5. The Emergence of Mediating Language

The mediating role of language involves its capacity to convey knowledge about the world, about other people, about social and cultural interpretations of situations and events, and about imagined possibilities, myths, mythologies and theories. In this role, language serves a different function than that of regulating interactions between people. Halliday (1975) differentiated between the *mathetic* and *pragmatic* functions of language use in the early phases of acquiring conventional linguistic forms. This contrast that captures this distinction as it emerges in development.

A major point to be brought out here is that language must be well developed in order to serve the full range of its mediating functions. The child does not immediately make a leap from pre-linguistic to linguistic, or from sensorimotor to representational, or any of the other stage changes that have been proposed as explanations of developments between 1 and 3 years. The transition is long and composed of a complexity of developments in different parts of the social-linguistic-cognitive system. At each point the transitions have been traced most completely in the linguistic system itself, documenting developments in an expanding meaning system, an expanding grammatical system, and an expanding pragmatic system. The connection of these with developments in social and cognitive competencies has been less well worked out. In this chapter some of the major developments that take place to establish language as a mediating system for an individual child are discussed. Succeeding chapters consider the language functions for the preschool child as a mediating system in different representational formats and in different knowledge domains.

**Representation in Language**

The unique contribution of human language is that it serves to communicate representations of states of affairs between individuals, transferring
complex information from one mind to another, structured in such a way that its transference maintains to an important degree the intended form and content of the original.

The development of this dual function as both an internal (cognitive) and an external (communicative) representational system is a critical turning point in human history and in human ontogeny. This bidirectional function has two interrelated roles, that of speaker/messenger and that of listener/interpreter. That is to say, each participant in a communicative situation uses an external linguistic representation to relate to an internal mental representation. In the case of the speaker, the mental representation (MREP) must be transformed into a language format that imperfectly represents its intention (imperfectly because there is no one-to-one mapping between thought – or for that matter, the world – and language). In the case of the listener, the external linguistic representation (LREP) must be internalized, interpreted, and transformed into an MREP that again, and doubly, imperfectly represents the intention of the speaker. To the imperfection of the speaker’s LREP is added the imperfection of the transformation of the linguistic format into the listener’s knowledge or belief (MREP) system. Such is the fallible communication system that we rely on to transfer meaning from one person to another. This is the situation for adults, what can children make of it?

Consider in this regard a well-worn example utterance:

(1) The cat is on the mat.

Interpret this utterance from, let us imagine, a parent, a child must understand at least the words “cat,” meaning certain domestic animals of the child’s acquaintance, and “mat,” meaning a kind of fabric construction, usually found on the floor, perhaps in the bathroom, or in front of the front door; and probably the preposition “on” as indicating a location in top of and not beside, behind, in front of, or underneath. If the child in view of a well-known cat that is in fact sitting on something understood to be a mat, this utterance may be interpreted to say what is obvious, perhaps to draw attention to it. But suppose this is not the case, and the utterance is spoken out of context. It might be imagined that the child would conjure up an image as many adults do, of a cat curled up in front of a fireplace resting on a bit of rug. This picture, however, requires a good bit more conventional cultural knowledge than our hypothetical 2-year-old possesses. Suppose the child does not share living space with a particular cat and is not viewing a book about cats, and her only acquaintance with mats is in the bathroom. Will she then go to the
bathroom to look for the strange visitor? More likely she will judge that the sentence just uttered is one more of the many things said around her that are irrelevant to her pursuits, whatever they are.

In general, 2- and 3-year-olds attend to language that informs them about their current activities, provides wanted information, or directs them in familiar actions, and not to random overheard utterances. Building up knowledge from what is said is a highly complex skill that calls on, not just syntax and lexicon, but modes of relating to the experiential knowledge base, and ways of adding to that base new information arriving in the form of discourse about an unfamiliar topic. The kind of representation that is involved takes language in the form of utterance in discourse, relates these to established knowledge about the world derived from experience or from prior linguistic representations — and constructs a new mental model conforming to what is said and meant. This process can of course go awry in many directions for many reasons beyond those of inadequate linguistic knowledge, but linguistic competence is clearly a first step toward this achievement.

What Makes Language Different?

Language represents states of affairs in special ways. It is based on special kinds of categories (grammar), on linear sequences of items (words), on hierarchical orders of constituent parts, and on special ways of referring within and outside of text, among many other things. To represent something in linguistic form is to make choices about what aspects to represent and how to present them. Events do not simply present themselves as linguistically codable. Any event might be expressed in innumerable ways (e.g., “Muffy is sleeping on your favorite rug again,” “That feline is shedding fur all over the mat I just vacuumed” etc.). The visible world does not appear (to the untutored eye) as separable animate objects undertaking discrete actions that eventually visibly different states, as the structure of sentences implies. Discourse units combined into linear propositions are special characteristic of spoken language, not of human thought in general. There is the thought/language mapping problem for the child to solve.

The linear sequence of elements in language is necessary to representations presented in the oral medium. However, there is an important payoff for mental functioning from this system of discrete units linearly arranged: words and sentences slow down, break up, and object thoughts that might otherwise be fleeting and inexpressible, chaotic...
sely complexive. Linguistic forms and structures thus make it feasible to manipulate mentally the separate parts of a concept or idea that in unarticulated and structured form that language imposes, the idea becomes only more manageable but more memorable. Thus the linguistic form of representation reveals new potentials not evident or accessible prior to forms of mental representation. For the child, then, acquiring language requires effort, but the achievement results in a continuously shifting new perspective together with new cognitive and communicative potentialities.

**Language Competence**

An important question to ask then is, "When do these potentials begin to open up in childhood?" To enter into the full potential offered by human language and culture the child must acquire the complexities of grammar that make extended discourse possible. It is not until the child is capable of following an extended dialogue and constructing parts of dialogue that mesh with those of the partner that the child can actually be integrated into the language/culture complex. A special problem for the beginning language user is the rapidity with which information in language is presented. Rapid-fire speech may simply pass the young language user by, so that only the slow and short utterances are processed at a "Motherese" - the special register used by adults speaking slowly and distinctly to young language learners - ensures that some messages through.

We know, both from common observation and scholarly research, that by about 4 years of age most children have mastered basic structures of sentence grammar, have acquired a vocabulary of a few thousand words, speak sufficiently articulately to be understood by others, and have mastered some basic pragmatic structures such as the turns to ask questions and how to address adults and peers. But there is much more to be learned. The most important outcome of language acquisition in childhood is mastery of language at a level sufficient to give the varied cognitive and communicative representational functions possible for adult language users. These functions include telling stories, making plans, reading novels, gossiping, studying history, reading the newspaper, following written instructions, and formulating formal and informal arguments. These activities are possible because language, in its original oral and derived written forms, has become a functional
mode of both cognitive and communicative representations for individual language users.

