

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/327253185>

Slobin, D. I. (2003). Language and thought online: Cognitive consequences of linguistic relativity. In D. Gentner & S. Goldin-Meadow (Eds.), *Language in mind: Advances in the inves...*

Chapter · August 2018

CITATION

1

READS

5,492

1 author:



Dan Isaac Slobin

University of California, Berkeley

101 PUBLICATIONS 8,214 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



poetry translation [View project](#)

Published in D. Gentner & S. Goldin-Meadow (Eds.), (2003). *Language in mind: Advances in the study of language and thought* (pp. 157-192). Cambridge, MA: MIT Press.

LANGUAGE AND THOUGHT ONLINE: COGNITIVE CONSEQUENCES OF LINGUISTIC RELATIVITY

Dan I. Slobin

The voluminous literature on linguistic relativity has concerned itself primarily with the search for influences of particular languages on nonlinguistic cognition *in situations in which language is not being used, overtly or covertly*. This represents a long tradition in which anthropologists, psychologists, and linguists have sought to relate grammatical and semantic systems of a language to the worldview or epistemology or culture of the community of speakers of the language. For example, Lucy has proposed a set of requirements for studies of linguistic relativity. He stipulates that such research “should assess the cognitive performance of individual speakers *aside from explicitly verbal contexts* and try to establish that any cognitive patterns that are detected also characterize *everyday behavior outside of the assessment situation*” (Lucy, 1996, p. 48, emphasis added). In this view, “cognition” is seen as a collection of concepts and procedures that come into play regardless of whether an individual is engaged in verbal behavior—speaking, listening, or verbal thinking. Such research is directed towards what Lucy calls “an independent cognitive interpretation of reality” (Lucy, 2000, p. xii). A rather different approach to “cognition” is provided by investigators who concern themselves with language *use* and cultural *practice*. For example, Gumperz and Levinson, introducing *Rethinking linguistic relativity* (1996, p. 8), underline the importance of “theories of use in context,” including formal semantic theories (e.g., Discourse Representation Theory, Situation Semantics) and pragmatic theories (Relevance Theory, Gricean theories), along with research in sociolinguistics and linguistic anthropology. In the present paper, I begin with the fact that human beings spend a large portion of their time in linguistic behavior of one sort or another—that is, we are creatures that are almost constantly involved in preparing, producing, and interpreting verbal messages. Accordingly, research on linguistic relativity is incomplete without attention to the cognitive processes that are brought to bear, *online*, in the course of using language.

THINKING FOR SPEAKING

In research on narrative productions across languages, it has become clear to me that “we encounter the contents of the mind in a special way when they are being accessed for use” (Slobin, 1987, p. 435). That is, there is a process of “thinking for speaking” in which cognition plays a dynamic role within the framework of linguistic expression:

The activity of thinking takes on a particular quality when it is employed in the activity of speaking. In the evanescent time frame of constructing utterances in discourse, one fits one’s thoughts into available linguistic forms. A particular utterance is never a direct reflection of “objective” or perceived reality or of an inevitable and universal mental representation of a situation. This is evident within any given language, because the same situation can be described in different ways; and it is evident across languages, because each language provides a limited set of options for the grammatical encoding of characteristics of objects and events. “Thinking for speaking” involves picking those characteristics that (a) fit some conceptualization of the event, and (b) are readily encodable in the language. (Slobin, 1987, p. 435)

The online effects of language on thought processes have been noticed by psychologists, although not seen as centrally important to the classical issues of language and cognition. For example, Pinker (1994, p. 58) writes that “there is no scientific evidence that languages dramatically shape their speakers’ ways of thinking” and that the Sapir-Whorf hypothesis is “wrong, all wrong” (p. 57). But he has also noted:

Whorf was surely wrong when he said that one’s language determines how one conceptualizes reality in general. But he was probably correct in a much weaker sense: one’s language does determine how one must conceptualize reality when one has to talk about it. (Pinker, 1989, p. 360)

In Levelt’s (1989) production model, the “Conceptualizer” sends a “preverbal message” to the “Formulator.” Levelt considers semantic differences between languages in this model:

A final issue to be raised is whether messages must, to some degree, be *tuned* to the target language. Will a message for an English Formulator have to differ from one that is fed into a Dutch Formulator, merely because of language-specific requirements? The answer ... is positive: Using a particular language requires the speaker to think of particular conceptual features. (Levelt, 1989, p. 71)

Pinker, Levelt, and others, however, stress that online thinking while speaking is an encapsulated process, with no consequences beyond speech time. Comparing particular English and Dutch verb constructions, Pinker concludes that “it seems unlikely that the Dutch conceive of [the underlying meanings] differently from us, except at the moment that they have to express them in words” (1989, p. 358). And Levelt, comparing deictic terms across languages, concludes: “It is highly unlikely ... that English and Dutch speakers *perceive* distance to ego differently than Spanish and Japanese speakers. But when they prepare distance information for expression, English and Dutch speakers must represent that information in their messages in a bipartite way, whereas Spanish and Japanese speakers must use a tripartite code” (1989, pp. 103-104). In brief, thinking-for-speaking effects are weak, not dramatic, and have no further implications for perception or conceptualization of objects and events.

It is, of course, exceptionally difficult to determine how people “really” represent situations to themselves; furthermore, “weak, undramatic” effects are not without scientific interest. I wish to argue that serious study of *language in use* points to pervasive effects of language on selective attention and memory for particular event characteristics. As I’ve argued in greater detail elsewhere (Slobin, 1996a, 2000), whatever effects language may have when people are not speaking or listening, the mental activity that goes on while formulating and interpreting utterances is not trivial or obvious, and deserves our attention.

Utterances are not verbal filmclips of events. An event cannot be fully represented in language: linguistic expression requires schematization of some sort. Every utterance represents a selection of characteristics, leaving it to the receiver to fill in details on the basis of ongoing context and background knowledge. Part of the background is a knowledge of what is obligatory or typical of the language being used. If I tell you about my “friend” in English, you will expect that sooner or later you will discover the sex of the friend, because you know that third-person pronouns in English indicate gender. If I go on and on to refer only to “my friend” or “they” you will begin to suspect that I have reason to conceal the person’s gender. However, if we have the same conversation in a language that has no gendered pronouns, such as Turkish or Chinese or Hungarian, you probably will not have such suspicions. When speaking English, my thinking for speaking—my Conceptualizer—is tuned to gender and its communicative significance, and your

“listening for thinking” is similarly tuned. We are not concerned with realworld cognition here, but rather with the ongoing construction of mental representations. Our basic cognition of gender does not change when we switch languages, as far as I know, although our social and cultural cognition may well change. Communication is embedded in culture, and much of culture is carried—indeed, constructed—by language. Therefore the definition of cognition should not be restricted to phenomena of the physical world alone. Imagine, for example, that the political balance in the United States shifts, and Spanish becomes the official language. Americans now would have to know—in every encounter—who is *tú* and who is *Usted*. That is, the language would force our attention to fine points of status and intimacy that we have not had to resolve in using the universal English *you*. (I leave it to the reader to decide if such a demonstration of linguistic relativity would count as “dramatic.” However, consider the ways in which the language of personal pronouns, honorifics, and discourse markers shapes social cognition and interaction across human societies.)

These are, of course, thought experiments. And one can argue that it is trivially obvious that a speaker or listener has to attend to those semantic features that are encoded in the grammatical and lexical elements of a particular language in order to learn and use that language. I propose that more rigorous demonstrations are possible, showing widespread “ripple effects” of habitual attention to linguistically-encoded event characteristics. Several criteria are required for thinking-for-speaking research. I’ll use the label “thinking for speaking,” but the framework embraces all forms of linguistic production (speaking, writing, signing) and reception (listening, reading, viewing), as well as a range of mental processes (understanding, imaging, remembering, etc.). Thus there will also be examples of “thinking for translating,” “listening for understanding,” “reading for imaging,” and so forth. Thinking-for-speaking research has the following characteristics:

1. a *selection of languages* and a *semantic domain* that is encoded with some frequency in all of the languages;
2. the semantic domain is encoded by *special grammatical constructions or obligatory lexical selections* in at least some of the languages under comparison;
3. the domain is relatively *more codable* in some of the languages to be compared;
4. a selection of *discourse situations* in which the semantic domain is regularly accessed.

