II
COMMUNITIES, COMMONALITIES, AND COMMUNICATION

HERBERT H. CLARK

What is the link between the thoughts we have and the language we speak? Benjamin Lee Whorf argued for two proposals. One was *linguistic relativity*: as languages differ, so do the thoughts of the people who use them. Whorf suggested, for example, that English and Hopi encode different points of view – different perspectives or representations – of the physical and social world, and when people use the two languages, they buy into these differences. The other, more radical, proposal was *linguistic determinism*: the language people speak helps determine the very way they think about their physical and social world. As an example, Whorf compared English and Hopi nouns for physical quantity. English has both count and mass nouns, as in *many dogs* and *much sand*, so for speakers of English, according to Whorf, "the philosophic 'substance' and 'matter' [of mass nouns] are the naive idea; they are instantly acceptable, 'common sense.'" Hopi, on the other hand, has only count nouns, so for speakers of Hopi, he claimed, the notions of substance and matter are not common sense – though he offered no evidence for this. Linguistic determinism is clearly the stronger doctrine. It is one thing to say that English and Hopi encode different points of view. It is quite another to say that English and Hopi speakers are forced to think in ways dictated by these differences.

Yet how do languages differ in their representations of the world, and how might these representations help determine the way we think? Surely, the answers depend on what we take to be language, or thought. Whorf himself concentrated on the lexicon and the grammar. He was readiest to compare two languages in how their words categorized the world, and in how their grammatical features might influence people's conceptions of time, space, number, and other abstract objects. But what about other aspects of language and language use, such as conversational practice, literacy, politeness, native fluency? What about other aspects of thought, such as mental imagery, social skills, technical know-how, and memory for music, poetry, places, or faces? About these Whorf had nothing to say. So the doctrines of linguistic relativity

and linguistic determinism are not two monolithic theories, but rather two families of hypotheses about particular aspects of language and thought. It is not the doctrines *per se* that are true or false, but only the member hypotheses, some of which may be true and others false without contradiction.

In proposing these doctrines, Whorf seemed to take for granted that language is primarily an instrument of thought. Yet this premise is false. Language is first and foremost an instrument of communication – the "*exchange* of thoughts," as one dictionary puts it – and it is only derivatively an instrument of thought. If language has an influence on thought, as Whorf believed, that influence must be mediated by the way language is used for communication. The alliteration in my title is not accidental, for communication, as its Latin root suggests, is itself built on commonalities of thought between people, especially those taken for granted in the communities in which each language is used. Once this is made explicit, I suggest, we will find it difficult to distinguish many potential influences of language on thought from the influences of other commonalities of mental life, especially the beliefs, practices, and norms of the communities to which we belong.

I will apply this argument to the lexicon. One reason for choosing the lexicon is that it was one of Whorf's main test laboratories for linguistic relativity and linguistic determinism. Another reason is that it presents us with examples *par excellence* of how language is an instrument of communication. That will enable us to go beyond Whorf's simple doctrines to a more perspicuous view of the relation between language and thought.

1 Co-ordination in language use

People use language to do things together. In conversation – the primordial form of language – they talk face-to-face, interactively, as they plan, transact business, gossip, and accomplish other goals with each other. A hallmark of these activities is that they are joint activities. They are like shaking hands or playing a piano duet: they cannot be accomplished by the participants acting autonomously. They need co-ordination, and when co-ordination fails, they break down. At one level, there must be co-ordination between the speaker's issuing an utterance and the addressees' paying attention, listening, and trying to understand it. At a higher level, there must be co-ordination between what speakers mean and what addressees take them to mean. Speakers and addressees cannot achieve that co-ordination without establishing commonalities of thought between them. Let us see how.

1.1 Schelling games

Suppose Anne points to a clump of trees and asks Burton, "What do you think of that tree?" Anne is using "that tree" to refer to a particular tree that she intends Burton to identify. They are faced with a co-ordination problem: to get Anne's meaning and Burton's construal of her meaning to match. In 1969, David Lewis offered a general analysis of co-ordination problems like this. He argued, in effect, that Anne and Burton must come to the mutual belief about which tree Anne is using "that tree" to refer to. To do that, they need a *co-ordination device*, a notion he drew from the work of Thomas Schelling (1960).

Schelling's approach is best illustrated in a form of co-ordination problem I will call a *Schelling game*. Suppose I approach two students named June and Ken individually, show them each a picture of three balls – a basketball, a tennis ball, and a squash ball – and tell them:

Select one of these three balls. I am giving the same picture and instructions to another student in the next room, someone you don't know. You will both get a prize if the two of you select the same ball, but nothing if you don't.

As Schelling argued about such a game:

Most situations – perhaps every situation for people who are practiced at this kind of game – provide some clue for coordinating behavior, some focal point for each person's expectation of what the other expects him to expect to be expected to do. Finding the key, or rather *a* key – any key that is mutually recognized as the key becomes *the* key – may depend on imagination more than on logic; it may depend on analogy, precedent, accidental arrangement, symmetry, aesthetic or geometric configuration, casuistic reasoning, and who the parties are and what they know about each other.   (1960: 57).

June might assume, for example, that she and Ken will both see the basketball's large size as the clue, focal point, or key that would allow them to co-ordinate their expectations and would therefore choose the basketball. I will call her choice of the basketball her *Schelling choice*. If Ken made the same assumption, he would make the same Schelling choice, and they would co-ordinate. They would have treated this assumed commonality of thought – the large size of the basketball – as a co-ordination device.

Schelling's insight was that almost any commonality of thought can serve as a co-ordination device – in the right circumstances. He mentioned a variety of rationales. One is precedent. If June is playing a second time with the same student, and they won the first time by picking out the basketball, she can use that precedent as the rationale for picking out the basketball again. Another co-ordination device, as Lewis noted, is convention. If, for some reason, it happened to be conventional among students to pick out basketballs in Schelling games like this, June could

assume she and the student in the next room would see this as a co-ordinating device, and they could choose the basketball. In the lexicon, convention is of paramount importance because word meanings are thought to be conventional. However, as we shall see, other co-ordination devices are also important in co-ordinating on word meaning, and these include precedence.

1.2 Joint salience

The problem is that there is always an overabundance of available co-ordination devices. In the Schelling game with Ken, June could have appealed to the small size of the squash ball, the unique color of the squash ball, the uniqueness of the tennis ball as part of an outdoor game, or any of an infinity of other rationales. Which should she appeal to? The answer, I argue, is this:[1]

Principle of joint salience: For the participants in a co-ordination problem, the optimal co-ordination device is the one that is most salient in the participants' current common ground.

The idea is straightforward. For June to succeed in the Schelling game, she must think about the rationale her partner will rely on, and he must think about her rationale. Obviously, she cannot base her rationale on information she alone is privy to. How could Ken come up with the same rationale? The same logic applies to him. The only information they can base it on is information they fully share at that moment. This is their *common ground*, the sum of their mutual knowledge, mutual beliefs, and mutual suppositions at the moment. Then, of all the rationales available in their common ground, they must pick the most obvious, most conspicuous, most salient one, because that is the only one they can count on being a unique key – *the* key.

To see the force of this principle, suppose I tell June I am giving the same picture and instructions not just to "another student in the next room, someone you don't know," but to "your friend Ken, who knows you are his partner." Since she and Ken play squash regularly, that is a salient part of their common ground, and if she thinks it is more salient than the basketball's size, she will choose the squash ball. Suppose, instead, that I tell her that her partner is Ken, but that he does not know she is his partner. Once again, she should choose the basketball. She should realize that for Ken this version of the game is indistinguishable from the original version, and the squash ball is no longer the most salient co-ordination device in the common ground Ken would assume he held with the student in the next room.

For Schelling and Lewis, Schelling games are always third-party Schelling games. I am a third party when I pose the ball game to June and

Ken. Schelling games can also be *first-party Schelling games*. As a first party, I could present the game to June in this form:

Select one of these three balls. I have already selected one myself. You and T will both get a prize if you select the ball I have selected, but nothing if we don't select the same one.

As before, June should try to find the most salient co-ordination device in her and her partner's common ground. However, now she can take advantage of the fact that I am her partner. She can assume that I devised the game so she and I would be sure to win. The optimal solution should be so salient, so accessible, in our common ground that she cannot help but see it. It is as if I had worded the problem this way:

Select one of these three balls. I have already selected one myself. I have good reason to think you can readily and uniquely select that ball on the basis of our current common ground. You and I will both get a prize if you select the ball I have selected, but nothing if we don't select the same one

1.3 Optimal design

Co-ordination in language use is, in effect, a first-party Schelling game. Let us return to Anne pointing to the clump of trees and asking Burton, "What do you think of that tree?" It is as if Anne had presented Burton with this first-party Schelling game:[2]

Select a referent for "that tree." I have already selected a referent myself. I have good reason to think you can readily and uniquely select that referent on the basis of my utterance "What did you think of that tree?" taken against the rest of our common ground. You and I will both get a prize if you select the referent I have selected, but nothing if we don't select the same one.