Language Functions

Different perspectives on these representational language functions both developing and mature forms are found in the sociolinguistic and philosophical literatures. For example, Taylor (1985) proposes that language performs three critical and unique functions: (1) It explicated thoughts, bringing them into explicit awareness; (2) it puts matters into public space where a thought, an idea, a feeling can be shared between people; and (3) it formulates our ideas about important human concepts that are otherwise inaccessible, such as justice and truth. The first of these is recognizable as the explicitation function of language, a goal in formal discourse and often a by-product in informal discourse. As noted previously, language slows down and stabilizes what are sometimes fleeting thoughts, thus making them accessible to conscious reflection and reformulation. The conventional symbolic medium (common to mimetic symbolism as well) not only stabilizes, but enforces a (more or less) common understanding of what has been brought into awareness. This commonality makes the second function, sharing of ideas and feelings, possible. The possibility of such sharing emerges for the child only with the acquisition of language or some other symbolic form. The third function involves the actual construction in language of ideas that are not thinkable in other forms, including concepts of morality, mythology, religion, science, and the arts. Children begin to reach for these ideas in early childhood, as soon as they acquire the words, but full grasp of their meanings is a lifelong process.

Halliday’s (1975) six basic functions of early speech map quite closely onto those outlined by Jakobson (1960) as basic linguistic functions (emotive, conative, phatic, referential, poetic, and metalinguial). Halliday divided these functions into Pragmatic and Mathetic, and he proposed that children began with Pragmatic functions. Pragmatic functions include Instrumental, Regulatory, and Interactive, while Mathetic (functions related to knowing or learning) include Personal, Imaginative, and Heuristic. Examples of each and of the Informative function, which Halliday suggested emerges later—toward the end of the second year—are shown in Table 5.1, drawn from my study of crib dialogues and monologues from the child Emily during her second and third years (Nelson 1989c, 1990).
Table 5.1. Halliday’s functions of beginning language

<table>
<thead>
<tr>
<th>Function</th>
<th>Example*</th>
</tr>
</thead>
<tbody>
<tr>
<td>egmatic</td>
<td>I need more juice (request)</td>
</tr>
<tr>
<td>regulatary</td>
<td>Put blanket on (directing parent)</td>
</tr>
<tr>
<td>practave</td>
<td>Night-night (response to parent leaving)</td>
</tr>
<tr>
<td>idethic</td>
<td>I standing up (describing own action)</td>
</tr>
<tr>
<td>personal</td>
<td>Carl playing ring a rosie (comment on picture)</td>
</tr>
<tr>
<td>descriptic</td>
<td>Mommy tired, mommy go nap (repeating parent explanation)</td>
</tr>
<tr>
<td>formative</td>
<td>[Toy Mouse is] In Daddy’s room (providing information from own memory)</td>
</tr>
</tbody>
</table>

*From Emily at 2 years (Nelson, 1990). Reprinted from J. Miller (ed.), Research on Language Disorders, with permission of the publisher.

Halliday suggested that early in development each utterance encodes one function, but in mature language each utterance expresses both personal (communicative) and ideational (cognitive) functions, as an intertextual function, relating the individual utterance to other elements of the discourse. He suggested further that the Pragmatic function of early child language map onto (in some sense) the Interpersonal, whereas the Mathetic map onto the mature Ideational, although of course specific functions addressed by an utterance are quite variable and complex than those expressed by the beginning language learner. In this perspective the Informational function, which first appeared in data from his own son at about 18 months of age, expresses both the personal – in that there is someone to whom information is being directed – and the Ideational, the information being conveyed.

Halliday’s (1975) theory explicitly claims that the Informative function (language to inform someone about something that that person is not already know) develops late, toward the end of the second year, and that it develops in conjunction with the development of grammar and entering into dialogue with others. Halliday puts the emphasis on dialogue and the structures that form a coherent text, highlighting the point when conversation between parent and child on a topic sustained over more than one turn becomes possible. This is an important point for the child into the full meaning potential of the culture. What we lack is a description of how the child moves from this set of primitive functions to the mature set of complex uses of language. Be-
tween 3 and 5 years most children become much more adept at all the uses of extended discourse. By 5 years they can retell a story, maintaining its sequential and causal structure, although in skeletal form. Their memories for events are more elaborated, and they can begin to use language for planning and explaining to others, as well as to follow the directions, plans, and explanations that they are given. They use language creatively in setting up and carrying through narrative play themes (Sachs, Goldman, & Chaille, 1984). These capabilities indicate that they have developed basic skills in using linguistic presentations to build novel representations that are different from those they have constructed from their own direct experience, and that they are able to move back and forth between their own representations, the linguistic representation of those representations, and the linguistic representations of other people, whose representation of an event may differ from their own.

Halliday’s theory is explicitly social-interactional. The functions he attributes to the child’s early expressions are those that relate self to other. Vygotsky’s (1986) interpretation of private speech (speech for self—what Piaget termed “egocentric speech”) viewed the use of language in monologue as a development from social speech toward inner speech, thinking in speech, or what here has been termed “cognitive uses of LREPs.” The private speech literature has been primarily concerned with the use of speech in the preschool period for self-regulation of action (Luria, 1980; Diaz & Berk, 1992; Kohlberg, Yaeger, & Hjelvholm, 1968). But Vygotsky’s description of inner speech clearly implies more than this single regulatory function. As the study of monologic prespeech has revealed (Nelson, 1989c), talk to self in the early childhood years appears to set a number of cognitive representational functions. It is interesting that incorporation of other voices is among the earliest of these. Thus, interiorization of speech-encoded representations appears to be what Vygotsky suggested, an important process in moving toward the functional complex of the language potential.

Beyond Basic Functions. The achievement of mediating language functions requires the acquisition of skills for composing and interpreting extended discourse, and for retrieving from discourse presentations a representation of a previously unknown event, narrative, theory, or other knowledge form that the producer intended to impart. As everyone who has attempted, successfully or not, to learn a second (or first) language knows, this level of accomplishment takes extensive practice...
Emergence of Mediating Language

...discourse genres — conversation, narrative, explanation — both written and oral, usually over several years of intensive exposure. Part of the development involves memory and conceptualization, which are also developing during the early childhood years (see Chapters 6 and 8), but these must be tuned to the language mode. Thinking in a language differs from thinking in images (or in some neutral code), and differs from language as bilingual and multilingual individuals testify.

This high level of cognitive and communicative functioning with language is the concern in this work. As is the case for those who are second or third language to this degree of competence, its achievement by first language learners takes years of practice in a community of like speakers. Although children learn their first language what is often characterized as amazing speed and efficiency, it is at least two years after the beginnings of productive speech before most children have acquired reasonably complex grammar at a level sufficient to carry on a connected conversation (Bloom, 1991a). It is at least another two years before the average child can begin to represent complex states of affairs in language and thus engage in extended discourse. Thus the milestone for achievement of this milestone is tentatively set at about four years of age, and the skills involved continue to develop further for several years.

Engage in the functions of language at the level of preliterate oral competence with language attained by a reasonably competent 5-year-old ready for school lessons, involves many skills. On the cognitive level, a level of conceptual knowledge encompassing aspects of the common culture, such as knowledge of plants and animals, tools and machines, numbers, space, and time is necessary, as well as the skill of finding to verbal explanations and stories extending over at least several minutes, and remembering critical parts of these. Conversation with peers and adults, respecting turn-taking conventions and topic extension by playing with others in fantasy dramas or games, participating in formal and informal groups of different kinds are all important preparatory specific linguistic skills include developing a vocabulary of about 200 words or more, mastering both sentence and discourse grammar, understanding the pragmatics of language necessary to interpret and use common usages of the child's social group and community.