Point 2 ensures that the domain is one that is *habitually* encoded in some of the languages. However, it allows for habitual encoding either by grammatical means (morphological elements, construction types) or obligatory lexemes, such as the compass-point terms or landmark terms used for spatial orientation in many languages (Levinson, 1996a, 1996b, forthcoming; Pederson et al., 1998). “Obligatory” is taken to mean that the dimension in question cannot be regularly referred to without the expression in question. Point 3 is concerned with relative “codability” of the domain—that is, ease of expression of the relevant categories. A more codable expression is more *accessible* in psycholinguistic terms—that is, it is short, and/or high frequency, and generally part of a small set of options in a paradigm or small set of items. Thus, a concept expressed by a single verb is more codable than a phrase or clause (e.g., *run* versus *while running*); a concept expressed by one of a small set of terms in a closed set (such as ‘uphill’, ‘downhill’, ‘across’) is more codable than one expressed by choices from a larger and more open set (such as ‘to your left’, ‘to my left’, ‘toward town’, ‘in front of the tree’, etc.). Note also that grammatical constructions (Goldberg, 1995) can provide codable means of expression, such as the English Caused-Motion Construction.

DESCRIPTIONS OF MOTION EVENTS

My “parade case” of thinking for speaking is the encoding of motion events.¹ This is a semantic domain that is important in all languages, and it is one that exhibits distinctive types of lexicalization patterns crosslinguistically. The essence of a motion event is change of location—in Talmy’s terms, *path*. Following Talmy (1991, 2000), languages tend to encode the path of motion in one of two ways: either in a verb (‘enter’, ‘exit’, etc.) or in an associated particle or “satellite” (‘in’, ‘out’). A simple example is provided by English and French:

- (1) a. The dog went *into* the house.
 b. *Le chien est entré dans la maison.*
 ‘The dog *entered* the house.’²

English “frames” path by means of a satellite (*in*); French “frames” path by means of a verb (*entrer*). English is a “satellite-framed” language (S-language); French is a “verb-framed” language (V-language). Path is highly codable in both languages. However, the languages differ in codability with regard to another dimension of motion events—*manner* of motion:

- (2) a. The dog *ran* into the house.
 b. *Le chien est entré dans la maison en courant.*
 ‘The dog entered the house *by running*.’

Manner is highly codable in English, because it is carried by the main verb. Every clause requires a verb, and it is just as easy to say *go in* as *run in*. I will argue that English-speakers get manner “for free,” and make widespread communicative and cognitive use of this dimension. In French, by contrast, manner is an adjunct—an optional addition to a clause that is already complete. French-speakers indicate manner when it is at issue, but otherwise do not mention it. I will try to show that, as a consequence, they are less sensitive to this dimension overall.

The typological distinction between S- and V-languages is quite widespread, apparently independent of language family, geographical area, and culture. In the research summarized here, the two types of language are represented by the following sample:

¹ I have presented thinking-for-speaking data on motion events in a number of places, and only give schematized findings here. More detailed discussion of data on manner of movement can be found in Slobin (2000); discussion of path and landmarks is in Slobin (1997); child language data are in Berman and Slobin (1994). A full list of references includes: Batra, 2001; Chouinard, 1997; Dukhovny & Kaushanskaya, 1998; Hsiao, 1999; Jovanović & Kentfield, 1998; Jovanović & Martinović-Zić (in press); Martinović-Zić & Jovanović (in press); Mucetti, 1997; Özçalışkan, 2000, in preparation; Özçalışkan & Slobin, 1999, 2000a, 2000b, 2000c; Slobin, 1987, 1996a, 1996b; Slobin & Hoiting, 1994.

² The Latinate form of 1b is available in English, but is not the everyday expression. Thinking-for-speaking research is concerned with the habitual means of encoding used by speakers of a language.

Satellite-framed (S-languages)**Germanic:** Dutch, English, German, Icelandic, Swedish, Yiddish**Slavic:** Polish, Russian, Serbo-Croatian, Ukrainian**Finno-Ugric:** Finnish, Hungarian**Sino-Tibetan:** Mandarin Chinese**Verb-framed (V-languages)****Romance:** French, Galician, Italian, Portuguese, Spanish**Semitic:** Moroccan Arabic, Hebrew**Turkic:** Turkish**Basque****Japanese****Signed languages:** American Sign Language, Sign Language of the Netherlands

The claims made for English and French above hold for all of these languages (except for signed languages, where path and manner are expressed simultaneously, and both dimensions appear to be accessible and cognitively salient). S-languages allow for an economical expression of manner of motion in the main verb of a clause. Apparently as a consequence, these languages make habitual use of manner verbs when encoding motion events, and have developed large lexicons with many fine-grained distinctions of manner, in comparison with smaller and less differentiated manner lexicons in V-languages. One can say that the semantic space of manner of motion is “highly saturated” in S-languages, in comparison with V-languages. For example, French *bondir* doesn’t distinguish between the manners of motion encoded in English by *jump*, *leap*, *bound*, *spring*, *skip*, *gambol*; Spanish *escabullirse* can be translated as *creep*, *glide*, *slide*, *slip*, *slither*. A detailed study of 115 English manner-of-motion verbs found only 79 French counterparts, many of them of low frequency in comparison with English manner verbs (Jovanović & Kentfield, 1998). By contrast, a similar study of Russian and English showed these two S-languages to be comparably saturated on this dimension (Dukhovny & Kaushanskaya, 1998).

On the basis of comparing a number of S- and V-languages, across a range of age and discourse types, I hypothesize a set of cognitive consequences of differential encoding of manner of motion:

If a language provides fine-grained, habitual, and economical expression of manner of motion:

- References to manner of motion will occur frequently, across genres and discourse contexts.
- Manner-of-motion verbs will be acquired early.
- The language will have continuing lexical innovation in this domain, including extended and metaphorical uses.
- Speakers will have rich mental imagery of manner of motion.
- Manner of motion will be salient in memory for events and in verbal accounts of events.

In brief, the proposal is that habitual, online attention to manner has made it especially salient in S-language speakers’ conceptualizations of motion events.

Salience of Manner of Motion

Languages of both types, satellite- and verb-framed, have verbs of manner of motion, but we have already seen that V-languages tend to have fewer such verbs. In addition, such verbs occur less frequently in speech and writing in V-languages. (For convenience, these verbs will be referred to simply as “manner verbs” from here on.) Greater frequency of use of terms that encode a semantic domain probably indicates that the domain is salient and conceptually articulated in the minds of speakers. Various sorts of evidence point to this conclusion, and I will schematically summarize findings from a range of published and unpublished studies.³

Ease of lexical access

When asked to list manner verbs in a one-minute time frame, English speakers listed far more verbs than French speakers, both in terms of tokens per individual and types per group of informants. In addition, French speakers found it hard to limit themselves to manner verbs, listing non-manner verbs such as *descendre* ‘descend, go down’ and *traverser* ‘cross, traverse’; English speakers showed no such intrusions. Furthermore, when English speakers were asked to list *all* types of motion verbs, only 13% were non-manner verbs. Many of the manner verbs that were listed are highly expressive, making fine-grained distinctions that are often not present in V-languages. For example, the following verbs were provided five or more times by a group of 70 Berkeley undergraduates: *crawl, dance, drive, fly, hop, jog, jump, leap, mosey, prance, run, saunter, shuffle, skip, sprint, walk*. Overall, this group produced 107 different manner verbs.⁴ As shown in footnote 4, these verbs are sufficiently accessible to be elicited in one minute, indicating that the underlying concepts are readily available to English speakers. Such results indicate that manner of motion is a salient lexical domain for English speakers.⁵

Conversational use

Similar crosslinguistic differences in attention to manner appear in spontaneous conversation. Intransitive verbs of human motion were checked in two-hour transcripts of conversations in Spanish and Turkish, both V-languages. The vast majority of verbs were simple path verbs, with no manner (97% of tokens in Spanish, 98% in Turkish). In both languages, the only manner

³ Where there is no citation to a written report, reference is made to unpublished data that I have gathered together with students at Berkeley, along with collaboration with Harriet Jisa in Lyon, France, and Aura Bocaz, in Chile.

⁴ The following verbs were listed by the students: amble, barge, bike, bounce, bound, canter, caravan, careen, charge, chase, climb, coast, crawl, creep, dance, dart, dash, dawdle, dive, drag, drift, drive, edge, fall, flit, flutter, float, fly, gallop, glide, hike, hop, hurry, inch, jaunt, jet, jog, jump, leap, limp, lollygap, lope, march, meander, mosey, pace, pedal, plod, pony, prance, promenade, race, ramble, ride, roll, rollerblade, run, rush, sail, sashay, saunter, scale, scamper, scoot, scurry, scuttle, shoot, shuffle, skate, ski, skip, skitter, slide, slink, slip, slither, somersault, speed, spin, sprint, stalk, step, stomp, stride, stroll, strut, stumble, swagger, sweep, swim, swing, thrust, tiptoe, toboggan, traipse, trap, trot, truck, tumble, twirl, waddle, walk, waltz, wander, wiggle, zip, zoom.

