HIDDEN MEANINGS: THE ROLE OF COVERT CONCEPTUAL STRUCTURES
IN CHILDREN’S DEVELOPMENT OF LANGUAGE

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Language has long been esteemed as the crowning achievement of the human symbolic capacity. In consequence, the processes by which children learn to talk intrigue not only scholars who are interested primarily in language itself but also those concerned with more general questions about how children come to engage in symbolic activities.

What aspects of symbolic development can research on language acquisition help to illuminate? We have, I think, barely begun to mine this rich source of information. Certain essential questions have undeniably been posed. These include, most centrally, whether the ability to use linguistic symbols to represent nonlinguistic entities is, as Piaget hypothesized, embedded in the emergence of a broader symbolic capacity underlying other representational activities. Other sorts of clues provided by language acquisition to the nature of symbolic development have been largely neglected, however. Yet some of these lesser-known aspects of child language may well turn out to be critical for a thorough understanding of linguistic symbolic development, and perhaps symbolic development more generally, especially when we look beyond the very first steps of acquisition upon which researchers have primarily concentrated.

The discussion of the present chapter is divided into two major sections. First, some limitations of the current approach to symbolism in language development are discussed. This is followed by an overview of some data that further illustrate the arguments advanced here, and indicate what kinds of additional information can be obtained by enlarging the scope of our investigations.
SYMBOLS AND MEANINGS IN LANGUAGE

The neglect of certain aspects of linguistic symbolic development can perhaps be attributed to the prevalence in the field of child language of a relatively circumscribed approach to two basic problems: which entities qualify as linguistic symbols and what or how these symbols can be said to "mean", "stand for", or "represent". We take these up in reverse order.

Meaning

The approach to meaning that characterizes such recent work on linguistic symbolic development is consistent with a growing trend among researchers to conceptualize language primarily in terms of its function as a system for communication between interacting speakers. The effect of this theoretical orientation is to focus the search for relationships between symbols and symbolized around meanings that constitute a relatively explicit part of the speaker's intended message.

A pioneering study in 1975 by Bates and her colleagues (Bates et al, 1975) is a good example of such an approach. These researchers explored the emergence of first linguistic symbols within the larger context of early communicative development. They found clear evidence that before the end of the first year of life children become capable of intentional communication, e.g. purposefully trying to get an adult to give them an object or to look at an object. These communicative goals are achieved nonlinguistically at first, with gestures and eye contact. Gestures gradually begin to take on a more ritualized quality, and eventually words appear in the same communicative contexts. Words are thus seen as a means, comparable to although more sophisticated than gestures, of achieving communicative ends, and their meaning or symbolic value is interpreted primarily with respect to their capacity to carry out this function.

Many studies of language development beyond the first words also implicitly or explicitly identify the meaning of linguistic forms with what the speaker tries to express when he uses them. This can be seen, for example, in the frequency with which the term "communicative intention" is used interchangeably with the terms "meaning" or "semantic function" in the literature. The child is typically seen as formulating "meanings" prior to language on the basis of his independent cognitive capacities. At a certain point after he becomes capable of conceptualizing a particular meaning, e.g. possession or spatial location, he may begin to want to "express" it. At first he uses whatever linguistic or nonlinguistic devices he has at his disposal. Eventually, however, he identifies and begins to use specific linguistic forms with which these meanings are conventionally associated in his language.

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(e.g. words, word order patterns, inflections).

The study of how the child learns to represent and convey his communicative intentions with arbitrary linguistic symbols is certainly an important part of any investigation into the development of linguistic symbolism. But too exclusive a focus on what the child intends to communicate with his utterances misses a critical property of linguistic symbols: that with the exception of proper names they do not directly represent the contents of the speaker's message. Rather, they do so only indirectly, by way of a network of backgrounded meanings and meaning contrasts that lie for the most part outside of awareness and do not figure as part of the speaker's intended message at all. This is not a novel point; of course, but I think it bears repeating in any field of conceptualization when attention is claimed not only on what a linguistic symbol represents — e.g. the entities (objects, events, etc.) to which it directs the listener's attention — but in how it succeeds in representing.

