5
Language, Thought, and Culture

> Which was first: the language patterns or the cultural norms? In main they have grown up together, constantly influencing each other. But in this partnership the nature of the language is the factor that limits free plasticity and rigidifies channels of development in the more autocratic way.
>
> (Whorf 1956[1941]:156)

Imagine that you were raised speaking a different language. Would you perceive the world differently? Would your thought patterns be different? Would you categorize objects, experiences, or ideas differently?

Now imagine that you were raised without any language at all. Would your lack of language prevent you from thinking at all? Would you be able to reason in complex ways or participate meaningfully in cultural activities?

These questions have been debated across many disciplines and societies for hundreds, if not thousands, of years. The current consensus among linguistic anthropologists is that a mutually influential relationship exists among language, thought, and culture, but many linguistic anthropologists echo Whorf's assessment above that language shapes culture and thought more significantly than people realize. Though the exact nature of that relationship has yet to be established, most linguistic anthropologists working in this area maintain that the influence of language on culture and thought is

more likely to be *predispositional* rather than *determinative* – in other words, the particular language you speak might *predispose* you to view the world a certain way, but it will not *prevent* you from challenging that view. Many linguistic anthropologists also prefer to speak of linguistic or semiotic "mediation" of the social order, positing that sociocultural practices, norms, and relationships are all mediated by signs of one sort or another – not just by language (written or spoken), but also by images, gestures, or actions, and by messages conveyed by certain material goods such as an expensive watch, the "right" pair of shoes, or an office full of books (Lee 1997; Mertz 2007b). This view builds upon the work of Charles Sanders Peirce, introduced in Chapter 1, and presents a theory of meaning-making that integrates all forms of language, thought, and culture. In addition to, or instead of, drawing on Peirce, many contemporary linguistic anthropologists trace the history of research in this area back to the early twentieth century to what has come to be called "linguistic relativity" or "the Sapir–Whorf Hypothesis."[1] While the intellectual roots of this debate go back much further to European thinkers such as Johann Gottfried von Herder and Alexander von Humboldt, and even further back to Greek and Roman scholars, for our purposes, the most relevant background to contemporary debates on the ways in which language, thought, and culture all influence one another begins with Franz Boas, his student Edward Sapir, and, in turn, his student Benjamin Whorf.

A Hundred Years of Linguistic Relativity

Franz Boas (1858–1942) is often considered the father of anthropology in the United States.[1] An important part of Boas's research agenda involved disproving racist assertions about the existence of so-called "primitive" languages, races, and cultures.[2] At the turn of the twentieth century, when Boas was writing, some scholars were arguing that people in certain societies were incapable of complex, abstract, "scientific" thought because of the seeming lack of "logical" grammatical categories in their languages. Boas, who was keen on demonstrating the essential equality and humanity of all people despite their tremendous linguistic and cultural diversity, disputed this interpretation, proposing instead that all linguistic and cultural

practices were equally complex and logical. The particular language spoken by a group of people merely tended to reflect their habitual cultural practices, Boas maintained. Language might facilitate certain types of thinking and could provide a valuable way of understanding unconscious patterns of culture and thought, Boas declared, but it would not prevent people from thinking in a way that differed from the categories presented most conveniently in their language.

Boas's student Edward Sapir (1884–1939) built upon Boas's research in this area but also departed from the views of his professor in several crucial respects. Unlike Boas, who, for the most part, considered the influence of language on thought to be "of minor importance only," Sapir believed that grammatical categories, while derived initially from experience, subsequently become part of intricate linguistic systems, resulting in the "tyrannical hold that linguistic form has upon our orientation in the world" (Sapir 1964[1931]:128, cited in Lucy 1992:20). In Sapir's best-known writings, he posited a strong influence of language on thought: "We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation" (Sapir 1949[1929]:162). At the same time, however, Sapir emphasized that all forms of linguistic expression could be reduced to a common underlying human psychology, and in many of his writings he emphasized that every language is so constructed "that no matter what any speaker of it may desire to communicate … the language is prepared to do his work" (1949 [1924]:153).

Benjamin Lee Whorf (1897–1941), a student of Sapir's, developed the insights of his two predecessors further, elaborating on "the relation of habitual thought and behavior to language" (as his most famous paper is entitled) and using Sapir's term "linguistic relativity" to link his work to Einstein's recently developed theory of relativity in the field of physics. So well known (though often terribly misunderstood) are Whorf's ideas on this topic, that contemporary scholars in many different fields often label influences of language on thought as "Whorfian effects." Like his professor Sapir, Whorf viewed language as a system of interrelated categories, some of which were less obvious to speakers (and therefore more likely to influence their thought) than others. The sum total of a language's categories produces an overall worldview in people who speak that language, Whorf suggested.

Whorf's most famous case study involved a comparison bet-ween the Native American language of Hopi and "Standard Average European" (SAE) languages such as English in the ways that time and matter are categorized. In this study, Whorf pointed out that grammatical categories such as plurals and verb tenses differ dramati-cally in Hopi and SAE. SAE languages tend to objectify and spatialize nonspatial qualities. For example, in English, it is common to talk about units of time as if they could be isolated and counted ("seven days in a week," "three months ago"). In Hopi, Whorf maintained, there is a non-objectifying, cyclical way of talking about time as an undifferentiated entity. Instead of talking about discrete units of time, the Hopi language uses more process-oriented ways of talking – what Whorf said might be better termed "eventing" (1956[1941]:147). The overall patterns of these linguistic differences lead, Whorf argued, to dramatic differences in the habitual cultural behavior of speakers of these two types of languages. Among the Hopi, according to Whorf, the linguistic categories emphasizing process and continuity have led to cultural values that stress preparation, endurance, and intensity, among other things. Conversely, among speakers of SAE languages, Whorf maintained, the linguistic tendency to split time into quan-tifiable substances has led to a culture that values record-keeping, accounting, schedules, and historical sequencing.

Though many of Whorf's broad claims about Hopi language and culture have been challenged,[3] linguistic anthropologists have generally accepted his assertion that the grammatical categories of a particular language have the potential to affect thought processes and cultural practices. Contemporary research investigating specific Whorfian effects will be reviewed below.

As focused on linguistic effects as Whorf was, he was by no means hostile to the existence of certain linguistic, cognitive, and cultural universals. As an anthropologist who was against the evolutionary ranking of societies and races, Whorf, like Boas and Sapir, was ada-mantly opposed to researchers who considered Western linguistic, cognitive, or cultural categories to be superior to all others. At a fundamental level, all three of these early scholars believed that all human beings share certain commonalities – but they cautioned that these commonalities should not be assumed to be discernible from the study of Western practices alone because of the remarkable diver-sity across languages and cultures (Lucy 1992:35–36). All too often,

they warned, the imposition of Western linguistic and cultural categories lead researchers to "find" cross-linguistic and cross-cultural universals when a closer look might reveal differences. This is the position of most linguistic anthropologists today – most fully accept the existence of both diversity and universality across languages and cultures, with the caveat that any proposed universals must be shown to be truly universal and not just the result of inappropriate generalizations stemming from Western cultural or linguistic categories (cf. Evans and Levinson 2009).