⁵ Similar results come from ongoing research in which speakers are asked to label video clips of human movement. Thus far, only English data are available (Batra, 2001). For example, a clip of someone moving about in a slow, tired manner elicited the following range of verbs from a group of 26 English-speakers: *loaf, meander, mope, pace, saunter, slouch, slump, stroll, sulk, trudge, walk, wander*. The stimuli are currently being used in Argentina, Spain, and Turkey, eliciting manner verbs in Spanish, Basque, and Turkish—with the expectation that those languages will demonstrate a lower level of lexical diversity than English.

verbs used were equivalents of *walk* (*caminar* and *pasear* in Spanish; *yürümeek* in Turkish). In comparable British and American samples, 34 types of manner verbs were used, again indicating the salience of manner in English.⁶

Use in oral narrative

Narratives have been elicited in a large number of languages, from ages 3 through adulthood, using a wordless picture book, *Frog, where are you?* (Mayer, 1969). (Research on “the frog story” in five languages is summarized in Berman and Slobin [1994].) Using this method, semantic content and plot structure are controlled across languages and ages. Again, S-language speakers—at all ages—use manner verbs more frequently (tokens) and with greater lexical diversity (types). For example, consider data from three unrelated V-languages—Spanish, Turkish, and Hebrew, in comparison with three different S-languages—English, Mandarin, and Russian (Hsiao, 1999; Özçalışkan & Slobin, 1999). Narrators were children in the age range 3–11 and adults. The figures show the proportion of manner verbs out of all motion verbs in the narratives, followed by the mean number of manner verbs used by adults.

LANGUAGE	PERCENTAGE OF MANNER VERB USE (ALL AGES COMBINED)	MEAN NUMBER OF MANNER VERBS PER NARRATOR (ADULTS)
V-languages		
Spanish	20%	3
Turkish	25%	4
Hebrew	30%	4
S-languages		
English	45%	7
Mandarin	62%	11
Russian	69%	16

Although there are differences within the two typological groups, it is clear that S-language speakers use manner verbs more frequently when describing events in the frog story. It is possible to talk about manner of movement in all of these languages, but apparently this dimension is a more regular part of thinking for speaking in S-languages.

Use in written narrative

Thinking for writing. The same patterns of attention to manner in S- and V-languages are found in novels across a range of languages. One might assume that writers of creative fiction would be relatively free of the sorts of linguistic constraints presented by typological differences in lexicalization patterns. Yet attention to manner of motion varies regularly with the type of language, apparently independent of obvious cultural factors of literary tradition and areal contact. In ongoing studies of “thinking for writing,” my students and I have been examining novels written in several V-languages—Spanish, French, Turkish, Hebrew—in comparison with

⁶ The following 34 types of manner verbs were used in English conversations, again indicating the availability of this domain: clamber, climb, crawl, dash, dive, drag oneself, drift, drive, flee, float, flop, fly, glide, hike, jump, leap, march, poke, plunge, run, rush, slide, sneak, stagger, step, stride, stumble, toddle, totter, trot, trudge, walk, wander, zoom.

S-language novels in English, German, and Russian. Overall, S-language novels have greater type and token frequencies of manner verbs in situations in which human movement is described. For example, the following figures show the rates of use of manner verbs in describing self-motion of characters in novels in several languages. Percentages show the proportion of verbs of human movement that are manner verbs.⁷

LANGUAGE	MANNER VERB USE
V-languages	
Spanish	19%
Turkish	21%
S-languages	
English	41%
Russian	56%

One might think that novelists in V-languages would have recourse to other means of drawing attention to manner of movement, in addition to manner verbs. Consider, for example, adverbs of manner (*slowly, quietly*); descriptions of motor behavior and body condition (*not looking where he went; sweating heavily and exhausted*); descriptions of inner states (*agitated, joyful*); descriptions of environmental conditions that affect manner of movement (*the snow was thick; the road was muddy*). To be sure, novelists do use such additional means of providing information about manner of movement. But even when all of these options are considered, the large relative differences between the two language types remain unchanged. S-language writers, overall, give their readers more information—explicit and inferential—about the manners in which their protagonists move about (Özcalışkan & Slobin, 2000c).

Thinking for translating. Translators working between the two language types face problems in dealing with manner. For example, in a sample of novels translated from English into Spanish, only 62% of the original English manner verbs appeared in the translation, while in translations from Spanish to English, 95% of the original Spanish manner verbs were retained (Slobin, 1996b, plus more recent data).⁸ In fact, English translators generally **add** manner descriptions, apparently finding the Spanish original too bland for English readers: 100% of

⁷ This sample was picked to cut across language families: Romance, Turkic, Germanic, Slavic. From each novel, 20 trajectories were selected at random, defined as a description of the motion of a protagonist from a resting position until coming to rest at a new position where a plot-advancing event takes place. The novels represented in the table are: **Spanish:** Allende, Carpentier, Cela, Donoso, García Márquez, Muñoz Molina, Rulfo, Sabato, Vargas Llosa; **Turkish:** Atay, Başar, Fűrüzan, Karasu, O. Kemal, Y. Kemal, Livaneli, Pamuk, Tekin; **English:** Anaya, Byatt, Derbyshire, du Maurier, Fowles, Hemingway, Lessing, McCullers, Steinbeck; **Russian:** Aksenov, Dostoevskij, Gorbunov, Gorkij, Neznanskij, Vainers.

⁸ The English novels were: Anaya, Fowles, Hemingway, Lessing, McCullers, Steinbeck; the Spanish novels were: Allende, Cela, Donoso, García Márquez, Sabato, and Vargas Llosa. Similar patterns appear in a smaller sample of translations between English (Hemingway, McCullers, Steinbeck) and Turkish (Karasu, Kemal, Pamuk): 68% of English manner verbs were retained in Turkish translation, while 80% of Turkish manner verbs were retained in English translation. English translators, working from either Spanish or Turkish originals, often replaced V-language manner verbs with more expressive or dynamic manner verbs in English (47% of translated manner verbs from Spanish, 35% of translated manner verbs from Turkish); by contrast, Spanish and Turkish translators never amplified English manner verbs in translation. Similar findings are related for a sample of Spanish translations of 50 novels written in English (Mora Gutiérrez, 1998). In brief, translations into English “up the ante” for manner expression, while translations out of English reduce the level of manner description.

Spanish non-manner motion verbs were replaced by manner verbs in English translations. Compare the following solutions to translation problems in the two directions:

- (3) a. ENGLISH TO SPANISH:
 He *stomped* from the trim house... →
Salió de la pulcra casa...
 [‘He *exited* from the trim house...’]
- b. SPANISH TO ENGLISH:
 ...*luego de diez minutos de asfixia y empujones, llegamos al pasillo de la entrada*
 [‘...after ten minutes of asphyxiation and pushes, *we arrived* at the entry-way’]
 →
 ...after ten minutes of nearly being smothered or crushed to death, we finally
fought our way to the exit

These examples are typical of translations between English and Spanish, as well as translations between English and Turkish—quite a different sort of language, but demonstrating the same V-language characteristics. Note that in (3b) the English translator has added not only manner of motion (*llegar* ‘arrive’ → *fight one’s way*), but has also increased the vividness of the description overall (*asfixia y empujones* ‘asphyxiation and pushes’ → *nearly being smothered or crushed to death*). This is not a whim of an individual translator, but rather a quite general interest in manners of action in S-languages. Consider, for example, English verbs of manner of speaking (*whisper, murmur, scream, yell, shout, bellow...*) or verbs of manner of object destruction (*shatter, crumble, crumple, rip, shred, smash...*). More broadly, there may be thinking-for-speaking effects across a number of domains, reflecting widespread attention to manner of acting—at least in English, and probably in other S-languages as well.

Building semantic domains in acquisition

Roger Brown (1958), in describing early lexical acquisition, aptly referred to words as “lures to cognition.” In the “Original Word Game,” the child “must discover the stimulus attributes governing the tutor’s verbal behavior” (p. 210). Melissa Bowerman has long argued that language guides the child to form language-specific semantic categories:

I argue that children are prepared from the beginning to accept linguistic guidance as to which distinctions—from among the set of distinctions that are salient to them—they should rely on in organizing particular domains of meaning. (Bowerman, 1985, p. 1285)

With regard to manner of motion, the two language types differ in drawing the child’s attention to this domain overall, as well as to semantic distinctions within the domain. In acquiring an S-language, in contrast to a V-language, the child has to pay attention to semantic dimensions that distinguish the many types of manner verbs that are encountered in the input. Children learning S-languages employ a large manner verb lexicon in the preschool period. For example, British, American, and Australian preschoolers (age 2–5) in the available CHILDES corpora for English use the following 34 types of verbs of manner of self-movement: *bump, chase, climb, crawl, creep, dance, float, flop, fly, hike, hop, jog, jump, march, paddle, pounce, race, roll, run, rush, scoot, skip, slide, slip, sneak, step, swim, tread, trip, trot, walk, wiggle*. By contrast, Spanish, French, and Italian preschoolers in CHILDES corpora use a limited set of such verbs, almost all of them relatively “non-expressive” in relation to English—mainly the equivalents of *climb, dance, fly, jump, run, swim, walk* (Chouinard, 1997; Mucetti, 1997). That is, while S-language

children are learning to distinguish expressive nuances of manner—such as *hop* versus *jump*, or *hike*, *jog*, *race*, *run*, *trot*—V-language children are learning broad categories of basic types of motor patterns, such as *run* versus *walk*. As a consequence, it seems reasonable to conclude that S-language children have been guided by their native language to pay attention to manner of motion and to construct a set of systematic semantic categories in this domain.