Regrettably, there is little in the language literature that focuses directly on the issue of the achievement of these integrated skills, although many of them have been considered separately. Much of the research on language in the preschool years is focused on "preliterate" accompli...
ments, concerned primarily with print. To set the stage for a more tailed consideration of some of these achievements, a proposed quence of representational levels in language is sketched next.

Levels of Representing with Language

It is proposed here that language as a representational medium develops through a sequence of stages. Representation is used in the two senses that were introduced earlier: (external) representation for others and (internal) representation for self (Miller, 1990). The general thesis is that these two faces of representation stand in a dynamic dialogic relationship such that development in one leads to development in the other in continuous chaining process. The theoretical model is conceived as operating on four successive levels that make possible the use of language in cognitive functions in different increasingly complex ways. As before, the internal mental representation or mental models will be referred to as “MREPS,” while the external linguistic representation (of self or others) will be referred to as “LREPS.”

Level 1: Undifferentiated

At this level (introduced in Chapter 4) the MREP is based solely on direct experience. Language forms experienced in specific situations are entered into the MREPs of those situations, thereby taking on meaning within them, and can be used productively within them. However, the form and content of the MREP is resistant to influence or input from another source but direct experience. This level is characteristic of the early stages of language acquisition, up to about 2 years, when grammar and dialogue begin to develop.

Language forms used within events that the child experiences may be learned and used to indicate any part of that event or the event as a whole. During this early period children begin to narrow their word meanings to the size and content implicated in the references used around them, extracting them from event contexts and generalizing to new instances of the same type, building on the connections that exist in the mental model as examples in Chapter 4 demonstrated. Nonetheless, the words learned remain tied to their world models and do not form systems of their own. The models may incorporate Donald’s social-mimetic representation as well as basic personally organized event schemes. They are thus already social and symbolic but not truly linguistic.
Transformation

marks the beginning of the real communicative-cognitive exchange.

6 Halliday (1975) recognized this as the emergence of the informative function of language, which he dated to the second year (see previous section). But the MREP itself is not open to input from any but direct experience. The ability to form an underlying representation into a verbal message effectively evolves over time, becoming more complex as the necessary language develops. This level makes possible the beginning of the use of language to exchange talk about the past, the anticipated future and the (pretended), as well as the present ongoing activity. The child can ask another’s question or comment regarding her own present or her past experience and respond contingently, but she does not adjust her responses in response.

Opening to Language

At this level the child can interpret another person’s LREP in ongoing use and can enter parts of it into her own prior or present MREP of the event, which is now composed of a mixture of event representa-
tional mimesis, and language forms embedded therein. It is possible that the LREP may become confused with her own MREP, and parts of her’s presentation may thereby enter into her own at this point. This constraint exists because the basic event representational system support two versions of the same event at the same time. This does not apply to the dual representation of a component of the event, for example, a child at this stage may remember that something is present at the beginning of an event has disappeared.

Cognitive prerequisites for this level include the capacity for demand extended extraction of, and memory for, patterned information. The language prerequisites include the acquisition of grammatical and lexical items that make interpretation of connected discourse possible. These forms (e.g., temporal and causal language, intratextual tense) have been extensively studied and found to undergo a steady development, lasting well into the school years, indicating that
their organization as an integrated system is a prolonged process, not completed in early childhood. The child must experience presentations of extended discourse in order to develop the system. Stories, memories, and in general talk about the child’s own experience – past, present, and future – are the major ways that children are given practice with these functions, at home and in preschools and schools.

Level 4: Language Modeling

At this level, incorporating the verbal LREP of a novel reality from another person (something that the child has no representation of from her own experience) into a new MREP begins to become possible. This implies that the child now has the capacity to construct enduring representations in language in her own mind. Note the distinction between a temporary language representation in the “mental space” that enables an interpretation of a linguistic LREP in terms of the MREP (level 3), and the maintenance of an internal linguistically formulated LMREP (level 4). The difference is roughly that of short-term (operational) memory and long-term semantic memory. Gradual improvement in this ability, involving increasingly complex and lengthy constructions, can be expected. At this point, the child is aware of the difference between her own MREP and that of someone else and will not confuse the source of her MREP. Two contrasting MREPs or possible views of the same situation may be maintained simultaneously. At least one of these must be – and possibly both will be – in linguistic form. It is the existence of dual levels of representation, event/mimetic/imagic and verbal – that makes comparison possible.

At this point, then, children will have developed basic skills in using linguistic LREPs to build novel MREPs that are different from those they have constructed from their own direct experience, and they will begin to move back and forth between their own basic event MREPs, linguistic LREPs of those representations, and the linguistic LREPs of other people, whose representation of an event may differ from their own. These developments have important implications for cognitive functioning during the preschool years, implications that will be further considered in later chapters.

Figure 5.1 represents the interactive progression of these representational skills in graphic form. On the right-hand side of this diagram, the parental figure [represented as a hybrid mind in Donald’s (1991) model] consisting of simultaneous MREPs in event, mimetic, and linguistic forms. On the left-hand side is the developing child mind, equipped for
Figure 5.1. Development of Representational Levels. Note: ERS = event representation system; MRS = mimetic representation system; LRS = language representation system; Hybrid = mixed representation system in mature mind.
with event structures (ERS) and mimetic structures (MRS), as described in the previous chapters, which come to embed words within them. At the third stage words and grammar develop their own complex systems functioning to support transformation from ERS and MRS MREP's in language LREP's, and at the fourth stage language becomes an irre- presenting medium. Movement between stages is supported by the increas- ingly elaborate and complex use of language in communicative exchanges, shown in the middle of the diagram.

Figure 5.1 incorporates the supposition that whereas at first child produce words and more complete utterances to express their prelinguistic MREP's and interpret parents' words within this system, parent produce and interpret from a different mental representational complex including a long history of representing in as well as through language. Thus parent and child are operating with different mental represen- tations of the same represented reality. In particular, the parent has a multilayered culturally and historically informed conception of what activity parent and child are engaged in, whereas the child's MREP is confined to the event as experienced. This asymmetry is in fact the core to the developments outlined. Figure 5.1 also conveys that grammar (language systems of all kinds) is not the language MREP itself, but a necessary tool prerequisite for interpreting and mentally representing through language. As shown here, words, as the basic carriers of mean- ing, are the mediators between the more basic representation system and the linguistic one.

Note that this scheme puts equal emphasis on the child's representations and expressions and on the social interactions that provide context and the impetus for the move to the next level. This dia- process is considered again in the last section of this chapter.