The referent Burton selects is equivalent to his Schelling choice in this game. The general principle reflected here is this (E. V. Clark & Clark 1979; H. H. Clark 1983; Clark, Schreuder, & Buttrick 1983; H. H. Clark & Gerrig 1983):

Principle of optimal design: Speakers try to design their utterances in such a way that they have good reason to believe that the addressees can readily and uniquely compute what they mean on the basis of the utterance along with the rest of their common ground.

First-party Schelling games are simply a combination of the principles of optimal design and joint salience.

Some years ago two colleagues and I (Clark, Schreuder, & Buttrick 1983) tested this hypothesis in detail. In four experiments, we gave some students utterances like "What do you think of that tree?" along with a picture of many trees and asked them to make referential choices for "that tree." We gave other students the equivalent Schelling games and asked them to make Schelling choices. Our findings were clear. First,

referential choices closely matched Schelling choices. Second, both choices reflected what the students took to be the most salient object in the speaker's and their common ground. In the situations we tested, these choices were based on the students' assumed mutual beliefs about perceptual salience, the speaker's goals, the speaker's explicit presuppositions and assertions, and cultural beliefs. Finally, students were more confident in their referential choices for some utterances than for others. Players in the Schelling games were more confident in their Schelling choices for the corresponding games. Put differently, the more confident you are that you have understood my reference, the more confident you would be that you and I had won the corresponding Schelling game. There is a tight fit, then, between the foundations of reference and the foundations of first-party Schelling games.

The principles of optimal design and joint salience are not limited to reference. They apply any time speakers mean something by what they do. That includes direct and indirect illocutionary acts as performed by means of full, elliptical, or phrasal utterances. It includes conventional and novel words and constructions. And it includes much more. Co-ordination à la Schelling is fundamental to language use.

1.4 Collaboration

In practice, however, co-ordination in language use is rarely achieved in one-shot episodes. Conversation is not a sequence of Schelling games, but a process in which Schelling co-ordination plays just one part. People in conversation have to co-ordinate not only on the *content* of what they say – the essence of Schelling co-ordination – but also on the *processes* by which they establish that content. In language use, co-ordination of content and co-ordination of process are interdependent: people cannot co-ordinate on one without co-ordinating on the other.

The basic idea is that contributing to a conversation takes the collaboration of both speaker and addressees. Consider this actual example:

> Anne: that wasn't the guy I met was it -
> Burton: *u:m*.
> Anne: *when we* saw the building -
> Burton: saw it where -
> Anne: when I went over to Chet*wynd Road*
> Burton: *yes -*[3]

When Anne produced "that wasn't the guy I met was it" she was presenting an utterance for Burton to consider. Both of them realized that presentation was not enough by itself to establish what she meant. Burton indicated as much by hesitating and saying "um" instead

of giving an answer. That led Anne to expand on her reference with "when we saw the building." When Burton indicated that he still did not understand, by asking "saw it where," Anne expanded once more with "when I went over to Chetwynd Road." Only then did Burton believe he had understood, as he implied by going on to answer her original question "yes."

As this example illustrates, contributing to a discourse is ordinarily achieved in two phases: presentation and acceptance.[4] If A is the person trying to contribute to the conversation (e.g., Anne), and B is her partner (e.g., Burton), then the two phases take this form:

Presentation phase: A presents an utterance for B to consider. She does so on the assumption that, if B gives strong enough evidence, she can believe that he understands what she means by it.

Acceptance phase: B accepts A's utterance by giving evidence that he believes he understands what A means by it. He does so on the assumption that, once A registers the evidence, she will also believe that he understands.

Anne, for example, presented Burton with the utterance "that wasn't the guy I met was it" in order to ask him about a man's identity. However, since Burton could not accept the utterance as having been understood, he initiated an extended acceptance phase. That phase ended only when Burton went on to answer her question "yes," which was evidence that he believed he had understood what she meant by her utterance. In the simplest acceptance phase, he would have provided that evidence straight off. A and B's goal in the entire process is to reach the *grounding criterion*: the mutual belief that B has understood A well enough for current purposes.

When Anne uttered "that wasn't the guy I met was it," what she did, in effect, was present Burton with a first-party Schelling game. She may have thought it would succeed – that Burton could compute the referent of "the guy I met" against their current common ground – but it did not. To get it to succeed, she had to reformulate it first as "the guy I met when we saw the building" and then as "the guy I met when we saw the building when I went over to Chetwynd Road." The point is that participants in conversation realize that it is never enough merely to present a first-party Schelling game, regardless of how simple or obvious its solution is. Speakers have to get their addressees to register the game in the first place, and they may mis-hear, or become distracted. Speakers may also misjudge what their addressees assume to be in their common ground. Both speakers and addressees must take the extra step and *ground* what is said: establish the mutual belief that the addressees have understood, well enough for current purposes, what the speakers meant.

Many actions are guided by conservation of effort, but *joint* actions are guided by conservation of *joint* effort. Grounding is no exception: people try to reach the grounding criterion with the *least collaborative effort*. Take Anne's first reference to the guy she met. She could have expressed it any of these ways:

(a) him
(b) the guy
(c) the guy I met
(d) the guy I met when we saw the building
(e) the guy I met when we saw the building when I went over to Chetwynd Road.

If she had chosen (a) ("that wasn't him was it"), she and Burton would be required many more turns, extra collaborative effort, to reach the grounding criterion. If she had chosen (e) ("that wasn't the guy I met when we saw the building when I went over to Chetwynd Road was it"), they would have needed no extra turns – but the initial effort would have been great. She chose (c), we can assume, precisely because she judged it was probably specific enough to succeed without extra turns, with the least collaborative effort. Sometimes, indeed, the most efficient strategy is to force extra turns. If Anne can not think of a name on the fly, it may take less collaborative effort for her to forge ahead with "Did you happen to see what's-his-name yesterday?" and let Burton offer the name to complete the process.

Although this is just one example of the collaborative process, it brings out three properties characteristic of spontaneous language use. First, meaning is established not in one shot, but over time. Second, meaning is created jointly by the participants establishing commonalities of thought between them. The process is opportunistic in that the participants may have no idea beforehand of the commonalities they will actually establish. Third, what speakers mean is narrower than what they say. The man Anne was referring to was not uniquely specified by the phrase "the guy I met." She depended on Burton narrowing in on the right man partly in the very process of grounding.

In ordinary discourse, then, speakers do not merely design optimal utterances – first-party Schelling games they believe will succeed. They demand evidence of success, the mutual belief that the addressees have understood what they mean. That relieves them of a heavy burden. It doesn't force them to design the optimal utterance every time, because what they mean is always open to repair and adjustment. They can even start with nothing – "what's-his-name" – and establish what they mean entirely by collaboration.

2 Common ground

If co-ordination devices are fundamental to language use, where do they come from? By the principles of joint salience and optimal design, they should be based on the common ground of the participants at any moment in a discourse. How you and I co-ordinate, with or without collaboration, depends on the information we believe we share at that moment. But how? For that, we need to understand what two people's common ground consists of (H. H. Clark & Marshall 1981).

The common ground between two people – our Anne and Burton, say – can be divided conceptually into two main parts. Anne and Burton's *communal common ground* represents all the knowledge, beliefs, and assumptions they take to be universally held in the communities to which they mutually believe they both belong. Their *personal common ground* represents all the mutual knowledge, beliefs, and assumptions they have inferred from personal experience with each other.

2.1 Communal common ground

Anne and Burton belong to a diverse set of cultural groups, systems, or networks that I will call cultural communities. We might say of Anne, for example, that she is a San Franciscan, an educated American adult, a physician, a pediatrician, a speaker of American English, a baseball fan, a Yalie. With each of these attributions we are saying, in effect, that she is a member of an identifiable cultural community – the community of all San Franciscans, physicians, pediatricians, speakers of American English, baseball fans, or Yalies. Within each community, there are facts, beliefs, and assumptions that every member believes that almost everyone in that community takes for granted. So if two people mutually believe they both belong to that community, this is information they can take to be communal common ground.

What sort of information is this? As two speakers of American English, Anne and Burton take for granted a vast amount of knowledge about syntax, semantics, phonology, word meanings, idioms, and politeness formulas. As two educated American adults, they take for granted a certain acquaintance with American and English literature, world history and geography, and recent news events – disasters, election results, military coups, films. They also take for granted such broad concepts as the nature of causality, religious beliefs, and expected behavior in standing in lines, paying for food at supermarkets, and making telephone calls. As two physicians, they take for granted facts about basic human anatomy, major diseases and cures, and the technical nomenclature taught in medical school.