The following anecdote can serve as a simple, preliminary illustration of a backgrounded meaning contrast: more elaborate examples will be discussed later. As an exercise in linguistic relativity, I once modeled for a class of students a series of actions involving separation and coming apart, such as opening a door, unwrapping a bandaid, removing glasses, unscrewing a jar, and so on. The student, who spoke English, Spanish, or Japanese natively, was asked to jot down for each action a simple sentence describing what I had done. In subsequent analyses of the data generated in this way, we found a number of interesting differences in the way acts of separation were classified in these languages. Among these, the English and Japanese in the encoding of two particular actions: taking a piece out of a flat jigsaw puzzle and removing a small Fisher-Price peg doll from a shallow circular niche in which it fits in a toy bus. All of the English speakers had referred to both of these actions as "take out". The Japanese speaker, however, had called the former by one verb and the latter by another.

On what grounds were these two acts, which seemed quite similar to the English speakers, distinguished? The Japanese speaker could not answer this question on the basis of immediate introspection. However, she could provide examples of other actions that would be referred to with one or the other verb, and she could also judge the appropriateness of a given verb for a given action. By analyzing a set of exemplars for each verb, the class finally concluded that the "puzzle piece" verb covered other (not all) acts of separation that would
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In picking out linguistic forms for study, just as in choosing meanings to investigate, our tendency, understandably enough, has been to concentrate on those entities which are most accessible to our conscious reflection. These include surface segments of the language such as words and inflections, and - only somewhat more abstracted from the surface string - patterns of intonation (e.g. rising versus falling) and word order (e.g. N-verb-N). Once such a unit has been selected for study, the question is typically asked "What meaning does the child associate with this form?" Alternatively, the problem may be approached from the opposite direction: "How does (or: simply 'does') the child express meaning X, even though he may not yet have acquired the word/inflection/intonation pattern (etc.) with which this meaning is conventionally encoded?"

These are necessary questions, of course. But the net they cast in the search for how the child acquires the meaning system of his language has big holes, and many meanings that play a specifiable role in the language slip through unseen and unsuspected. These are the meanings that Whorf (1956), their most astute observer, termed "covert classes" or "cryptotypes" because they are not associated with any specific linguistic form in the way that plurality, for example, is associated with "and" and past time with "ed" in English. Instead, they make themselves felt through their "reactance" (Whorf, 1956:70): their influence upon the acceptability of potential combinations of, or operations upon, overt forms.

Whorf gave a number of interesting examples of cryptotypes in English. One, to which we shall return later, is the class of transitive verbs of a covering, enclosing and surface-attaching meaning, the reactance of which is that UN- may be prefixed to denote the opposite. Hence we say "uncover", undo, unfasten, unfold, unlock, unroll, unentangle, untie, unwind", but not "unbreak", undry, unhang, unheat, unlift, unseal, unopen, unpress, unspill". (1956:71)

Other examples discussed by Whorf include the semantic characteristics of verbs that cannot be followed by the particle up with the meaning "completely, to a finish" (cf. break/cover/see it up versus spread/waste/tablrock it up). Still other cryptotypes are discussed (although not under this name) by, among others, Binnick (1971), (the semantic class of verbs that can be used both intransitively and, with an additional causative sense, transitively); and Blust (1968), (the semantic distinction between verbs that take a marki infinitive in their complements, e.g. persuade, want, plan, versus those that occur with the present participle, e.g. find, imagining, avoid).
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comparisons and analogies among disparate experiences that contributes to imagery in art, poetry, metaphor, dreams, and the like.

SOME HIDDEN MEANINGS

How can we get at the shadowy conceptual structures that guide and influence children's use of language, but that are neither directly part of their communicative intentions nor necessarily associated with specific forms such as hall or red? One abundant source of clues is children's speech errors - ways in which their speech departs, either systematically or sporadically, from conventions of the adult speech to which they have been exposed.

Some error types selected to illustrate possible methods in the investigation of background meanings as well as some results are presented below. The analyses draw primarily upon spontaneous speech data from my two daughters, Christy and Eve, whose language development I have followed closely by tagging and daily diaries. Each error type is also extensively represented in my records by examples gathered less systematically from a number of other children in comparable age ranges; these supplementary data indicate that the processes for which the errors give evidence are widespread among English-speaking children.

Most of the speech errors in my data that are relevant to questions about the role of hidden meanings in language development can be grouped into two major categories: overregularizations and word substitutions. The process of overregularization, or the application of a grammatical pattern to forms that constitute exceptions to it, is well known to students of child language from studies of the acquisition of inflectional morphology (e.g. the familiar cow and goats). But the pervasiveness and importance of this process in the domains of syntax and derivational morphology (word formation) has not, I think, been fully appreciated (see Bowern, 1962b, for a variety of examples). The usefulness of errors of overregularization for the study of covert meanings is that the rules or grammatical patterns that are overused often have subtle semantic correlates - i.e., they are extended only to words or to configurations of elements sharing a particular semantic property.

