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ACQUISITION IN THE COURSE OF CONVERSATION*

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Children readily take up new words they hear in the course of conversation, and they substitute these, when necessary, for the words they began with. Adults also offer them pragmatic directions about how to relate such terms to familiar words (*is a part of*, *is a kind of*, *belongs to*, *looks like*, etc.). In short, children aged 2;0 and younger can and do make use of what adults tell them about words and about meaning relations among words. The consistent patterns of adult offer and child uptake support the view that lexical acquisition takes place in the course of conversation. Findings from spontaneous exchanges are further supported by experimental data. In word-learning tasks, very young children are attentive to specific pragmatic directions and make use of them in word-learning. But when children receive no pragmatic directions, they resort to a range of coping strategies, both to assign meanings and to relate new meanings to each other. Early lexical acquisition therefore appears to be constrained less by innate limits on children's assumptions about meaning and reference, and more by the information adults offer about meanings and meaning relations, information that young children make active use of in their acquisition of lexical meanings.

0. Introduction

To communicate with language, children need to master the conventional meanings of the terms in use around them. For this, they must acquire a good number of the stock of conventional words and word meanings in use in the community where they are growing up. In this paper, I will argue that much of this acquisition takes place in conversation. As adults and children talk to each other, adults OFFER children information about unfamiliar words and their meanings, and children TAKE UP this information in the course of conversation.

What basics do children need to know in order to attach some meaning to a word-form? First, they need to know what the conventional word-form IS for the intended meaning; second, they need to track any distinguishing information that they can use to keep that form-meaning combination DISTINCT from any neighboring terms; and third, they need to know how each word is RELATED to its neighbors. Given these requirements, we need to establish how children actually go about acquiring the meanings of unfamiliar words — what the process of acquisition looks like, and what evidence there is for different steps in that process

as children start to build up lexical entries in memory for the words being acquired.

Researchers have typically taken one of two general positions on how the process of acquisition proceeds with respect to the lexicon: The first position is what I will call the CONSTRAINTS VIEW. In this view children are assumed to rely on certain CONSTRAINTS ON LEXICAL ACQUISITION that guide the learning of unfamiliar words (Markman 1989:8; my italics):

> When a child hears a word used to label an object, [...] an indefinite number of interpretations are possible for that word. [...] Given the impossibility of ruling out every logically possible hypothesis, how is it that children succeed in figuring out the correct meanings of terms? Part of the answer is that *children are constrained or biased to consider only some kinds of hypotheses.*[1]

These constraints have been widely assumed to be 'built-in' or innate in some sense, but with little specification of what precisely would have to be innate for each constraint to hold, briefly, and then be either abandoned or severely modified as children find out more about the properties of the lexicon as a whole in a specific language. Some of the major constraints that have been proposed include the following:

- WHOLE-OBJECT ASSUMPTION — Words pick out whole objects, not just a part or a property of an object (Markman 1989, Mervis 1984).
- TAXONOMIC ASSUMPTION — Words pick out coherent categories of objects (Markman & Hutchinson 1984)
- MUTUAL EXCLUSIVITY ASSUMPTION — Words are mutually exclusive, so each object will have one and only one label (Markman & Wachtel 1988, Merriman 1986)
- TYPE ASSUMPTION — Words pick out types, not individuals (Clark 1991)
- BASIC-LEVEL ASSUMPTION — Words pick out objects in basic-level categories (Mervis 1984)
- EQUAL-DETAIL ASSUMPTION — Words pick out equally-detailed instances of object categories from within a domain (Shipley, Kuhn, & Madden 1983)

