers, cordage, nets, baskets, levers, and spears and other weapons. (Pinker 1997: 189)

Here is depicted a kind of generalized forager, characterized by a universal set of traits. The only role for cultural difference is as the historical accretion of expertise: "An information-exploiting lifestyle goes well with living in groups and pooling expertise—that is, with culture. Cultures differ from one another because they pool bodies of expertise fashioned in different times and places" (Pinker 1997: 190).

I have used Pinker to illustrate stance 2 because his claims are so unequivocal that they have received a wide press. But, hard to believe though it may be, this stance is perhaps the mainstream one in cognitive science, taken uncritically from the mainstream linguistics of the past forty years and extended from language to culture by theorists influenced by evolutionary psychologists. Although the view of language as an innately specified mental module has certainly not gone unchallenged,[2] in the work of many other cognitive-science-oriented theorists we can find arguments for what is universal and what is innate in humans along lines very similar to Pinker's. Take, for example, Ray Jackendoff, whose picture of culture focuses on how children learn concepts. Like Pinker, Jackendoff presumes that there is a universal conceptual structure with innately given concepts and rules for restricting possible concepts. In order for children to learn word meanings, Jackendoff (1992) argues, they must have a set of primitives with specific content (e.g., spatial concepts, the concept of possession). Such concepts must be pregiven in the child's "Conceptual Well-formedness Rules," Jackendoff's proposal for a mental module that sets

the limits for possible concepts. Thus, not only the ability to form concepts but the content of some concepts—the "primitives" from which concepts are built—must be innately given.

Jackendoff (1992: 69) also argues for "a module or group of modules (a faculty) that is specialized for *social cognition.*" For this there are input-output modules (just like those for, among other things, the language system, the visual system, the motor system, and musical capacity) that provide connections between sensory and motor periphery and central capacities. The social cognition module is what enables children to learn culture. Foreshadowing Pinker (1994), Jackendoff (1992: 74) observed that despite considerable variation both across cultures and within a culture, "following the example of language, perhaps we should be looking for underlying principles that enable a child to learn the culture-specific conventions in which he or she is situated." Many such underlying principles have been proposed in the child development literature, including hypotheses about the necessary cognitive prerequisites for learning language in general and for learning particular aspects of language (e.g., nouns as opposed to verbs).[3] In the grip of the computational metaphor for human thinking, these proposals show a certain lack of imagination about how context and creative inference can fill in the gaps for human learners who (unlike computers) grow up in the matrix of a rich community of practices that inform the use of language.

Jackendoff winds up with an explicit analogy between culture and language in the form of Chomsky's Internal language (I-language), or competence, as opposed to External, or E-language, which is performance: "The hope . . . is that many of the Universals and parameters of human E-[external] social organization can be eventually attributed to the character of I-[internal] social organization, just as many properties of human linguistic communication have been attributed to the mental capacity that constitutes I-[Internal] language" (1992: 76). His detailed proposal for these universals includes some primitives of social cognition: persons, requests versus orders (which rely on a social dominance hierarchy), exchange transactions (which rely on social concepts of agreement and value), and ownership.

What then is left to be learned? Not a lot, according to Jackendoff: "The child only has to learn what parameters govern ownership or property rights in the local culture. The codification of these parameters (and those connected to kinship, etc.) constitutes the basic issues around which a culture constructs its equivalent of a legal system" (1992: 79). And: "'Learning a culture' then consists of fleshing out the particulars of these frames into a culture-particular realization, and

creating categories of situations in which to apply the logic of each mode of interaction" (1992: 80). In other words, an innately specified social cognition module provides the underpinnings—including the relevant concepts—for "learning a culture."

In sum, cognitive scientists such as Pinker and Jackendoff insist that one think about culture just as generativists think about language—that is, as a genetically specified set of underlying elements with underlying rules of combination. In their proposals for a Culture module, they seem to be saying, "In the absence of a coherent science of anthropology, we'll make the obvious generalizations from Language and postulate the existence of universal abstract traits of Culture analogous to Language ones, while redirecting attention to the mental underpinnings of Culture. From this perspective the differences between cultures are trivial."