Regardless of the information Anne and Burton share as English speakers, San Franciscans, and physicians, that information does not become part of their common ground until they have established the mutual belief that they both belong to these communities. They can establish this in many ways – by assertion ("I'm a pediatrician," "Ah, so am I"), by showing (they recognize each other speaking American English), and by many other means (Isaacs & Clark 1986, Krauss & Glucksberg 1977, Schegloff 1972). The more communities they establish joint membership in, the broader and richer is their communal common ground.

2.2 Communities

The notion of cultural community I am appealing to here[5] is itself built on the common ground of its members. Physicians, for example, do not all live in one place and know each other. Yet when Anne and Burton establish that they are both physicians, they assume they share an expertise about medicine and its practice that makes them part of the same community – members of a set of people who share the same system or network of beliefs, practices, conventions, values, skills, know-how. The shared expertise may show up in a variety of characteristics:

(a) *language*: American English, Dutch, Japanese
(b) *nationality*: American, German, Australian
(c) *education*: university, high school, grade school
(d) *place of residence*: San Francisco, Edinburgh, Amsterdam
(e) *occupation*: physician, plumber, lawyer, psychologist
(f) *religion*: Baptist, Buddhist, Muslim
(g) *hobby*: classical piano, baseball, philately
(h) *subculture*: rock musicians, drug users, teenage gangs
(i) *ethnic origin*: Black, Hispanic, Japanese American

The idea is that when Anne becomes a physician, she believes she has done more than gain expertise in medicine. She believes she has become a member of a select group of people – those who are expert in medicine and have a common set of beliefs, practices, conventions, values, skills, and know-how. Membership in these communities, indeed, is reflected in such English nominals as *American, student, university graduate, San Franciscan, physician, Baptist, classical pianist, rock fan*, and *Latino*.

It is easy to underestimate the network of communities Anne and Burton may belong to. Place of residence, for example, really defines a set of nested communities. Anne may be a resident of Sacramento Street, Pacific Heights, San Francisco, the San Francisco Bay area, Northern California, California, the Western United States, the United States, and English-speaking North America. Each of these communities has associated with it distinguishable beliefs, practices, and assumptions

that Anne can appeal to when she needs to. Suppose, for example, Anne and Burton establish they are both residents of Pacific Heights. They can take for granted a great body of information, universal to residents of Pacific Heights, that they could not take for granted if they were only joint residents of San Francisco. Think of all the detailed perceptions, experiences, geographical knowledge, and social beliefs you can take for granted with others in your neighborhood but not with others in the rest of your city, region, or state.

Just as place of residence can be differentiated into a nesting of communities, so can other characteristics listed earlier. For nationality, the nesting goes from local neighborhoods to nations; for language, from local dialects (San Francisco Bay area) to mutually intelligible languages (English); for occupation, from specialties (psychiatric pediatrician) to occupational classes (white-collar professional); for religion, from sects (Baptist, Missouri Synod) to general (Christian); and so on. Some of these nestings are correlated – like language and place of residence – but they are nevertheless distinct. The communities defined by education probably partition not just by amount of education, but by type (e.g., sciences vs. humanities), place (Ivy League vs. Big Ten Universities), and other features. People belong to an immense number of distinguishable communities, and each has its own universal set of beliefs, perspectives, practices, and understandings.

Communal common ground is obviously akin to the everyday notion of culture, so my characterization of it is hardly definitive or complete. All I have tried to do is bring out three properties. First, cultural beliefs, practices, conventions, values, skills, and know-how are not uniformly distributed in the population. Second, most of them are identified with experts or authorities within the population, people who are defined by their special training or background and who are identified as belonging to particular communities. Third, when two people meet, they identify each other as members of such communities and use that membership to infer which features they can and cannot take to be common ground. My analysis is intended only as a beginning for the issues I take up later.

2.3 Personal common ground

Once Anne and Burton meet, they begin openly to share experiences, and these form the basis for their personal common ground. Most joint experiences originate in one of two sources – *joint conversational experiences* or *joint perceptual experiences*. Whenever Anne and Burton participate in the same conversation, they are responsible for ensuring that everyone understands what has been said, and everything they succeed on they assume to be part of their common ground. That is the outcome of the process of grounding. For example, when Anne asked

"that wasn't the guy I met was it?" she and Burton worked collaboratively to establish the mutual belief that he had understood what she meant. So what she meant became part of their personal common ground. Likewise, whenever Anne and Burton attend to the same perceptual events, such as a shot in a basketball game, and realize they are both doing so, they can ordinarily assume that everything they are jointly attending to is also common ground (Schiffer 1972, H. H. Clark & Marshall 1981). Even if at first they didn't know they were at the same basketball game, once that becomes mutually known, they can assume that its salient public parts are common ground.

An important difference between personal and communal common ground is in the way people keep track of them. For communal common ground, they need encyclopedias for each of the communities they belong to. Once Anne and Burton establish the mutual belief that they are both physicians, they can immediately add their physician encyclopedias to their common ground. For personal common ground, on the other hand, they need to keep diaries of their personal experiences; but not personal experiences alone. Anne's diary, to be useful, must record for each personal experience who else was involved in it – who else was openly co-present with her. Anne can count as personal common ground with Burton only those diary entries for which the two of them were openly co-present. The more entries there are, the richer their personal common ground.

In fact, it is not the personal experiences themselves that Anne and Burton share as personal common ground, but their interpretations. These interpretations are always shaped by their assumed communal common ground. Suppose Anne and Burton view a skin ailment together, and Anne, a physician, interprets it as eczema. If she believes Burton is not a physician, she will not assume that he interprets it as eczema. Yet because she believes he is an educated American adult, she will assume he does see it as a rash. In the end, everything we believe we share relies for its justification on our communal common ground.

The common ground that Anne and Burton can establish, therefore, may be vast, but every piece they do establish needs a basis. The basis may be the communities they believe they both belong to, which leads to what I have called their communal common ground; or it may be their openly shared experiences, which leads to their personal common ground.

3 Convention

With co-ordination and common ground as background, we can return to the best known of all co-ordination devices – convention. What is so important about convention? My argument is simple. Whorf's doctrines

of linguistic relativity and linguistic determinism are about languages like English and Hopi, and these languages are systems of conventions. The problem is that Whorf took the notion of convention for granted. He appeared to consider it self-evident and therefore of no consequence to his doctrines. That, indeed, has been the attitude of most linguists, psychologists, and anthropologists since. The notion of convention, however, is anything but self-evident, and it bears directly on how we interpret and test Whorf's two doctrines. To see this, let us turn to the analysis by David Lewis (1969).

Languages like English, Japanese, and Lakota, according to Lewis, are really conventional signalling systems. English, for example, is a system of signalling conventions such as these: *dog* can be used to denote the domesticated carnivorous mammal, *Canis familiaris*; the morpheme -*z* on nouns can be used to denote plural number; a sentence can be composed of a noun phrase followed by a verb phrase in that order. Conventions are what is represented in the rules of phonology, morphology, syntax, semantics, and pragmatics.

Yet what is a convention? Lewis based his answer on Schelling's analysis of co-ordination problems and argued that it is a community-wide solution, a co-ordination device, for a recurrent co-ordination problem. In brief:

a convention:
(a) is a regularity in behavior;
(b) is partly arbitrary;
(c) is in common ground;
(d) applies in a given community;
(e) is (used as) a co-ordination device;
(f) tackles a recurrent co-ordination problem.[6]

Take greeting. When any two old friends meet, they have a recurrent co-ordination problem of how to greet. In some American communities, the co-ordination device that has evolved is for two men to shake hands and for a man and woman, or two women, to kiss each other once on the cheek. These actions, then, constitute a regularity in behavior. They are a co-ordination device that solves the recurrent co-ordination problem of how to greet. The regularity is common ground for the members of those communities. It is also partly arbitrary, for it could have been different; in other communities, two men hug; in still others, two people kiss two, or three, times instead of just once. Hence this regularity is a convention for these communities.

Words in the lexicon have the same six properties. The recurrent problem is how to co-ordinate the speakers' specification of types of

entities with the addressees' recognition of these types. How, for example, can speakers and addressees co-ordinate on the speakers' use of a term to denote a domesticated carnivorous mammal, *Canis familiaris*, and their addressees' recognition of the type they are denoting? In the community of English speakers, one solution is to use the word *dog*. Among German, French, and Spanish speakers, a like solution is to use *Hund*, *chien*, and *perro*. So the use of *dog* is a regularity in behavior, partly arbitrary, that is common ground among English speakers as a co-ordination device for the recurrent problem of denoting members of the type *Canus familiaris*. All conventional words are subject to a similar analysis.