Word substitution errors involve the use of one word where another is required by either nonlinguistic or linguistic context, or both. One well-known class of such errors is termed "overextension": the use by a young child of a word (such as doggie) not only for members of the category that adults associate with that word but also for certain referents that fall outside it and for which the child typically has no conventional label as yet (e.g. cats, horses; see Clark, 1973).
A second kind of word substitution error occurs among older preschool children whose grammars and vocabularies are already relatively well developed. It involves confusion or interference between two or more words (or, sometimes, between a word and a bound morpheme) that have had a previous history in the child’s speech of being used appropriately and separately, each one in its own semantic domain (see Bowerman, 1978, for an introduction to the phenomenon and general discussion). These errors are reminiscent of adult “slips of the tongue” involving semantically related words, e.g., “I really like to = hate to = get up in the morning” (Frauenfelder, 1971), in the sense that they are occasional rather than routine. They differ, however, in that any particular error by an adult is unlikely to be heard again, whereas in child speech an error of a given type may often be observed repeatedly over a relatively short period of time.

Linguists and psychologists interested in adult slips of the tongue involving semantically related words have proposed an explanatory model that applies to children too (see, e.g., Laver, 1973). According to this model, such errors result from lapses in the resolution of competition between lexical items. When the speaker plans to encode a particular event, a given component of his mental representation of the event may activate more than one candidate lexical item. The speaker must then evaluate these items for their appropriateness and select the best. Ordinarily this unconscious editing process works smoothly, but occasionally a less appropriate candidate wins out. In another possible outcome, the conflict is resolved by the combination of two forms, as in fantasbulous (fantastic + fabulous).

Word substitution errors, like overregularizations, provide information about the way meaning is organized in the speaker’s head, but in a different way. Here there is no discernable pattern or rule to which a meaning category is linked, discoverable by inspection of the semantic characteristics of a large number of forms conforming to the pattern. Instead, the meaning category is inferred by comparing the meanings of two or more forms that compete with each other to find their common element(s), or, in the case of overextensions, by comparing all the referents to which the word is extended.

What is fascinating but as yet poorly understood about substitution errors is that they exhibit a kind of hidden logic. Overextensions and competitions among words do not take place on the basis of all conceivable similarities among the natural objects or events. Rather, they appear to be based on similarities that are linguistically “sensible”, in that they play a specific role in the structure of one language or another. Sometimes the errors reflect a concept that is required for the child’s own language, but in connection with forms that the child has not yet acquired. Alternatively, the concept in question may have no clear function in the child’s language, but be important in the structure of other languages, often even in connection with a form parallel to the one the child has linked it to. This flexibility in the way meanings “surface” in the child’s speech — i.e., in the forms over which they exert an observable influence — has interesting cross-linguistic parallels. As Fillmore (1968:3) notes, for example, meanings that have obvious morphemic realizations in one language often show up in other languages as cryptic influences on selective constraints or transformational possibilities.

In sum, the picture that emerges is of a child broadly equipped for language learning. The meaning categories he entertains — either relatively stably, as in the case of persistent overextensions, or more frequently, in the course of selecting among possible words — go beyond the set he will actually need for his own language. Nevertheless, they are still constrained in such a way that they have potential linguistic relevance. These arguments will be illustrated below in connection with particular examples; see also Bowerman (1980) and Clark (1976) for further examples and discussion.

UN—again

An intriguing set of interrelated errors that illustrate processes of both overregularization and competition between related known forms involves the child’s acquisition of productivity with reiterative un-. Much, as noted, beyond that speakers of English have an implicit feel for the covert semantic category associated with un- prefixation, i.e., (reversal of) an act of covering/enclosing/surface-attachment. Although he himself added no empirical evidence to support this claim, we can see that he was right by inspecting patterns of un- usage in children’s speech.

Children start out by learning a number of everyday English verbs prefixed with un- like unmake, unfasten, and unfold, apparently without recognizing that two morphemes are involved. Considerably later — after a year or more — they begin to produce novel verbs with un-. A sure sign that analysis into constituent morphemes has taken place. Some children — Eva, for example — appear to recognize the “right” semantic category from the onset of productivity, as indicated by the fact that most of their coinages involve verbs that fall within the category, e.g.: 1.