This conclusion is echoed by Levelt, who has written about the development of the Conceptualizer and the Formulator in childhood:

In learning the language, the speaker (the child) must surely have realized that the language requires him to attend to certain perceptual or conceptual features when he encodes a message. ... But although conceptualizing and grammatical encoding *are* interacting for the language-acquiring child, the mature speaker has learned what to encode when preparing a message for expression. He knows by experience whether his language requires a category of medial proximity, number, tense, object shape, or whatever is needed, and he will select the appropriate information in building his preverbal messages. It is no longer necessary for the Conceptualizer to ask the Formulator at each occasion what it likes as input. ... The language-specific requirements on semantic structure have become represented in the Conceptualizer's procedural knowledge base. (Levelt, 1989, pp. 104-105)

Thus the child begins by “listening (and watching) for understanding,” gradually learning to think for speaking. In the end, thinking for speaking becomes automatized, yet still relative to the particular language. Language-specific patterns can be established quite early, as shown in the work by Choi and Bowerman (1991) on very young children's differing spatial concepts in Korean and English, as well as in the frog-story research, where differences in narrative style between speakers of S- and V-languages are clearly present in the preschool period.⁹

Note, also, that both the lexicon and the grammar are at play in thinking for speaking, although traditional Whorf-Sapir discussions focus on obligatory grammatical distinctions. Gumperz and Levinson (1996) underline the cognitive effects of acquiring both systems of language:

[I]f one is to speak a language which makes certain distinctions obligatory, one simply *must* have categorized experience in appropriate ways (i.e., have noticed how states or events were structured on the relevant parameters) (p. 33). ... [T]he lexical level can also have deep cognitive effects, by requiring distinctions to be noticed and memorized at the time of experience, in case the need arises for later description. (p. 11)

⁹ In related research, Naigles and co-workers are finding evidence for typological preferences in the learning of new words in experimental contexts. English- and Spanish-speaking adults were presented with novel motion verbs in situations in which the verb could refer to either path or manner of motion. Naigles and Terrazas (1998) found that English speakers were more likely to attribute manner meanings, while Spanish speakers were more likely to attribute path meanings. Hohenstein and Naigles (2000) have replicated these findings for monolingual English- and Spanish-speaking 7-year-olds (but not for 3-year-olds). These findings suggest that, in learning a language, the child develops expectations about the dominant lexicalization patterns of the language, and uses these expectations as the basis of acquiring the meanings of new lexical items. Naigles et al. (1998, p. 547) suggest that language-specific lexicalization patterns should enable children “to *fast-map*, or quickly and accurately associate a new verb with its meaning.”

We will return to the latter point, which leads from thinking for *present* speaking to thinking for *potential* speaking. But first, there are several more indications of the salience of manner of motion in S-languages.

Innovative and expressive uses of manner-of-motion verbs

The history of English verbs shows that manner of motion was already an elaborated semantic domain in Old English, with many new verbs being added ever since. For example, the *Oxford English Dictionary* lists the following as intransitive verbs of human motion that were innovated in the 19th century: *barge, clomp, cruise, dodder, drag oneself, ease, goose-step, hustle, leapfrog, lope, lunge, lurch, mosey, meander, race, sashay, scoot, scurry, skitter, smash, stampede, stomp, waltz, zip*. Clearly, this is a domain that continually attracts the attention of English speakers.

It is also a domain that plays an important role in reporting events—in the news media, novels, and conversations. Newspapers in English-speaking countries make use of such verbs for vivid reporting, such as the following examples:

- (4) “Sometimes the gunfire drives them to *flee* again, *crawling* under the coiled wire at the back of the compound and *scaling* the hillside in search of some other place to hide.” (*New York Times*)
- (5) “Although there have been thousands of aftershocks, yesterday’s was big enough to send frightened people *scurrying* out of their homes to safe, open spaces.” (*San Francisco Chronicle*)

Not only are manner verbs used to provide graphic descriptions of motion, but they also serve to provide evaluations of the person who is moving, as in the following examples:

- (6) “Solomon Moss had never applied for a loan before and he had no idea of what to expect when he walked into Louhen’s Quick Cash here. He bit his lip, *waltzed* up to the counter and asked to borrow \$100.” (*Washington Post*)
- (7) “Dalia Itzik [Labor Party member of the Knesset], who wore a short, tight, very secular suit ... *sashayed* past.” (*New York Times*)

In these examples, the writer uses manner verbs to call forth particular images of moving figures, relying on the reader to access a conceptualization of the type of motion suggested—and thereby an evaluation of the moving figure as well. It is also common to use the manner-verb lexicon metaphorically, to add an evaluative dimension to descriptions of various sorts of non-literal motion and change of state. For example, two countries are reported as “*shambling* into a confrontation”; a political campaign “*stumbles* on roadblocks”; prices can “*drift*,” “*soar*,” “*lurch*,” or “*plunge*.” The force dynamics of bodily movement serve as metaphors for political and economic events (Narayanan, 1997), drawing upon fine-grained categories established in the minds of S-language speakers. Similar expressive and metaphorical uses of manner verbs are found in news reports and novels in other S-languages, such as Mandarin (Yu, 1998) and Dutch; however, they are relatively infrequent in Turkish (Özçalışkan, in preparation) and other V-languages.

Mental imagery

Such differences in extended uses of manner verbs suggest another online cognitive effect of language, which we might call “reading/listening for imaging.” Most experimental research on linguistic relativity has dealt with language *production*, but many conceptual effects of language

occur in the course of *reception*. We receive a great deal of our information about events through news reports, personal narratives, and hearsay. In all of these situations, verbal cues alone provide information for building up a mental representation of the event in question. Users of S-languages are habitually exposed to more elaborate and vivid descriptions of motion—actual and metaphorical. And it may well be that their mental imagery for described events—in comparison with users of V-languages—contains more information about manners of movement and change of state, along with the evaluative conclusions that can be drawn from such information.

Suggestive evidence for this proposal comes from reading accounts of the same event in newspapers written in different languages. For example, it is my impression that events reported in English and Dutch seem to be more active, dynamic, or violent than reports of the same events in French, Spanish, or Turkish. These impressions have been confirmed by native speakers of those languages. For example, compare the following three reports of an attempt by French troops to block a Greenpeace demonstration against a French nuclear test in the Pacific:

- (8) ENGLISH: “Squads of troops ... **stormed** the Greenpeace flagship Rainbow Warrior... 15 commandos **clambered** on board... Greenpeace defied warnings not to **breach** the 12-mile exclusion zone to **power** across the lagoon in Greenpeace dinghies.” (*The Guardian* [London])
- (9) FRENCH: “*Les commandos de marine arraisonnent le Rainbow Warrior... Le Rainbow Warrior est passé à la offensive dès l’aube, franchissant la limite des eaux territoriales françaises...*”
‘The marine commandos **took control of** the Rainbow Warrior... The Rainbow Warrior switched over to the offensive at dawn, **crossing** the limits of French territorial waters...’ (*Le Figaro* [Paris])
- (10) SPANISH: “*Pero cada vez que una embarcación se atreve a **atravesar** la zona de exclusion...*”
‘But each time that an embarkation dares to **cross** the exclusion zone...’ (*ABC* [Madrid])

While all changes of location are given with manner verbs in English (*storm, clamber, breach, power*), the two Romance languages use only path verbs (‘board’, ‘cross’), and devote less attention to movement overall. These differences hold up across a sample of news stories in these languages.

A small experiment (Slobin, 2000) has begun to confirm the impression that there are major differences in mental imagery between speakers of S- and V-languages. I gave English and Spanish speakers passages to read from novels, later asking them to report mental imagery for the protagonist’s manner of movement. The examples were from Spanish novels, in which manner verbs were not used, but in which the author had provided information about the nature of the terrain and the protagonist’s inner state, allowing for inferences of manner. English speakers were given literal translations of the Spanish texts. For example, in a selection from Isabel Allende’s *La casa de los espíritus* (*The house of the spirits*), the following information was provided as part of a long paragraph:

- (11) SPANISH ORIGINAL: “*Tomó sus maletas y echó a **andar por el barrial y las piedras de un sendero** que conducía al pueblo. **Caminó** más de diez minutos, agradecido de que no lloviera, porque **a duras penas podía avanzar con sus pesadas maletas por***

ese camino y comprendió que la lluvia lo habría convertido en pocos segundos en un lodazal intransitable.”