As accepted as the ideas of Boas, Sapir, and Whorf have become within linguistic anthropology, many misconceptions about their work remain among scholars who are outside of the discipline. Foremost among these are misunderstandings about the so-called "Sapir–Whorf Hypothesis," to which we now turn.

The Sapir–Whorf Hypothesis

Many researchers, especially those outside of anthropology in fields such as cognitive science, psychology, or linguistics, have used the term "Sapir–Whorf Hypothesis" as shorthand for a simplistic and easily dismissible "strong" version of Sapir and Whorf's beliefs, which purportedly (and mistakenly) states that language *determines* thought. In this view, the particular language you speak rigidly structures your thought in an inescapable manner. The causal arrow for this obviously wrong "strong" version of the so-called Sapir–Whorf Hypothesis runs in just one direction between language and thought, and culture is nowhere in the picture (see Figure 5.1).

The 2016 film "Arrival" made a deterministic version of Whorfian effects a central element of its plot. The film tells the story of a linguist named Louise Banks who is brought in to help translate the language of aliens who have landed on earth (See Figure 5.2). As Louise works on decoding the mysteriously circular language,

Figure 5.1   Relationship between language and thought according to the (mistaken) "strong" version of the Sapir–Whorf Hypothesis.

Figure 5.2   Scene from 2016 film Arrival. Picture Moviestore Collection Ltd / Alamy Stock Photo.

she finds her conception of time becoming more circular. In essence, the film brings to life a super-strong version of the Sapir–Whorf hypothesis – a version neither Sapir nor Whorf would have supported.

While Boas, Sapir, and Whorf all wrote about language's relationship to thought and culture, and while they were clearly influenced by one another, what has come to be called the "Sapir–Whorf Hypothesis" is a misnomer in several respects. First, Sapir, and Whorf never coauthored anything – and certainly nothing labeled a "hypothesis." Whorf was deeply influenced by his professor Sapir, but the two scholars' views on language, thought, and culture diverged significantly. Second, though some highly respected scholars such as John Lucy have taken on the task of formulating specific, empirically testable hypotheses stemming from the insights of Boas, Sapir, and Whorf, these scholars themselves never framed their research using these terms from the realm of science. All three had conducted fieldwork and had committed themselves to learning many Native American languages, but none ever couched what he was doing in terms of hypothesis testing.

A more accurate depiction of the view of many linguistic anthropologists can be seen in Figure 5.3, in which language, thought, and culture all influence one another.

In this model, the particular language you speak may predispose you to think a certain way or to engage in certain cultural practices,
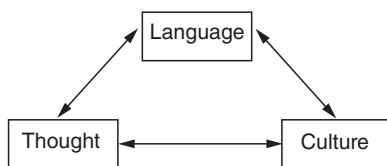
Figure 5.3   Relationship among language, thought, and culture according to contemporary understandings of the Sapir–Whorf Hypothesis within linguistic anthropology.

but this relationship is by no means a rigidly deterministic one, nor is it unidirectional. Instead, language, thought, and culture are all viewed as influencing one another in a flexible, mutually constitutive way. The relative strengths of the relationships – the thickness of the arrows in Figure 5.3, if the level of influence were depicted that way on the diagram – remain unspecified and perhaps unknowable. It is possible that the relative strength of the influence of language on thought and culture is more in some cases than in others, making it an empirical question to investigate, but it is also possible that the relative strength of the influence of these three overlapping entities could never be speci-fied with any precision.

Some linguistic anthropologists (e.g., Hill and Mannheim 1992) maintain that this sort of multidirectional relationship is best con-ceived of as an axiom – an assumption that informs all research on language in social contexts – rather than as an empirically testable hypothesis with dependent and independent variables. Supporters of the axiom view argue that there is no clear-cut way to distinguish that which is linguistic from that which is nonlinguistic. Everything is linguistically mediated, they contend, so it is impossible to sepa-rate something called "language" from the two allegedly nonlinguis-tic entities called "thought" and "culture." As with other working assumptions, Hill and Mannheim assert, treating this relationship as axiomatic means that it is not falsifiable but instead is to be judged only "on the basis of the extent to which it leads to productive ques-tions about talk and social action" (1992:386). Researchers who endorse this approach to the relationship of language to thought and culture strongly maintain that the social world is largely constituted by, and knowable through, language, much as Sapir famously argued more than 80 years ago:

> The fact of the matter is that the 'real world' is to a large extent unconsciously built up on the language habits of the group. No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds, not merely the same world with different labels attached. (1949[1929]:162)

While this axiomatic view is quite common within the discipline, leading many linguistic anthropologists to maintain that the exact nature of the influence that language, thought, and culture have on one another can never be known, other researchers support more narrowly focused studies of the effects of specific, more easily identified aspects or categories of language on precise areas, categories, or modes of thought or culture. Scholars who take this approach do formulate hypotheses. Such research has enjoyed a renaissance over the past two decades as investigators in fields such as linguistic anthropology, psychology, linguistics, and cognitive science have abandoned their prejudices against work that examines how language, thought, and culture are interrelated. The next section describes some of this fascinating research.

Investigating the Effects of Language on Thought

Scholars who have sought to operationalize the Sapir–Whorf Hypothesis have done so by focusing on the effects of language on particular aspects of thought (cognition). For most of these researchers, especially those in fields such as psychology or cognitive science, culture tends to drop out of the equation. Some scholars criticize this limitation and also object to the experimental methods preferred by these researchers because they assume the ability to distinguish linguistic and nonlinguistic forms of cognition. In addition, experimental contexts always differ by definition from "naturally occurring" contexts – though of course both experimental and non-experimental contexts are social and cultural in nature. Nevertheless, despite these criticisms, the research emerging from many different fields over the past two decades points to unmistakable evidence that language can indeed influence thought.

Now, where might we start in searching for such Whorfian effects? Noted linguistic relativity expert John Lucy (1996)

suggests three broad areas, each of which he believes should be investigated carefully:

- *Language-in-general*. Research of this type explores at the broadest level how having any language at all might influence thinking. Such studies ask how the cognitive processes of humans who know at least one language might differ from animals or from humans who have never learned a language.
- *Linguistic structures*. Research at this level considers how some specific structures within a particular language, such as grammatical categories, might influence thinking or behavior.
- *Language use*. Investigations of this sort look at the ways that particular habits of speaking (also called discursive practices) can influence thought and interpretation. In other words, the question is whether patterns of language *use* rather than language *structure* can have an impact on cognition – either directly, or by virtue of indirectly reinforcing or reconfiguring any effects caused by linguistic structures (Lucy 1996:52).