1. E: 3:10:2 Ni I have to capture you. (Grabbing R in a game.)

R: Uncapture me! (= release, let loose; as R tries to pull free.)
Other children, however, came to an appreciation of the category more gradually. Christy, for example, initially produced many novel verbs in un- which either directly violated the category, in that they specified the reversal of an act of detachment, uncovering, or moving out (etc.) instead of the converse (cf. examples 3 and perhaps 4 below), or for which the category was simply irrelevant (example 5).

3. C 4:5 (Has asked M why pliers are on table.)
M: I’ve been using them for straightening the wire.
C: And unstraightening it? (= bending it)

4. C 3:9 This is poopy that’s coming out of here. (In tub, showing cup with water spouting out of holes.)
And that’s how to make it unpoopy. (Blocking holes with hand.)

5. C 4:7 (Very angry with M for denying a request.)
C: I hate you! And I’ll never unwhate you or nothing!
M: You’ll never unwhate me?
C: I’ll never like you.

After an extended period of relatively indiscriminate un-prefixation, Christy began increasingly to limit the operation to verbs of "covering, enclosing, and surface-attaching meaning" as in the following:

6. C 5:1 (M working on strap of C’s backpack.)
M: Seems like one of these has been shortened, somehow.
C: Then unshorten it. (= lengthen)

7. C 5:1 I unbended this with [= by] stepping on it. (= straightened; after stepping on a tiny plastic three-dimensional triangular road sign, squashing the angles out of it.)

8. C 5:1 He tightened to the graveyard and unburred her. (Piling ghost story.)

9. C 7:11 I’m gonna unhang it. (Tearing stocking down from fireplace.)

Although Eva and Christy followed different paths in their implicit analyses of the semantic correlates of un- prefixation, they both arrived at an understanding of the covert semantic category associated with the operation, as shown by the restriction of their coinages to verbs of this class (see Bowperman, 1982b, for further examples and discussion). At this point an interesting further development took place. The children began to show evidence, in both substitution errors and related blends, that un-, now firmly associated with what we may call acts of separation (i.e., the reversal of acts of covering, enclosing, and surface-attaching), had come into competition with various other forms that were called for in particular speech contexts. These other forms, which the children had previously used perfectly correctly in such contexts, include both single-word verbs like open that already, by virtue of their lexical meaning, refer to an act of separation, and two-part verbs like take off, that achieve reference to separation with a locative or stative particle. Some examples of early and later redundant blends are given in 10-15 (one nice example from a different child is included, and see also 2 above), and of the replacement of a locative or stative particle by un- in 10-18:

10. C 4:11 Will you unopen this? (Wants D to take lid off styrofoam cooler.)

11. B 4:7 E: (Holding up chain of glued paper strips):
I know how you take these apart. Unsplit them and put ’em on.
M: How do you unsplit them?
E: Like this. (Pulling a link apart.)
Simultaneous classification at two different levels of abstraction is not the usual way of encoding the act in question in Germanic languages that are closely related to English, such as Dutch (see Bowern, 1981). Thus, where English uses *un-* + verb, Dutch may use verb + particle or simply a bare verb, and vice versa, as illustrated in Table 1 (Dutch examples underlined).

Despite the fact that "acts of separation" are divided up into comparable semantic subcategories in these two languages, these subcategories are then distributed among the available formal devices in what seems to be a rather arbitrary way. This suggests a lack of psychological unity specific to the acts sharing a particular formal device (e.g. verbs in *un-* verbs in *off/-out*), and points instead to the semantic coherence of the domain of "acts of separation" as a whole. And this is, of course, exactly what the children's errors, in a different way, also indicate.

The spatial metaphor

Another large body of substitution errors in my data involves the use of a word or phrase conventionally associated with spatial concept to refer to a temporal or static concept. (The converse errors, use of a temporal or static word for a spatial concept, also occurred, but much less frequently; see Bowern, 1978 and 1982c for general discussion).

These errors are particularly interesting because of their relevance to a claim that has been made by many linguists and psychologists: that space is a metaphor for thinking about and communicating nonspatial meanings. Whorf, for example, noted the prevalence in English and related languages of
Table 1: Encoding Acts of Separation: Some comparisons between English and Dutch.