Lewis's analysis raises two points that are especially relevant to Whorf's two doctrines. The first is that conventions do not hold for people in general. They each hold only for members of particular communities. If so, it is essential to specify for every convention the communities in which it holds. The second point is that conventions are, at their foundations, ways of solving recurrent co-ordination problems. However, conventions are not the only way of solving co-ordination problems, even recurrent ones. So it is essential to distinguish conventions from other co-ordination devices. These two points, I will argue, raise havoc with linguistic determinism.

4 Whorf and conventions

For Whorf, the lexicon offered compelling evidence for linguistic relativity and linguistic determinism. When a language has words for some categories and not others, he argued, speakers of that language habitually see the world divided into those categories and not others. As he put it:

> We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way – an agreement that holds throughout our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, but *its terms are absolutely obligatory*; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees. (Whorf 1956: 213–14, Whorf's emphasis)

Whorf's "implicit and unstated" agreement that "holds throughout our speech community and is codified in the patterns of our language" is, of course, Lewis's conventional signalling system, a system of conventions. So Whorf's claims were, first, that we cannot talk without subscribing to these conventions (linguistic relativity) and, second, that even when we are not talking, we "cut nature up, organize it into concepts, and ascribe significances as we do" in accordance with these conventions (linguistic determinism).

Whorf was at his rhetorical best in this quotation. His versions of the two doctrines are strong and uncompromising. The doctrines can, of course, be formulated in other terms – stronger or weaker. Still, for many lay readers, Whorf's statement captures what his position was really about. When we can, it is worth taking Whorf at his word.

However, once we view language use as a joint activity, we discover that the two doctrines, in either their strong or their weak form, are not as clear and testable as they appeared to be. I will first take up four problems that come from a close analysis of conventions: communal lexicons, origins of conventions, historical change, and conceptual conventions.

4.1 Problem 1: communal lexicons

What is the lexicon for English? It is common to gather up all the words available to any English speaker from Alaska to Bombay, throw them into a single hopper, and call that the English lexicon. That, of course, is nonsense. Every conventional word meaning, in Lewis's account, holds not for the word *simpliciter*, but for the word *in a particular community*. You cannot talk about conventional word meaning without saying what community it is conventional in.

Word knowledge is properly viewed, then, as dividing into *communal lexicons*, by which I mean sets of word conventions that are taken for granted in individual communities. When I meet June at a party, she and I must establish as common ground which communities we both belong to simply in order to know what English words we can use with each other with what meaning. Can I use *fermata*? Not without establishing that we are both music enthusiasts. Can I use *rbi*? Not without establishing that she and I are both baseball fans. What about *murder*, surely a word that every English speaker knows and agrees on? Even here, I must establish which communal lexicon I am drawing on.

Every community has a specialized lexicon. We recognize the existence of these lexicons in the terms we have for them in English:

for places: regional or local dialect, patois, provincialisms, localisms, regionalisms, colloquialisms, idiom, Americanisms, Californiaisms, etc.;

for occupations or hobbies: jargon, shoptalk, parlance, nomenclature, terminology, academese, legalese, medicalese, Wall Streetese, etc.;

for subcultures: slang, argot, lingo, cant, vernacular, code, etc.

Probably every identifiable region has a distinctive dialect, patois, or idiom with distinctive terms for everything from food to geographical features. Every occupation and hobby, from physics to philately, has its own technical jargon or terminology. And so does every subculture, from drug addicts to high-school cliques.

When we think of jargon, slang, or regionalisms, we tend to focus on the words that are unique to a communal lexicon. *Meson, pion*, and *quark* are terms that only a physicist could love. Yet most common word-forms belong to many communal lexicons – though with different conventional meanings. Examples are common. In Britain, what are called *biscuits* can be sweet or savory, but in America, they are always savory. In common parlance, *fruit* denotes a class of edible, sweet, fleshy agricultural products; among botanists, it denotes the ripened ovary or ovaries of seed-bearing plants, whether or not they are edible, sweet, and fleshy, and that includes tomatoes, pumpkins, and nuts. Two botanists in conversation would have to establish which lexicon they were drawing on. You and I would be forced to stay with common parlance.

Other examples are less obvious. Take the word-form *murder*. The conventional meaning associated with it varies in subtle ways as we go from one communal lexicon to the next. It has slightly different meanings for American, British, and New Zealand lawyers, for example, and for pro-choice advocates, anti-abortionists, army officers, animal rights activists, pacifists, vegetarians, and primary school children. The complication is that most of us belong to more than one community at once and, depending on who we are talking to, appeal to a different conventional meaning. Two lawyers talking about legal matters will take for granted a legal definition, but in talking to an anti-abortionist, pacifist, or army sergeant they will have to negotiate how the word is to be interpreted on that occasion. The collaborative process of grounding I described earlier is designed to handle just this sort of discrepancy.

The conventional meanings for *murder* in all these communal lexicons are related, but they hardly "cut nature up, organize it into concepts, and ascribe significances" in the same way. What is more, the very ways they differ seem part of the fabric of the distinctive beliefs, assumptions, practices, and traditions of these communities. If you and I are both lieutenants in the US army, we subscribe to a vast system of beliefs, assumptions, practices, and traditions that are common ground for everyone in the army. (Even if we do not subscribe to the system, we know the system.) When you and I meet in uniform for the first time, that is the salient common ground against which we expect to co-ordinate. I can only assume that your use of *murder* is consonant with that system – that, for example, killing the enemy in combat is not murder. Change "US army" to "Salvation Army," and not only will our common ground change, but so will the conventional denotation of *murder*. So the conventional use of *murder* in each community reflects its particular system of beliefs, and not vice versa. That violates at least the spirit of linguistic determinism; and examples like *murder* can be multiplied indefinitely.

When Whorf formulated his two doctrines, he was thinking of broad languages and not communal lexicons – of English, Hopi, and Nootka, and not legalese, baseball jargon, or chemical nomenclatures. We may speak loosely of doctors, lawyers, acid rockers, and baseball players as "speaking different languages," but for Whorf this is surely only a figure of speech. To test Whorf's version of linguistic determinism, we would need to identify a specifically English-language lexicon – a lexicon for the community of English speakers that is separate from all other communal lexicons. Is there such a lexicon? Do we ever classify our interlocutors merely as English speakers? I suggest that we do not. We see them at least as adults or children, as educated or uneducated, as speakers of American or Filipino English, as members of other communities. If so, it will be difficult to distinguish entries in the English language lexicon from those in other communal lexicons. It may ultimately be impossible.

4.2 Problem 2: origins of conventions

Conventions do not come out of the blue. They evolve and become entrenched within a community, in Lewis's view, precisely because they are effective co-ordination devices for the people they serve. A co-ordination device is effective in a community only if it is both useful and usable in that community. To be *useful*, it must be a solution to a recurrent co-ordination problem that is important for a broad segment of the community. Driving on the right solves a widely applicable co-ordination problem; driving with one's hat on does not. To be *usable*, the co-ordination device must have two properties. Members of the community must find the regularity in behavior easy to represent and reproduce; how to shake hands is probably easier to remember and reproduce than how to perform a complicated pattern of finger touchings. Also, they must be able to recognize and represent the recurrent co-ordination problem for which it is a solution; it is probably easier to recognize when to use *dog* than when to use *dalmatian*. In a lexicon, a word is more usable to a community (a) the simpler its form given the other words in that lexicon, and (b) the more applicable its meaning for the community.

The content of communal lexicons, then, is no accident. There is a good reason why *dog*, *potato*, and *tree* evolved in the greater community of English speakers, but *embolism*, *thrombosis*, and *rhinitis* evolved only among physicians, *fly out*, *infield*, and *rbi* only among baseball aficionados, and *staccato*, *fugue*, and *fermata* only among musicians. *Dog*, *potato*, and *tree* were both useful and usable to most English speakers, whereas *embolism*, *rbi*, and *fermata* were useful and usable only

in the more specialized communities. Words evolve in a community in direct response to their usefulness and usability in that community, and not vice versa.

What, then, about differences between languages? According to Berlin & Kay (1969), the Dugum Dani of New Guinea have only two basic color terms (for light and dark), whereas Mandarin speakers have six (for black, white, red, green, yellow, and blue) and English speakers eleven (also, brown, purple, pink, orange, grey). Now, by linguistic determinism, English speakers should have eleven "thoughts" when they contemplate colors, whereas Mandarin speakers should have only six and the Dani two. Yet if conventions evolve in response to their usefulness and usability in a community, all that these differences show is that the Dani have not found color terms useful or usable enough for co-ordination in talk in their culture to have evolved more than the two. The communities in which Mandarin and English are spoken have. Otherwise, Dani, Mandarin, and English speakers should see colors in the same way. Indeed, two colors that are similar for English speakers are just as similar for the Dani (Heider 1972, Heider & Olivier 1972; see also Kay & Kempton 1984).