We can give these cognitive scientists credit at least for asking the question that anthropologists have generally failed to ask—How is it that humans can have culture?—and for proposing an answer: Because human minds are different from those of other animals![4] This idea has been irresistibly attractive not only to cognitive and developmental psychologists but also to many cognitive anthropologists. Such proposals, however, fail to recognize that it is by no means straightforward to establish what the cognitive primitives underlying all social life actually are. Everyone would agree that biology places some constraints on human minds, culture, and behavior. But exactly what those constraints are is precisely the issue that should be (and on the whole is not) empirically addressed. Pinker's and Jackendoff's claims for the innate component are entirely too detailed and theory dependent in relation to the evidence assembled. Indeed, all the universalists who take stance 2 are painfully naive about the extent and significance of cultural variation.

As every anthropologist knows, it is not easy to find universals in the cultural domain. Unilinear descent groups, marriage, shamanism, money, the incest taboo—what, on the ground, counts as instances of these categories? Universals are equally problematic in linguistics. Many putative universals are hotly disputed by linguists looking at specific languages: whether languages always have subjects, or distinguish nouns from verbs, or are characterizable in terms of phrase structure. The crux of the problem is that universal traits at a concrete level do not exist. One can find *elements* of putatively universal traits (e.g., marriage) in social life (male-female bonding, maternal child-rearing), as one can in language (e.g., elements contributing to the "nouniness"

or "verbiness" of words). But when one looks at particular cases, the elements are not necessarily all present and do not necessarily cohere. The level of universals is in these elements, not in systems or institutions (kinship, marriage) taken as a whole.

In my view, linguists have not yet established exactly what Language is, and so they are hardly in a position to extrapolate to Culture. Turning now to sociological and anthropological approaches to language, we can see that different ideas about the nature of language induce different extrapolations to the nature of culture.

Stance 3: Culture as Knowledge

Closer to home for anthropologists, a third stance treats cultural differences as worthy of investigation but assumes that they are best seen through a language's semantic categories. Language again is the key to culture, but it is language as semantics rather than as Universal Grammar. This is of course the view promulgated in classic ethnoscience, as in Ward Goodenough's famous statement that "a society's culture consists of whatever it is one has to know or believe in order to operate in a manner acceptable to its members, and do so in any role that they accept for any one of themselves. Culture, being what people have to learn as distinct from their biological heritage, must consist of the end product of learning: knowledge, in a most general, if relative, sense of the term" (1964 [1957]: 36).

Like stance 2, this "culture-equals-knowledge" stance is based in a linguistic homology (Duranti 1997: 27). Knowing a culture is like knowing a language—both are mental realities—and describing a culture is like describing a language: one writes "cultural grammars."

Modern proponents of this view range from cognitive linguists (e.g., Langacker 1986) to practitioners of some schools of semantics (e.g., Wierzbicka 1992) and modern descendents of ethnoscience or cognitive anthropology (D'Andrade 1995; Strauss and Quinn 1997). In terms of their views of mind, this group is as cognitivist as the generativists—mind is where the action is—and many advocates of stance 3 are also strongly universalist. Meaning inheres in individual minds but is structured by culturally learned experiences that provide "frames" or "schemata" for organizing and understanding cultural ideas. Culture consists of the contents of such schemata. The cultural notions invoked, however, are often crude, including extreme proposals of modularity. For example, Leonard Talmy's (2000) idea of a cognitive culture module is analogous to Pinker's.

From this perspective, the mind is taken to be rather hodgepodge, for the schemata—the units of culture in the mind—are not necessarily integrated with one another. In fact, "the overall view is one in which culture is seen to be particulate, socially distributed, variably internalized, and variably embodied in external forms" (D'Andrade 1995: 248). This insistence on the heterogeneity and nonintegration of different aspects of cultural knowledge has the virtue of providing an antidote to overholistic views of culture. However, it ignores the fact that some core aspects of cognition (e.g., space) are demonstrably culturally conditioned and yet *crosscut* different mental domains.

Stance 4: Culture as Context

A fourth stance, associated with the ethnography of speaking, takes culture to be the basis for the contextually specific nature of language as it is actually used. Culture is whatever makes us use language differentially in different contexts, with contexts taken to be characterizable in terms of social variables such as gender, age, ethnic group, genre, and social setting. This is a loosely connected family of approaches, crossing disciplinary boundaries from much of linguistic pragmatics to the hyphenated branches of linguistics that are interested in the social setting of language use for adults or for children learning language—sociolinguistics, traditional anthropological linguistics, some developmental psychology. For scholars working from this perspective, analysis centers on activities, the interactions in which activities are embedded, how such activities structure the environment and frameworks for understanding within which language is used and learned, and how this can give rise to miscommunication in cross-cultural interaction. In this stance, it is the cultural contexts that are actually the focus of study. On the whole, the nature of mind is not explicitly of interest. Some universals have been suggested (for example, Dell Hymes's proposal [1974] for the dimensions of context relevant to linguistic variation), but the emphasis is on differences, and this group of scholars studying linguistic behavior is not generally engaged in dialogue with universalists.