Words and Meanings

The beginnings of the entry into language – acquisition of first words and early multiword constructions – were described in Chapter. The problem of word learning is sometimes discussed as though it begins and ends in the early years of life, but of course it is one component of the linguistic system that continues to develop, acquiring new form and new meanings throughout life. It is in fact the key to the development all cultural knowledge domains. Therefore, while recognizing the the- anical problem of word meaning facing the beginning first language learner, we must also recognize that a theory of word meaning a
must span the limited cognitive, social, and linguistic capacities of
cy to the most sophisticated knowledge structures of mature adult-
Implicit in many current proposals regarding word learning in
cldhood is the assumption that different processes apply at that
than at later stages. However, the present proposal is that we can
understand the acquisition of words and their meanings if we con-
the problem as continuous across the lifespan.

d proposal grows out of the experiential system view on which the
all theoretical framework of this book is based. It is at odds with a
rigorous set out by a number of writers (e.g., Markman, 1987,
Golinkoff, Mervis, & Hirsh-Pasek, 1994) that the young child is in
al need of “constraints,” “rules,” or “principles” that can be applied
od-learning situations to decode the meaning of a novel word.
proposals are based in formal linguistic or cognitive theories that
formulated in terms of rules and principles; thus the child is
as needing to acquire the right rule to apply to a novel word. But as
ed by many scholars (e.g., Anderson & Nagy, 1989; Johnson-Laird
McNamara & Miller, 1989; Miller, 1990), word meanings are com-
nd multilayered, and are acquired partially and fallibly over time
experiencing their use in different contexts (Sternberg & Powell,
); a process consistent with the developmental view espoused here.
view has been interpreted as one that rests language acquisition on
interaction (Behrend, 1994), reducing a complex product to one
ge of causation in an either/or contrast (either the child has internal
straints or principles or the child relies on social learning). The dia-
system view is far more complex, relying on the child’s cognitive,
, and knowledge structures, as well as her increasing command of
age and its lexical organization and her experience of words in
social discourse contexts. Indeed, it is this complexity that makes
achievement of meaning, even of some seemingly very simple
ods, so prolonged and uncertain, as the following discussion lays out
more detail.

From about 18 to 20 months of age children begin acquiring words at a
rate, so that by 6 years of age they have accumulated somewhere
between 6,000 and 14,000 lexical items (depending on different esti-
ates). These estimates yield a rate of about 4 to 10 new words a day,
suggesting a powerful engine at work. In light of this impressive ac-
complishment, many researchers have searched for the mechanism and
have identified a process of “fast mapping,” which involves assigning
words to evident referents on first encounter. Such assignments may be
off-track for various reasons, yet a striking characteristic of children's acquisition of words is that they tend to be used in appropriate sentential and extralinguistic contexts. This is not to say that children never misuse words – their errors often strike us as amusing. Nonetheless, on the whole both the grammar and the semantics/pragmatics tend to be in the right court.

Paradoxically, when children are tested for understanding of specific words, or when they are pressed by psychologist interviewers, the results often show that they lack an understanding of critical components of the meaning of common words. For example, preschool children often insist that "animal" refers to groups of different animals and not any given instance of animal. Or they may respond similarly to both "before" and "after," to "same" and "different," or to "more" and "less." They may seem to treat "because" as though it means "so," and "tall" as though it means "big." Therefore, a major puzzle is how they can be right in production and so fallible in comprehension. It appears the "fast mapping" may be a weak mechanism at best. Moreover, an explanatory mechanism it stops short, providing only an association between a form and something encountered in the same context, leaving meaning to be constructed in some way as yet unknown.

A classical view of word learning based on Augustine (1950/397) is similar to the fast mapping proposal: "When they [my elders] named a thing, and as they spoke turned towards it, I saw and remembered. For they called what they would point out, by the name they uttered" (p. 394). Many theorists since Augustine stated his case 1600 years ago have endorsed, more or less, his description of how children learn to speak. This process implies an "ostension" paradigm wherein the adult points to something and names it, causing the child to acquire the word (Brown 1958b; Quine 1960; Macnamara 1982; Markman 1987). Recently, however, psychologists, drawing on Quine (1960) and Wittgenstein (1953), have recognized the weakness of this paradigm. Quine (1960) drew attention to the problems in the following way: How can a linguist in an alien world who observes a native speaker uttering "gavagai" know for certain that "gavagai" means "rabbit"? There are numerous other referential possibilities that Quine and others have pointed out: "gavagai" might mean rabbit running (or just running), rabbit in the color brown, rabbit ear (or ear in general) or, more exotically, "stages or brief temporal segments of rabbits" or "all and sundry attached parts of rabbits" or the fusion of all rabbits – that single thing.
continuous portion of the spatiotemporal world that consists of rabbits (pp. 51–52). It seems obvious that the ostension paradigm on its own cannot solve the word-learning problem.

The ostension paradigm works, if at all, for object labels, and traditionally it has been assumed that these are what the child begins with at least Chapter 4 for counterevidence to this assumption. Recent accounts explicitly assume that children beginning language learn primarily nouns and make the default assumption that “words refer to whole objects” (Markman, 1991). From the perspective taken here, however, lexical acquisition problem viewed in the Quinean mode is misspecified, and the solutions proposed are inadequate to the real problem of word learning in early childhood, as well as in later life. The ostension paradigm on which the analysis is based is limited to a subset of words, to a limited period of developmental time, and to a single aspect of the multifaceted meaning of words (reference).

Emphasis on noun learning in the literature on lexical acquisition in childhood leaves the superficial impression that the only words parents and children use together during the preschool years, and the only words that children learn, are those referring to objects and object hierarchies (superordinate and subordinate). However, proper nouns form the largest grammatical class of words acquired by young children – and of words used in the language – they are not the rarity of words learned. Other word types include action verbs, and adjectives, prepositions, pronouns, and a miscellaneous set of often classified words (such as “thank you” and “okay”). Equally important is the fact that not all nouns – including those learned by young children – refer to objects. English grammar makes a distinction between count nouns and mass nouns, the latter usually but not always referring to substances rather than discrete items. But both kinds of nouns can refer to a variety of other ontological types, for example, locations (e.g., “park,” “kitchen”), events (“lunch,” “party”), times of day (“morning,” “week”), and natural phenomena (“rain,” “sun”). (All examples are from vocabularies of children under 2 years.)

In addition, words do not come identified as noun or verb; some refer to actions as well as objects in the same form, and others refer to actions in both verb and noun forms (Nelson, 1995). An instance is the former is the word “drink” which is often used to refer to an entity may be interpreted as an object (e.g., a glass or bottle holding a liquid) or a substance, the liquid itself, and is also used to refer to the act
of consuming the liquid. For example, a mother talking with her 20-
month-old daughter says,

(2) “D’you want a drink?”

and follows within a few minutes with the imperative,

(3) “Allison drink.”

as Allison blows bubbles in the glass rather than drinking. “A drink” is
actually ambiguous in most uses. It uses a count noun quantifier (a) to
apply to what is presumed to be a substance, a liquid, requiring a mass
noun quantifier. In this case the count noun is used in English to encom-
pass the liquid in its container (the quantified).

An example of the action noun/verb problem is taken from a transcrip-
tion of telephone play between child (C) at 18 months and mother (M):

(4) M: Make a little phone call?
      Who are you gonna call?

This sequence is typical of talk between mothers and their 20-month-
old children in the context of the toy telephone, where the word is first used
in a noun phrase (a little phone call) denoting an event and immedi-
ately thereafter as a verb denoting the act of speaking on the phone with
someone.