Even cursory inspection of these constraints shows that they all 'fail' at certain points for lexical acquisition and therefore cannot hold as general constraints. The whole-object assumption is violated by every term that is not a noun for a concrete object (e.g., verbs like the verb *to run*, adjectives like *red*, prepositions like *in*, or nouns for parts of objects like *ear* or *tail*, or for more abstract entities like *justice*); the taxonomic assumption fails for all terms that refer to complex arrays (e.g., terms like *circus*, *breakfast*, or *shopping center*). Mutual exclusivity is violated every time an object can be referred to in more than one way (e.g., a dog referred to as *a dog*, and as *a spaniel*, *an animal*, or *a pet*); the type assumption is violated by proper names since these pick out individuals rather than types; the basic-level assumption is violated by both superordinate-level and specific-level terms (e.g., *animal* or *mammal* for a dog on the one hand versus *spaniel* or the even more specific *King Charles spaniel* on the other), and the equal-detail as-

sumption is violated by uses of terms from different domains for the same referent (e.g., *setter* versus *pet*).[2] None of the constraints that have been proposed hold across the board for the adult lexicon, so as soon as children have acquired even a very small vocabulary, they are likely to learn terms that violate one or more of these constraints. The puzzle here is how they can learn such terms if the constraints really hold: Just what kind of information (and how much) is required to push children to abandon one or other constraint? For none of the constraints has this been specified.

Notice that in the constraints view, children are conceived of as being more-or-less autonomous in their learning of meanings for unfamiliar words. That is, they are seen as treating each unfamiliar word as a problem to be solved in a two-step process (Miller 1986:175):

(a) They notice an unfamiliar word and immediately assign it to a semantic category;

(b) They discover and learn the distinctions among words in the same category.

Children's autonomy here is supported by the existence of built-in constraints on lexical learning, in that each constraint makes specific predictions about how children should assign meanings to unfamiliar words. Take the predictions made by the whole-object and the mutual exclusivity assumptions. The whole-object assumption makes two main predictions: (i) Children will not look for words to pick out actions, relations, or events, but only objects; and (ii) they will therefore mis-map words and meanings because they attach wrong meanings to non-object terms. The mutual exclusivity assumption predicts (i) children will refuse to use or accept more than one term per category, and (ii) they will mis-map words and meanings. For example, if they hear a part term for an unfamiliar (and as-yet unlabelled) object, under this view, they should map that term to the object itself (rather than just to the part). Then, when they hear the term for the object proper, they will be unable to map its meaning appropriately because they will already have assigned that meaning. In other words, the Whole-object assumption would block the uptake of any words except words for objects, and it would lead to the mis-mapping of non-object words. Mutual Exclusivity would block the uptake of semantic relations between words because these entail use of more than one term for the same referent (e.g., a dog that could be called both *the dog* and *the spaniel*); it would also lead to the mis-mapping of many meanings (e.g., for part and property terms among others) that would then block the uptake of other terms for instances of the target category.

The issues these consequences raise are serious and they seem inconsistent with much of what we know both about adult language and about language acquisition in children. They also raise these further questions: In the case of the whole-object assumption, how would children ever acquire non-nouns — verbs, adjectives, and prepositions, say — if they were to start out with the assumption that words apply only to objects? And how could children go on to acquire words for parts, properties, and activities associated with objects if words apply

only to whole objects? In the case of mutual exclusivity, how would children learn words for other levels of categorization, superordinate or subordinate to the basic-level (e.g., *that animal* or *the Siamese* compared to *the cat*)? Or how could they learn additional words from orthogonal domains for the same referent object (e.g., *the cat* versus *his pet*)? Mutual exclusivity leads them to assume that only one word can refer to any one referent-type so they should therefore reject all other terms that appear to apply to the same referent.

This constraints-based approach contrasts with what I call THE INTERACTIONAL VIEW. The latter assumes that children learn words from observing how they are used in everyday conversations with the people around them. It does NOT require that children rely on built-in constraints on which kinds of words they can learn at the outset. Rather, it assumes first, that children — like adults — are sensitive to certain basic pragmatic conditions, namely, that (a) the speaker and addressee share a joint focus of attention during any conversational exchange; (b) the speaker and addressee make use of physical co-presence in identifying referents; and (c) the speaker and addressee make use of linguistic co-presence in identifying referents. These pragmatic conditions guide speakers and addressees as they try to establish what the intended referents are in each successive utterance in a conversation. But in order to make use of the third condition (linguistic co-presence), speakers and addressees must agree on the conventional meanings of the words being used. Since young children have yet to build up an adult-like vocabulary, they lack many or most of the words and meanings they might require. This deficiency is made up for largely by the extensive pragmatic information adults offer children about language use, and in particular the information they offer about word uses and word meanings.