<table>
<thead>
<tr>
<th>Action</th>
<th>Dutch</th>
<th>English</th>
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<tbody>
<tr>
<td>un + V</td>
<td>V particle</td>
<td>Single word</td>
</tr>
<tr>
<td>e.g., off/out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some I unlock</td>
<td>I chip off/ik hak af</td>
<td>I open/</td>
</tr>
<tr>
<td>parallel ik ontaald</td>
<td>I cut out/ik snip uit</td>
<td>ik open</td>
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<tr>
<td>forms</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ik unh Wilk pak uit (i.e., pack out)</td>
<td>ik open</td>
</tr>
<tr>
<td>Some</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cross-over</td>
<td>I unh hook</td>
<td>I skin (e.g., my knee)</td>
</tr>
<tr>
<td></td>
<td>(i.e., hook off/out)</td>
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physical, spatial metaphors as in "I 'grasp' the 'thread' of another's arguments, but if it's 'level' is 'over my head', my attention may 'wander' and 'lose touch' with the 'drift' of it..." (1956:146). Whorf considered the use of space for nonspatial meanings to be language-specific, but other investigators have argued on similar and other linguistic grounds that this metaphor serves as a deep-seated, universal organizing principle of the human mind (e.g., Jakobson, 1975; Lakoff & Johnson, 1986; Tarski, 1976).

Arguments based on linguistic idioms and other structures, although interesting and certainly plausible, do not give fine evidence for cognitive structures in the head of individual speakers. This is because speakers could, in principle, learn to use conventional spatial metaphors as well as other linguistic structures suggesting the metaphorical use of space, without in fact ever "recognizing" the spatial metaphor they entail. What is needed is evidence that spatial metaphors are actively at work in the speaker's head - for example, serving to guide on-line linguistic performance. This is exactly the kind of evidence that word substitution errors can provide.

Consider the following examples:

19. E 3:9 Can I have any reading behind the dinner? (= after. To M, who is fixing dinner; request to be read aloud to.)

20. C 7:6 I don't remember behind those two. (= before. C has just been recalling her last two birthday parties; cannot remember any previous ones.)

21. E 4:10 Today we'll be packing 'cause tomorrow there won't be enough space to pack. (= time. The day before the family is to leave on a trip early in the morning.)

22. C 7:2 Do we have room before we go to bed for another reading? (= time. M has been reading aloud in the evenings; final finished book.)

These utterances all require a very specific temporal preposition or noun. Instead, a parallel word from the spatial domain has been "imported." Such errors were observed only occasionally in Christy's and Eva's speech, although they recurred systematically over a long period of time. Their onset was preceded by a period of many months in which both the needed temporal word and the substituted spatial word had been used correctly as required.

The occurrence of such errors, even only occasionally, gives general grounds for concluding that the child makes an implicit analogy between space and time. But what is the exact cause of the errors? Does the child conceptualize the temporal event in a temporal way, but sometimes accidentally choose a spatial word because semantic links have now been forged between temporal and spatial lexical items? Or does she in fact sometimes conceptualize the event directly in terms of a spatial analogy, and then simply select the spatial word that is appropriate? The answer is not clear in the case of the foregoing examples. There are, however, examples that allow us to infer relatively confidently that the child has conceptualized a temporal event in a thorough-going spatial way. This is because there is no simple one-to-one correspondence between a temporal and a spatial word instead, the spatial metaphor affects the meaning of the entire sentence. For example:

23. C 4:5 [C telling sequence of activities at a birthday party she has just been to:] The balloons is on the other side, after I ate. But there might have been more on the first side. ("On the other side" = after (the eating); "On the first side" = before (the eating).)

24. E 6:9 You know what I don't like, Mom? Friday is covering Saturday and Sunday so I can't have Saturday and Sunday if I don't go through Friday. Another set of related errors involves the verbs put and take. These are commonly associated in sentences of the kinds in question, with acts in which an agent causes an object to undergo a
change of spatial location. But they are used here instead to refer to acts in which an agent brings about a change of state. The called-for verb in such contexts is either make, put, or sometimes a so-called "lexical causative"; these verbs had also been well established previously in the child's speech. The following examples illustrate the genre:

25. C 4/3
I put part of the sleeve blue so I crossed it out with red. (Telling M about mistake in drawing.)

26. E 4/7
I'm not going to put it too long. (Putting cutting pieces of yarn for a doll's hair.)

27. C 4/7
Put it all filled. (= fill it up.) Instructions to M, who is filling C's cup.

28. E 3/9
I'm taking those crucks bigger. (= pulling on cracked peanut shell.)

29. E 6/1
I'm also gonna have to have soapy water 'cause Daddy took it all soapy. (At the end of long list of complaints about having to bathe after C in the same bathtub.)