The idea that terminology evolves to reflect the culture is hardly new. Berlin & Kay argued that the greater the "general cultural complexity (and/or level of technological development)," the more elaborate the color lexicon. Brown (1977, 1979) argued much the same thing in accounting for the number of so-called life forms found in a language's botanical lexicon (tree, grass, bush, vine, herbs) and zoological lexicon (bird, fish, snake, worm, bug, mammal).

4.3 Problem 3: historical change

If conventions arise only when they are useful and usable in a community, they should also disappear when they are not. That has been demonstrated again and again in studies of historical change: as a culture changes, lexical conventions change to reflect it.

Take an example of Berlin's (1972). When the Spanish arrived in Mexico in the sixteenth century, they brought along sheep, chickens, and pigs, animals unknown to the Tenejapa Tzeltal in Chiapas. However, the Tzeltal knew about deer, or *čih*, for example, so they called sheep *tunim čih*, literally 'cotton deer.' Over the centuries, as sheep became an important livestock for the Tzeltals, it was for sheep, not deer, that they needed the briefest co-ordination device. As a result, the bare term *čih* came to denote sheep, and deer were referred to with the marked term *te?tikil čih*, or 'wild sheep.' So as the relative importance of sheep and deer changed, *čih* changed from meaning 'deer' to meaning 'sheep';

likewise, the pre-Conquest words for bird and wild pig changed to mean 'chicken' and 'pig.' Analogous historical changes happened in other native American languages (Witkowski & Brown 1983) . In various communities, the word for tapir changed to 'horse,' peccary to 'pig,' opossum to 'pig,' dog to 'horse,' caribou to 'horse,' bison to 'cattle,' arrowhead to 'bullet,' and bow to 'gun.' Closer to home, British English *carriage*, which once meant 'large horse-drawn vehicle' and contrasted with *horseless carriage*, now means 'railway car' and contrasts with *horse-drawn carriage*.

Modern languages are filled with words whose lexical conventions moved out from under them. *Lady* once meant 'kneader of bread,' and *buxom*, 'obedient, yielding.' Books on historical linguistics are full of examples (e.g. Waldron 1967). Modern languages are also filled with words invented to handle new cultural phenomena – from *boycott* and *sabotage* to *radio* and *stereo* – just as are more specialized communal lexicons. Most changes in word meaning have been in response to cultural changes – new commodities (sheep, automobiles), an invading language (as with the Norman invasion of Britain), spreading expertise (terms like *ego* from psychoanalytic theory), and so on. Few modern word-forms have the same conventional meanings they did 500, or even 100, years ago.

Often, the brute morphological analysis of a word tells us more about its history than what it means now. At one time, whales were thought to be a type of fish, and that is reflected in Dutch and German, where they were called 'whalefish' – *walvis* and *Walfisch*. Over time, beliefs about whales changed, and the terms *walvis* and *Walfisch* now denote a type of mammal despite their morphological insistence to the contrary. In medieval physiology, people's character was thought to be determined by a dominant humor, and that led to such terms as *humorous, sanguine, phlegmatic, choleric, melancholy, in a good humor*, and *in a bad humor*. In modern times, we retain the terms, but without subscribing to, or even knowing about, the theories that gave rise to them. Examples of this type can be multiplied indefinitely.

The generalization, then, is that, as a community's beliefs, assumptions, concepts, and practices change, so its lexicon changes to reflect them. Whorf's strong form of linguistic determinism does not sit well with this generalization. If "we cut nature up, organize it into concepts, and ascribe significances as we do" because of the conventions of language, and if "its terms are absolutely obligatory," then a language should not change in response to a change in a community's system of beliefs. It should continue to dictate the way that community cuts nature up. This version of linguistic determinism is obviously untenable. But the generalization weakens any version of linguistic determinism. If linguistic

determinism has any force historically, we should find examples of beliefs *failing* to change over time because of the conventions that exist in the language. Such examples do not come readily to mind.

4.4 Problem 4: conceptual conventions

Some of the most compelling arguments for linguistic relativity and determinism are made by comparing two languages for words of the same conceptual domain. Take English *trousers* and the equivalent Dutch *broek*. In English, *trousers* and its near relatives are plural: *pants, trousers, breeches, shorts, panties, longjohns, dungarees*, and so on. In Dutch, *broek* and its near relatives are singular. The same plural–singular contrast is found in the terms related to English *glasses* vs. Dutch *bril*, and those related to English *scissors* vs. Dutch *schaar*.[7] If language determines thought, these differences should *cause* English and Dutch speakers to think differently about trousers, glasses, and scissors. Indeed, there is good evidence that English and Dutch speakers do think differently about these objects – at least for purposes of communication.

(a) *Pairs*. Not only do English speakers use *pants, glasses*, and *scissors* in the plural, but they speak of *pairs* of pants, glasses, and scissors. They think of these objects as coming in pairs – a conception I will call "pairings." Dutch speakers. in contrast, use *broek, bril*, and *schaar* in the singular and never talk about *pairs* of pants, glasses, or scissors. Their conception I will call a "singleton."

(b) *Demonstrative pronouns*. When English speakers refer to a single pair of pants, glasses, or scissors, they can use the bare *those*. In the same situation, Dutch speakers use the bare *that*. This is consistent with English speakers' thoughts of pairings, and Dutch speakers' thoughts of singletons.

(c) *Coinages*. When new terms for these objects are introduced into English and Dutch, they are made to conform to the contrasting concepts of these objects. When *jeans, Levis*, and *tights* came into English, they were treated as plural, and their referents were conceived of as coming in pairs. In contrast, when the English word *hotpants* was introduced into Dutch, it was treated as singular despite its plural use in English to denote pairs.

(d) *Entrenchment*. These concepts are deeply entrenched in the culture. US clothing merchants have occasionally tried to slip *a pant, a slack*, and *a jean* into clothing advertisements, but to no avail. Here is a letter to Lands' End about their clothing catalogue: "As a somewhat loyal Lands' End customer, I must protest your use of the singular form of the word for denim casual pants. There is no such word as 'jean.' When you get up

in the morning, do you put on your pant? Or slack? And under that, do you wear your brief? Or short? Do you cut with a scissor? Do you sing the blue? No – and you don't wear a jean either. The word is jeans – plural – even if you're referring to only one. (Signed)"

Here, then, is a compelling case for linguistic determinism – as compelling as one finds. English and Dutch words for pants, glasses, and scissors contrast in number, and English and Dutch speakers' conceptions for these objects seem to differ in response. Even this case, however, is open to a competing account.

Conventions cover many types of regularities in behavior. Some govern the co-ordination of *practices* such as placing silverware on tables and locating hot and cold water faucets in sinks. Others govern the co-ordination of *actions* such as shaking hands and passing through doors; and so on. In communication, we must distinguish between conventions that govern the co-ordination of word use *per se* (lexical conventions) and conventions that govern the co-ordination of our conceptions of things (conceptual conventions). The distinction is important because conceptual conventions can determine language use without being conventions of language *per se*.

Consider the numbering of floors in buildings. In most of Europe, the floor at ground level is the ground floor, and the floor above that is the first floor. In the US and Canada, the floor at ground level is the first floor. The floors above the first floor are numbered the same way in both systems. It is tempting to say that *first*, *floor*, or *first floor* therefore differ in meaning between British and American English, but that is surely not the right description. Floor numbering is a property not of languages (e.g. American or British English, French, or Polish), but of communities (e.g. North Americans and Europeans).

Floor numbering is what I will call a *conceptual convention*. It is the convention people in a community subscribe to in counting floors. It is a convention because it is a co-ordination device, partly arbitrary, for solving the recurrent co-ordination problem of how to number floors. It also happens to be a convention that does not depend on the language spoken. Travelers take the European system for granted when they are in Europe, and the North American system when they are in the US, no matter what language they are speaking. These two systems provide people with highly salient co-ordination devices for talking about floor numbers. They determine how we talk about floors without being part of the languages *per se*.

Conceptual conventions are ubiquitous. Many are linked to cultural practices. In Britain, small businesses are named for the person running them – the butcher's shop, the grocer's, the greengrocer's, the ironmon-

ger's, etc. In North America, they tend to be named for the product sold – the meat market, the grocery store, the fruit market, the fish market, etc. Same language, but different conceptual conventions for thinking about such businesses. In Britain vs. the rest of Europe (and America), differences in the way cars are manufactured and driven lead to different conceptual conventions of "passenger seat," "driver's side," "across the traffic," etc. In some English-speaking communities, boats above a certain size are conventionally viewed as female and are referred to as *she*. In other communities, the same goes for cars.