The following sections summarize some of the research in each of these areas reviewing, in turn, how language–in–general, linguistic structure, and language use might influence thought or behavior.

Language-in-General

Many researchers inside and outside of linguistic anthropology maintain that knowing any one of the world's 7,000 or so languages will lead to identifiable cognitive effects because all human languages make use of conventional symbols (in the Peircean sense described in Chapter 1) and complex grammatical structures. While animals such as birds, chimpanzees, whales, and vervet monkeys have highly developed signaling mechanisms, to our knowledge, no nonhuman animal communicates by means of a system anywhere near as complex as any human language. Animals that have a signaling system of some sort appear to focus, for the most part, on the here–and–now; they are unable, it seems, to express abstract concepts or complex relationships of the sort that human toddlers regularly understand and express.

One way of researching the influence of language-in-general on thought is to study children who have not yet learned a language. Clearly, it would be highly unethical to deprive a child of access to a language; further, studies of abused children who have not been exposed to any language involve so many complicating factors that the causes of cognitive differences are impossible to ascertain. Researchers interested in the effects of language-in-general on human thought have therefore turned to subjects such as very young, prelinguistic infants, or deaf children who are raised in normal circumstances but who have been deprived of early exposure to language because they have hearing parents who do not use sign language. In the case of infants, as noted in Chapter 4, the language socialization process begins from day one (if not before), so it is impossible to study a truly "prelinguistic" infant. Nevertheless, some insights can be gleaned from observing extremely young children. It is well known, for instance, that all human babies are born equally capable of recognizing and eventually producing all the sounds used in all human languages – and yet, by six months of age, they begin to lose this flexible ability as they start to learn the specific sounds of their native language(s). Eventually, as adults, they will be incapable of hearing or producing many contrasts between sounds used in other languages besides their own without prolonged training (and perhaps not even then). Native English speakers will have great difficulty distinguishing among the four different "t" sounds in Nepali, for example, and native Nepali speakers will have similar difficulty distinguishing between "s" and "sh" sounds in English. It is evident, therefore, that exposure to any human language begins to change children's mental representations of the acoustic material they hear at a very early age. Some researchers, however, argue that these changes in a person's ability to hear such phonemic contrasts only occurs when the brain is operating in a "linguistic mode" (decoding speech) rather than in a more general sound-analysis mode because, in experiments testing adults' abilities to distinguish between such sounds, they were able to do so if the sounds were presented very close together, or if the sounds were from languages very different from their own (Munnich and Landau 2003:123–124). Still, even if this is the case, the particular language you speak clearly has an effect on your ability to hear and produce sounds in natural speech contexts, and most researchers would therefore consider this a case of language's influence on cognition.

Deaf children of hearing parents comprise another group of people whom researchers have studied to obtain a clearer under-standing of the possible effects of language-in-general on human thought (Villiers and Villiers 2000, 2003; Figueras-Costa and Harris 2001; Peterson and Siegal 2000). These deaf children's parents choose not to expose their children to sign language but instead encourage their children to read lips. Because of this, these children generally have significant language delays but have normal intelligence and are socially active. There is one area of cognitive development, however, known as "theory of mind," that is delayed up to several years in these children, possibly as a result of their much later acquisition of com-plex grammatical structures. Theory of mind is the "everyday ability to attribute mental states to other people and thereby to interpret, explain, and predict their behavior" (Leslie 2001:15,652–15,653) – the ability, in other words, to ascertain others' intentions, beliefs, and desires. According to child psychologists, hearing children generally develop this ability somewhere around the age of four, depending on which aspect of theory of mind is tested, and how the test is con-ducted. Deaf children who learn sign language from birth develop theory of mind at the same age as their non-deaf peers. Deaf children whose parents do not sign to them, however, are significantly delayed in developing theory of mind.

One of the most commonly conducted experiments in theory-of-mind research involves a false-belief task of the following sort: a child is shown two dolls or puppets, who are labeled "Sally" and "Anne." The experimenter acts out a skit for the child, in which Sally places a marble in a basket, then leaves the room. While Sally is gone, Anne moves the marble from the basket to a box. Then Sally returns to the room, and the child is asked (using varying verbal phrases or even a nonverbal prompt) where Sally will look for the marble. Sally did not see Anne move the marble, so the child should state that Sally will look for it in its original location, the basket. Most children under four years of age, however, will say that Sally will look for the marble in the box, even though the skit makes it clear that Sally did not see Anne move the marble from the basket to the box. The conclusion child psychologists draw from this set of experiments is that children who have not yet developed theory-of-mind abilities cannot yet fully separate their own beliefs and inten-tions from those of others.

The central question for our purposes here is whether the development of language (presumably any language, though the cross-linguistic research on this topic is extremely thin) facilitates or perhaps is even a prerequisite for the development of a mature theory of mind. Is it necessary, in other words, for a child to be able to talk about others' false beliefs using phrases such as, "Sally thought that the marble was still in the basket because she didn't see Anne move it to the box," in order to succeed in false-belief experiments? Since a great deal of research shows that the development of complex syntax in phrases such as "Sally thought that …" occurs at roughly the same age in hearing children as a mature theory of mind, it is quite challenging to tease out the cause-and-effect relationship here (if there is one) between language and thought. In a fascinating set of experiments, however, Jill and Peter de Villiers present compelling evidence showing that deaf children of hearing parents who do not use any form of sign language are delayed up to several *years* in being able to pass even the simplest nonverbal versions of false-belief tasks (Villiers and Villiers 2003:344–345). Villiers and Villiers compare this group of deaf children with two other groups of deaf children: those who have hearing parents who use some form of sign language, and those who have deaf parents who have introduced sign language to their children from birth (and who therefore have no language delay at all). In each case, the children's language ability, especially the ability to form complements ("Sally thought that …"), correlates with their ability to succeed in false-belief tasks.

Correlation does not entail causation, however. Language development might be causing the emergence of theory of mind in children, but the reverse could also be the case – cognitive development in the form of theory of mind might be enhancing linguistic abilities. Or, alternatively, both linguistic and cognitive development might be the result of some third factor, such as the general overall development of the brain. The jury is still out on these issues, but some preliminary research has shown that three-year-olds' levels of language development were predictive of their later performance on false-belief tasks at age four, but the reverse was not the case; their early performance on false-belief tasks did not predict their later levels of language development (Astington and Jenkins 1999:1318). While alternative interpretations are still possible, these researchers argue that their data can best be understood as demonstrating that theory of mind depends on lan-

guage: "In our view, it is not just that children need language skills to display their theory of mind in false-belief tasks. Language plays a fundamental role in theory-of-mind development" (Astington and Jenkins 1999:1319; cf. Schick et al. 2007).