30. C 3/9
M: Stop unbuttoning me. (= C tries to unbutton one of M's shirt buttons.)

C: I'm not taking you unbuttoned. (= unbuttoning you.)

The lag in the onset of substitution errors in the domain of space-time-state bogs for explanation. Does the analogy between spatial and non-spatial concepts arise in the child's mind only after a period in which the different domains are conceptualized in unrelated ways? If so, does the analogy emerge purely spontaneously, or does it reflect the child's linguistic experience? Adult English has many words with both spatial and nonspatial conventional uses, e.g. go downtown (spatial), go on until 4 o'clock (temporal), go with rage, (stateive). These words, along with various idioms, could in effect continually invite the child to see a connection between space and other domains. Once made, the connection could then begin to "leak" into other aspects of language where it does not belong in conventional usage. This latter explanation would provide an account of the lag between the acquisition of the relevant words and the time at which the errors set in. At present, however, there are no clear grounds for deciding upon this or any other interpretation (see Bowern, 1982c for further discussion and examples).

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Kinds of instruments

For a final illustration of a "hidden meaning", we turn to a set of interrelated errors involving both systematic overextension and, at a later age, epiphenomenal substitutions. These errors differ from the ones discussed earlier in that they do not suggest a semantic kinship between two words per se. Rather, they indicate that the child perceives some similarity in the abstract semantic function of the sentence constituents that follow and are "introduced" by these words.

By way of background, a quick review of what is meant by assigning an "abstract semantic function" to sentence constituents is in order. Before about 1970, children's utterances were described by investigators of language development primarily in terms of the form and arrangement of the words they contained. After this time there was increasing realization that important aspects of the child's linguistic competence were missed unless some "deeper" or "more abstract" level of description was provided (see Bloom, 1976, for seminal arguments). But what should this description look like? Motivated both by theoretical considerations and the need for a convenient descriptive taxonomy, researchers began increasingly to draw, directly or with modifications, upon the set of "case relations" proposed by Fillmore (1968) as needed for the adequate analysis of adult language (e.g. Bowern, 1973; Brown, 1973).

A case relation, or simply case, is defined as the semantic relationship that holds between a noun phrase and the verb with which it is associated. Fillmore's list of candidate cases included, for example, Agentive, "the case of the typically animate perceived instigator of the action identified by the verb", and Instrumental, "the case of the inanimate force or object causally involved in the action or state identified by the verb" (Fillmore, 1968: 24). The case relationship holding between a noun phrase and a verb is in principle independent of the syntactic structure of the sentence; for example, May functions as Agentive in both Mary gave John a present and John received a present from Mary, despite striking differences in its syntactic treatment. It is interesting to note that in making arguments for the necessity of a notion of case, Fillmore explicitly invoked Whorf and the concept of "covert categories". Specifically, he argued that even though many languages, including English, do not mark case relations overtly and consistently with a set of case endings or other devices, these relations nevertheless have a "reality" that is manifested through various subtle grammatical constraints.

Fillmore's arguments, along with his list of candidate cases, had considerable intuitive appeal. A major problem, however, was that it proved difficult to justify any particular set of case
relations and their precise definitions over other potential
taxonomies. Fillmore himself (1971) discussed various interpretive
difficulties with respect to adult language. For child language the
dilemma is even more acute, since on psychological grounds a number of
possible breakdowns are plausible (see Boweman, 1976; Brown,
1973) and there may be few or no grammatical markers or operations
to serve as guides. In consequence, despite over a decade of
research and the introduction of various procedures for determining
whether young children indeed operate with (for example) a category of
Agent (e.g., Braine, 1976; Golinkoff, 1981), the problem of
psychological reality has never been satisfactorily resolved.

I do not intend here to tackle the issue of the psychological
reality of case relations in child language as a whole. Rather, I
would like to show how data from a rather unexpected source
potentially be brought to bear on the problem. Specifically, the
argument will be that certain kinds of errors support a particular
hypothesis of Fillmore’s concerning the mapping of the instrumental
case.

