THINKING FOR SPEAKING

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My title deliberately turns a familiar pairing of terms--**thought and language**--into a more dynamic expression, replacing the abstract nouns with gerunds, and replacing the empty conjunction with a purposive preposition. "Thought" and "language" are often treated as two static entities, as a system of concepts and propositions that is somehow mapped onto a system of linguistic structures. There is often a third static term lurking in these discussions--"objective reality"--which is represented, however directly or indirectly, by the structures of language and thought. In much of cognitive psychology and AI, there is an implicit isomorphism between the first two terms (content and form), often with a direct relationship between these two and the patterned stimuli of the physical world. On the other hand, in much of the older linguistic and anthropological literature on language and thought, the structures of language were held to shape or determine the structure of thought, thereby serving as a selective filter between sensory experience and cognition. Be this as it may, we encounter the contents of the mind in a special way when they are being accessed for use. In the terms of my title, 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.

It is, of course, a truism of linguistics that anything can, somehow, be said in any language. Here I want to limit myself to what is most easily and automatically said in particular languages, especially with regard to several features of verbal morphology. In suggesting that the grammar of an individual language influences "what is most easily and automatically said," I am, of course, raising the restless ghost of Benjamin Lee Whorf, who suggested, in 1940, that "users of markedly different grammars are pointed by their grammars towards different types of observations and different evaluations of externally similar acts of observation, and hence are not equivalent as observers but must arrive at somewhat different views of the world" (1940/1956:221). My aim, however, is less ambitious. We will probably never succeed in demonstrating the effects of grammar on world view or

nonlinguistic behavior. What I have in mind is a more cautious goal, characterized in an early formulation by Whorf's great teacher, Edward Sapir, in 1924: "[The forms of each language] establish a definite relational feeling or attitude towards all possible contents of expression and, through them, towards all possible contents of experience, **in so far, of course, as experience is capable of expression in linguistic terms** (my emphasis--DIS) (Sapir, 1924/1958:152). The expression of experience in linguistic terms constitutes "thinking for speaking"--a special form of thought that is mobilized for communication. Whatever effects grammar may or may not have outside of the act of speaking, the sort of mental activity that goes on while formulating utterances is not trivial or obvious, and deserves the attention of linguists and cognitive scientists. Indeed, one can go back even further, to Franz Boas' Introduction to the *Handbook of American Indian Languages* in 1911. There, Boas considered a range of obligatory grammatical categories across languages and asserted: "When we consider for a moment what this [diversity] implies, it will be recognized that in each language only a part of the complete concept that we have in mind is expressed, and that each language has a peculiar tendency to select this or that aspect of the mental image which is conveyed by the expression of the thought" (1911/1966:39).

So much for raising the ghosts of our forebears in **this** century; more could be found, of course, in past centuries. Can we go any further than comparisons of grammars and tantalizing demonstrations of linguistic relativity? I think we can--in at least three ways, all of which focus on thinking for speaking. The first is to examine ways in which children acquiring different sorts of grammars begin to talk about experience. When do they stop talking like **universal** little children and start sounding like **native speakers** of particular languages? This is the topic of the present paper. The second is to study ways in which one's native language shapes one's mastery of the grammatical categories of a foreign language. That is, how well can one adapt one's thinking for speaking in a different system? And the third way is to study the contents of grammatical categories that seem especially resistant to historical change in a language or group of languages, on the assumption that these categories are exceptionally deeply ingrained as systems of "thinking for speaking." If the forms of each language "establish a definite relational feeling or attitude towards...contents of experience," this attitude should be established in early childhood, and should shape one's interpretations of other languages and of potential changes in one's own language.

I cannot claim to present definitive evidence from any of these three directions of study, but I can offer some suggestive directions with regard to the first approach by presenting a portion of work in progress on the acquisition of several different kinds of languages. I will focus on verbal marking of **aspect** and **motion** in four languages, with the hope that this approach to "neo-Whorfian" questions will have wider applicability. (Eventually, the second and third approaches should mesh with the first.)

At Berkeley, we have developed a technique for eliciting narratives from speakers of various languages, children and adults, in response to a standard picture story, presented without words.[1] In this way, we can hold objective content constant and ask whether the same pictured events are described differently on the basis of age or native language of the narrator.