The problem is that many lexical conventions are difficult, if not impossible, to distinguish from conceptual conventions. Consider two accounts for trousers, glasses, and scissors. First, a *lexical* account claims that there is a lexical convention in English that *trousers*, *glasses*, and *scissors* denote pairings, and in Dutch that *broek*, *bril*, and *schaar* denote singletons. Second, a *conceptual* account claims that there is a conceptual convention in most English-speaking communities that trousers, glasses, and scissors are pairings, and in most Dutch-speaking communities that they are singletons. Which account is to be preferred, or do the two accounts come to the same thing?

The lexical account comes in at least two versions. In the first version I will consider, the word forms for pants, glasses, and scissors are specified morphologically as [+pl] in English and [+sg] in Dutch, just as the words for sun and moon are [+masc] and [+fem] in French, but the reverse in German. That is, the contrast between English and Dutch is in the *morphological* feature of number, and otherwise the assignment is arbitrary, unmotivated, accidental. This version of the lexical account, however, fails to explain several essential phenomena.

Uniformity of treatment. In German, clothing terms may be [+masc], [+fem], or [+neut]; for example, the words for pants and shirt, *die Hose* and *das Hemd*, are [+fem] and [+neut]. In French, these terms vary not only in morphological gender (*le pantalon* is [+masc] and *la chemise* [+fem]), but also in morphological number (*le pantalon* is [+sg] and *les blue-jeans* [+pl]). In contrast, the terms for pants, glasses, and scissors in English are all [+pl] and in Dutch they are all [+sg]. Moreover, when new words are coined in these domains – such as *briefs*, *shades*, and *nippers* – in English they are always [+pl] and in Dutch [+sg]. Nothing in this version of the lexical account explains this uniformity.

Pairings. Nor does anything in this version require *pants*, *glasses*, or *scissors* and their close relatives to denote pairings.

Pronoun morphology. In German and French, anaphoric and demonstrative pronouns ordinarily take the morphological gender and number of the nouns that would be used for their referents. In German, you would point at a pair of pants and say *die* [+fem], to agree with *die*

Hose, and in French, *celui-là* [+masc], to agree with *le pantalon*. Point at a shirt instead, and you would say *das* [+neut], to agree with *das Hemd*, and *celle-là* [+fem], to agree with *la chemise*. Or point at a pair of jeans, and you would say *die* [+pl], to agree with *Jeans*, and *ceux-là* [+pl +masc], to agree with *les blue-jeans*.

Yet whenever an object has a natural gender that conflicts with its name's morphological gender, speakers generally engineer utterances to get the morphology to agree with natural gender. So in German, one might say *Das Mädchen hat sein Geld verloren, und darüber ist sie sehr böse* – that is, 'The girl [+neut] lost *its* money, and *she* is very angry about it.' Although *sein* ('its') agrees with *Mädchen* in morphological gender, *sie* ('she') matches the referent in natural gender. Indeed, you could point at a pair of pants and say *das* [+neut], to agree with the natural gender of the pants. In French, one might say *Le professeur, elle est excellente* – that is, 'The professor [+masc], she [+fem] is excellent [+fem].' If you point at the same professor, you could say *Celle-là est excellente* – that is, 'That one [+fem] is excellent [+fem].' The crucial evidence here is that in English, the number associated with pants, glasses, and scissors behaves like natural and not morphological plural. Speakers use *they, these,* and *those* in referring to a single pair of pants, glasses, or scissors both anaphorically and deictically. The plurality associated with *pants, glasses,* and *scissors* is not morphological. The first version of the lexical account is not enough.

In the second version, the lexical conventions specify, instead, that *pants, glasses,* and *scissors* denote pairings, and that *broek, bril,* and *schaar* denote singletons. This version solves several problems. It says that *pants, glasses,* and *scissors* are plural because their referents are plural objects – pairings – and that *broek, bril,* and *schaar* are singular because their referents are singletons. The version also accounts for agreement with natural number in the pronouns of English and Dutch. At first glance, it seems to solve all the problems.

However, there is still the issue of uniformity: why should all the nouns in the domains of pants, glasses, and scissors denote pairings? In principle, *jeans, spectacles,* and *shears* could denote pairings at the same time that *brief, goggle,* and *plier* denoted singletons. Yet that isn't how it works. The convention we need must capture more than the concepts of single words. It must apply to entire domains. What is most telling is that it must apply even to objects that do not yet have names. "What are those called?" I would ask a welder of something that looked like goggles, not "What is that called?" Conceptual conventions have precisely these properties. They offer a natural way of accounting for all these phenomena.

Most conventions are deeply entrenched because they are part of a larger system of conventions. That is why Lewis's conventional signalling

systems (e.g. English or Dutch) are so stable. Their constituent conventions – for example, their lexical conventions – are so tightly interlinked that a community cannot change one without changing many others. Conceptual conventions are no different. Indeed, the conceptual convention of pairing in the domains of trousers, glasses, and scissors is maintained in part by its link to the consistent use of the plural and to the word *pair*. However, ultimately it is maintained by our need to co-ordinate in talking about these objects and others like them.

The argument, then, is this. Among most English speakers, there is a conceptual convention that trousers-, glasses-, and scissors-like objects are to be viewed as pairings. That, in turn, leads English speakers (a) to denote them with plural nouns; (b) to speak of *pairs* of trousers, glasses, and scissors; (c) to coin new words also as denoting pairings; (d) to use the pronouns, *they, these,* and *those* in referring to a single pair – even when they have no names for them. The conceptual convention is needed to account for their uniformity of treatment beyond the specific words already in the domain.

Conceptual conventions seem to be part and parcel of the expertise of specialized communities. In every medical comunity, there is a body of unwritten conventions about how to view diseases, cures, the human body, and medical practice. These conventions differ across the communities of standard physicians, chiropractors, holistic physicians, faith healers, and shamans and help determine the uses of a vast family of medical terms such as *disease, pain, sick,* and *cure*. It is the acquisition of these conventions, in part, that makes a person a member of these communities. With conceptual conventions, we have come full circle to the primacy of communities and their common ground.

5 Whorf and nonconventional co-ordination

Almost anything can serve as a co-ordination device – conventions are only one type. Yet when students of language investigate language use, they tend to focus on the conventional and ignore the nonconventional. Whorf was a good example. For him, the conventions of a language constituted "an implicit and unstated" agreement: "*its terms are absolutely obligatory*; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees." Yet nonconventional devices are also essential to language use. Their use is absolutely obligatory. We cannot talk at all except by subscribing to the organization and classification of data that they decree. The problem for Whorf's two doctrines is that nonconventional devices are not part of language as a system – part of Whorf's agreement – precisely because they are not conventional.

Nonconventional co-ordination in language use raises further problems for the interpretation and application of linguistic relativity and linguistic determinism. Here I will consider three interrelated problems: nonconventional co-ordination devices, semantic indeterminacy, and conceptual creativity.

5.1 Problem 5: nonconventional co-ordination devices

Nonconventional co-ordination devices have regularities of use too. That makes them easy to confuse with conventional devices – especially linguistic conventions. However, these regularities do not fall under the jurisdiction of linguistic relativity or linguistic determinism. They cannot be appealed to as evidence for or against these doctrines.

Suppose I tell a friend, "In the drugstore today I noticed another interesting Gumperz phenomenon." What did I mean by *Gumperz phenomenon*? It is a novel compound, so I cannot be relying on a convention. I expect my friend to consult our common ground and, as in any first-party Schelling game, find the most salient interpretation. What interpretation that is depends on the Gumperzes we know in common, the information we share about them, the drugstore I was referring to, and on and on. Suppose I actually meant "the phenomenon of misunderstanding between people of different social groups, as described by John Gumperz." This interpretation might possibly be classified as an instance of the general pattern "phenomenon *from* Gumperz" or "noun2 from noun1." If we look at enough of these compounds, we might conclude, as Lees (1960), Levi (1978), and Li (1971) all have done, that they form a small number of patterns that cover all possible English noun compounds. In Levi's analysis, there are exactly twelve such patterns. The rules of compound formation allow these and no others. For her, the pattern "noun2 from noun1" is a convention of English noun compounds.

Yet there *are* no such conventions of English. First, the relations in noun compounds such as *Gumperz phenomenon* can in principle be anything people can think of (Downing 1977, Gerrig & Murphy 1992, Gleitman & Gleitman 1970, Jespersen 1942), and that is true for many other so-called contextual constructions as well (E. V. Clark & Clark 1979, H. H. Clark 1983, Kay & Zimmer 1976). Second, the relation "noun2 from noun1" is a regularity at only one level of abstraction. Levi could just as well have abstracted over a more specific set of relations and arrived at "noun2 described by noun1" or "noun2 of language use described by noun1." Levi's twelve types are at an arbitrary level of abstraction. There are an infinity of levels she could have chosen. Third, it is easy to find novel noun compounds that do not fit Levi's categories.