ENGLISH VERSION: “He picked up his bags and started to **walk through the mud and stones of a path** that led to the town. He **walked** for more than ten minutes, grateful that it was not raining, because **it was only with difficulty that he was able to advance along the path with his heavy suitcases**, and he realized that the rain would have converted it in a few seconds into an impassable mudhole.”

Not surprisingly, almost all English speakers reported mental imagery for the manner in which the protagonist moved, using manner verbs such as *stagger*, *stumble*, *trudge*, as well as more elaborate descriptions, such as: “he dodges occasional hazards in the trail”; “he rocks from side to side”; and “slowly edges his way down the trail.” Surprisingly, only a handful of Spanish speakers from Mexico, Chile, and Spain provided such reports. The vast majority reported little or no imagery of the manner of the protagonist’s movement, although they had clear images of the muddy, stony path and the physical surroundings of the scene. They reported having seen a series of static images or still pictures (“more like photographs”). Bilinguals tested in both languages systematically reported more mental imagery for manner of motion, and less for physical surroundings, when reading in English, in comparison with Spanish.

Salience of Paths and Landmarks

The differences between S- and V-languages are also reflected in relative attention to path segments and landmarks—that is, sources, goals, and other objects encountered along a trajectory (Slobin, 1997). I will not summarize these patterns here, but will simply emphasize that lexicalization patterns play a role in determining the degree of attention to **all** event components, resulting in specific forms of narrative style and mental imagery that characterize event descriptions in the two language types. Briefly, V-language narratives are more concerned with establishing the physical and emotional settings in which people move, often allowing both path and manner to be inferred, whereas S-language narratives attend to both manner of movement and successive path segments. As one consequence, it seems that V-language speakers conceive of manners of motion as activities that take place in specified geographical regions, while S-language speakers “seem to conceive of manner and directed motion as **a single conceptual event**, making it difficult to have a mental image of one without the other” (Ohara, 2000; Slobin, 2000, p. 132).

Language and Thought Online in the Domain of Motion Events

To summarize, a large collection of different kinds of data strongly suggests that users of S- and V-languages attend differently to the components of motion events while producing or interpreting linguistic communications about motion. For S-language speakers, manner is an inherent component of directed motion along a path, and the semantic space of manner is highly differentiated. For V-language speakers, manner is much less salient and attention is focused on changes of location and the settings in which motion occurs. The determining linguistic factor seems to be the availability of a main-verb slot for manner verbs in S-languages, in contrast to a main-verb slot for path verbs in V-languages.¹⁰ S-language speakers are thereby habituated to

¹⁰ This is somewhat of a simplification, because manner verbs are allowed for some kinds of path descriptions in V-languages, while excluded from paths that cross a boundary or terminate in a change of state (Aske, 1989; Slobin, 1996b, 1997; Slobin & Hoiting, 1994). What is important for the present

making frequent online decisions about the type of manner involved in motion events. A number of phenomena indicate that manner is a salient and differentiated conceptual field for such speakers, in comparison with speakers of V-languages. In summary, for S-language speakers:

- Manner verbs are easily accessed in a listing task.
- Manner verbs are frequently used in conversation, oral narrative, and written narrative.
- Speakers readily access many different types of manner verbs, attending to fine-grained distinctions between similar manners of movement.
- A large portion of the manner-verb lexicon is used in the preschool period, requiring learners to differentiate between types of manner.
- Meanings of manner verbs are readily extended for purposes of evaluation and metaphorical descriptions of events and processes.
- Listeners and readers tend to build up detailed mental images of manner of movement in reported events.

SPATIAL DESCRIPTIONS

Similar evidence of linguistic influences on online attention is provided by the rich collection of studies of spatial relations carried out by members of the Cognitive Anthropology Research Group of the Max Planck Institute for Psycholinguistics in Nijmegen (e.g., Levinson, 1996a, 1996b; Pederson et al., 1998). One component of this research distinguishes between languages that rely on *relative* versus *absolute* orientation in describing locations of objects. Relative systems are familiar to speakers of European languages: we tend to locate objects by reference to the position and orientation of the viewer of a scene (e.g., “to the left of the house,” “in front of the tree”). In absolute systems, reference is made to a fixed bearing, such as compass points or landscape features (e.g., “west of the house,” “north of the tree”).¹¹ Perhaps a third of the world’s languages use absolute systems, in which, for example, one would say, ‘There’s a rabbit north of the tree’, or ‘seaward from the tree’, rather than ‘behind the tree’. In order to use an absolute system, you always have to know where you are in relation to the fixed external referent points. That is, online production and interpretation of utterances requires attention to those points, and users of such languages must constantly update their locations accordingly. This is perhaps one of the most powerful thinking-for-speaking effects that has been demonstrated. Even when you are in a windowless room, or traveling in a bus in the dark, you must know your location relative to the fixed points in order to talk about events and locations.¹² As we will see, online attention of this sort also has consequence for cognitive processes that occur outside of acts of speaking or understanding.

MEMORY FOR REPORTED EVENTS

It is unlikely that people experience events in their lives differently because of the language they speak. But events quickly become part of a personal narrative, and then language can begin to

argument is that there are no such restrictions on the use of manner verbs in S-languages, resulting in different habitual styles of event description for the two language types.

¹¹ For simplicity of presentation, I omit the third system of spatial description—*intrinsic* orientation—which makes use of inherent properties of objects, such as fronts and backs.

¹² Similar crosslinguistic, typological differences are reported for the use of *gestures* that accompany speech, showing differential attention to relative and absolute spatial relations, according to the type of language spoken, as well as differential attention to manner and path in S- and V-languages (Kita, 2000; Kita, Danziger, & Stolz (in press); Levinson, forthcoming; McNeill, McCullough, & Duncan, forthcoming; Özyürek & Kita, 1999; Özyürek & Özçalışkan, 2000; and chapters in McNeill (2000)).

shape those memories. As pointed out above, many of the events that we remember were encountered *only* through narrative—that is, human beings are voracious producers and consumers of news and stories. The mental representations that are built up in the process of “listening/reading for understanding” are likely to bear the traces of the language in which the event was reported, giving rise to effects such as those in the mental imagery experiment. It has long been known that verbal instructions and questions can influence recall, as shown most dramatically in research on eyewitness testimony (e.g., Loftus, 1979). In fact, people can have vivid memories of events that they had experienced only in the form of a verbal account. Piaget provided a particularly graphic case of what he called “memories which depend on other people” (1962, pp. 187-188). He described a vivid and detailed childhood memory in which his nurse had prevented a man from kidnapping him. However, when he was 15, the nurse confessed that she had made up the story of the kidnap attempt. Piaget concluded: “I therefore must have heard, as a child, the account of this story, which my parents believed, and projected it into the past in the form a visual memory, which was a memory of a memory, but false. Many real memories are doubtless of the same order.” Research on “source monitoring” by Marcia Johnson and her collaborators (e.g., Johnson, Hashtroudi, & Lindsay, 1993) provides a detailed picture of the factors that determine people’s ability to assess the sources of their memories, knowledge, and beliefs. As Johnson et al. point out (p. 13): “Movies, television, books, magazines, newspapers—all are sources of fictional information that may, under some circumstances, be treated as reliable information.” It is quite likely that the language in which information is presented—both fictional and documentary—plays a role in the ways in which information is stored and evaluated. However, we still lack crosslinguistic research on such issues as eyewitness testimony and source monitoring, so the question of linguistic relativity in memory for reported events remains open.