The implications of these complexities of nouns and “dual-category
words for the child’s semantic and grammatical category development
have been generally ignored (Nelson, 1995; Nelson, Hampson, Kessler
Shaw, 1993). The Augustinian paradigm won’t work for these
words (or for many others), neither will the “whole object” or other
alleged principles now in the literature (e.g., Golinkoff, Mervis,
Hirsh-Pasek, 1994). Rather, children must be working at both very
abstract and very concrete levels simultaneously during language acquisi-
tion. They must be able to interpret the discourse context to assign
in the above example to the action of calling, and also accept both its noun and verb roles. The strategies that children use to untie
these complexities have begun to be identified for both noun
verbs (Tomasello & Olquin, 1993; Olquin & Tomasello, 1993), show
that their strategies rest importantly on the child’s interpretation of
the adult’s discourse intention.

Of course vocabulary acquisition does not end at 2 or even 6 years
of age, and the child’s words are not confined indefinitely to a small
texts. Between 6 years and 18 years many children expand their vocabularies 10-fold from about 10,000 to about 100,000 words according to estimates, which works out to about 20 new words a day, twice as many as the most generous estimates quoted for the preschool years. Observers agree that the vast numbers of words learned during the preschool years must be learned from seeing or hearing them used in context; that is, they are not specifically taught in vocabulary drills. The question this poses is then just that faced by the toddler: How does a learner extract meaning from context? According to Sternberg and K's (1983) analysis, the answer depends upon finding a relevant fit of novel word to one's knowledge base. Indeed, the general principle of relevance to the knowledge base has wide application.


tice

Tyler and Wilson's (1986) analysis (introduced in Chapter 4) of how speaker and listener make sense to each other despite the vagaries of a language they use provides the theoretical framework for this section. They claim that verbal communication between two or more people is made possible because participants assume that what is communicated is relevant to ongoing discourse, to the current context, and the cognitive environments of the communicators. It is suggested that the general problem for the language-learning child is greatly different from that of any speaker and listener— it is to interpret the utterance of another within the context of the activity, as represented within the listener's current cognitive environment. The application of this model to the problem of establishing a first meaning system requires consideration of how the two participants may mutually interpret each other.  

Tyler and Wilson (1986) rest the assumption of relevance on shared context, but they do not conceive of context simply in terms of the immediate external environment within which two people are situated. Rather, they invoke the idea that relevance applies to the cognitive environments that the communicators share. They emphasize that people construct different mental representations of their environments based on the history of their different experiences with it. In a statement applicable to the developmental problem they write: People "have mastered different concepts; as a result, they can construct different representations and make different inferences . . . even if they all shared the same narrow physical environment . . . their cognitive environments would still
differ” (p. 38). In spite of these differences, speakers and listeners are able to communicate by making assumptions about what is shared of the cognitive environments, what the listener knows about the speaker context. The relevant point for the present purpose is that communication between people always rests on inference and interpretation. The cognitive environments of the communicators at least temporarily share sufficient common structures so that the relevance of a communication can be inferred. If not, the usual strategy of the child is to ignore it, although an adult, expecting intentionality, may pursue the matter by further inquiry as to the speaker’s meaning.

An important part of the relevance assumption is that words may be interpreted differently depending upon their relevance in a particular cognitive environment. When attempting to communicate, a speaker makes assumptions about the cognitive environment of the listener, and the listener, to interpret the message, makes assumptions about the relevance of the words to the present situation, when the situation includes the prior discourse, the listener’s cognitive environment, and the listener’s assumptions about the speaker’s cognitive environment.

This idea about shared cognitive environments is precisely equivalent to the notion of cognitive context that Nelson and Gruendel (1979) introduced as a proposal for how children might begin to learn to make sense to each other. We analyzed talk between 3- and 4-year-old peers playing together in a preschool, showing that their talk relied upon a background of shared understandings of such things as the school day, the structure of telephone conversations, and the content of meals (see later section of this chapter on Developing Discourse). We suggested that sustained talk would be established within contexts—both present and those familiar to the child from previously established scripts—that provided supportive structure independent of the actual discourse. We tested this idea further with mothers and their 2-year-old children in conversational contexts that provided different degrees of scripted support (meals, play) and found, for example, that children answered questions more readily in the familiar scripted contexts, that more complex language involving categorical language about the past and the future was used in the familiar structure (Lucariello & Nelson, 1986). These findings support the model presented in Figure 5.1 indicating that at levels 2 and 3 the cognitive context is of the mental event representation (MER).

Sperber and Wilson’s (1986) position implies that words can be used in many different ways to convey messages, and that the listener
fully interpret what the speaker's intention may be. A person's lexicon may contain much relevant information about the complexities of possible uses of particular word forms, but no given instance of the word can be perfectly predicted outside of its context of use. The child who must somehow use the situation to interpret flexibly what is meant in that text is therefore only at a somewhat greater disadvantage than the adult. In contrast, if the child came to the language with highly contained expectations about word meanings (e.g., Markman, 1987, 1991; Wellinkoff, Mervis, & Hirsch-Pasek, 1994) she would be at a loss.

These claims imply that in order for the child to extract elements of meaning from the discourse context, the word must be made relevant to the child's cognitive contexts, conceived here as event knowledge. The child's cognitive contexts may vary in terms of the familiarity of situations, of speakers, of activities, and of ways of formulating messages. Some of the ways in which the child's cognitive context and the social context work together are evident in studies of the conditions under which children acquire nouns (Tomasello & Farrar, 1986) and verbs (Tomasello & Kruger, 1992), which have established that very specific conditions of making words relevant to the child's attentional focus within an activity - different for different types of words - determine whether the child will acquire the word. Further, the child may come to recognize how certain words are used in quite specific discourse contexts, and gradually accrue meaning to them. Again, it is the relevance of new word to the child's interpretation of a communication within an established cognitive activity context that determines whether the word will be entered into that context and thereby derive meaning from it. How and whether words and their meanings are acquired also depends on what words are already known, and on the state of the general knowledge base. Much recent work on children's category knowledge, and their ability to make inferences about properties of instances from hearing a category name, underscores the intricately tangled relation between general knowledge and lexical organization, in young children as well as in adults. For example, from hearing "This dax is a bird," a child might be able to infer properties such as flying and nest-building (Gelman & Markman, 1986; Taylor & Gelman, 1988). When children learn words, they not only call on old knowledge - general and specifically lexical - but also acquire new general knowledge.

Thus the general solution to the puzzle of how words are learned at any age lies in the fact that people - children as well as adults - use discourse context to interpret language. They make inferences about what
is relevant within the context of the utterance. The context they use for this purpose is cognitive context – in the child’s case, the dynamic model of the world of events, built up on the basis of present and previous experiences in similar event contexts, and updated within the particular discourse context of the situation of use. It is because of this basis the words may sound right in the child’s first productive use: Children have assigned the word to the appropriate context; but because it is restricted to the contexts in which it has been encountered it will be found to lack aspects of a more general meaning that becomes apparent in testing situations.