In one study (Coolen, Van Jaarsveld, & Schreuder 1991), trained judges disagreed about 40 percent of the time in trying to fit novel compounds into Levi's categories.[8]

What are Levi's regularities regularities of? I suggest they are really regularities in what people have used noun compounds to talk about. They give a statistical picture of the relations people (a) can think of and (b) want to denote in typical communicative circumstances. They inventory the relations people tend to find salient in common ground as they talk, where these are conceptual relations independent of language *per se*. When we think about the relations that might hold between a dog and a sled, we may think first of dogs pulling sleds (the relation that arises in *sleddog* and *dogsled*). Yet in the right circumstances, we may also think of dogs chewing on, riding on, running after, being transported by, being obsessed by, or being transmogrified into sleds. The last few relations may be rare, but they are perfectly usable in the right circumstances.

If Levi's categories are really a statistical inventory of common regularities, they ought to hold in other areas of language where these relations might appear, and they do. Her relations are also the ones E. V. Clark & Clark (1979) found commonest in a large sample of conventional and novel denominal verbs. So in *They milked the cow*, the abstract relation between cow and milk is "noun2 from noun1," the Levi category I appealed to earlier. We took these to be statistically common regularities, not conventional relations, and gave many arguments for thinking so. Many of these relations are also common in denominal adjectives (like *milky*) and denominal nouns (like *dogger*).

Compounds like *Gumperz phenomenon* are hardly the only constructions that depend on nonconventional co-ordination devices. Here is just a partial list of such constructions with an example of each:

1. Indirect nouns: "He plays jazz *piano*?"
2. Compound nouns: "I noticed another *Gumperz phenomenon*."
3. Possessives: "Here comes *my* bus."
4. Denominal nouns: "He's a *dogger*."
5. Denominal verbs: "He managed to *porch* the newspaper today."
6. Eponymous nominals: "The photographer asked me to do a *Napoleon* for the camera."
7. Pro-act verb *do*: "Alice *did* the lawn."
8. Denominal adjectives: "He held a *Churchillian* pose."
9. Non-predicating adjectives: "I have an *electric* knife."
10. Eponymous adjectives: "She's very *San Francisco*."   (H. H. Clark 1983)

Nonconventional co-ordination devices, I suspect, play a much greater role in everyday language use than standard models of semantics would lead us to think.

The lesson is that many regularities in language use are only statistical regularities associated with people in communities. They are a combination of (a) possible human conceptions, (b) possible salient conceptions for use in Schelling games, and (c) recurrent community interests. Although (a) may be universal, (b) and (c) vary with personal and communal common ground. These factors determine aspects of language use without being part of language *per se*. There are many aspects of word use that lexicographers, linguists, psychologists, anthropologists, and others assume are conventional. It is an open question how many of these aspects will turn out to be mere statistical regularities. The argument has to be made word by word.

5.2 *Problem 6: semantic indeterminacy*

Even if conventional words cut nature up into categories, as Whorf claimed, many of these categories are semantically indeterminate. Take the adjective *muddy*. The dictionary defines it as "covered, full of, or spattered with mud." Yet when I use it on a particular occasion, I always mean something much more specific. If I tell you "My shoes are muddy," I don't just mean they are "covered, full of, or spattered with mud." Depending on the situation, I may mean there is mud on the soles, or on the leather surface; I am unlikely to mean they are "full of mud." There is an entirely different range of salient occasion meanings for *muddy* in *muddy water* (e.g., water with mud dissolved in it), *muddy road* (e.g., road with a surface of mud), *muddy windshield* (e.g., windshield with mud on the outside surface), and *muddy floor* (e.g., floor with mud patches on it). The category we cut the world into when I tell you "My shoes are muddy" is particular and only indeterminately specified by the conventional meaning of *muddy*.

What words like *muddy* mean on each occasion is really a combination of (a) conventional meaning and (b) nonconventional co-ordination devices. With "My shoes are muddy," I am presenting you with a first-person Schelling game about the specific category of muddiness I intend. I expect you to see the salient way in which mud could be "had" by shoes, and that is to be adhering to their soles. It is related to shoes in the way we would mutually expect it to be on this occasion.

Examples like this pose two problems for the two Whorfian doctrines. One is that it is difficult, empirically, to separate lexical conventions from systematic but nonconventional co-ordination devices. We are tempted to give *muddy* different conventional meanings corresponding to the ways in which it modifies *shoes, water, road, windshield*, and *floor*. Indeed, the dictionary definition ("covered, full of, or spattered with mud") is better viewed as a list of the most common occasion meanings, typical

exemplars, than as a list of conventional senses. If I am right, *muddy* has only a general conventional meaning, which gets particularized on each occasion through a first-party Schelling game and through collaboration. How many of Whorf's lexical concepts are nonconventional particularizations instead of true conventional meanings? That is hard to know without looking at the vocabulary word by word.

The second problem is that if words like *muddy* have such a nonspecific conventional meaning, the categories they cut nature into, the concepts and significances they determine, are broad and diffuse. For these words, linguistic relativity and linguistic determinism are of little consequence. The more pervasive semantic indeterminacy is, the less consequence they have.

5.3 *Problem 7: conceptual creativity*

One standard view of cognition holds that, by the time we are adults, we have a large stock of ready-made concepts, like "apple" and "gun" and "crawling," and that we draw on these in interpreting the world around us. It also holds that the most basic of these concepts correspond to the words in our language, words like *apple, gun*, and *crawl*. This seems to have been Whorf's view, as it seems to be required both for linguistic relativism and linguistic determinism. Yet this view has many problems. The most important for us here is its lack of imagination – its incapacity for conceptual creativity.

We are deft at creating new concepts on the fly. We do that every time we interpret complex expressions such as *things that could fall on your head* or *ways to make friends* or *things to inventory in a department store*. Although we may never have thought of the categories denoted by these phrases before, we have no trouble creating the right concepts on the spot. These are what Lawrence Barsalou (1983) called *ad hoc categories*, and they pop up everywhere in daily life, both in and out of language use. What is remarkable, as Barsalou showed, is that they have many of the same properties as ready-made categories like "fruit" and "furniture." In particular, they have the same graded structures. For "fruit," we consider apples and oranges to be typical instances, and raisins and pomegranates atypical. Likewise, for "things that could fall on your head," we take apples and flower pots to be typical instances, and dogs and radios atypical. And there are other properties correlated with this graded structure.

In language use, I suggest, we create concepts for *ad hoc* categories for almost every predication we meet, whether the predication is made with a phrase like *things that could fall on your head* or a single word like *fruit*. Suppose I tell you, "Down at the beach the other day, I saw a great number of birds." Just what am I predicating I saw a great number of?

Certainly not birds pure and simple. The prototypical instances of that category are robins and sparrows (see, e.g., Rosch, Gray, Johnson, & Boyes-Braem 1976), whereas the prototypical instances of the category of thing you would infer I saw were gulls and sandpipers – and even that would depend on which beach you understood me to be referring to. I used the bare noun *bird*, and yet I intended you to create a concept for an *ad hoc* category something like "bird I would be likely to see at that beach." You would be mistaken in thinking that the prototypical entities I had in mind were robins and sparrows. I presented you with a first-party Schelling game, and the category I denoted with *bird* was that *ad hoc* category that was most salient given our current common ground. Change "down at the beach" to "up in the mountains" and the category I denoted by *bird* would change enormously.

So the way "we cut nature up, organize it into concepts, and ascribe significances" for the bare noun *bird* changes from one use to the next – sometimes radically. The conventional meaning for *bird* plays only one part in the process. This poses a problem for linguistic relativity and linguistic determinism. In Whorf's view, my use of *bird* leads you to call forth, in an "absolutely obligatory" process, a ready-made concept of birds, pure and simple. Yet if it leads you each time to create a novel concept for an *ad hoc* category, the absolutely obligatory link between language and thought is broken, and much of the potential influence of language on thought is thrown into doubt.

6 Conclusions

The argument I have presented has taken many steps. Language use between two people, Anne and Burton, depends fundamentally on them co-ordinating what Anne means with what Burton takes her to mean. They co-ordinate by means of co-ordination devices, and these devices must be part of their common ground – communal or personal. More than that, they collaborate moment by moment, making opportunistic use of that common ground. Now the Whorfian doctrines of linguistic relativity and linguistic determinism are really claims about the conventional parts of a language. The first problem is that in the lexicon it is difficult to know which conventional aspects belong to the language as such and which do not. The second is that conventions are only one means by which Anne and Burton co-ordinate.

The first problem is inherent in the notion of convention. Conventions are co-ordination devices that hold only for particular communities. For any word meaning, we must ask "In which community is this a convention?" Many word meanings, perhaps most, hold not for all speakers of a language *per se*, but only for communities defined by other

cultural characteristics – and there are many of these. And the word meanings that evolve in a community evolve in response to their usefulness and usability in that particular community – in line with its members' common beliefs, assumptions, practices, and traditions.