Here I wish to sample from this research, presenting a few critical scenes as they are narrated in four languages: English, German, Spanish, and Hebrew. (The overall study, at this point, also includes Turkish, Icelandic, and ASL, with the potential additions of Polish, Russian, and Mandarin.) The four languages to be examined here lie on a continuum of elaboration of grammatical aspect: Hebrew has three simple tenses--past, present, future--with no grammatical marking of aspect. German has a single contrast of preterit and perfect. English has this contrast as well, along with a cross-cutting marking of progressive in all tenses. And Spanish, in addition to perfect and progressive, also distinguishes perfective and imperfective in the past. With regard to verbs of motion, English and German represent one of the basic types described by Talmy (1985), where the verb conflates motion and manner, with path expressed by satellites (e.g., *run / jump / float... in / out / across...*). Spanish and Hebrew represent another basic type, where the verb conflates motion and path, with manner expressed independently (e.g., *entrar / salir / pasar... corriendo / saltando / flotando* 'enter / exit / pass... running / jumping / floating').

I have picked three scenes from the picture-story in which speakers have options with regard to the encoding of aspect and motion. All three scenes deal with **falling**, but in different ways. First we will consider the potentials for aspectual marking of each of these three scenes in Spanish, English, German, and Hebrew, and then the potentials for encoding of motion. The data come from speakers of three age groups: preschool (3-5), school age (9), and adult.[2]

ASPECT

Scene 1: PUNCTUAL/DURATIVE

In the first scene, two events are pictured as simultaneous: a boy has fallen from a tree and is shown landing on his back at one side of the picture, while a swarm of bees is chasing a dog across the picture. Here, **falling** is PUNCTUAL, contrasted with NON-PUNCTUAL, DURATIVE activities of **chasing/running**. Languages that mark progressive aspect, like Spanish and English, allow for an opposition between a neutral verb form and a progressive, with the neutral form taking on a default punctual value, given the Aktionsart of 'fall'. The following description by an American 5-year-old is typical:

(1) *The boy fell out ... and the bees were flying after the dog.*

While this is possible in Spanish as well, the preferred version is to mark the punctuality of the first event by a perfective form, contrasting it either with an imperfective or a gerundive expression, as in the following 5-year-old examples:

(2a) *Se cayó el niño y le perseguían al perro las avispas.* 'The boy fell-PFV and the bees chased-IPFV the dog.'

(2b) *Se cayó ... y el perro salió corriendo.* 'He fell-PFV ... and the dog came-out-PFV running.'

Spanish thus makes it possible to grammatically mark both poles of the durative-nondurative distinction, whereas English provides explicit marking only of the durative pole.

German and Hebrew lack distinctive marking of either pole of the distinction, and speakers generally do not distinguish the two events grammatically, as shown in the following typical examples, again from 5-year-olds:

(3) German: *Der Junge fällt vom Baum runter ... und die Bienen gehen hinter dem Hund her.* 'The boy falls down from the tree ... and the bees go after the dog.'

(4) Hebrew: *Hu nafal ve hakelev barax.* 'He fell and the dog ran-away.'

I have given examples from 5-year-olds, but it is important to note that the language-specific patterns hold across all ages, from 3 to 9, and adults. In German and Hebrew the tendency is to maintain the same tense-aspect form for both clauses, while in Spanish and English the tendency is to differentiate the two. This trend is summarized numerically in Table 1.

Table 1			
PERCENTAGE OF NARRATORS USING SAME TENSE/ASPECT FORM FOR 'FALL' AND 'RUN' CLAUSES IN SCENE 1			
	Preschool (3-5)	School (9)	Adult	OVERALL
Hebrew	71	100	63	78
German	54	80	78	71
English	26	22	33	27
Spanish	23	18	0	21

Consider these figures in the light of "thinking for speaking." If the figures for Hebrew and German were uniformly 100%, and for English and Spanish 0%, we could only conclude that speakers strictly adhere to the formal contrasts provided by their language, and it would not be possible to separate thinking from speaking. But the deviations from these extremes indicate that other options are possible. Some Hebrew speakers try to contrast the two events by presenting the first in the past tense and the second in the present, thereby recruiting a tense difference to mark the aspectual contrast COMPLETED-ONGOING; e.g.:

(5) *Hayeled nafal ... ve hakelev boreax.* 'The boy fell ... and the dog runs-away.' [5 yrs.]