Thus the claim here is that word learning is a matter of inference based on contextual relevance within discourse situations. Both the strengths and weaknesses – context-restricted meanings – result from this process. This process thus accounts for three common observations in children’s word learning: Fast mapping is the entering of a novel word into its context of use. Appropriate production occurs because the word is used in contexts similar to those in which it was observed. Restricted comprehension is observed because accrual of meaning outside the context of first use is a slow and uncertain process.

‘Cause: An Example of Developing Meaning in Discourse

The model in Figure 5.1 places the burden of representational development as well as word meaning on discourse practices. The dialectic process involved at both levels can be seen through a detailed examination of gradually developing situated meanings. A longitudinal study in collaboration with Elena Levy (Levy, 1989; Nelson & Levy, 1987; Levy, Nelson, 1994) focused on the dialogic and monologic talk of a child, Emily, whose language in the crib was tape-recorded at frequent intervals between the ages of 21 months and 36 months (Nelson, 1989). The child engaged in bed dialogue, mostly with Father, and talk to herself when alone enabling a view of the use of the same term in both dyadic and individual fashion over several months.

Here the development of the term “‘cause,” beginning in Emily's second year, is examined. Causal terms (e.g., “because” or “‘cause”) are assumed to express intentions, goals, and cause-effect relations, and in general it is observed that children begin to use the terms “because” and “so” early in the preschool period (Hood & Bloom, 1979; Bloom et al., 1980) but do not achieve full understanding of their logical implications.
much later (French & Nelson, 1985; French, 1988; Byrnes, 1991). Finally, she used the word "‘cause" in her monologues from the earliest observations when she was 21 months. The word "because" or "‘cause" was used by Emily’s father at this time in allusions such as the following:

(5) F: everyone’s asleep
    you know Tanta’s asleep and Mormor’s asleep
    everyone is going to sleep because you know what happens
    in the night-time? people go to sleep at night-time . . .

E: Carl mommy sleeping
F: yeah, Carl’s mommy’s sleeping too
   do you think Chris is sleeping?
   how about Chris? hmmm?
   and Annie and Jeannie?
   everybody’s asleep ‘cause it’s . . . [E interrupts]
   . . . (???) sleep because he’s a little baby (1;10.30)

That in this example "because" follows "sleep" three times.

Over 2 years Emily’s own monologic uses of "‘cause" tended to
fix specific patterns, such as with "sleep" or "baby," as the following examples illustrate:

(6) Emmy went to sleep ‘cause Morm (1;9.8)
(7) Emmy didn’t go to sleep ‘cause in bed (1;10.30)

This pattern "sleep . . . ‘cause" is thus similar in form to segments of
sleep dialogues between Emily and her parents, concerned with
predictions over sleep. Another set of early uses of "‘cause" was fol-
lowed by a clause containing "baby" or "bed.” These instances coincided with
Emily’s move to a new room and a new bed in anticipation of the
move of a new baby; no doubt her parents provided a justification for
this change, using similar discourse patterns.

A similarity between Emily’s uses and her father’s discourse pat-
tern suggests that her use of "‘cause" was borrowed from her father’s.
It is not a sense of verbatim imitation, but rather as internalized pattern:
"because" follows "sleep," linking it to a second utterance. Note that the
word was embedded in talk when Emily was already in her crib, being
told to sleep. However, the talk itself (like Emily’s own talk) was not
necessarily about the here and now situation but about rules and expecta-
dions surrounding the going-to-sleep event. Thus Emily’s interpretation
of talk (to the extent that she interpreted it rather than simply accept-

ing it as part of the going-to-bed-ritual) must be based on her MER of the sleep situation.

Emily's use of "'cause" was then borrowed from the discourse patterns of adult speech in the going-to-bed/sleep context of discourse. This use of a term in a borrowed context requires little or no grasp of the semantics of the term or the full interpretation of parental explanation. It is simply a connector, linking "the baby," "sleep," or "bed" to another utterance, in the context of parental justification of an action or event grounded in the child's representations of routine events. Many early instances of "'cause" in fact were partly or fully inappropriate with respect to their larger discourse context, indicating that the semantic interpretation was missing, as in the following:

(8) Emmy went to sleep
'cause Mommy Mormor Emmy get up (1:9.8)

The proportion of inappropriate uses in her monologues declined with time; 68% of the instances of "'cause" in the early period were judged inappropriate, 47% of those in the middle period, and only 19% in the late period (between 2 and 3 years).

Later, "'cause" began to co-occur with a coordinate clause introduced by "but," as in the following example:

(9) my won't go to sleep
   but I later
   'cause my hava cold (2:0.9)

The co-occurrence of "'cause" and "but" formed part of a pattern used in Emily's pre-sleep negotiations with her father. In these negotiations, Emily attempted to attain a goal and her father attempted to block it:

(10) (Emily requests a toy)
    F: Okay you go get it
    but be quick about it
    because we have to go to sleep (1:10.30)

(11) E: Daddy (rock) me for a couple min . . .
    but this is the last night
    because then (?) . . . (1:11.20)

"But" and "'cause" together help create a compromise agreement: "but" offers an alternative to an absolute refusal and "'cause" provides a justification. In these contexts "'cause" expresses a relationship between action (or blocking of an action) and a judgment, statement, or desire that
doses a motive for the action (cf. Bloom et al., 1980; Bloom & Sides, 1987). Here "'cause" is a connector used in the context of a type of connector, "but." This discourse pattern includes a statement (often negative) followed by justification ("'cause"), sometimes ending a compromise ("but").

In the later months the logic of psychological justification became complete. Most (73%) of the instances of "'cause" were now fully interpretable, and sometimes the term occurred with "so" or with other words, for example.

(2) actually it's Stephen's koala bear... 
'cause it's really Stephen's
as a matter of fact it's Stephen's (2;9.12)

This usage suggests that Emily was extending her understanding of semantics of "'cause," and systematizing it with other terms that go causal and truth conditions.

It is seen that, during the first two to three months of the study, uses of "'cause" were apparently borrowed from parental uses, or pragmatic generalizations based on distributional relationships observed in adult speech. During the later months (2 to 3 years) use shifted a better grasp of the format of psychological justification: denot + negative contrast (but) + compromise (so) + explanation (actually/really/as a matter of fact). This organization of related terms lexical domains or paradigmatic structures reflects a process of semiotic systematization during the preschool years that has been studied first by Bowerman (1982) and Karmiloff-Smith (1979). It is indicative of the child's analysis of components of meaning of related words and a cognition thereby of their relatedness.

Of Course of Word Meaning Over Time

Analysis of Emily's uses of "'cause" over the 16 months of this study throw light on the gradual acquisition of both grammatical and semantic components of language, and their relation to both the child's representations and parental discourse. On the basis of this analysis of other words (Levy & Nelson, 1994), a general process of derivation of meaning from discourse context can be extracted, consistent with the preceding sections of this chapter, as follows:

New language forms are acquired, together with their distributional relations with other language forms, on the basis of the discourse con-
text, both extrasentential (broad discourse patterns) and intrasentential (syntactic).