The second problem is that many regularities of language use are easy to mistake for conventions of language. Some regularities, like the numbering of floors, are conventions, not of language, but of a community's way of conceiving things. Other regularities, like the relations in noun compounds, are statistical summaries of the community interests that typically arise when people talk. Many conventional meanings, like *muddy*, are also highly indeterminate, and what they are actually taken to denote is created *ad hoc* on the fly. Many regularities in word use come not from conventional meanings, but from the momentary non-linguistic co-ordination devices that are exploited in their use.

What about linguistic relativity and linguistic determinism? The arguments here suggest a greatly expanded and more detailed version of linguistic relativity. Language use varies not merely by major language communities – English vs. Hopi – but by any cultural community that corresponds to people's social identities – from plumber or San Franciscan to university graduate or baseball aficionado. At the same time, the arguments here weaken or limit linguistic determinism. Yes, people who speak differently think differently, but much of the correspondence comes from the common beliefs, assumptions, practices, and traditions in the communities to which they belong. There can be no communication without commonalities of thought. But there can be thought, even commonalities of thought, without communication.

Notes

1 The argument here is drawn from E. V. Clark & H. H. Clark (1979), H. H. Clark (1983), H. H. Clark & Gerrig (1983), but most directly from H. H. Clark, Schreuder, & Buttrick (1983).
2 Levinson (1990) has independently proposed a similar analysis.
3 From the London–Lund corpus of English conversation (Svartvik & Quirk 1980). I retain the following symbols from the London–Lund notation: "." for a brief pause (of one light syllable); "-" for a unit pause (of one stress unit or foot); ":" for a lengthened vowel; and asterisks for paired instances of simultaneous talk (e.g., *yes*).
4 See H. H. Clark & Wilkes-Gibbs (1986), H. H. Clark & Schaefer (1989), and H. H. Clark & Brennan (1991).
5 You can substitute the term *cultural group*, *cultural network*, or *cultural system* if you don't like the term *cultural community*, but it should be defined as I am defining it here.
6 This simplifies Lewis's formulation and terminology but retains the heart of his account. See Lewis for the full story.

7 Here is a partial list of trouser words in English: *trousers, pants, breeches, slacks, jeans, levis, blue jeans, denims, dungarees, jodhpurs, overalls, pyjamas, pedal-pushers, plus-fours, trunks, shorts, bermuda shorts, hotpants, tights, longjohns, boxer shorts, briefs, panties, knickers, bloomers.* A partial list of glasses words: *glasses, eyeglasses, spectacles, goggles, binoculars, readers, bifocals, sunglasses, shades.* And a partial list of scissor words: *scissors, shears, snippers, secateurs, tweezers, dividers, calipers, forceps, clippers, nippers, pliers, snips, wirecutters.*

8 In fact, *Gumperz phenomenon* does not fit at all comfortably into Levi's "noun2 from noun1" (the closest of her categories), which she illustrates with such compounds as *olive oil*, i.e., "oil from olives."

References

Barsalou, L. W. 1983. Ad hoc categories. *Memory and Cognition*, 11, 211–27.

Berlin, B. 1972. Speculations on the growth of ethnobotanical nomenclature. *Language in Society*, 1, 51–86.

Berlin, B. & Kay, P. 1969. *Basic color terms: their universality and evolution.* Berkeley & Los Angeles: University of California Press.

Brown, C. H. 1977. Folk botanical life-forms: their universality and growth. *American Anthropologist*, 79, 317–42.

1979. Folk zoological life-forms: their universality and growth. *American Anthropologist*, 81, 791–817.

Clark, E. V. & Clark, H. H. 1979. When nouns surface as verbs. *Language*, 55, 797–811.

Clark, H. H. 1983. Making sense of nonce sense. In G. B. Flores d'Arcais & R. J. Jarvella (eds.), *The process of language understanding* (pp. 297–332). Wiley: New York.

Clark, H. H. & Brennan, S. E. 1991. Grounding in communication. In L. B. Resnick, J. M. Levine, & S. D. Teasley (eds.), *Perspectives on socially shared cognition* (pp. 127–49). Washington, DC: American Psychological Association.

Clark, H. H. & Gerrig, R. J. 1983. Understanding old words with new meanings. *Journal of Verbal Learning and Verbal Behavior*, 22, 591–608.

Clark, H. H. & Marshall, C. R. 1981. Definite reference and mutual knowledge. In A. K. Joshi, B. Webber, & I. A. Sag (eds.), *Elements of discourse understanding* (pp. 10–63). Cambridge University Press.

Clark, H. H. & Schaefer, E. R. 1989. Contributing to discourse. *Cognitive Science*, 13, 259–94.

Clark, H. H. & Wilkes-Gibbs, D. 1986. Referring as a collaborative process. *Cognition*, 22(1), 1–39.

Clark, H. H., Schreuder, R. & Buttrick, S. 1983. Common ground and the understanding of demonstratives. *Journal of Verbal Learning and Verbal Behavior*, 22, 245–58.

Coolen, R., van Jaarsveld, H. J., & Schreuder, R. 1991. The interpretation of isolated novel nominal compounds. *Memory and Cognition*, 19, 341–52.

Downing, P. A. 1977. On the creation and use of English compound nouns. *Language*, 53, 810–42.

Gerrig, R. J. & Murphy, G. L. 1992. Contextual influences on the comprehension of complex concepts. *Language and Cognitive Processes*, 7(3/4), 205–30.

Gleitman, L. R. & Gleitman, H. 1970. *Phrase and paraphrase some innovative users of language.* New York: W. W. Norton.

Heider, E. R. 1972. Universals of color naming and memory. *Journal of Experimental Psychology*, 93, 10–20.

Heider, E. R. & Olivier, D. 1972. The structure of the color space in naming and memory for two languages. *Cognitive Psychology*, 3, 337–54.

Isaacs, E. A. & Clark, H. H. 1987. References in conversation between experts and novices. *Journal of Experimental Psychology: General*, 16, 26–37.

Jespersen, O. 1942. *A modern English grammar on historical principles*, vol VII: *Morphology.* Copenhagen: Ejnar Munksgaard.

Kay, P. & Kempton, W. 1984. What is the Sapir–Whorf hypothesis? *American Anthropologist*, 86, 65–79.

Kay, P. & Zimmer, K. 1976. On the semantics of compounds and genitives in English. Paper presented at the Sixth Annual Meeting of the California Linguistics Association, San Diego, California, May 1976.

Krauss, R. M. & Glucksberg, S. 1977. Social and non-social speech. *Scientific American*, 236, 100–5.

Lees, R. B. 1960. The grammar of English nominalizations. *International Journal of American Linguistics*, 26, Publication 12.

Levi, J. N. 1978. *The syntax and semantics of complex nominals.* New York: Academic Press.

Levinson, S. C. 1995. Interactional biases in human thinking. In E. Goody (ed.), *Social intelligence and interaction* (pp. 221–59). Cambridge University Press.

Lewis, D. 1969. *Convention: a philosophical study.* Cambridge, MA: Harvard University Press.

Li, C. N. 1971. Semantics and the structure of compounds in Chinese. Unpublished doctoral dissertation. Berkeley: University of California.

Rosch, E., Mervis, C., Gray, W., Johnson, D., & Boyes-Braem, P. 1976. Basic objects in natural categories. *Cognitive Psychology*, 8, 382–439.

Schegloff, E. A. 1972. Notes on a conversational practice: formulating place. In D. Sudnow (ed.), *Studies in social interaction* (pp. 75–119). New York: Free Press.

Schelling, T. 1960. *The strategy of conflict.* Cambridge, MA: MIT Press.

Schiffer, S. R. 1972. *Meaning.* Oxford: Basil Blackwell.

Svartvik, J., & Quirk, R. 1980. *A corpus of English conversation.* Lund, Sweden: Gleerup.

Waldron, R. A. 1967. *Sense and sense development* (2nd. edn.). London: Deutsch.

Whorf, B. L. 1956. *Language, thought, and reality: selected writings of Benjamin Lee Whorf*, ed. J. B. Carroll. Cambridge, MA: MIT Press.

Witkowski, S. R. & Brown, C. H. 1983. Marking-reversals and cultural importance. *Language*, 59, 569–82.

RETHINKING
LINGUISTIC RELATIVITY

Edited by

JOHN J. GUMPERZ

Professor Emeritus, University of California, Berkeley

and

STEPHEN C. LEVINSON

*Director, Max Planck Institute for Psycholinguistics
and Cognitive Anthropology Research Group, Nijmegen*

CAMBRIDGE
UNIVERSITY PRESS