MEMORY FOR EVENTS FOR LATER REPORTING

In order to report an event you must have paid attention to linguistically-relevant components of that event while you experienced it. At first glance, this seems trivially obvious. When you report an encounter with a friend in a language with gender pronouns, you must have remembered the sex of the friend. But, of course, you would remember that aspect regardless of your language. However, when reporting an encounter in English, you may not remember if your friend approached you from the South, or in the direction of a distant landmark such as a mountain or the sea, as you would if you spoke a language that required this sort of absolute orientation. That is, you can only include those elements in the verbal account that you noticed while experiencing the reported situation. As Gumperz and Levinson have pointed out (1996, p. 27): “...thinking in a special way for speaking will not be enough. We must mentally encode experiences in such a way that we can describe them later, in the terms required by our language.” Thus, those event components which must be attended to in thinking for speaking must also be mentally stored for future speaking. As noted earlier, thinking for *present* speaking becomes part of *potential* speaking. Here we have evidence for the classical Whorfian quest for covert effects of language on nonverbal cognition. The Nijmegen research has rigorously demonstrated such effects in a large number of nonlinguistic tasks, carried out across a range of linguistic and cultural communities. Pederson et al. make this point forcefully:

Far more than developing simple habituation, use of the linguistic system, we suggest, actually forces the speaker to make computations he or she might otherwise not make. Any particular experience might need to be later described, and many are. Accordingly many experiences must be remembered in such a way as to facilitate this. Since it seems, based on our findings, that the different frames of reference cannot be readily translated, we must represent our spatial memories in a manner specific to the socially normal means of expression. That is, the linguistic system is far more than just an *available* pattern for

creating internal representations: to learn to speak a language successfully *requires* speakers to develop an appropriate mental representation which is then available for nonlinguistic purposes. (Pederson et al., 1998, p. 586)

A FRAMEWORK FOR THINKING-FOR-SPEAKING RESEARCH¹³

Spatial conceptualization has provided a rich arena for research on possible linguistic effects on online thinking and memory. Space turns out to be a domain that can be construed in quite different ways in different languages, although there are clearly underlying universals. Temporality is another such domain. For example, frog-story research shows different patterns of attention to such temporal factors as duration, boundedness, and simultaneity (Aksu-Koç & von Stutterheim, 1994; Slobin, 1996a). We have yet to determine the range and types of domains that are susceptible to online linguistic shaping of the sort proposed here. Diversity in linguistic coding provides the basic data for speculations about relativity, and habitual use of linguistic forms (see Fuchs & Robert, 1997). That is, in the online tasks of producing and interpreting messages, attention is directed to the necessary analysis and categorization of experience. Most of the data presented in this paper rely on an inferential argument: Speakers of typologically different languages vary in their linguistic construals of events, across a wide range of situations of language use. There seem to be quite clear differences in habitual ways of talking about the sorts of events that all human beings experience and care about. More elusive have been clear demonstrations that these sorts of online attention may also have long-term and pervasive effects on mental representation and conceptual processes. The most successful attempts, thus far, come from research on absolute orientation (Pederson et al., 1998), number (Lucy, 1992), deixis (Bickel, 2000; Danziger, 1994; Hanks, 1990, 1996), and motion (summarized in this paper). What is needed for a full picture of linguistic relativity and determinism is systematic exploration of areas of mental life in which thinking for speaking can be demonstrated as having effects on how people experience those events that they are likely to talk about later (“anticipatory effects”), matched with demonstrations of cognitive effects after events have been experienced (“consequential effects”). Schematically, there are three time frames that must be considered in a full research program.

- **EXPERIENCE TIME:** This is the time of prelinguistic or nonlinguistic coding, when *anticipatory effects* of language may play a role. That is, the individual must attend to those event dimensions that are relevant for linguistic coding.
- **SPEAKING TIME:** This is the time of *thinking for speaking* and *listening for understanding*—that is, the time in which linguistically codable dimensions must be accessed and attended to.
- **TESTING TIME:** This is the time for nonlinguistic assessment of attention to codable dimensions—that is, the testing of *consequential effects*: tests of recall, recognition, and inference.

Crosslinguistic and typological analysis provides us with candidates for research, but the challenge is to select those coded dimensions which are likely to have anticipatory and consequential effects. Only parts of the full scheme have been sketched out, and only with regard to a few domains of experience. However, I have argued here that—while researchers work at filling in the larger picture of anticipatory and consequential effects of language—the effects at speaking time present the critical interface between language and cognition.

¹³ This framework was formulated in a discussion at the Max Planck Institute for Psycholinguistics in Nijmegen in 1993. The participants were P. Brown, W. Levelt, S. Levinson, J. Lucy, D. Slobin, and D. Wilkins.

SPEAKING, THINKING, AND CULTURAL PRACTICE

The various thinking-for-speaking phenomena summarized in this paper seem to be independent of culture. The division between S-languages and V-languages is based entirely on lexicalization patterns. For example, France and Spain would seem to be closer, culturally, to England and Germany than to Turkey and Japan, yet the findings reported here make the opposite grouping. Similarly, Chinese does not group with Korean and Japanese, but rather with Germanic and Slavic languages with regard to salience of manner of motion. The Nijmegen research on spatial orientation also points to linguistic, rather than cultural determinants. For example, two Mayan languages (Tzeltal, Tzotzil) use absolute orientation, while two other Mayan languages (Mopan, Yucatec) do not. The research also excludes geographical determinism, because the various orientation types are scattered across a range of terrains. For example, Belhare, spoken in the Himalayas, has a different spatial system than Swiss German, spoken in the Alps (Bickel, 2000).

Examples such as these are methodologically appealing, in that they make it possible, to some extent, to collapse across cultures. However, acts of communication always take place in a cultural context, and cultural practices are part of the online processes that include thinking and speaking. Anyone who has lived in more than one language knows that each language is not only a system for coding objects and events, but is also a system that—in its use—constitutes interpersonal and intrapersonal values, expectations, and dispositions. Susan Ervin-Tripp (Ervin, 1964) has provided a rare empirical demonstration that bilinguals reveal different “personalities” in using each of their languages—or at least that “a shift in language [may be] associated with a shift in social roles and emotional attitudes” (p. 506). She gave a personality test (the TAT) to fluent French-English bilinguals. The TAT elicits stories in response to pictures, and subjects told stories about each picture in both French and English. Ervin-Tripp found that bilinguals provided significantly different personality profiles when responding to the same picture in French versus English. For example, French stories showed more withdrawal and autonomy, whereas English stories showed greater need for achievement. Here we go far beyond individual components of a language, finding that use of a language, as a whole, may invoke the cultural norms and practices in which it is embedded.

An important and growing body of work in anthropological linguistics provides more fine-grained demonstrations of ways in which culture and language co-constitute each other in ongoing processes of speaking and engaging in cultural practices. I will cite just a few of many such pathbreaking studies.

Hanks has studied *deixis*, writing a book with a title that provides a clear picture of the approach: *Referential practice: Language and lived space among the Maya* (1990). Using both linguistic and ethnographic data, he shows that:

Maya deixis is related in basic and very significant ways to a range of other orientational systems in the Maya world. These include cultural understandings of the human body, the social organization of the household and domestic space, cardinal point orientation, agricultural practices whereby the land is transformed and goods produced, and the ritual enactments corresponding to all of the foregoing. (Hanks, 1990, p. 8)

Bickel (1997, 2000), working on deixis in a quite different linguistic and cultural context, also deals with “the grammar of space and sociocultural practice” (2000, p. 176). He documents grammaticization of spatial deixis throughout Belhare grammar, as well as demonstrating central roles of spatial location and orientation in a range of cultural practices, including design of houses

and social relations. Bickel notes that thinking-for-speaking phenomena should not be sought in individual minds alone:

Correlations between language and cognition often attest to a unidirectional link from public language to private thinking. Correlations between linguistic and cultural patterns, however, suggest mutual influence, since both speaking and social behavior are publicly shared activities that are transmitted across generations. Thus, language and nonlinguistic practice together construct a relativized cognitive ground. From this perspective, Whorfian effects do not obtain between modules of isolated minds, but are fundamentally embedded in a *habitus* of public practice. (Bickel, 2000, p. 185)

Danziger (1996) shows that the Mopan Maya use similar frames of reference in spatial language and kinship relations. She points out that particular grammatical structures apply to both domains, emphasizing that “the experience of using language in social interaction therefore helps to engender culturally-specific modes of thinking” (p. 67). That is, thinking for speaking in similar fashion across domains—spatial and cultural—reinforces habitual ways of thinking about relations in general.

Finally, John Gumperz (e.g., 1982, 1996) has long argued that uses of specific linguistic forms in conversation serve as contextualization cues to the presuppositions and ideologies that are inherent in any conversational exchange. He and Levinson conclude: “It follows that we cannot think of a ‘world-view’ as inherent in a language, somehow detached from all the practices established for its use” (Gumperz & Levinson, 1996, p. 230).

The attempt to find thinking-for-speaking effects of particular linguistic forms is thus part of a much larger framework of online communication, negotiation, and action. What all of these processes have in common, however, is that they are *processes*—that is, they unfold in time and are shaped in use. It is difficult, in a language like English, to conceptualize dynamic interactions of ever-changing forces that nevertheless exhibit distinct patterns. In fact, note that all of the available terms seem to be nouns. With effort, we may be able to go beyond this sort of English speaking for thinking, as we attempt to develop dynamic models of “language, thought, and culture.”