Note that this option is used about one-third of the time by preschoolers and adults, while school-age children (age 9) follow the language most tenaciously in not attempting any aspectual distinction. (The only other option was the use by one adult of an inceptive construction, *matxil laruts* 'started to-run', thereby giving some indication that the second event has some duration with regard to the first.)

German presents a similar picture, with some flexibility especially in preschool age children who put the first event in the perfect, thereby closing it off as a resultant state with regard to the second event in the present; e.g.:

(6) *Der ist vom Baum runtergefallen und der Hund läuft schnell weg.* 'He has fallen down from the tree and the dog runs away quickly.' [5 yrs.]

The tendency in German is to mark the first event as completed, rather than to elaborate the second as ongoing,[3] with two notable exceptions:

(7a) *Er rannte schneller und immer schneller.* 'He ran faster and ever faster.' [9 yrs.]

(7b) *Der Hund rennt rennt rennt.* 'The dog runs runs runs.' [adult]

Such deviations from the overall tendencies of each language type are important, in that they show that it is, indeed, possible to try to mark aspectual notions like terminative and durative if they are not part of the regular system of verb morphology in one's language. And, on the other hand, the occasional lack of aspectual distinctions between the two clauses in Spanish and English shows that one need not make use of the full array of distinctions available in verbal morphology. What is most striking in Table 1, however, is the finding that **speakers so rarely make use of options that differ from the norm.** Overall, Hebrew and German speakers attempt to elaborate aspectual distinctions only about one-fourth of the time, while Spanish and English speakers fail to mark aspectual distinctions about one-fourth of the time. Such tendencies appear throughout our ongoing study of these narratives, clearly suggesting types of "thinking for speaking." Speakers of all ages, in the four languages, certainly **know,** in some nonlinguistic sense, that the boy's falling is punctual and completed with regard to the simultaneous ongoing chasing and running of bees and dog. But they generally do not seem to be inclined to express any more of this knowledge linguistically than fits the available distinctions in the language. It is striking that children as young as 3 already show a sensitivity to the "slant" of their particular native language. This point will be echoed as we examine tense/aspect in the other two falling scenes, and expressions of motion in all three scenes.

Scene 2: DURATIVE/RESULTATIVE

In the second scene, the boy and dog fall from a cliff into a pond below. This is shown in a two-picture sequence, with the boy and dog in mid-fall in the first picture and landing in the water in the second. Here **falling** is DURATIVE, contrasted with a RESULTANT STATE that is both INCEPTIVE and DURATIVE. Although 'fall' is typically discussed as a verb of inherent punctual aspect, here is a situation in which a falling event is slowed down, as it were, allowing it to be seen first as ongoing/durative and then as perfected. Again, the languages differ with regard to which phases of this episode are most readily grammaticized, and children as young as 3 are already selective in their descriptions. English-speaking children often switch from present progressive to preterit, again marking duration rather than result, as in:

(8)   *The boy's falling. He falled into the water.* [3 yrs.]

Spanish- and German-speaking children present a different account with regard to this scene, often switching to the perfect or to a stative to contrast the resultant end-state with the preceding process, as in:

(9)   Spanish: *Se caen los dos al agua. Aquí que ya se han caído.* 'The two of them fall to the water. Here they have already fallen.' [3 yrs.]

(10)   German: *Der Hund und Walter die plummpsen da runter. Da sind die runtergeplummpst.* 'The dog and Walter, there they plop down. There they have plopped down.' [3 yrs.]

Hebrew-speakers, by contrast, use the same verb form for both events; e.g.:

(11) *Ve azarey ze hu nafal. Ve azarey ze hu nafal lamayim.* 'And then he fell. And then he fell to the water.' [4 yrs.]

(At most, Hebrew-speakers may distinguish the end-state by mentioning it with a locative phrase, but this is not a very widespread pattern.)