Stance 5: Culture as Process

This stance emerged in the last two decades of the twentieth century in the subdisciplines of linguistics, anthropology, and psychology that study actual, naturally occurring interactional behavior in its cultural

setting.[5] Here we have the insistence that culture is both knowledge and habits of thinking, on the one hand, and out-there-in-the-world objects, interactions, and communicative behaviors, on the other. In this supraindividual sense it forms the environment—the people, objects, and altered landscapes—into which children are born and which scaffolds their interactions so as to ensure that, within the constraints of their biological endowment, they gradually become enculturated members of the society.

Although there are many differences among theorists who take stance 5, they all stress the emergent nature of mind, meaning, and culture. These emerge in the process of social interaction, relying both on cultural props in the environment and on other minds. Such theorists also share a conviction that to understand this emergent meaning-mind-culture, one must study the emergent process by looking at data drawn from real, situationally embedded social interactions.

Culture, according to this stance, is partly in the mind and partly (re-)created in social interaction. Proponents include practice theorists such as Lucy Suchman (1987) and Jean Lave (1988), who argue that cognition is instantiated in action, in everyday practices, and as such it is "distributed—stretched over, not divided—among mind, body, activity and culturally organized settings (which include other actors)" (Lave 1988: 1). Much cognition occurs *between* individuals, emerging from their interaction (Hutchins 1995). Linguistic anthropologists argue, in addition, that knowledge resides also in the tools people use (Keller and Keller 1996), and so culture as knowledge must include culture as objects.

Other proponents of this approach to culture are the modern interactionist linguistic anthropologists (roughly equivalent to linguistic anthropology minus cognitive anthropology), who ritually cite Pierre Bourdieu as a source of inspiration: for example, Alessandro Duranti (1997), William Foley (1997), John Gumperz (1992), and William Hanks (1995). Work on language socialization (Ochs 1988; Ochs and Schieffelin 1986; Schieffelin 1990) also fits into this perspective.

Another group that takes stance 5 consists of proponents of a newly conceptualized Whorfianism (Gumperz and Levinson 1996; Lucy 1992a, 1992b), who are committed to the comparative study of thought as constrained by language. Rather than treating thought and language as static global entities, they link the language-thought relationship in a particular domain to online processing, habits, and patterns of interaction. These modern studies of linguistic relativity, with their explicitly comparative methodology, are tied to cross-linguistic studies

of language acquisition conducted from the perspective of stance 5 (for example, Bowerman 1996; Bowerman and Levinson 2001; Slobin 1996). These have formed a distinct line of research that converges in one respect with that described under stance 3, namely, in the serious attention given to findings in cognitive science about how the human mind works and a commitment to contributing an anthropological, comparative perspective to the cognitive science enterprise. This work reflects a recent swing back in psychology, linguistics, and linguistic anthropology toward a position that views diversity in linguistic and cultural practice *within* what has been learned about universals.

Summary

Cognitive science is the modern setting for the old debate concerning the psychic unity of mankind. The five stances toward culture I have just sketched characterize different positions in the debate, each with its own limitations. Lurking underneath these stances are more fundamental ideological divisions, polar oppositions found in anthropology as much as in linguistics. These are the sources of the chronic cross-talk between universalists and relativists, with their different presuppositions. The three major poles can be characterized as follows.

First, there is the opposition between Culture and cultures. Most cognitive scientists, as just surveyed, deal only with Culture with a capital *C;* humans versus other animals are the focus of interest. A parallel split occurs in linguistics: Language with a capital *L* versus languages. As John Lucy (1996: 39) has pointed out, one's stance toward the importance of variation in language and culture depends greatly on one's view of the significance of having a language at all, as opposed to not having one. The dominant perspective in cognitive science stresses the continuity between humans and other animals and views language as a biological phenomenon that maps in an unproblematical way onto perception, cognition, emotion, and social interaction. Humans, in this view, are unique in occupying the "cognitive niche" (Pinker 1997), to which language is a relatively straightforward addendum. The alternative view holds that despite many continuities, humans differ fundamentally from other animals, because humans alone possess a variable symbolic capacity that adds new levels of organization (self, culture, consciousness, historically developed systems of meaning), all of which depend on human language. This view insists that humans also occupy the "cultural niche," and cultural niches vary (Deacon 1997; Levinson 1998, 2000; Tomasello 1999). Indeed, it is

culture's amenability to variation that may be the key to the uniqueness of this human-occupied niche.