Much research remains to be conducted before a definitive understanding of the potential effects of language-in-general on various dimensions of thought can be obtained. It may even turn out to be the case that there is no such general effect, since no one actually learns "language-in-general" but instead learns one (or more) particular language. In this regard, additional research is needed to explore the timing of theory-of-mind development in children who speak languages other than English. There are some studies of Baka- and Japanese-speaking children, among others, indicating that they are able to pass the standard false-belief tasks at the same age as English-speaking children, but other children, such as those who speak Junin Quechua, seem not to be able to pass the classic false-belief tasks until much later, perhaps because of the specific grammatical structures of Junin Quechua or a very different cultural context (Villiers and Villiers 2003:372–373). Many linguistic anthropologists question whether standard experiments devised in the United States can be exported, either in their original form or in "culturally appropriate" versions, to be used with children (or even adults) from very different linguistic and cultural backgrounds. At the very least, what little research there is of this sort must be closely scrutinized for cultural and linguistic bias.

Discussion of the effects of grammar on various aspects of thought brings us to the second area: how specific linguistic structures might affect cognitive processes.

Linguistic Structures

This area of inquiry looks at some classic Whorfian questions regarding the influence of the particular language you speak on how you think about or perceive the world. Researchers in this field investigate the effects of specific linguistic forms in a given language on the thought processes of speakers of that language. What parts of a language might have the greatest potential to influence thought? Before searching for these, it is important to rule out one area that researchers believe *does not* have much influence on thought – the existence, or lack thereof, of a particular word in a given language. No linguistic anthropologist

believes that the lack of a single word for a concept in a particular language prevents someone from being able to think of that concept. (See Figure 5.4 for a cartoon ridiculing those who make these sorts of claims.) This sort of idea is far too simplistic and too easily disproved. Look at the following three words in Nepali, for example:

> *dhān*– unhusked rice that is still in the fields
> *chamal*– harvested but still uncooked rice
> *bhat*– cooked rice.

English does not have a single word for any of these concepts, instead collapsing them all within the general concept of "rice," modified by various phrases. Does this mean that English speakers cannot conceptualize *dhan*, for example? Of course not. There will always be cultur-

Party Game: Applying the Sapir-Whorf Hypothesis
to any linguistic quirk

Figure 5.4   Cartoon ridiculing the tendency of some scholars (especially those without any training in linguistics or anthropology) to make tendentious claims about the effects of a lack of a specific word in a given language.
Source: Zach Weinersmith, https://www.smbc-comics.com/comic/party-game

ally specific connotations and challenges to any translation of words from one language to another, but the crudely deterministic belief that one cannot conceptualize that for which there is no specific word in one's language is clearly without merit. Even articles (e.g., DeMain 2020) that present lists of supposedly untranslatable terms from other languages (such as the German word Backpfeifengesicht – "a face badly in need of a fist") end up glossing those terms fairly successfully, though of course certain nuances will be lost in the translation.

A related, equally mistaken, view concerns the allegedly numerous "Eskimo words for snow." (Figure 5.5). As Laura Martin (1986)
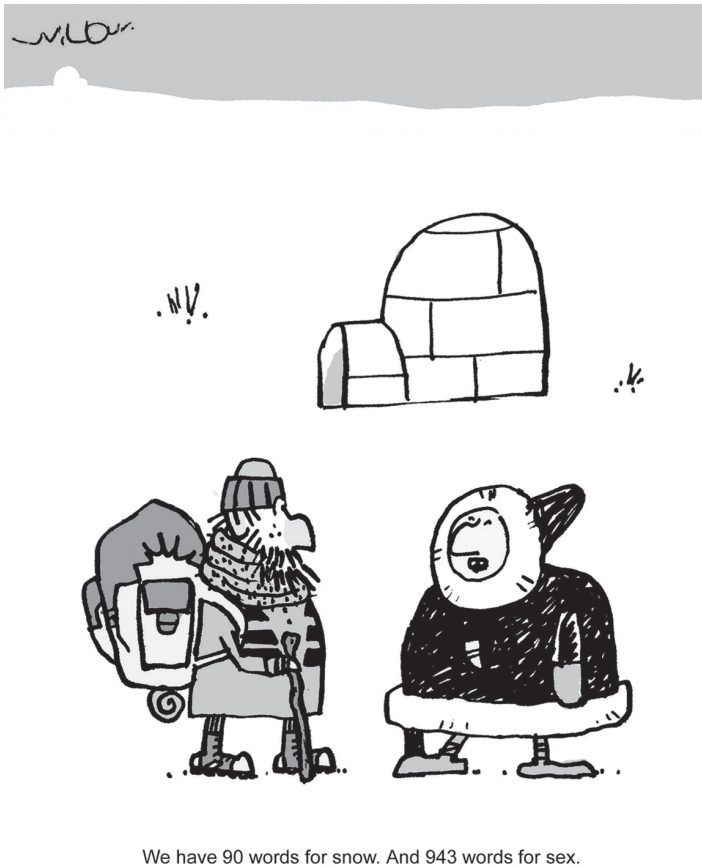

We have 90 words for snow. And 943 words for sex.

Figure 5.5   Another of the many representations in popular culture of the "Eskimo words for snow" myth.
Wilbur –Dawbarn/Cartoon Stock.

persuasively demonstrated in her debunking of this myth, imprecise citations by scholars, combined with offhand references in the popular press, have led to wide-ranging estimates of the number of snow terms (from 4 to 400 +) in "Eskimo" languages. "Eskimo," which is considered a derogatory label by many Arctic people, is also an inexact term, as it comprises a number of different languages and dialects,[4] including Yupik and Inuit-Inupiak. Martin notes that in all of these languages and dialects there are at most two different roots for "snow," one referring to snow that is on the ground and the other referring to snow that is in the air. (Note that it is fairly simple to make this distinction in English.) All of the other allegedly different words for snow in "Eskimo" are modifications of these roots, much as we might do in English with words and phrases such as "snow shower" or "snowman." Even if the fascination with "Eskimo" words for snow is interpreted in the most favorable light, the elaboration of words in a certain part of a language's vocabulary demonstrates nothing about the thought processes of speakers of that language. At best, it points to an area of cultural practice that is important enough to people that specialized vocabulary has been developed, much as is the case for golfers, doctors, or chefs in our society.[5]