A comparison of narrations of the two falling scenes shows an interesting interaction between flow of attention and available tense/aspect morphology. In the first scene, falling is completed with regard to chasing/running; in the second scene, falling comes to conclusion. American English, with its much-used progressive and less frequent perfect, predisposes marking of the durative situation for both scenes--chasing/running in the first, and falling in the second. The Spanish progressive is more highly marked than the English, while participial forms expressing states are much more common than in English (Talmy, 1985). Thus, although both English and Spanish have progressive and perfect, the forms are used differently. The perfect is acquired late in American English, while it is freely used by Spanish 3-year-olds to encode stative situations, as in the second scene. The German perfect serves a similar function. Thus attention to process and state seems to be subtly guided by verbal morphology--at least with regard to the direction of attention flow for the purposes of describing and narrating situations.

Scene 3: PUNCTUAL/RESULTANT

In the third scene, the dog falls from a window with a glass jar stuck on his head, breaking the jar when he lands. Here **falling** is PUNCTUAL, leading to a RESULTANT CHANGE OF STATE that is also PUNCTUAL. Given what we have observed in the first two scenes, we should expect that none of the available durative forms of English and Spanish should be used; that the Spanish and German perfects should be used for the second event; and that the overall tendency should be to use the same tense for both clauses. And this is, generally, what we have found--with some interesting variations. The following are the most typical versions for each of the four languages, fairly consistent across the entire age range:

(12a) English: *He fell out the window, broke the jar.* [3 yrs.] / *Then he fell down and then the glass broke.* [4 yrs.]

(12b) Spanish: *Y luego se cae, se rompe.* 'And then (he) falls-REFL, (it) breaks-REFL.' [5 yrs.] / *El perro se cayó de la ventana y rompió un jarro que tenía en la cabeza.* 'The dog fell-REFL-PFV from the window and broke-PVF a jar that he had-IPFV on his head.' [9 yrs.]

(12c) German: *Der Hund fällt mit dem Glas runter und da ist es kaputtgegangen.* 'The dog falls down with the glass and there it has gotten broken.' [3 yrs.]

(12d) Hebrew: *Hakelev nafal im hakufsa ve hakufsa nishbera.* 'The dog fell with the can and the can got-broken-MIDDLE.VOICE.' [5 yrs.]

Overall, the two clauses are in the same tense, with a frequent switch to present perfect for resultant state in German. The same is not done in Spanish, however, for here the language provides a sort of passive/middle voice by means of the reflexive; Hebrew does the same by means of a verb-pattern (*binyan*) alternation. Where a passive or middle voice option is

available, it is a highly frequent choice for describing the breaking of the glass. Again, children as young as 3 are guided in their linguistic attention by grammatical morphology.

MOTION

The three falling scenes also clearly reflect the differences described by Leonard Talmy (1985) between the Germanic type of conflation of motion and manner with independent marking of path, and the Romance and Semitic type of conflation of motion and path with independent marking of manner. This difference is evident in the the example sentences offered in the preceding discussion of aspect in the four languages. Summarizing across those examples, we find rich independent marking of path in the two Germanic languages: **English:** *fell out* (1), *falled into the water* (8), *fell out the window* (12a), *fell down* (12a), and *flying after* (1), with only one example of simple *falling* (8). **German:** *fällt vom Baum runter* 'falls down from the tree' (2), *vom Baum runtergefallen* 'fallen down from the tree' (6), *plummpsen runter / runtergeplummpst* 'plop down / plopped down' (10) *fällt runter* 'falls down' (12c). If we were to look further, we would find a wide range of special verbs of manner in these two languages, such as English *splash in, dump off, tumble down* and similar verbs in German. And we would find elaborated strings of path-marking satellites, such as *OFF OVER a cliff INTO the water* and *fiel HERAB IN den See HINEIN* 'fell down-from-here in-to the lake.