Second, one can describe an opposition between concepts of culture as a (partially) integrated whole versus culture as a set of traits. The holistic view of culture insists on common themes, patterns, and structural connections across different domains in a society. Language goes along with a mind-set: the connections are carried in symbolic systems with common themes cross-connecting to different aspects of members' social and cultural lives. This perspective tends to be antitrait and anticomparative, and it is the way many anthropologists (Geertzians, structuralists) have tended to think about culture. The whole has a coherence greater than the sum of its traits.

However, because this notion of culture as the common threads across domains is ineffable, hard to pin down, it remains opaque to virtually all nonanthropologists. The nonanthropologist's view is much easier to grasp: groups who share a culture have particular *traits;* it is irrelevant whether or not one trait is related to another. One can do culture analysis by traits (à la Murdock [1949]), as when one lists a set of traits common to the "culture area" of Mesoamerica. In cognitive science, this traits view of culture reigns.

Third, we have the "culture as mental" versus "culture as material" opposition. Cultural traits may be mental (e.g., Dawkins's [1976] and Dennett's [1991] "memes"), or they may be material (e.g., primatologists' lists of cultural "tools" used by apes). This opposition divides cognitivists, who take culture to be a mental phenomenon, from primate specialists, who look at culture as material, and from archaeologists, who take the material remains of cultures as their starting point. But proponents of stance 5 argue for *both:* culture encompasses the mental and physical environment in which meanings arise in situated interaction with others and in which a child turns into a member of a cultural group (see, e.g., Bowerman and Levinson 2001; Tomasello 1999).

Given these kinds of profound divisions in interests and presuppositions, is there a concept of culture that might usefully feed into cognitive science? The cognitive scientists I have discussed are floundering to include culture in their grand picture while operating with exceedingly primitive concepts of culture. It is time to begin building explicit models and cross-disciplinary research programs for investigating the *interaction* of culture (as socially learned meanings and behavior patterns) with language and with mind. I next describe one such program, coming back to consider my Tenejapan problem of spatial language and cognitive style.

How Can We Study Language-in-Culture Comparatively?

Since about 1990, Stephen Levinson and his collaborators at the Max Planck Institute for Psycholinguistics have developed an empirical comparative program that aims to contribute directly to the cognitive science enterprise. The aim is to establish, against a background of universal constraints (which need to be discovered, not stipulated), dimensions of cognitive variability by looking at particular domains—such as space—that are fundamental to thought while forming part of the taken-for-granted background of everyday life. Culture as "public representations" is both in our minds and in the environment, and it comes into individual minds through social interaction. This notion of culture is more particulate than the anthropologists' "group with its own lifestyle and value system" but less hodgepodge than Roy D'Andrade's (1995) "tidal pool." Cultural ideas are considered within a particular domain, in this case the domain of spatial language and spatial thinking across cultures. They are also considered within a community of practice, as actually used by members, not just as reported by them.

Space was a provocative place to start, because the standard line in philosophy, psychology, and cognitive science has presumed a universal basis for spatial cognition in the biological structures that we derive from our mammalian inheritance. The dominant view is that an egocentric perspective is fundamental to human spatial thinking: three planes through the body provide the basis for thinking in terms of space as in front and behind, to the left and right, and above and below (see, e.g., Clark 1973; Miller and Johnson-Laird 1976). This view seems to be supported, first, by modularity in the brain (distinct "what" versus "where" systems) and, second, by certain linguistic evidence, such as how children acquire spatial prepositions in Indo-European languages. The conclusion was overhastily drawn from these kinds of evidence that the universal basis for spatial language resides in our common human egocentric visual system and that it strongly constrains how we can think about space.