2. Discourse patterns are interpreted in terms of the child's event knowledge system; extralinguistic context provides the conditions for instantiating relevant event representations. Recognition of patterns and forms may be first restricted to the particular activity contexts in which they were originally experienced (where experienced means noticed by the child). For the child, the relevant event context may be different from the immediate event observed by the adult; thus it is "cognitive context" that is at issue here, as discussed previously. Sentential context includes the co-occurrence of forms, for example, noun–verb; and/or a recurrent syntactic frame such as a particular prepositional phrase.

3. On the basis of adult uses of the form in identifiable contexts, the child may form a discourse notion regarding the use of the form and subsequently use it herself in closely constrained syntactic "formats" and the context of specific topics.

4. Use of the form itself—especially in formally contrastive alternation with other forms—alerts the child to further uses by other speakers and leads to additional knowledge about the "meaning context" that it represents.

5. Comparison of the uses of the form by self and others may lead to a period of resystematization of the form and other forms that are semantically or syntactically closely related.

6. Subsequently the child's uses indicate at least partial control of the form in productive speech. However, comprehension tests of the form reveal gaps in the child's knowledge, and productive uses may remain confined to well-understood event contexts.

7. Full control of some forms ("full meaning") may be delayed for years after the form is first acquired and readily used. Further reorganization of the meaning system may be required before adult-level understanding is achieved.

In its most general claims this description is expected to apply to the acquisition of all linguistic forms, but different types of forms may exhibit some of these developmental characteristics and not others. For example, the child may need to do very little refining of her use of understanding of names of common objects, whereas terms referring to abstract notions such as temporal perspective (Clark, 1971; Fernald & Nelson, 1985; Weist, 1986) or quantification (Karmiloff-Smith, 1979) may be used for many years before their context-independent functional analysis.

The patterns observed here illustrate the process of deriving knowledge and grammatical knowledge from discourse; they indicate both that the discourse is the source of knowledge of language forms, and that discourse is the context within which meaning and use of language forms is extended and elaborated. The use of words themselves contributes change in their function, implying on ongoing process of a dialect...
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...age between the child and her social/linguistic environment, as noted earlier.

Aeras Emily did appear to be quite sensitive to both the discourse grammatical constraints on uses of “’cause,” her initial use revealed no realization of its semantic entailments. This is the reverse of assumption of constraints models, which assume that the child, with a hierarchy of ontological principles to choose among hypotheses one that is likely to be correct. The alternative proposed here is that of the term by self and others in well-understood event contexts then the substantive data that eventually become organized as semantic knowledge.

Inferring meaning from discourse context requires that the child identify the relevance of the word is within that context. Discourse provide meaning, but only clues to meaning, as this example illustrates. But as implied in the example, discourse also provides a way of interpreting meaning of complex sentences, and it provides the basis for extracting paradigms that underlie the internalized language system. Words occurring in discourse are related by the listener to the illocutionary context and the particular utterance in which they occur. The use of terms before meaning (within similar contexts) may be engaged by child, from which meaning from use gradually accrues.

The process as described here is general, applying to all types of words in all phases of development. The major differences in ease of acquisition some words, such as object nouns, appear, not because of internal structural constraints, but because the relevance of some words to the use context is more apparent than it is in others. Seen in this way, meaning emerges from shared cognitive context and the mutual retention of relevance to that context by speakers and listeners, tutored learners.

Scaffolding Discourse: from Scaffolds to Frames

...ar discourse has been considered as context supporting the acquisition of word forms and meanings. However, the inverse problem is how discourse itself is constructed from language forms and functions and develops over time. If words must be learned from discourse, the must engage in discourse, but discourse requires that the child utter words and sentences. How can this circle be breached?

Although there are many discourse forms, genres, styles, and regist-
ters in a language (Hymes, 1974; Bakhtin, 1986), the discourse context of the young child begins as simple conversational exchanges. 12 Most systematic analyses of conversational exchanges between parent and child have focused on the achievement of pragmatic competence. Bloom (1991a) assumed that "A major goal of language acquisition is for the child to be able to take something from what someone else says and form a contingent message that converts simple turn taking into discourse" (p. 435). Bloom's longitudinal research with children from 2 to 3 years indicated a developmental increase over this period from simple adjacency (a child utterance following a parent's) to greater contingency of topic. Younger children introduced new topics or changed the topic more than half the time, while older children's contributions shared the topic of the parent utterance, and added information. As Bloom (1991a) notes: "To participate in conversations, children must be able to use the information in a prior message to access something stored in memory, hold that representation in mind, and access the procedures of language for its expression" (p. 436). This formulation of the problem provides a perspective on the representational demands involved in dialogic discourse that accords with the view developed here. Bloom's characterization involves using a presentation in language to access something one's own representation, which is then expressed in language form. Her study documents how long and hard is the progress toward easy accomplishment of this level. A number of authors have emphasized the importance of "scaffolding" by the parent as the child learns to take part in these exchanges. Bruner (1983) provides a theoretical account of this process and shows how a parent may "up the ante" over time, requiring more quantity and more complexity from a child as linguistic and cognitive development advance.

Engaging in a conversation on a single topic that extends to 3, 4, or more turns requires even greater representational capacity and skill than studied by Bloom and her colleagues in 2- and 3-year-olds, and necessitates kicking away some of the scaffolding previously depended upon. The grammatical requirements for this engagement go beyond those simple and complex sentence structures, and involve deixis, that is, establishment of relations of space, time, and person in relation to speech context, and anaphoric reference, reference to elements previously introduced as topics. Analysis of conversations between parent and child that are focused on talk about the past (see Chapters 6, 7, 9) indicates that the parent initially scaffolds the child's contributions to maintain coherence from one exchange to the next, resulting in external
course on a single topic. By 4 years of age, and earlier for some, the child is able to engage in fairly long conversations with an adult on a topic about something she has experienced (Hudson, 1993; Fivush, 1993) experiencing (Tessler, 1991), indicating that the child is able to share adult’s frame of the topic.

Contrast to talk with adults, preschool children’s talk with peers has been stigmatized as egocentric since Piaget’s (1926) report, characterizing children as talking past each other, talking for their own sakes and for engaging others. More recent analysts (e.g., Garvey & Hogan, 1990; Garvey, 1990; Nelson & Gruendel, 1979) have emphasized the site: that children do engage in perspective-taking and shared topic. Nonetheless, as French, Boynton, and Hodges (1991) have pointed out, much of the communication between young peers (around 2 years) is directed to attention-getting and struggles over possession. Their analyses reveals that extended interactions lasting more than a few seconds between peers aged 2 to 5 years depends strongly on establishing shared ground event knowledge and/or a shared familiar activity context, as the housekeeping center in preschool. These provide the frame to support the play and the language in it. In play with props, as in the housekeeping corner, or with doctor props (R. Goldman, & Chaillet, 1984) the talk is incidental to the activity. Nelson’s study (Seidman, Nelson, & Gruendel, 1986) following up the questions from Nelson and Gruendel (1979), showed as predicted that: extended talk interactions were more sustained when the participants initiated a shared script. The shared familiar context of the play, and objects that help to instantiate it, provide the background event and fictive context in which talk contributes to sustaining the pretense, but does not convey new representational material.