By contrast summarizing over the preceding Spanish and Hebrew examples, we find mainly simple verbs: **Spanish:** *se cayó* '(he) fell-PFV' (2a,2b,12a), *se cae(n)* '(he,they) fall-PRES' (9,12), *se han caído* '(they) have fallen' (9), *perseguían* '(they) chased-IPFV' (2a). There is no elaboration of path, and only one elaboration of manner: *salió corriendo* 'came-out-PFV running'. **Hebrew:** *nafal* 'fell' (4,5,11,12d), *barax* 'ran-away' (4), *borax* 'runs-away' (5), with only one elaboration of path: *nafal lamayim* 'fell to the water' (11): These tendencies are demonstrated throughout the Spanish and Hebrew narratives, where we find a collection of verbs that conflate motion and path, such as Spanish *bajar* 'descend', *salir* 'exit', *subir* 'ascend', and Hebrew *k-n-s* 'enter' and *y-r-d* 'descend'. There are only sporadic attempts to elaborate path, as the Spanish 4-year-old who said: *se cae por la ventana baja* '(he) fell through the window downwards'; and there are very rare attempts to elaborate manner, as the Hebrew 5-year-old who said, of falling from the cliff, *Az hem kol hazman mitgalgelim* 'then they roll down all the time'.[4]

The distribution of options chosen by 3-year-olds is revealing of general tendencies. Table 2 summarizes across the three scenes, dividing all instances of the verb 'fall' into the categories: verb alone (e.g., *fell*), verb + locative particle (e.g., *fell down / out / in*), and verb + locative phrase (e.g., *fell down from the tree / out of the window / into the water*).

Table 2			
PERCENTAGES OF TYPES OF MOTION DESCRIPTIONS USED WITH VERB 'FALL' BY 3-YEAR-OLDS			
	Verb	Verb + Locative Particle	Verb + Locative Phrase
English	4	61	35
German	15	65	20
Spanish	73	0	27
Hebrew	68	0	32

The four languages do not differ greatly in their use of the third option, verb + locative phrase. This suggests that these children are similar in the extent to which they orient to and specify the path (source or goal) of movement. However, with rare exception, the English and German children do not use bare verbs without a locative particle--although the few exceptions show that it is possible to say things like *he's falling*. The Spanish and Hebrew children, by contrast, are content to simply use some version of 'fall' (or, in other pictured scenes, 'throw', 'ascend', 'descend', 'enter', and other unanalyzed verbs of motion). The widespread use of locative particles by English- and German-speaking 3-year-olds suggests that they have already assimilated the pervasive pattern of path-marking characteristic of their languages.

By school age our young narrators have developed quite different patterns of describing motion events. The German and English children have both a greater frequency and diversity of locative particles and prepositions than do the Spanish and Hebrew children. For example, in describing Scene 2 (falling from the cliff into the water), there is a great difference in the number of locative elements--adverbial particles and prepositions--used by the 9-year-olds, with the Germanic speakers using about one-third more tokens per child than the Romance and Semitic speakers (average number of locative tokens per subject: English--2.0, German 2.2, Spanish 1.2, Hebrew 1.4).

These differences have an important effect on larger narrative structures. Scene 2 has a preparatory phase, in which the boy gets entangled with a deer who causes him to fall into the water. Germanic 9-year-olds tend to conflate causality, directionality, source, and/or goal in one clause-- as, for example, the English, *he tips him off over a cliff into the water* or the equivalent German, *schmiβ ihn den Abhang hinunter genau ins Wasser* 'hurled him down from the cliff right into the water'. Such compact expression is not available to Romance and Semitic speakers, and, as a result, a widespread narrative strategy consists in setting the scene in separate locative phrases, especially relative clauses with existential or stative verbs, and then referring back to this scene with a general verb of motion. The following two examples are typical:

(13) Spanish: *El ciervo le llevó hasta un sitio, donde debajo había un río. Entonces el ciervo tiró al perro y al niño al río. Y después, cayeron.* 'The deer took him until a place, where below there was a river. Then

the deer threw the dog and the boy to the river. And then, they fell.' [9 yrs.]

(14) Hebrew: *Ve ha'ayil nivhal, ve hu hitxil laruts. Ve hakelev rats axarav, ve hu higia lematsok she mitaxat haya bitsa, ve hu atsar, ve hayeled ve hakelev naflu labitsa beyaxad.* 'And the deer was startled, and he began to run. And the dog ran after him, and he reached a cliff that had a swamp underneath, and he stopped, and the boy and the dog fell to the swamp together.' [9 yrs.]