Findings from our large comparative study of spatial language and cognition, however, cast doubt on the universality of egocentric space as the basis for linguistic systems of spatial description. It turns out that spatial linguistic systems around the world are much more variable than has been presumed (Levinson 1996a, 1996b, 1996c). In particular, they differ systematically in their underlying frames of reference—their

coordinate systems for reckoning spatial relations. Three major frames of reference are used in languages of the world, and only one of them is egocentric. The *relative* frame of reference uses the speaker's egocentric viewpoint to calculate spatial relations, as in the familiar left-right and front-back systems of European languages. The *absolute* frame uses fixed angles extrinsic to the objects whose spatial relation is being described, as in the cardinal direction systems of many Australian Aboriginal languages. The *intrinsic* frame relies on intrinsic properties of objects being spatially related (e.g., parts and shapes of the ground object or positions of the figure object) in order to reckon spatial relations, as in the body-part systems (top, bottom, side, middle, etc.) of many languages.[6]

These three frames of reference are made use of differently in different societies. First, there are different "default" systems for spatial language across cultures. Western speakers of English, for example, use mainly relative and intrinsic systems, employing the absolute only for large-scale geographic reckoning (between, say, two cities). Speakers of the Australian Aboriginal language Guugu Yimithirr use only one frame of reference, an absolute north-south-east-west system, and Tzeltal speakers use only two—an absolute (uphill-downhill) and an intrinsic (body-part) system. Second, spatial descriptions in different languages and cultural settings may have different default frames of reference for particular purposes (small-scale versus long-distance, for example). Third, cognition is related to the default system. The different frames of reference have different conceptual bases (egocentric, geographically centered, and object centered), resulting in different implications for spatial memory and reasoning.[7] They also differ in cognitive complexity.[8]

Another major finding from the Max Planck project is that there is a clear link between the linguistic system used and nonlinguistic spatial cognition. Results on a range of nonlinguistic tasks carried out by members of social groups representing more than ten unrelated languages show that people think, remember, and reason in the system they use most for speaking (Levinson 1997, 1998; Pederson et al. 1998). This is a prime example of a Whorfian link between language and nonlinguistic cognition.

To illustrate, let me return to the case I started with—the Mayan Tzeltal speakers of Tenejapa in southern Mexico. In this community, set in precipitous mountain terrain, the main spatial frame of reference is in terms of "uphill" and "downhill." Using an abstract conceptual angle based on the overall slope of the land downward from south to north, Tzeltal people routinely describe motion as "ascending,"

"descending," or "going across" and objects as being "uphill," "downhill," or "acrossways" in relation to another object. They do this on both sloping and completely flat terrain, and in small-scale (e.g., table-top) space as well as over long distances (Brown and Levinson 1993a, 1993b; Levinson and Brown 1994). Correlated with this absolute linguistic system is the fact that on nonlinguistic tasks of memory and reasoning, Tzeltal speakers have a strong tendency to code in absolute terms, in contrast to Dutch speakers, who code in relative left-right, front-back terms (Brown and Levinson 1993a; Levinson 1996b). To achieve this behavioral consistency, Tzeltal speakers must have a cognitive habit of constant background tracking of where abstract "uphill" is. Other cultural features of this Mayan society reflect the absence of left-right distinctions and reinforce the cognitive effects of the absolute frame of reference. For example, there is a strong preference for left-right symmetry in cultural artifacts and activities (weaving, architecture, ritual). There is also evidence that people are to some degree "mirror-image blind,"[9] a result consonant with their speaking a language with no left-right distinction and not (yet) having been forced by literacy or automobiles to attend to left-right distinctions.

How do people come to share a cognitive style with respect to space? How do children learn to think differently depending on what spatial reference system they learn? The mainstream (Piagetian) view is that cognitive development proceeds through universal stages, uninfluenced by the linguistic categories of a particular language; cognitive development precedes, and lays the basis for, linguistic development (Laurendeau and Pinard 1970; Piaget and Inhelder 1967). But a third finding from work at the Max Planck Institute is that children are very early attuned to the particularities of the semantic spatial categories their language uses (e.g., Bowerman 1996). In line with this finding, there appears to be cultural variation in how children learn their spatial linguistic system. Evidence from my longitudinal study of Tzeltal children indicates that they learn the absolute system relatively early, achieving productive mastery of the complex sets of semantic oppositions by age three and a half.[10] They acquire the ability to use the system in novel situations on flat table-top space between ages five and a half and seven and a half.[11] In addition, their linguistic production suggests that they learn the absolute system—the "projective" and therefore cognitively more difficult one—as soon as, or possibly even before, they master their intrinsic "topological" system (Brown 2001; Brown and Levinson 2000).[12]