In short, in the interactional view, children acquire words in the course of conversations, either with parents or other adults, or, as in many cultures, with older siblings. Every use of a term that children hear tells them more about the conventional meaning of that term in that community of speakers. In offering such information, adults appear to do three things: (1) they offer children new words by telling them what to call instances of unfamiliar categories; (2) they inform children about how the referents of new words differ from the referents of familiar words in the same conceptual domain; and (3) they inform children about how the referents of new words are connected to the referents of other words, both familiar and unfamiliar.

When adults introduce unfamiliar words and their uses to young children, they do so in the middle of ordinary conversations. And in these conversational interactions, adults depend critically on the pragmatic principle of contrast such that the use of each term is motivated. That is, there is a reason to use this new, unfamiliar term rather than some other term already known — namely because the speaker means to convey something different, something that could not be conveyed, conventionally, by the use of another term instead. In effect, contrast pervades language use since speakers take every difference in form to mark a difference in meaning (Clark 1993:69):

> For each contrast, the address must work out just where the contrast resides — and this will depend in part on whether the term used is familiar or unfamiliar, and what else the speaker uses it with in the utterance.

Such reliance on contrast, of course, assumes that speakers and their addressees, in each exchange, act co-operatively in the sense that speakers make their intended meanings as accessible as possible to those particular addressees, and the addressees in their turn make their best efforts to arrive at the speakers' intended meanings on each occasion (Clark 1990, 1993):

> Speakers assume in using whatever expression that have chosen on a particular occasion that, for their addressees, they are denoting a situation, object, property, or relation that the addressee can readily arrive at or compute on that occasion.

In general, then, the INTERACTIONAL VIEW differs from the CONSTRAINTS VIEW in focusing on how speaker and addressee exchange information during conversation, and in particular on how adult speakers offer young children information about both word meaning and word use. In this paper, I will argue for THE INTERACTIONAL VIEW over the CONSTRAINTS VIEW, in that I propose that meaning acquisition normally occurs in the course of conversation. I will focus on the kinds of information adults OFFER children about words and word use, on children's UPTAKE of that information, and how the two together inform us about the PROCESS of meaning acquisition.

1. Child-directed speech

We know a great deal about some of the kinds of modifications adults tend to make in talking to less-skilled addressees (here, young children), but what we know is somewhat deceptive — in the sense that most of the studies done in the 1970s and 1980s focused almost exclusively on what adults did to modify the FORM of what they were saying. What we know about form in child-directed speech is summarized in Table 1. However, hardly anyone has looked at the CONTENT of what adults say to young children, specifically what they say about words and word use. When we do look at conversations between adults and children, we see that adults:

(a) make offers of new words to children in everyday exchanges,

(b) make offers of distinguishing information for terms in the same domain, and

(c) make offers of information that relates one term to another in meaning.

This information consists of PRAGMATIC DIRECTIONS, what I have called METALANGUAGE DIRECTIONS, for language use in general, and — here, word-use in particular. In the same conversations, children for their part:

(a) take up new words when they are offered,

(b) take up information about how words are to be distinguished,

Table 1: Modifications in form in child-directed speech

1. RATE OF SPEECH
— Slow (compared to adult-to-adult speech)
— Short, grammatical utterances
— Reliance on 'frames'
— Pausing between utterances (rarely within)
— Reliance on repetition
2. PROSODY
— High pitch and extended range (1.5 octaves, double the adult-to-adult range)
— Exaggerated intonation contours (over the whole pitch range)
— Some use of whispering (directly to the child-addressee)
3. WORD CHOICE
— 'Baby talk' (specialized, conventional vocabulary; often parallel to the first 20-30 words children learn to produce)
— Reliance on attention-getters (child names, exclamations [*hey*], deictics [*see*, *there*])
— Selection of vocabulary (at the level of utility)

and

(c) take up information about how words are connected.