If the existence (or lack thereof) of individual words in a given language is not a fruitful area for research on the effects of language on thought, where else might we look? Researchers have generally focused on one of the following two areas:

- *Semantic domains.* These are groupings of words that have some core meaning in common, with differences in particular details (Bonvillain 2000:53). Examples of semantic domains include kinship terms (mother, father, sister, brother, cousin, etc.), color terms (red, orange, yellow, etc.), or body-part words (head, shoulders, knees, toes, etc.). These words are often learned in reference to one another by children and, as such, they tend to delineate specific domains of experience, perception, or meaning. Some researchers believe that these semantic domains can shape categories of thought in measurable ways. The risk, however, is that the identification of a semantic domain by a researcher might (ironically enough) be influenced by the researcher's own linguistic categories, resulting in the study

of something that might constitute a semantic domain in the researcher's own language but not in the language of the people being studied. Lucy and Gaskins (2003:467) argue that this is what has happened with the cross-linguistic study of color terms, a research topic that will be discussed further below.

- *Grammatical categories.* These are the grammatical structures of a given language that must be used in order for sentences in that language to be well formed. Examples include pronouns, verb tenses, and plurals. Ever since Whorf, scholars have looked closely at grammatical categories for potential influences on thought because they are *habitual* (i.e., they must be used frequently), *obligatory* (i.e., speakers cannot opt out of using them if they want to speak the language correctly), and for the most part *unconscious* (i.e., speakers are rarely aware of the grammatical structures of their own language). Examples include pronouns, verb tenses, and cases.

Given these two areas within language – semantic domains and grammatical categories – in which we are most likely to find an effect of language on thought, let us now review some of the most relevant research pertaining to elements within these realms.

Color

The semantic domain of color terms has been investigated for over 50 years, with researchers drawing conflicting conclusions regarding the universality vs. variability of color perception and terminology. In a famous study, Brent Berlin and Paul Kay studied the color terms in 20 languages and compared them to an additional 78 languages from the literature (Berlin and Kay 1969). They argued that their findings demonstrated cross-cultural and cross-linguistic universals in the realm of color, with the major color terms of all the languages clustering around 11 primary foci: black, white, red, green, yellow, blue, brown, purple, pink, orange, gray. They also posited an evolutionary sequence for the development of color terms in any language. If a language had only two color terms, Berlin and Kay argued, they would be the equivalent of black and white. A language with only three terms would have black, white, and red. Further

semantic differentiation would proceed in the following order: green and yellow, then blue, then brown, and finally purple, pink, orange, and gray (Kay 1999:33).

In the ensuing decades, Berlin and Kay (as well as others) revised this theory significantly. In recent publications, Kay and his collaborators have constructed an alternative model that still involves the assumption of a universal set of primary color terms (black, white, red, yellow, green, and blue), and a predictable, step-wise process by which languages add color terms (Kay 2005, 2018; Kay and Maffi 1999). Nevertheless, Kay's most recent universalist theory acknowledges that not all languages even *have* a semantic domain for color – they do not "partition the perceptual color space" linguistically.[6] In recent years, Kay and other scholars, who argue for semantic universals in color terminology, have also acknowledged that linguistic variation can in fact influence the way colors are perceived (Kay and Kempton 1984; Regier et al. 2005).[7] In other words, the cross-linguistically varying boundaries of linguistic color categories can indeed affect color cognition.

Here is how this type of Whorfian effect can be demonstrated. An experiment is designed with one group of subjects speaking a language such as English that differentiates between "green" and "blue," and another group of subjects speaking a language such as Tarahumara (an Uto-Aztecan language spoken in northern Mexico) that has a single term (*siyo'name*) that covers all shades of both green and blue (Kay and Kempton 1984). The subjects are shown groups of three bluish-green/greenish-blue color chips at a time and are asked which of the three chips is "most different" from the other two. The results show that the existence in a person's language of specific color terms differentiating the blue-green area of the color spectrum will cause that person to perceive the boundary between the two colors in a starker way than does the person who does not have two different color terms for that area of the spectrum. Other experiments that test color labeling, sorting, differentiating, or memory also show that the presence or absence of specific color terms in one's language can have a measurable effect on various thought processes. For example, Winawer et al. (2007) found that the existence in Russian of two different commonly used terms for blue (*goluboy* for light blue, and *siniy* for dark blue) gave Russians an advantage over English speakers when they were given the task of discriminating between two closely related shades of blue.

While more research remains to be conducted to decipher the precise effects of color terminology in particular languages, it seems safe to say that the specific language you speak can indeed influence, at least for borderline cases, your perception of color – or at least your performance on experimental tasks designed to test your perception of color.

Space

Another domain of human experience that has been tested for Whorfian effects is space. One might expect that the physical environment would quite severely limit the range of linguistic variation in how languages express things like frame of reference or directionality, but there are in fact considerable differences cross-linguistically in this regard.

The research of Steven Levinson[8] on absolute and relative spatial coordinate systems challenges some of the most taken-for-granted presuppositions that English speakers (especially those who are cognitive scientists) have about how people map out space in their minds and languages. Languages, such as English, that utilize a relative frame of reference for spatial mapping allow for phrases such as "to the left of the chair," "behind me," or "to Sita's right" when describing the location of objects. In contrast, languages that use an absolute frame of reference for spatial mapping do not allow for these kinds of phrases, instead requiring speakers to describe the location of objects in absolute terms according to compass directions (north, south, etc.) or another system of fixed bearings (uphill or downstream, for example, with reference to a specific hill or river). A language incorporating this sort of absolute frame of reference requires its speakers to maintain a constant awareness of their position, "to run a mental compass in the unconscious background, as it were" (Levinson 2003b:152), so that they are able to use absolute cardinal points to describe location or directionality whenever they need to. Levinson provides the following anecdotes, along with several others, in order to illustrate the implications of absolute spatial reckoning (2003b:4–5):

- Old Tulo, a poet and painter who speaks the indigenous Australian Aboriginal language of Guugu Yimithirr, interrupts Levinson at one point to warn him that there is a big army ant "just north of" Levinson's foot.

- Levinson hikes with Dan, another Guugu Yimithirr speaker, all day long to reach a set of caves with ancient paintings in them: "We are sitting in the cave entrance, and disoriented myself, I ask him to point back to base. He does so without hesitation, right through the hillside we are sitting on. I check with an accurate prismatic compass, and ask him for other locations. Checking later on maps, it turns out that he is spot on – absolutely dead accurate, as far as my compass can discriminate" (Levinson 2003b:5).
- Slus, a Mayan speaker of the language Tzeltal, has just arrived at a hotel in a distant, unfamiliar city. She approaches the sink and asks her husband, "Is the hot water in the uphill tap?" What does she mean by this? Levinson explains that she is asking whether the hot water is in the tap that would lie in the uphill (southerly) direction if she were at home.