These findings and others—including that Tzeltal children of eighteen months start talking with verbs, many of them semantically (and

culturally) specific verbs—suggest that language itself can influence the concepts children develop during their semantic learning (Brown 1998a). Tzeltal children are also sensitive to the semantic structure of their language, as is revealed in patterns of ellipsis, where speakers can assume that what is elided is recoverable from context (Brown n.d.). More speculatively, certain properties of the language they are learning may influence their cognitive development; it is suggestive that Tzeltal children acquire their absolute linguistic system very early, as soon as or even before the intrinsic system, thus inverting Piaget's claim that topological concepts are always learned before Euclidean ones. It is also of interest that these children very early (from around age three) use and recognize conventional irony, as well as lying, raising the provocative possibility that an early "theory of mind" is induced by culture-specific language practices (Brown 2002).[13]

How do the children do it? Here is where I need a culture concept, in order to capture the coherence of semiotic systems across different domains. The supports afforded to children learning this system apparently so effortlessly include features of the pragmatics of the spatial language system, the characteristics of caregiver speech to small children, the spatial consistency of gestures accompanying speech, and the early engagement of children in the adult world (to fetch things, take messages, take responsibility for child care). I need a culture concept in order to talk about the "limited holism" of symbolic systems linking otherwise disparate activities and realms of social life into coherent patterns. This is not just a random collection of traits; the parts make sense taken together, and the sense they make makes them accessible to the learner.

Some far-reaching conclusions emerge from this research concerning where concepts can come from. Concepts do not have to be innate: linguistic inputs of differing kinds can have demonstrable effects on the process of (semantic) language acquisition. As Stephen Levinson and David Wilkins (n.d.) point out, the abstract nature of the underlying universals means that children have to be constructivists, not just mapping local forms onto preexisting innate concepts but building the concepts as they learn the language. Spatial language is not fully pregiven; the child must construct both domain and range and the mappings between them. Theorists such as Ray Jackendoff (1992), W. V. O. Quine (1960), and Lila Gleitman (1990) have thought this to be logically impossible, and so the concepts must be innate. The Tzeltal findings suggest that there may well be other solutions to the logical problems, solutions derived from some uniquely human abilities—for

example, the ability to attribute intentionality to others (Goody 1995) and the ability to understand that others have minds like one's own (Tomasello 1999). These allow humans (unlike computers) to make use of information available in social interaction—that is, in communicative processes—to create culturally specific categories.

A diagram contrasting anthropological and cognitive science perspectives on culture may help to clarify my position. Table 8.1 summarizes anthropologists' views of "culture(s)" and cognitive scientists' views of Culture. The anthropological core of culture is learned, it accumulates over generations, and it is (potentially) different across social groups. (In this core, I see no problem with including apes.) Anthropologists also generally agree about what kinds of content culture has, though they disagree passionately (in both time and space) about which kinds are more important and worthy of study. They also agree for the most part on what culture is *not*. It is not social structure or group identity; it is not well bounded, ahistorical, uniformly shared, or transmitted intact.

But few social or cultural anthropologists ask the questions that are surely crucial to understanding what it is to be human, the questions cognitive scientists are asking: What is the capacity for Culture? What prerequisites allow humans to have Culture at all? Cognitive scientists focus on ingredients of two types (again, with much disagreement about which is the critical ingredient). Set 1 is about *cognitive architecture*—how the brain is wired, which gives humans attentional and representational biases. This architecture provides crucially for symbolic capacity, hierarchic levels of mental organization—the ability to think about our own thoughts, to form sets of sets—and the ability to understand others as intentional agents with minds like our own. Some cognitive scientists also postulate a highly specified innate basis—set 2, the *contents* of the mind—claiming "representational innateness" in specific specialized modules for solving particular evolutionary problems. These include, as we have seen, modules for Universal Grammar and for Culture in the form of modular logic, specified by our genes, for universal cultural and social ideas. They also include word-learning theorists' proposals for word-learning biases, Jackendoff's universal conceptual structure ("Well-Formedness Rules"), conceptual primitives (such as EXIST, spatial concepts such as UP and DOWN, and social concepts such as PERSON and POSSESSION), universals of color terminology, semantic primitives, and "basic concepts."

But what is absurd about the claims for prerequisites for Culture encompassed in set 2 is that they are all made by intuition, with no

Table 8.1. Anthropologists' "culture(s)" versus cognitive scientists' Culture.