References

- Aksenov, V. (196). *Apel'siny iz Marokko*: [electronic text].
- Aksu-Koç, A. A., & von Steutterheim, C. (1994). Temporal relations in narrative: Simultaneity. In R. A. Berman & D. I. Slobin, *Relating events in narrative: A crosslinguistic developmental study* (pp. 393-456). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Allende, I. (1982). *La casa de los espíritus*. Barcelona: Plaza and Janes. [English transl. M. Bogin (1985). *The house of the spirits*. New York: Knopf.].
- Anaya, R. (1972). *Bless me, Última*. New York: Warner Books [Spanish transl. anon. (1992). *Bendíceme, Última*. New York: Warner Books.].
- Aske, J. (1989). Path predicates in English and Spanish: A closer look. *Proceedings of the Fifteenth Annual Meeting of the Berkeley Linguistics Society*, 1-14.
- Atay, O. (1971). *Tutunamayanlar*. Ankara: Sinan Yayınları.
- Bailey, D., Feldman, J., Narayanan, S., & Lakoff, G. (1997). Modeling embodied lexical development. *Proceedings of the Annual Meeting of the Cognitive Science Society*, [available from the International Computer Science Institute (ICSI), Berkeley].
- Başar, K. (1992). *Sen olsaydın yapmazdın, biliyorum*. Istanbul: AFA Yayınları.

- Batra, R. R. (2001). *e-Motion: Using digitized video clips to explore the semantic fields of manner verbs*. Unpublished senior honors thesis, Program in Cognitive Science, University of California, Berkeley.
- Berman, R. A., & Slobin, D. I. (1994). *Relating events in narrative: a crosslinguistic developmental study*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Bickel, B. (1997). Spatial operations in deixis, cognition, and culture: Where to orient oneself in Belhare. In J. Nuyts & E. Pederson (Eds.), *Language and conceptualization* (pp. 46-83). Cambridge: Cambridge University Press.
- Bickel, B. (2000). Grammar and social practice: On the role of 'culture' in linguistic relativity. In S. Niemeier & R. Dirven (Eds.), *Evidence for linguistic relativity* (pp. 161-192). Amsterdam/Philadelphia: John Benjamins.
- Bowerman, M. (1985). What shapes children's grammars? In D. I. Slobin (Ed.), *The crosslinguistic study of language acquisition. Vol. 2: Theoretical issues* (1257-1319).
- Brown, R. (1958). *Words and things*. Glencoe, IL: Free Press.
- Byatt, A. S. (1990). *Possession: A romance*. New York: Random House.
- Carpentier, A. (1983). *El siglo de las luces*. Barcelona: Editorial Seix Barral.
- Cela, C. J. (1942). *La familia de Pascual Duarte*. Madrid/Burgos: Editorial Aldecoa. [English transl. A. Kerrigan (1964). *The family of Pascual Duarte*. Boston: Little, Brown & Co.]
- Choi, S., & Bowerman, M. (1991). Learning to express motion events in English and Korean: The influence of language-specific lexicalization patterns. *Cognition*, 41, 83-121.
- Chouinard, M. M. (1997). *Speaking of motion...: How do children acquiring their first language learn to properly express motion events?* Unpublished senior honors thesis, Department of Psychology, University of California, Berkeley.
- Danziger, E. (1994). Out of sight, out of mind: person, perception, and function in Mopan Maya spatial deixis. *Linguistics*, 32, 885-907.
- Danziger, E. (1996). Parts and their counterparts: Spatial and social relationships in Mopan Maya. *The Journal of the Royal Anthropological Institute*, 2, 67-82.
- Derbyshire, J. (1996). *Seeing Calvin Coolidge in a dream*. New York: St. Martin's Griffin.
- Donoso, J. (1958). *Coronación*. Barcelona: Editorial Seix Barral. [English transl. J. Goodwin (1965). New York: Knopf.]
- Dostoevskij, F. (1880/1970). *Brat'ja Karamazovy*. Leningrad: Izd-vo Xudožestvennaja Literatura.
- du Maurier, D. (1938). *Rebecca*. New York: Modern Library. [Spanish transl. F. Calleja (1959). *Rebeca*. Barcelona: Plaza & Janes.]
- Dukhovny, E., & Kaushanskaya, M. (1998). *Russian verbs of motion*. Unpublished paper, Department of Psychology, University of California, Berkeley.
- Ervin, S. M. (1964). Language and TAT content in bilinguals. *Journal of Abnormal and Social Psychology*, 68, 500-507.
- Fowles, J. (1969). *The French lieutenant's woman*. Boston: Little, Brown & Co. [Spanish transl. A. M. de la Fuente (1981). *La mujer del teniente francés*. Barcelona: Editorial Argos Vergara.]
- Fuchs, C., & Robert, S. (Eds.) (1997). *Diversité des langues et représentations cognitives*. Paris: OPHRYS. [English translation: Fuchs, C., & Robert, S. (Eds.) (1999). *Language diversity and cognitive representations*. Amsterdam/Philadelphia: John Benjamins.]
- Fürüzan. (1974). *47'liler*. Ankara/Istanbul: Bilgi Yayınevi.
- Fürüzan. (1974). *Parasız yatılı*. Ankara: Bilgi Basımevi.
- García Márquez, G. (1982). *Cien años de soledad*. Madrid: Espasa-Calpe. [English transl. G. Rabassa (1970). *One hundred years of solitude*. New York: Harper & Row.]
- Goldberg, A. E. (1995). *Constructions: A Construction Grammar approach to argument structure*. Chicago/London: University of Chicago Press.
- Gorbunov, V. *Krov na podramnike*.
- Gorkij, M. (1913/1958). *Detstvo*. Moscow: Goslitizdat.
- Gumperz, J. J. (1982). *Discourse strategies*. Cambridge: Cambridge University Press.
- Gumperz, J. J., & Levinson, S. C. (Eds.) (1996). *Rethinking linguistic relativity*. Cambridge: Cambridge University Press.
- Hanks, W. F. (1990). *Referential practice: Language and lived space among the Maya*. Chicago: University of Chicago Press.

- Hanks, W. F. (1996). Language form and communicative practices. In J. J. Gumperz & S. C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 232-270).
- Hemingway, E. (1941). *For whom the bell tolls*. London: Jonathan Cape [Spanish transl. L. de Aguado (1973). *Por quién doblan las campanas*. Barcelona: Editorial Planeta] [Turkish transl. N. Özyürek (1966). *Çanlar kimin için çalıyor*. Istanbul: Varlık Yayınları].
- Hohenstein, J., & Naigles, L. (2000, November). *Preferential looking reveals language-specific event similarity by Spanish- and English-speaking children*. Paper presented at the Boston University Conference on Language Development, Boston, MA.
- Hsiao, A. H-H. (1999). *Holding the frog in place: Linguistic typology of Mandarin Chinese*. Unpublished senior honors thesis, Department of Psychology, University of California, Berkeley.
- Jovanović, J., & Kentfield, M. (1998). *Manifold manner: An exploratory analysis of French and English verbs of motion*. Unpublished paper, Department of Psychology, University of California, Berkeley.
- Jovanović, J., & Martinović-Zić, A. (in press). Why manner matters: Contrasting English and Serbo-Croatian typology in motion descriptions. In C. Moder & A. Martinović-Zić (Eds.), *Discourse across languages and cultures*. Amsterdam/Philadelphia: John Benjamins.
- Karasu, B. (1985). *Gece*. Istanbul: Metis Yayınları. [English transl. G. Gün & B. Karasu (1994). *Night*. London: Louisiana State University Press.].
- Kemal, O. (1960). *El kız*. Istanbul: Ak Kitabevi.
- Kemal, Y. (1970). *Ağrıdaki efsanesi*. Istanbul: Cem Yayınevi. [English transl. T. Kemal (1975). *The legend of Ararat*. London: Collins and Harvill.].
- Kita, S., Danziger, E., & Stolz, C. (in press). Cultural specificity of spatial schemas as manifested in spontaneous gestures. In M. Gattis (Ed.), *Spatial schemas in abstract thought*. Cambridge, MA: MIT Press.
- Lessing, D. (1952). *A proper marriage*. New York: New American Library. [Spanish transl. F. Parcerisas & A. Samons (1979). *Un casamiento convencional*. Barcelona: Editorial Argos Vergara.].
- Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.
- Levinson, S. C. (1996a). Frames of reference and Molyneux's question: Crosslinguistic evidence. In P. Bloom, M. A. Peterson, L. Nadel, & M. F. Garrett (Eds.), *Language and space* (pp. 109-169). Cambridge, MA: MIT Press.
- Levinson, S. C. (1996b). Relativity in spatial conception and description. In J. J. Gumperz & S. C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 177-202). Cambridge: Cambridge University Press.
- Levinson, S. C. (forthcoming). *Space in language and cognition: explorations in cognitive diversity*. Cambridge: Cambridge University Press.
- Livaneli, Z. (1979). *Arafatta bir çocuk*. Istanbul: Cem Yayınevi.
- Lucy, J. (1992). *Grammatical categories and cognition: A case study of the linguistic relativity hypothesis*. Cambridge: Cambridge University Press.
- Lucy, J. (1996). The scope of linguistic relativity: An analysis and review of empirical research. In J. J. Gumperz & S. C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 37-69). Cambridge: Cambridge University Press.
- Lucy, J. (2000). Introductory comments. In S. Niemeier & R. Dirven (Eds.), *Evidence for linguistic relativity* (pp. ix-xxi). Amsterdam/Philadelphia: John Benjamins.
- Martinović-Zić, A., & Jovanović, J. (in press). Conceptualization of motion and language-specific constraints in first-language acquisition. *MIT Working Papers in Linguistics*, 26.
- Mayer, M. (1969). *Frog, where are you?* New York: Dial Press.
- McCullers, C. (1946). *The member of the wedding*. Boston: Houghton Mifflin. [Spanish transl. J. Silva (1982). *Frankie y la boda*. Barcelona: Bruguera.] [Turkish transl. I. Kantemir (1991). *Düğünün bir üyesi*. Istanbul: Remzi Kitabevi.].
- McNeill, D. (Ed.). (2000). *Language and gesture: Window into thought and action*. Cambridge: Cambridge University Press.
- McNeill, D., McCullough, K-E, & Duncan, S. D. (forthcoming). An ontogenetic universal and how to explain it. In C. Müller & R. Posner (Eds.), *The semantics and pragmatics of everyday gestures*. Berlin: Verlag Arno Spitz.
- Mora Gutiérrez, J. P. (1998). *Directed motion in English and Spanish*. Unpublished doctoral dissertation, University of Seville, Spain.