These examples show that thinking for speaking goes beyond the choice of particular lexical items and grammatical morphemes in structuring a mental representation of an event for verbal expression. Here we see an indirect grammatical effect on the preferred structure of sequences of clauses into paragraphs. Although speakers in any language **could** construct event descriptions like those in (13) and (14), this particular type of expanded scene-setting seems to be called for when using a language which does not provide detailed encoding of the causation and trajectory of movement in the verb and its satellites. What we have, then, is a particular kind of narrative strategy in which the scene is sketched out in a series of separate clauses, allowing the trajectory and its causation to be inferred, rather than explicitly encoded. The Germanic strategy seems to be quite the opposite. It is worth speculating whether such apparently small differences might have larger effects on the organization of discourse. As John Gumperz (1982) and other sociolinguists have suggested, strategies for constructing and interpreting extended discourse are deeply influenced by the kinds of "thinking for speaking" that are predisposed by the grammar of a particular language.

Even a cursory examination of children's speech across languages suggests, as I have tried to demonstrate, that children as young as 3 seem to be guided in in how they choose to talk about experience by the most available grammatical means provided by their native language. They do not tend to compensate by additional means where the language is relatively under-elaborated, nor simplify where the language is relatively elaborated; and they come to adapt the structure of connected discourse to the strengths and limitations of grammatical means for encoding event characteristics. A full examination of crosslinguistic and developmental data, such as these narratives, should more clearly reveal the ways in which thinking adapts itself for speaking. The result of such study, I suggest, would be to define a level of mental representation which may not be involved in perception and habitual behavior--as Whorf advocated--but which is nevertheless intimately involved with language, and, in a real sense, **exists because of language.**

FOOTNOTES

1. The study reported here was planned and directed in collaboration with Ruth A. Berman (Tel-Aviv University), with support from the U.S.-Israel Binational Science Foundation, the Linguistics Program of the National Science Foundation, the Sloan Foundation Program in Cognitive Science at the University of California at Berkeley, and the Max-Planck-Institut für Psycholinguistik in Nijmegen. The data were gathered, analyzed, and discussed in collaboration with: Ayhan Aksu-Koç (Boğaziçi University, Istanbul), Michael Bamberg (Clark University), Esther Dromi (Tel-Aviv University), Virginia Marchman (University of California, San Diego), Yoni Ne'eman (Tel-Aviv University), Tanya Renner (University of California, Berkeley), Eugenia Sebastián (Universidad Autónoma, Madrid), and Christiane von Stutterheim (Universität Heidelberg). All stories were elicited in standard fashion by use of a picture story-book, *Frog, where are you?* (Mayer, 1969). This method was developed by Michael Bamberg, and the first full-scale analysis of German stories appears in his 1985 Berkeley dissertation. Additional reports of the project can be found in Berman (1986), Berman and Slobin (1987), Slobin (1986), and forthcoming publications. I am grateful to Ruth Berman for her major role in helping to develop the research program and the ideas presented here.

2. In all four languages there were groups of narrators aged 3, 5, 9, and adult; in Spanish, English, and Hebrew there were also groups of 4-year-olds. There were 12 narrators in each group, except for the Spanish adults, for whom only six stories have been analyzed. The data were gathered in Berkeley by Tanya Renner and Virginia Marchman, in Madrid by Eugenia Sebastián, in Berlin by Michael Bamberg, and in Israel by Ruth A. Berman.

3. It appears, generally, that when German speakers choose to take an aspectual perspective, they tend to orient to some marking of boundedness ("terminative aspect"). This is evidenced at several points in our narratives, as well as in the history of the language. English speakers, by contrast, tend to orient to durativity, as if echoing the historical development of the progressive as a particularly "English aspect" among the Germanic languages. As suggested above, thinking for speaking in **language-specific** ways seems to establish itself as a pervasive pattern over time.

4. It is interesting that it is especially the 5-year-olds, in Spanish and Hebrew, who make occasional attempts to grammatically mark features of aspect and motion beyond the typical means available in the language (as noted above as well). The 9-year-olds, by contrast, are especially stereotyped in their narrations, adhering closely to the typological constraints of the language.

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