Anthropologists' "culture(s)"		Cognitive scientists' prerequisites to Culture	
Learned; accumulated over generations; different in different social groups		Universal, genetically based mental structures	
Shared mental structures:	Semiotic systems, knowledge, ideas, beliefs, values, principles for understanding, emotional habits, cultural models, cognitive styles	Set 1, cognitive architecture:	Symbolic capacity, hierarchic levels, self-reflexitivity, ability to understand others as intentional agents
Shared patterns of behavior:	Behavioral styles, interactional "ethos," public rhetoric, etc.	Set 2, content:	Universal Grammar, culture modules, word learning biases (e.g., shape bias), universal conceptual structure, conceptual primitives (e.g., UP/DOWN, PERSON), "basic concepts"
Shared objects:	Tools, knowledge technologies, etc.		

control over the range of data. They are embarrassingly ethnocentric. The basic problem with such proposals is that they have the *wrong kind of content* in them—far too much content. Constraints on the structure of mind (and language and culture) do exist, but they have to be more like syntax and less like semantics.[14] We have to distinguish the architecture claims (symbolic capacity, hierarchic levels) from the content claims (the concept of "property," for example) and to be skeptical of the latter. I see my Tzeltal child language work as (in part) aimed at testing and challenging these content claims: I drag bits and pieces of what are proposed to be part of the "universal content of

mind" over into the "culturally variable" and learnable arena. It is important to ask, What is unique about humans? What is it that allows us to develop the way we do (unlike other animals in important respects)? But it requires redefining the job as a matter of assessing the *interplay* between cognitive preconditions to language and cultural learning, as well as the linguistic preconditions to advanced conceptual development.

The news to cognitive science from this research is that universals of mind are not the whole story in the domain of space. Absolute spatial systems are widespread across the world; they do not necessarily coexist with other systems of spatial reckoning; they clearly can affect everyday cognition, reasoning, and memory; they can affect children's learning of the semantics of their language; and they possibly even influence the children's cognitive development. These results encourage some optimism that we may finally be moving away from universals versus particulars as poles in an argument and toward an awareness that universals and particulars must coexist. Even if there are extensive universal properties of human cognition (as appears to be the case in the domain of space), these may be accompanied by cognition-penetrating cultural specifics (such as the frame of reference used for calculating spatial relations on the horizontal).

What Use Is "Culture"?

I see two distinct needs for the culture concept. Culture_1 captures the thematic unity of a symbolic system—the conceptual unity across domains demonstrated, for example, in my findings about early, culture-specific spatial meanings for words supported by semiotically compatible properties of the culturally modified environment (e.g., household and field layout) and properties of social interaction (e.g., gesture). Culture_2 captures the functional fit between elements across different domains, as I have argued, for example, in connection with children's initial access to the linguistic system. Elsewhere (Brown 1997, 1998a, 1998b), I have shown that by the time Tzeltal children start to speak at around eighteen months, they have isolated the verb root without the help of prosodic cues or of a special baby-talk register, but with cues provided by an idiosyncrasy of Tzeltal conversational style (dialogic repetition). Retrospectively, it makes sense to structure verbal discourse like this, as an aid to children's language learning. (There may of course be many other reasons, too—redundancy, politeness, or grooming, for example).

My claim is that against a background of universal constraints on what human minds and cultures can be like, children in interaction with the cultural environment come to have distinct cognitive styles in different communities of practice. I agree with Christina Toren (this volume): minds are created in interaction with others and with the culturally shaped environment. I, too, study how children come to have certain kinds of ideas, but unlike Toren, I study ideas that are not (for the most part) consciously accessible. There is a taken-for-granted-way of thinking about spatial relations that is coherent in relation to other ideas also learned along the way. *That* is what I need a notion of culture for. And that is what a pure traits view of culture cannot provide.

What does "culture" buy you? A system greater than the sum of its traits. If you, the learner, grasp one part of the system, you can extrapolate to other parts—for example, pointing, gesture, ritual, and the organization and layout of fields, houses, and schools all help children to grasp the semantics of an absolute spatial system in the language. The presence of these supports, and the absence of contradictory ones (left-right system, asymmetries), means that children become sensitized to an absolute orientation (in terms of the lay of land) quite early, so they can use it to calculate, for example, where a bottle is in relation to a basket on a flat surface. Being embedded in this culturally rich, coherent set of spatial practices is what helps the child "get" one system (absolute) and not another one (relative).