1.1 Adult offers

Adults offer new words all the time in the course of conversation — that is, these words are not yet known to young children. Their offers can be DIRECT, as when the adult speaker introduces the child to a new type of object ('That's an owl') or activity ('That horse is trotting'). Note the direct offers in the exchanges in (1) and (2):[3]

(1) Child (1;7.19, looking at a book and pointing at the page with a picture of a kangaroo)
Mother: Yeah. (laughs) It's called a kangaroo. Kangaroo.
Child: **roo**. (neweng:N20:0152,1557)

(2) D (1;8.2, having his shoes put on; points at some ants on the floor): Ant. Ant.
Father (indicating a small beetle nearby): And that's a bug.
Child: **bug**. (Clark, diary)

These DIRECT OFFERS are initiated by the adult, often during such activities as playing with blocks or looking at a picture book.

Many adult offers, though, are INDIRECT in that adults often appear to assume that their children can readily compute what a new term most likely refers to in context. For instance, they might introduce an entirely unfamiliar animal from a zoo set by simply asking 'D'you want the tapir?' Since it is the only unfamiliar animal on the table, they assume implicitly that the child can reason that the unfamiliar word must denote the unfamiliar object. In their classic study of rapid mapping, Carey and Bartlett 1978 exploited just this reasoning in introducing

nursery school children to an unfamiliar color term, *chromium* — here used to denote an olive-green color. As the teacher was setting up the classroom for snacktime, she introduced the new term by saying to a child:

'You see the two trays over there? Bring me the chromium one.
Not the red one, the chromium one.'

Notice that the adult speaker here takes for granted that the child-addressee can identify the entity picked out with the unfamiliar adjective in the referring expression 'the chromium one'. Indirect offers like this may be initiated by the adult speaker, as here, or may follow a child-initiated exchange and so take the form of an embedded repair. Embedded repairs typically have the form illustrated in (3), where the speaker initiating an exchange proposes one term (on this occasion, *wales*, a term for ridges in corduroy material); the second speaker, identifiable in this context as the expert, substitutes another term for the one first offered (*threads*), and the first speaker then takes up this offer of the substitute *threads*, without any comment, in his next turn (Jefferson 1982:63):

(3) Customer in a hardware store looking for a piece of piping:
Customer: Mm, the WALES are wider apart than that.
Salesman: Okay, let me see if I can find one with wider THREADS.
(Looks through stock)
How's this?
Customer: Nope, the **threads** are even wider than that.

Two typical adult-child exchanges containing embedded repairs are shown in (4) and (5) (from Clark, unpublished diary, and Gelman et al. 1998, respectively):

(4) D (2;2.6, after asking for and being given the tape-measure; as he pulled out the tape): I tape with a measure.
Mother: I think you're gonna *measure* with a tape myself.
Child (as he measured a toy on the table, to his Fa): Herb, I **measuring** my man. (Clark, diary)

(5) Child (2;11, pointing to picture of an aardvark): That's a kangaroo.
Mother: Well, that looks like a kangaroo but it's called an *aardvark.*
Child: **Aardvark.** (Gelman et al. 1988:97)

In short, when adults offer an alternative term for the referent in question, children frequently take it up explicitly in their next turn in the exchange.

2. Children's uptake of new words

When offered new words, children often provide quite direct evidence that they are taking up an offer. They repeat the new word, and thereby both ACKNOWLEDGE the adult offer, and RATIFY the new word as the appropriate term for the target referent. Notice that this repetition shows that children can identify the new word as the pertinent element to change and extract it from its context in the adult's utterance. In order to repeat an adult offer, then, children must be tracking their own utterances and the words they have used, tracking the adult's utterance offered in response, and detecting the mismatch in the term proposed

for the referent that is currently the locus of joint attention in the conversational exchange.