Fillmore’s hypothesis. The realizations of the Instrumental
case that are most familiar to us from Fillmore’s 1968 treatment
involve a noun phrase referring to a concrete object used by an
Agent in bringing about an action. If the Agent is mentioned, the
Instrument is introduced by the preposition with, as in *Mary ate
her cereal with a silver spoon.* Jim broke the window with a ball,
and George opened the door with his spare key. Some verbal permuta-
tions of the Agent, in which case the Instrument, if mentioned,
will become the sentence subject, as in *A ball broke the window.*

In his 1971 discussion of “Some problems for case grammar”,
Fillmore extended his interpretation of Instrument. This move was
now seen to include not only noun phrases referring to concrete
objects and forces such as “wind” or “air pollution”, but also
clauses referring to an entire action or event seen as instrumental
in bringing about some second action or event. In the underlying
structure proposed by Fillmore for sentences with such
constituents, the clause specifying the causing event and the
clauses specifying the resulting event are both embedded into a
higher predication suggested by the word cause, as manifestations of
the Instrumental and Goal cases, respectively; for example *I hit the
ball* [CAUSE [the ball went over the fence] [Goal [She
tapped her fingers on the desk]]]. CAUSE [I hit the
irritated] [Goal]. Syntactic configurations of this general type are
related to several different surface structures, according to
Fillmore’s analysis, e.g., *I hit the ball and that made it go over
the fence;* I hit the ball over the fence, I made the ball go over
the fence by hitting it; Her tapping her fingers on the desk.

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Fillmore’s proposal is, most basically, a claim about
cognitive organization. Do speakers indeed entertain, as the
proposal implies, a relational category that is broad and abstract
enough to encompass not only spoons, keys, and possibly less
tangible entities like “wind” that play a causal role in bringing
something about, but also causally-involved actions or events in
their entirety? There is evidence, in the form of certain errors
involving prepositions, that they indeed do, and from a
surprisingly young age.

With and by. In Christy’s and Eva’s speech, as in that of
other English-speaking children, the first realizations of the
Instrumental case were simple nouns referring to body parts
and common tools such as eating utensils. At first these were
unmarked, as in *eat fork.* By age two or before, with begun to
introduce the noun, e.g., *Christy:* I drink it with mouth I eat
chocolate with a spoon. (Eva: How come out with knife? I feel
it. Mommy, with my hands.

A long time passed – about a year for Eva and a year and a
half for Christy – before the children began to produce sentences in
which causing action is explicitly mentioned in a separate
clause. Interestingly, a number of sentence patterns of this type
emerged more or less simultaneously in each child’s speech,
suggesting that an analysis which, like Fillmore’s, formally
captures the conceptual similarity among such sentences is on the
right track (see Boweman, 1977, 1982a).

More important for present purposes, however, is Fillmore’s
claim that sentences of this latter type are conceptually related
to simpler ones in which an object used in performing an action is
specified. Is there evidence for this analysis? There is: when
the children first began to produce sentences with by-clauses, both
children for some time consistently used only with instead. For
example:

31. C 3:6 Anyway, you made me cry with putting that
up there. (After M had put a desired object
out of reach, causing C to cry.)

32. C 3:7 I’ll clean up the yard with rolling it [=
shovel] up in little balls. (C describing
how she intends to clear the yard of snow.)

33. E 2:8 I pinched my finger with taking this off.
(Showing M a ring.)

34. E 3:1 I’m making a rag with cutting little lines.
(As E cuts fringe into end of rectangular
piece of paper.)
COVERT CONCEPTUAL STRUCTURES IN CHILDREN’S LANGUAGE

Instrumental Case

<table>
<thead>
<tr>
<th>Age</th>
<th>Noun phrase: with + NP</th>
<th>Clause: by + V-ing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:0</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>2:4</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>2:8</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>3:0</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>3:4</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>3:8</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>4:0</td>
<td>with</td>
<td>by</td>
</tr>
<tr>
<td>4:4</td>
<td>by</td>
<td></td>
</tr>
</tbody>
</table>

CHRISTY (Open the door with a key) (Open the door by kicking it)

EVA

<table>
<thead>
<tr>
<th>Age</th>
<th>with</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:8</td>
<td>with</td>
</tr>
<tr>
<td>2:0</td>
<td>with</td>
</tr>
<tr>
<td>2:2</td>
<td>with</td>
</tr>
<tr>
<td>2:6</td>
<td>with</td>
</tr>
<tr>
<td>2:8</td>
<td>with</td>
</tr>
<tr>
<td>3:0</td>
<td>with</td>
</tr>
</tbody>
</table>

Figure 1: Usage of with and by over time for two children.