What are the implications for an anthropological concept of culture? Public (shared, semiotic) representations really exist; we need a name for them. And we need a name for the parallels across different aspects of a given "cultural context" that work together to support a particular cognitive style (such as absolute orientation), enabling children to learn it and adults to maintain it. Cultures are overlapping sets of systems that to some extent can be pulled apart; they do not all have to cohere. To the extent that they do cohere into something larger than the sum of the individual parts, we need a concept of culture. We do not, however, need a global theory of culture, but rather the ingredients for understanding human nature and human differences. These will require at least the following: a theory of mind (or mind/body, if you prefer), a theory of how cultural environment interacts with mind, a theory of how culture and mind emerge ontogenetically through social interaction in a community, and a theory of how the capacity for culture could have evolved.

Anthropologists should recognize that cognitive science has taken the ball away from us in our self-styled game of explaining "what it is to

be human." The cognitive scientists' answer is, our *minds*. More specifically, for Terrence Deacon (1997) it is our "symbolic capacity," for Steven Pinker (1994) it is our "language instinct," and for Daniel Dennett (1991) it is our "consciousness," all conceived of as parts of the human mind. By presenting these ideas in books designed for a wide readership, these cognitive scientists have had considerable influence on popular views of language and mind. But these views leave a huge hole where culture should be. Perhaps it is time to start filling the hole.

Notes

1. This research was conducted in the Mayan *municipio* of Tenejapa from 1990 to 1998, in collaboration with Stephen Levinson, and was based on my earlier work (1971–1973, 1980) in the same community. The Tzeltal data discussed here are derived from participant observation, videotaped natural social interaction, videotaped interactional "space games" constructed to foster the use of spatial vocabulary, linguistic elicitation, and informal cognitive experiments. See Brown 2001 for details.

2. See, for example, Tomasello's damning review of Pinker's *The Language Instinct* (1994), entitled "Language Is Not an Instinct" (Tomasello 1995), as well as Deacon 1997; Elman et al. 1996; Sampson 1999.

3. See, for example, the "lexical principles" proposed in Golinkoff et al. 1995.

4. An exception to the generalization that anthropologists have failed to ask this question is Michael Carrithers (1992). Biological anthropologists, too, increasingly are asking such questions (see Durham, this volume).

5. The "culture as process" stance rests on pioneering work of the 1960s and 1970s, especially that of ethnomethodologists and conversation analysts, as well as that of interactionist psychologists such as Roger Brown and Jerome Bruner.

6. The terms "figure" and "ground" in discussions of spatial language derive from their counterparts in gestalt psychology and refer to the object being located (the figure) and the object or region in relation to which it is located (the ground). See Talmy 1983.

7. Among such implications are differences in performance on memory tasks. People shown a spatial layout and asked to remember it, then rotated 180 degrees before having to reconstruct it, will perform differently depending on their frame of reference. Relative speakers rotate the spatial scene so that what

was on the left side remains on the left; absolute speakers rotate the remembered array in their heads and reconstruct the array with the same object lying, say, to the north. See Levinson 1996b; Pederson et al. 1998.

8. Complexity clearly is different for the two-place topological relations of an intrinsic system (e.g., "at the house's face"), the three-place egocentric relations of a relative system (e.g., "left of the house"), and the three- or four-place Euclidean grid of an absolute system (e.g., "north of the house"). See Levinson 1996b.

9. For example, on a task requiring discrimination between two otherwise identical but mirror-image-reversed photographs, Tzeltal speakers routinely insist that "they are exactly the same" (Levinson and Brown 1994).

10. The semantic oppositions specialized for this absolute system include those encoded in a set of motion verbs (ascend/descend/go across), some positional verbs (be above/be below), a set of nouns (uphill/downhill/across the slope), and a set of directional adverbials (uphillward/downhillward/acrossways). See Brown and Levinson 1993b, 2000.

11. This compares favorably with Western children's mastery of the left-right distinction, which is not complete until age eleven or twelve (Brown and Levinson 2000).

12. Similar findings are described in de León 1994 for the closely related Mayan language Tzotzil. Related work in Bali (Wassman and Dasen 1998) has also shown early learning of an absolute spatial system, in this case prior to learning of a relative system.

13. These speculations about possible cognitive effects rest to date on linguistic evidence alone. Cognitive tests (of topological/projective reasoning, and "theory of mind" tests) would be required to confirm them.

14. Cognitive scientists' wild proposals for the contents of hard-wiring run up against another objection: there is no possible evolutionary motive for developing a hard-wired concept or representation of something such as "property" (unlike a predator silhouette, for example). There is, however, an evolutionary motive—adaptability—for having the capacity for culture in mental architecture (see Levinson 2000).