Lest readers think that these sorts of languages are rare, only to be found, perhaps, in certain kinds of "exotic" environments, In fact, Levinson claims that approximately one third of the world's 7,000 or so languages reckon directionality primarily in a fixed, absolute way (2003b:48). Some languages provide both types of systems for speakers, but the kinds of languages Levinson studied were those that required (rather than merely allowed for, as English does) the use of an absolute spatial framework.

What did Levinson find when he investigated the effects of having an absolute vs. relative system in one's language? He and his research associates conducted various experiments testing the spatial memory and reasoning abilities of speakers of Tzeltal, Guugu Yimithirr, and other languages. For example, subjects were presented with a line of model animals placed in a row on a table. After the animals were removed, the subjects were asked to replace the row of animals "exactly as it was," first on the original table, then on a different table that the subjects were facing from the opposite direction. The order in which each speaker placed the animals after rotation of the table depended on whether the speaker's language used an absolute or relative coordinate system (see Figure 5.6).

The findings of this experiment and others all indicate that an absolute or relative frame of reference in a given language influences speakers to perceive and act upon the spatial world in different ways.[9] Research with speakers of other languages with absolute frames of
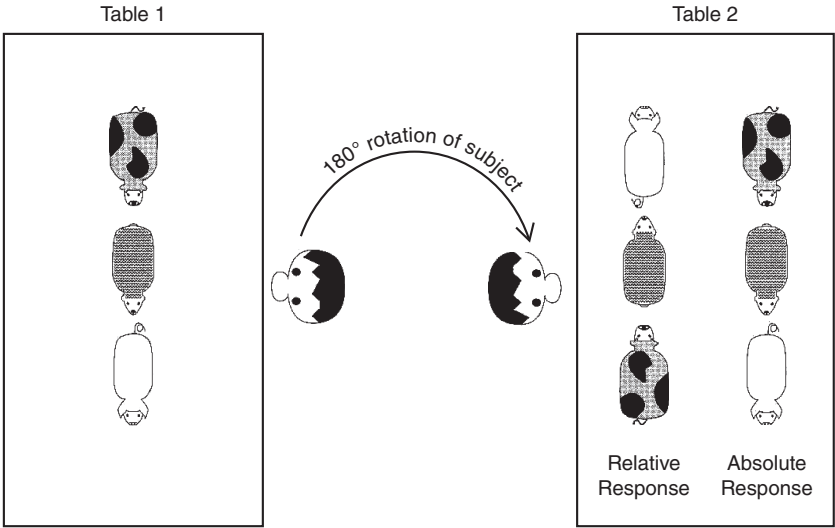
Figure 5.6   Set-up for experiment involving coordinate systems.
Source: Levinson (2003b:156). Reprinted with the permission of Cambridge University Press.

reference, such as Arrente from Australia, Hai//om[10] from Namibia, and Longgu from the Solomon Islands, confirm these findings (Evans 2010:167). In short, the specific language one speaks can indeed influence one's thought, at least in the conceptualization of space.

Time

Though some of the claims that Benjamin Whorf made about the connection between grammar and conceptions of time among Hopi speakers have been challenged, other researchers have noted a relationship in how time is conceptualized in the brain and described in particular languages. Interestingly, it turns out that languages often borrow spatial metaphors to talk about time. For example, in English, we might say that we can look forward to good times ahead or look back on the years behind us. In other languages, such as Mandarin Chinese, different spatial metaphors can be used to talk about time. While Mandarin speakers can use horizontal terms similar to those used in English, they also sometimes use vertical metaphors to describe time, with earlier events being shàng or "up," and

later events being xià or "down" For example, "shàng ge yuè" is upper (last or previous) month, and "xià ge yuè" is lower (next or following) month (Boroditsky, et al., 2011:123; Yang and Sun 2016). In still other languages, time might be described and conceptualized using east–west, west–east, back–front, front–back, or cyclical metaphors. Based on experimental evidence, researchers have argued that the way time is expressed linguistically in a given language will influence how speakers of that language conceptualize time.

In some cases, the way time is conceptualized by speakers of a given language is influenced not by (or not only by) spatial metaphors in that language but by how that particular language is written. So if you ask English speakers to arrange various photographs of the same person as a child, a young adult, and an old person chronologically, they will most likely place them from left to right (youngest to oldest) because that is the direction in which English is written. In contrast, Arabic or Hebrew speakers will place them from right to left. Speakers of other languages, such as Mandarin Chinese, may place them vertically. Still others, such as speakers of Kuuk Thaayorre, an endangered language of Australia, represent time along an absolute east-to-west axis, echoing the way in which Kuuk Thaayorre speakers (like the Guugu Yimithirr and Tzeltal speakers mentioned in the previous section) describe space (Gaby 2012). For Kuuk Thaayorre speakers, earlier events are "locked onto" the landscape instead of being relative to a particular person's body, with time being described and conceptualized as flowing from earlier events in the east to later events in the west (Boroditsky 2017).[11]

Language Use

The third way in which language might influence thought is through habitual patterns of use. That is, our thought processes might be affected not just by virtue of speaking language-in-general or because of the particular semantic or grammatical structures of our own language but because of the social patterns of everyday language use. There has been very little experimental research conducted on the specific cognitive effects of using language in a certain way because such research does not lend itself well to experimental methods, but there is every reason to believe that habitual social and linguistic practices influence thought patterns – though of course not in any kind of deterministic way.

One arena in which some scholars have claimed to identify cognitive effects of everyday language use has been literacy practices. Decades ago, Jack Goody and Ian Watt (1963) argued that there is a "cognitive divide" between "literate" and "nonliterate" groups of people, with the "literate" groups being more capable of logic, abstraction, and advancement. This view of literacy practices has been challenged by many scholars, as will be discussed in Chapter 7; for our purposes here, it is important to note that an assertion of the alleged cognitive effects of "literacy" fails to distinguish among different kinds of literacy, some of which are related to schooling practices and some not. The immense cross-cultural variability of literacy practices has been well documented – to the point that "literacy" can no longer be viewed as a single, neutral technology that brings about identical cognitive or social effects wherever it arises (cf. Street 1984; Barton et al. 2000; Collins and Blot 2003). Many researchers, therefore, prefer to pluralize the term, using *literacies* instead *literacy*.