The pattern of preposition usage over time that I have just described can be represented schematically as in Figure 1. In the upper left-hand corner of each child’s panel is shown the age of onset of with to correctly mark nouns specifying object instruments. The consistent overextension of with to by-clauses, a year or more later, is shown by the arrow connecting this first with to the with in the right-hand column. The slightly later onset of the by required in such contexts is shown just below this second with. Finally, the still later onset of occasional errors in which object instruments are marked with by is shown at the bottom of the left column, at the receiving end of an arrow connecting it to the inferred source of interference from by-clauses.

Where does the child’s equation of objects used instrumentally and causally-involved actions come from? It has been suggested to me that it might be introduced to the child by experience with language itself. Even though instrumental noun phrases and instrumental clauses are conventionally marked in English by different prepositions when they occur in positive sentence constituents, in negative sentence constituents they both are introduced by without, as in I ate my cereal without a spoon and I
made you cry without even touching you. It is difficult to rule
this explanation out completely on the basis of my present data,
but I think it is unlikely. This is because at the time that
errors involving in by-clauses first appeared, and for some
time thereafter, the child produced no negative by-clauses at all.
Without in simple instrumental phrases had occurred very
occasionally but was not yet well established. In sum, there is no
evidence that the child had the necessary knowledge of a shared
marker.

If language does not suggest to the English-speaking child the
conceptual similarity between objects used instrumentally and
causally-involved actions, then it is an equivalence that
arise in the child spontaneously. If so, it is nevertheless a
linguistically useful equivalence, since many languages do
explicitly categorize instrumental objects together with
instrumental actions/events by the use of the same case ending,
and even the English-speaking child will eventually find the
equivalence helpful in making sense of the use of without in
superficially different kinds of contexts.

CONCLUSIONS

Recent research on language as a developing symbolic system
has concentrated heavily on the question of how children come to
use linguistic entities to represent nonlinguistic entities. In
this chapter I have argued that the focus on this issue, essential
as it is, has tended to encourage interest in the more conscious,
"surfacy", communication-oriented aspects of symbolic processes at
the expense of more unconscious, covert processes that may
be linked only very indirectly to communicative activity. And yet
these latter processes, perhaps precisely because they are
relatively far removed from the immediate, everyday concerns of
conveying messages, may offer the most profitable hunting grounds
for scholars interested in uncovering the most basic conceptual
organizing principles of the human mind - principles that can be
expected to underlie not only language but many other sorts of
symbolic activities as well.

In this chapter I have concentrated on a particularly rich
source of clues to subterranean conceptual processes - children's
occasional or consistent speech errors. And I believe that this is a
source we have barely begun to tap. But of course it is not the
only way to exploit child language in looking for backgrounded
meaning categories - experimental approaches as well as those in
which analyzing spontaneous speech data can also yield valuable
information. Taken together, studies of child language that
explore the ways in which children categorize and structure their
experiences for purposes of language use have much potential for
revealing elusive aspects of the human symbolic capacity.
ACKNOWLEDGEMENT

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SECOND LANGUAGE ACQUISITION:

INTRODUCTION

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Though practical interest in the problems of second language acquisition and use has a lengthy history (see Kelly, 1969, for a survey), the emergence of an independent and identifiable body of "pure" theory and research in the area occurred only in the late 1960's and early 70's. Since that time research in the field has grown tremendously in both breadth and depth. A wide variety of cognitive and affective factors have been identified as conducive to or inhibitive of second language acquisition, the course of acquisition has been described (if not explained) in certain limited cases and compared with that of first language acquisition and to the pidginization of standard languages, and a variety of theories and insights - some of the latter quite genuine - have arisen.

The most central questions in the field, however, concern the role of biological maturation and its influence on the capacity for the acquisition of any language - whether a first or a second. Great impetus was given to the investigation of biological factors in second language acquisition by Lenneberg's hypothesis (Lenneberg, 1967) that there is a "critical period" for language acquisition akin to imprinting in certain species of birds as investigated most prominently by Konrad Lorenz. Lenneberg further related the end of the critical period to the completion of lateralization of brain function at approximately the age of puberty, though this specific claim is highly controversial (see, e.g. Krashen, 1973).

During this same period, a new and more restrictive (hence, empirically more adequate) theory of the syntax of natural languages has emerged in the work of Chomsky and his colleagues (see, e.g. Chomsky, 1981). Though research on second language