- Mucetti, R. (1997). *Thinking and speaking about movement: How parents and their children talk about motion events in English, Spanish, and Italian during the early stages of language acquisition*. Unpublished senior honors dissertation, Department of Psychology, University of California, Berkeley.
- Muñoz Molina, A. (1992). *Los misterios de Madrid*. Barcelona: Editorial Seix Barral.
- Naigles, L. R., & Terrazas, P. (1998). Motion-verb generalizations in English and Spanish: Influences of language and syntax. *Psychological Science*, 9, 363-369.
- Naigles, L. R., Eisenberg, A. R., Kako, E. T., Hightner, M., & McGraw, N. (1998). Speaking of motion: Verb use in English and Spanish. *Language and Cognitive Processes*, 13, 521-549.
- Narayanan, S. (1997). *Knowledge-based action representations for metaphor and aspect (KARMA)*. Unpublished doctoral dissertation, University of California, Berkeley.
- Neznanskij, F. (19). *Jarmarka v Sokol'nikax*.
- Ohara, K. H. (2000). Cognitive and structural constraints on motion descriptions: Observations from Japanese and English. *Proceedings of the 2nd International Conference on Cognitive Science and the 16th Annual Meeting of the Japanese Cognitive Science Society (Joint Conference)* (pp. 994-997).
- Özçalışkan, S. (2000, August). *Contrastive effect of narrative perspective vs. typological constraints in encoding manner of motion: A developmental look*. Paper presented at 7th International Pragmatics Conference, Budapest.
- Özçalışkan, S. (in preparation). *Metaphorical motion event descriptions in English and Turkish*. Doctoral dissertation, University of California, Berkeley.
- Özçalışkan, S., & Slobin, D. I. (1999). Learning “how to search for the frog”: Expression of manner of motion in English, Spanish, and Turkish. In A. Greenhill, H. Littlefield, & C. Tano (Eds.), *Proceedings of the 23rd Annual Boston University Conference on Language Development* (pp. 541-552). Somerville, MA: Cascadilla Press.
- Özçalışkan, S., & Slobin, D. I. (2000a). *Climb up vs. ascend climbing: Lexicalization choices in expressing motion events with manner and path components*. In S. Catherine-Howell, S. A. Fish, & T. K. Lucas (Eds.), *Proceedings of the 24th Annual Boston University Conference on Language Development, Vol. 2* (pp. 558-570). Somerville, MA: Cascadilla Press.
- Özçalışkan, S., & Slobin, D. I. (2000b). Expression of manner of movement in monolingual and bilingual adult narratives: Turkish vs. English. In A. Göksel, & C. Kerslake, (Eds.), *Studies on Turkish and Turkic languages*. Wiesbaden: Harrasowitz.
- Özçalışkan, S., & Slobin, D. I. (2000c, August). *Codability effects on the expression of manner of motion in Turkish and English*. Paper presented at the 10th International Conference on Turkish Linguistics, Istanbul. [to appear in the conference proceedings, ed. by S. Özsoy]
- Özyürek, A., & Kita, S. (1999). Expressing manner and path in English and Turkish: Differences in speech, gesture, and conceptualization. In M. Hahn & S. C. Stoness (Eds.), *Proceedings of the twenty-first annual conference of the Cognitive Science Society* (pp. 507-512). Mahwah, NJ: Lawrence Erlbaum Associates.
- Özyürek, A., & Özçalışkan, Ş. (2000). How do children learn to conflate manner and path in their speech and gestures? In E. V. Clark (Ed.), *Proceedings of the 30th Stanford Child Language Research Forum* (pp. 77-85). Palo Alto, CA: CSLI.
- Pamuk, O. (1990). *Kara kitap*. Istanbul: Can Yayınları. [English transl. G. Gün (1994). *The black book*. New York: Farrar Straus Giroux.]
- Pederson, E., Danziger, E., Levinson, S., Kita, S., Senft, G., & Wilkins, D. (1998). Semantic typology and spatial conceptualization. *Language*, 74, 557-589.
- Piaget, J. (1962). *Play, dreams and imitation in childhood*. New York: Norton. [Translation of (1946) *La formation du symbol chez l'enfant: Imitation, jeu et rêve, image et représentation*. Neuchâtel: Delachaux et Niestlé.]
- Pinker, S. (1989). *Learnability and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.
- Pinker, S. (1994). *The language instinct: How the mind creates language*. New York: Morrow.
- Rulfo, J. (1953). *Pedro Páramo*. Barcelona: Editorial Planeta.
- Sabato, E. (1950). *El túnel*. Barcelona: Editorial Seix Barral. [English transl. M. S. Peden (1988). New York: Ballentine Books.]

- Slobin, D. I. (1987). Thinking for speaking. *Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society*, 435-444.
- Slobin, D. I. (1996a). From “thought and language” to “thinking for speaking.” In J. J. Gumperz & S. C. Levinson (Eds.), *Rethinking linguistic relativity* (pp. 70-96). Cambridge: Cambridge University Press.
- Slobin, D. I. (1996b). Two ways to travel: Verbs of motion in English and Spanish. In M. Shibatani & S. A. Thompson (Eds.), *Grammatical constructions: Their form and meaning* (pp. 195-217). Oxford: Oxford University Press.
- Slobin, D. I. (1997). Mind, code, and text. In J. Bybee, J. Haiman, & S. A. Thompson (Eds.), *Essays on language function and language type: Dedicated to T. Givón* (pp. 437-467). Amsterdam/Philadelphia: John Benjamins.
- Slobin, D. I. (2000). Verbalized events: A dynamic approach to linguistic relativity and determinism. In S. Niemeier & R. Dirven (Eds.), *Evidence for linguistic relativity* (pp. 107-138). Amsterdam/Philadelphia: John Benjamins.
- Slobin, D. I., & Hoiting, N. (1994). Reference to movement in spoken and signed languages: Typological considerations. *Proceedings of the Twentieth Annual Meeting of the Berkeley Linguistics Society*, 487-505.
- Steinbeck, J. (1947). *The pearl*. New York: Viking [Spanish transl. F. Baldiz (1980). *La perla*. Barcelona: Balaguer.] [Turkish transl. A. Selver (1995). *İnci*. Istanbul: Oda Yayınlar.]
- Talmy, L. (1991). Path to realization: A typology of event conflation. *Proceedings of the Seventeenth Annual Meeting of the Berkeley Linguistics Society*, 480-519.
- Talmy, L. (2000). *Toward a cognitive semantics*. Cambridge, MA: MIT Press.
- Tekin, L. (1990). *Berci Kristin çöp masalları*. Istanbul: Metis Yayınları. [English transl. R. Christie & S. Paker (1993). *Berji Kristin: Tales from the Garbage Hills*. New York: Marion Boyars Publishers.]
- Vainers, A., & Vainers, G. (19). *Vizit k minotavru*.
- Vargas Llosa, M. (1977). *La tía Julia y el escribidor*. Barcelona: Editorial Seix Barral [Spanish transl. H. R. Lane (1982). *Aunt Julia and the script-writer*. New York: Avon Books.]
- Yu, N. (1998). *The contemporary theory of metaphor: A perspective from Chinese*. Amsterdam/Philadelphia: John Benjamins.