One extensive study has attempted to identify potential cognitive effects of specific kinds of literacies among the Vai of Liberia (Scribner and Cole 1981). At the time of Scribner and Cole's large-scale, team-led research, there were three forms of literacy among the Vai: an indigenous Vai script that was passed on informally from person to person; English, acquired in formal school settings; and Arabic, acquired in early morning sessions with Qu'ranic scholars. Scribner and Cole expected to find differences on various cognitive tests between people who were totally non-literate in comparison with people who were literate in at least one of the three scripts – confirmation of the alleged "cognitive divide" between literate and non-literate people. Scribner and Cole found no such divide: "Instead of generalized changes in cognitive ability, we found localized changes in cognitive skills manifested in relatively esoteric experimental settings" (1981:234). What they discovered was that each of the specific literacies of the Vai was associated with particular sets of cognitive skills, though attributing these differences to the use of a particular script alone was impossible, as each type of literacy was embedded in a set of very different social practices.

Metaphors – words or phrases that are applied to something in a figurative rather than literal sense – constitute another area of language use that many consider to have strong potential effects on

how we view and act in the world. Far from the esoteric poetic flourishes that they sometimes appear to be, metaphors are instead pervasive throughout everyday language use. They can invoke entire conceptual schemas or frameworks, thereby influencing how an issue, an individual, or a situation comes to be viewed. In their classic work, *Metaphors We Live By*, George Lakoff and Mark Johnson presented many conceptually interlinked metaphors. For example, they noted that in English, one such metaphor is ARGUMENT IS WAR, as can be seen in the following sorts of word choices (1980:4):

- Your argument is indefensible.
- She attacked every weak point in my argument.
- His criticisms were right on target.
- I've never won an argument against her.
- They shot down all my arguments.

Lakoff and Johnson invite their readers to imagine what our society would be like if instead of living by the metaphor ARGUMENT IS WAR we lived by the metaphor ARGUMENT IS DANCE – if participants were seen as performers and if the objective of an argument were the creation of an esthetically pleasing experience.

In the decades since Lakoff and Johnson's groundbreaking work, there has been an increasing realization of the power of metaphors to influence how we act and how we see the world. In five separate experiments, Paul Thibodeau and Lera Boroditsky (2011) showed how referring to crime either as a "virus" or as a "beast" clearly influenced the types of solutions people proposed to rid a city of crime. In subsequent research, these scholars found that their study participants were generally unaware of how much they had been influenced by metaphors (Thibodeau and Boroditsky 2013). Because of the potential power of this kind of framing of an issue or a product, public relations experts now routinely choose words that they hope will invoke metaphors that are advantageous to their product or cause. As the COVID-19 pandemic was starting, for example, organizations such as The Workshop in New Zealand published guidelines for how to talk about the virus using metaphors that they hoped would invoke frames that encouraged constructive collective action rather than frames that supported harmful selfish actions (The Workshop 2020:18). (See Table 5.1.)

Table 5.1   Metaphors that a research organization in New Zealand, The Workshop, encouraged people to avoid and embrace during the COVID–19 pandemic.

Metaphors to Avoid	Metaphors to Embrace
War and battle	Journeys, navigation, and challenges
These surface anti-democratic solutions, individualism, fear, and limitations on people's freedom and information.	Journeys are useful as there is a destination in sight (the other end of this) and the real question isn't whether we'll get there, but how.
"Together we will fight this virus."	"How do we overcome the hurdles in our way?"
"Frontline" staff	"How do we make sure nobody is left behind?"
"The battle against COVID-19."	"We are all in this boat together; let's paddle in the same direction."
	"We can navigate our way through and out of this."
Disasters, e.g., storms, natural weather systems, floods, fires	Creativity and drive/mechanics
Surfaces a battening down response, fear, and a lack of control.	Surfaces thinking about positive human actions that can be taken.
"We can weather this storm."	"We can create better, more resilient connected communities now."
"This is a flood overcoming us."	"Wisdom and compassion will help us steer through this crisis."
"A tidal wave"	
"Going into a bunker."	
Heroes and individual sports	Natural or built systems, team sports, acting
Surfaces thinking about individualism.	Helps explain the need for many people working together in our public systems.
"Nurses and doctors are the superheroes of this pandemic."	"Many people work upstream to ensure our downstream health."
	"People in the public health system are like a ground crew for our health, doing the contract tracing."
	"Like in a football team, we all need to work together to prevent the ball getting through."

(Continued)

Table 5.1   (*Con't*)

Metaphors to Avoid	Metaphors to Embrace
	"We all have different and important roles to play."
Power/strength	External pressures/overloaded truck
Surfaces thinking about individualism.	"The impacts of the virus, job loss, poor health, lack of social support can overload us like a truck with too much cargo, so we cannot cope. Lifting some of those burdens will help us cope and stay well."
"People need to be strong during this crisis."	

Source: Adapted from The Workshop (2020:18).

Another thought-provoking study of the effects of patterns of metaphors and language use on thought processes is that of Carol Cohn (1987). In her article, "Sex and Death in the Rational World of Defense Intellectuals," Cohn describes how, during her year of residence in a think tank of nuclear strategists, she was required to undergo a language socialization process that involved learning a new way of speaking – lots of acronyms for types of missiles, for example, and many euphemisms and abstractions for describing nuclear war. In all of the discussions among the defense intellectuals, Cohn noticed, the nuclear weapons themselves were most often the subjects of sentences. Human beings, in other words, were not the active agents in what Cohn called "technostrategic" discourse; the weapons were the ones that had the power to act upon the world in this community of practice (1987:711). Cohn reports that in order to be taken seriously in this social and intellectual environment, she had to learn how to speak this "technostrategic" discourse – but as soon as she did, she found herself unable, at first, to articulate her anti-nuclear sentiments, and then, frighteningly, unable even to *think* about her anti-nuclear opinions:

> I had not only learned to speak a language: I had started to think in it. Its questions became my questions, its concepts shaped my responses to new ideas. Its definitions of the parameters of reality became mine … My grasp on what *I* knew as reality seemed to slip. (1987:713; emphasis in the original)

Of course, eventually Cohn was able to extract herself from this frame – from the influence of "technostrategic" discourse – in order to write her analysis. Cohn herself is not a linguist or a linguistic anthropologist, so she does not present her work as any kind of definitive statement on the effects of certain patterns of language use on thought. Nevertheless, her experiences point to the ways in which language use in certain communities of practice can predispose people to think and act in particular ways. In addition, however, it is also important to note that social and cultural factors almost certainly influenced the development of "technostrategic" language to begin with, so disentangling language, thought, and culture from one another in such instances (indeed, in almost all instances) turns out to be nearly impossible.