By 4 to 5 years many children can use shared cognitive contexts to sustain an extended conversation on a single topic that also introduces shared information, without the support of related props or pretense. One of the conversations between two 4-year-old girls reproduced by Nelson and Gruendel (1979) illustrates this more sophisticated level of change of representations and presentations of new knowledge.

(13) A: At morning it’s lunch time.
B: But first comes snack, then comes lunch.
A: Right . . . Just in school right?
B: Yeah, right, just in school.
A: Not at home.
B: Well, sometimes we have snacks at home.
A: Sometimes

... 
B: Because when special children come to visit us, we sometimes have snack. Like, like, hotdogs, or crackers, or cookies or something like that.

... 
B: Or maybe hotdog.
A: Maybe hotdog.
B: But, but, but, Jill and Michael don’t like hotdog. Don’t you know, but, do you know Michael and Jill?
A: I know another Michael.
B: I know, I know another Michael.
A: No, I know just one Michael. I just know one Michael.

Note: Ellipses ( . . . ) indicate bits of repetitive talk.

At the outset these two children have agreed that “at morning, lunchtime.” They then go on to consider snack at school (shared information that they can agree on; thus there is no conflict in the representations presented by the conversation). This is followed by information that sometimes there is snack at home, and that under particular circumstances (special children) different foods can apply. Both children contribute to and agree on this. But then the notion of hotdogs for snacks raises a conflict. Some children that B knows do not like hotdogs. How to deal with this raises the issue of whether A knows these children. Remarkably, they are able to agree that they know different Michaels. By wending their way through this shared information about snacks and friends they have apparently succeeded in conveying new information and modifying prior representations of their structure of these categories. This kind of achievement is not possible, even the 3-year-old, who does not conceive of more than one reality, be representing different experiences through language has not yet been a possibility.

This level of exchange, which is not supported by external play or props, goes beyond talk about shared experience, present or future. In this exchange, the two girls first share knowledge based in their school routine, and then move to individual knowledge of the nonpresent home routines, effectively asking questions and acknowledging differences. This level of interaction reflects an ability to represent and express one’s own event knowledge, and to compare and contrast different event knowledge presented through language with one another.
course, this sample is still replete with infelicities in comparison with exchanges, and it reveals a somewhat complexive and circular nature reminiscent of Vygotsky’s conceptual complexes. Nonetheless, early a step along the way to competent dialogic discourse without requirement of detailed scaffolding provided by adults.

A progression from very limited ability to engage on a sustained even when scaffolded by parents, to a reasonable level of ease in speaking on a conversation requiring the processing of nonshared informaion with a peer, takes a very long time. “Co-constructing” an account for an adult is exchanging information with peers does not yet indicate the child can either (1) construct an account of an episode (remembrance, anticipated, or imagined) with the necessary linguistic markers structures for providing an understandable account to another person who has not experienced the episode herself; or (2) interpret the act of an unshared episode presented by another. But these earlier, demanding forms are steps along the road toward the later achievements. As with any development, one must be careful not to confuse precursors abilities in this case, engaging in scaffolded conversation, with the full range of competence of the developed form. In analyses of older children’s conversations (Dorval & Eckerman, Dorval, 1990) indicate that it is many years before children acquire skills that enable them to stay on topic and share perspectives. Speakers still produce many unrelated turns, and coherence continues to increase at least through the ninth grade. Dorval (1990) views developments in terms of steps toward collaboration within a person structure. These more developed conversational skills and lies lie beyond the abilities of the preschoolers that are the focus of analyses here, and thus beyond the scope of this discussion.

Emergence of Mediating Language: How Culture Enters the Mind

Previously proposed, to enter into the potential offered by human and culture the child needs to acquire the complexities of grammar that make extended discourse possible. It is not until the child is of following an extended dialogue, and constructing parts of a tale that mesh with those of the partner, that the child can actually into the language/culture complex. The developmental course involves a long period during which language is learned and used for communicative functions, and its mechanisms for constructing extended of discourse are acquired in these communicative contexts, prior
to the point where they may be used for more advanced functions, so that the earlier levels provide a ratchet for movement to the next level.

The limited extent of cognitive functions of language during the early levels have been noted in the preceding sections, but these limitations should not negate the importance of those cognitive aspects that enter the mind within the language envelope from the very beginning. They include attention to the ways that language in general and a specific language in particular carves up the world into more discrete and conventional categories than those of the prelinguistic period (see Chapter 4 and 8). Beyond this very basic cognitive function lie many further cognitive reflections of communicative functions of language. The emphasis in this chapter on words and word meanings reflects the proposed ideas that language must first be extracted from its communicative functions and forms before it can serve to establish new representations. But this does not mean that in the early stages language use has no impact on mental representations. Learning the use of words of all types indicates how one's language partitions the world. Learning the use of "call," "help," and "cause" articulates notions of communicative, socially supportive relations, and intentions that may not have existed in an implicit MER system. Later, learning the meaning of words like "know," "remember," "fair," and "wrong" signals entry into the cultural categories of knowledge and justice. Each move involves establishment of new vocabulary for new cultural concepts, each at a more complex and abstract level.

Learning words is thus learning to think in cultural forms. This proposition does not entail that particular words of a particular language occur up the world and its ways differently than any other language, although many such differences between language do exist. However, this does entail that to learn the language means learning to think culturally in addition to thinking individually or even socially. This is the meaning of the Sapir-Whorf hypothesis (Lucy, 1992; Whorf, 1956) that language embodies the culture, thus thinking in language is thinking culturally. This meaning is implicit as well in Vygotsky's ideas of inner speech, although it was spelled out more completely in his discussion of scientific concepts. Wertsch (1990, 1991) has extended Vygotsky's account to encompass Bakhtin's (1981) conceptions of "voices in the mind" (heklossia). As suggested previously, children seem to be exceptionally open to a variety of different voices and are able to "revoice" them quite accurately from early in development (Dore, 1989). Thus it is not only the categories of the culture that enter the mind from language.
language users themselves also are represented there. As well, dual knowing system remains and develops, not only in terms of persons and linguistic cultural representations, but also in terms of integration of all this within as well as without. The remainder of the book considers more fully these important issues of language, culture, and the developing mind.

In this chapter, the following topics have been broached that relate to the book:

- Thinking - of words and other forms - is acquired through social discourse.
- Discourse reports external representations of affairs that may differ from a person's prior internal representation of such affairs.
- Participation in discourse requires extensive practice.
- Competence in interpreting discourse representations facilitates and is necessary to establishing internal representations formulated in language.
- Internal language representations come into play, thinking in language emerges.

In the next propositions we only need to add the recognition that language has a cultural system. Its forms and structures have a cultural history; meanings are culturally embedded; they are not the properties of individuals, dyads, or small groups. It follows that when thinking emerges, culture enters the mind. Unlike the thinking of the 5-year-old - and much more the 10- or 20-year-old - only socially mediated but also, by virtue of sharing a common, culturally mediated. Because most of the interesting organizations exist as cultural properties (not as childish instructions) this step is the most important one for bringing to the cognitive world of adults. This chapter has only begun to show some of these revolutionary developments. Succeeding chapters of the story, and show other ways in which language can be representationally - both internally and externally - in different ways.