Susan Harding, a cultural anthropologist, also experienced the feeling that her own way of thinking had been influenced by the language use in the community she was studying (Harding 1987). Harding was studying a fundamental Baptist community, paying particular attention to the rhetorical strategies members explicitly used to try to convert nonbelievers. One day, after a long and intense interview with a preacher, during which he tried through the practice of "witnessing" to convert Harding, she was driving home and almost got into an accident. Completely unbidden (Harding was not a fundamental Baptist), the following question came into her head: "What is God trying to tell me?" "It was my voice, but not my language. I had been invaded by the fundamental Baptist tongue I had been investigating," Harding wrote (1987:169). She continued: "It was quite specifically Reverend Cantrell's language and mode of interpretation that unfurled itself in my mind as I contemplated my near accident" (1987:170). By listening to Reverend Cantrell intensively and uncritically, as ethnographers often do in an attempt to understand unfamiliar ways of viewing the world, Harding, inadvertently, became susceptible to influence from the rhetorical devices the preacher used. Again, like Cohn, Harding makes it clear that these influences were not deterministic in nature, but her experiences exemplify the many ways in which everyday language use can have a powerful effect on someone's thought processes.

Conclusion

In many respects, the question of the relationship among language, thought, and culture is a chicken–and–egg sort of question. Almost all linguistic anthropologists consider these three entities to be overlapping and mutually influencing, but while some linguistic anthropologists are content to accept this sort of mutual influence as a given – as a presupposition or axiom, in other words, that informs the rest of their work – other linguistic anthropologists and an increasing number of cognitive scientists prefer to investigate the exact nature of the relationship by conducting experiments. On the whole, there is general acceptance in linguistic anthropology for the existence of some underlying universals that constrain variation in language and thought, but most linguistic anthropologists believe that linguists, psychologists, and cognitive scientists tend to overestimate the type and scope of universals in this area. The dominant view in these other fields is that humans are born with a large set of pre-existing universal concepts, and that "humans invent words that label their concepts" (Li and Gleitman 2002:266). Scholars such as Levinson reject this view as "simply false" (2003a:32) and maintain that the actual relationship is much more complex. As we have seen in this chapter, even in domains such as space, where there are substantial physical, environmental, and cognitive universals that constrain linguistic variability in many ways, there are still enormous differences in how languages semantically and grammatically encode relationships. As the research in this chapter demonstrates, many of these differences influence the thought processes of those who speak particular languages.

What we have explored very little so far in this chapter is the possible effect that habitual cultural practices and norms might have on language and thought. In the mutually constitutive model of language, thought, and culture that most linguistic anthropologists support, the specific ways in which culture influences language *use* have been studied extensively and will be discussed in later chapters of this book. The possible ways in which culture might influence linguistic *structure*, however, have been much less comprehensively studied. Boas leaned toward believing more in a culture's possible influence over language rather than the reverse, though he believed that language and culture could covary freely (Lucy 1992:16). More recently, Dan Everett, a linguist, has made some fascinating but

extremely controversial claims about Pirahã, a language spoken by a tiny group of indigenous people in the Brazilian Amazon. Everett argues that "Pirahã culture severely constrains Pirahã grammar in several ways, producing an array of otherwise inexplicable 'gaps' in Pirahã morphosyntax" (Everett 2005:622). Pirahã culture restricts communication to "nonabstract subjects which fall within the immediate experience" of speakers, and this explains, according to Everett, the lack in Pirahã language of numbers, color terms, and embedding (the ability to construct phrases such as "the hat that I wore"), among other things. Everett's claims have been challenged by many scholars,[12] so it remains to be seen whether the type of strong cultural influences on language that he posits are operative, either among the Pirahã or elsewhere. Unfortunately, Everett seems unaware that most contemporary linguistic anthropologists consider the relationship among language, thought, and culture to be mutually constitutive. Indeed, he says he rejects "the unidirectionality inherent in linguistic relativity" (Everett 2005:623) without realizing that the views of Whorf and his successors are considerably more sophisticated than the simplistic and mistaken linguistic determinism he attributes to them. Though the naive cultural determinism he proposes would be rejected by virtually all contemporary linguistic anthropologists, Everett's provocative research does raise some interesting questions regarding the possible effects of cultural norms and practices on linguistic and cognitive processes.

In this chapter, we explored three ways in which language might influence thought: through language-in-general, through specific linguistic structures, and through habitual language use. In each of these areas, scholars have detected clear Whorfian effects. Despite this accumulation of recent research on the topic, many linguists and cognitive scientists remain not just opposed to the idea that language might influence thought but actively hostile to it. Why? Deborah Cameron, a linguist, suggests some reasons for this hostility in a short essay entitled, "Linguistic Relativity: Benjamin Lee Whorf and the Return of the Repressed" (Cameron 1999). According to Cameron, it is often illuminating to ask who a discipline's "hate figures" might be, as they will shed light on what scholars in that discipline want most to repress. In linguistics, she argues, Whorf's suggestion that language might influence thought touches upon three of the great issues of our time: (1) the nature of power, "which is no longer believed to

grow out of the barrel of a gun, but seems complex, diffuse and often hidden in its workings, with a significant symbolic (which includes linguistic) component"; (2) the nature of human agency, for linguistic determinism, like genetic determinism, seems to challenge common ideas about freedom and responsibility; and (3) the opposition between universality and diversity: "Which matters more, what unites us or what divides us?" (Cameron 1999:154–155).

It may never be possible to disentangle all of the complex ways in which language, thought, and culture are interrelated, but this should not prevent us from continuing to explore the topic. As Cameron notes,

> The point of posing problems of this kind is not to find a solution so you can move onto something else; on the contrary, it is to enable conversation to continue on subjects we think important for our understanding of our condition. We deepen that understanding by reflecting on the questions themselves, and the last thing we need is for our reflections to be cut short by a scientist saying, "but we *know* the answer to that one." (1999:156; emphasis in the original)

In recent decades, as the semantic and grammatical diversity of the world's languages has become more evident, as different approaches to the understanding of language and cognition have become popular, and as domains aside from color have been investigated, no longer is it the case for scholars in linguistics, psychology, or cognitive science that to admit any sympathy for, or even curiosity about, linguistic diversity is "tantamount to declaring oneself to be either a simpleton or a lunatic" (Gentner and Goldin-Meadow 2003:3). Within linguistic anthropology, the discipline's long history of research on this topic, extending back to Boas, Sapir, and Whorf, has stimulated evermore compelling and thought-provoking studies in recent years. Not only should this research be of value to scholars outside of anthropology but also, as Sapir long ago noted, such studies will benefit cultural anthropologists as well, for language can be seen as "the *symbolic guide to culture*" (Sapir 1949[1929]:162; emphasis in the original). Indeed, language, thought, and culture are so intimately interwoven that to study any one of these is to study the other two as well.