In younger children, these repeats take the form of single word utterances, as shown in the exchanges in (6) and (7) (from the Sachs and Brown corpora, in CHILDES, respectively):

(6) Naomi (1;6.16, with her mother who's showing her a pair of glasses)
Mother: Um, what are these? Um, what are they? They are called glasses. Glasses.
Naomi: [**gaga**]. [**gaga**]...[**gaga**]. (N02,1084)

(7) Adam (2;3.18, talking to his mother)
Mother: And the last car on a train is called what?
Adam: Call too-too train.
Mother: It's called the caboose.
Adam: Call [bu].
Mother: Caboose.
Adam: [**kabut**]. (Adam02,212)

But, roughly speaking, once children have begun to combine two or more words in their utterances (around age 2;0), they no longer just repeat the target word produced by the adult; instead, they incorporate it into their next utterance, so the repeat no longer occurs as a single word on its own. Consider two typical examples from Abe in (8) and Adam in (9) (from the Kuczaj and Brown corpora, in CHILDES, respectively):

(8) Abe (2;10.27): What's that? What's that? I haven't tasted that.
Mother: It's called cream cheese. That's part of the ingredients for your milkshake.
Abe: That's good **cream cheese**. (Abe051, 137)

In this exchange, after tasting the cream cheese, Abe incorporates the term into his next utterance.

(9) Adam (4;6, wanting his mother to take the top off a bottle): Untie dis for me.
Mother: Untie what?
Adam: Untie dis.
Mother: What d'you call what you do to a bottle? Do you tie a bottle?
Adam: No.
Mother: What d'you do to a bottle?
Adam: I don't know.
Mother: Screw, unscrew.
Adam: **Unscrew** a bottle, please. (Adam49,461)

In (9), Adam and his mother go through a protracted, five-turn, side-sequence as she tries to elicit the appropriate word from him, and finally offers it herself with a direct comparison of the terms for the positive and negative actions (*screw*, *unscrew*), probably accompanied by the appropriate gestures as well. Adam then goes back to his original request and incorporates the appropriate verb for the action he wants done.

Repeats like these, of targeted terms — whether as single words or as parts of larger utterances — show clearly that children are both ATTENDING to the adult offer, and OBSERVING how and where the new term is being used on that occasion.

2.1 Making use of contrast

Since speakers take every difference in form among conventional terms to mark a difference in meaning, it is important for children to be able to establish just how one term contrasts with another. When adult speakers make offers of new words, they should therefore include information about any properties relevant to contrast. And they do, as shown in the exchanges in (10) and (11):

(10) Child (1;8.12, looking at a picture of owls in a new book): duck duck.
Mother: yeah those are birds. (looks at the picture) they're called owls. (points at the picture) owls, that's their name. owls. (looks at child)
Child: **birds**.
Mother: and you know what the owl says? (points at the picture again) the owl goes 'hoo'. 'hoo.'
Child: **owl**.
Mother: that's what the owl says.
Child: **hoo**. (smiles)
Mother: that's right. (neweng:NE20:0571,1936)

(11) Child (2;11, looking at a book)
Mother: Do you know what that one is?
Child: Ummm.
Mother: I don't know if you know what that one is.
Child: That's a snake.
Mother: It looks like a snake, doesn't it? It's called an eel. It's like a snake only it lives in the water. And there's another one. (Gelman et al. 1998:97)

In these exchanges, the adults offer information about how to distinguish owls from ducks, for instance, by offering the distinctive sound made by owls, or how to distinguish eels from snakes by offering information about the usual habitat of eels compared to snakes. In effect, such information allows children to accumulate information that will help motivate the contrast between pairs of terms like SNAKE and EEL by attaching distinctive information to one or both terms. The information offered under these circumstances typically pertains to surface characteristics of object-types along with other kinds of observable information such as habitat, characteristic motion, sound, preferred foods, and so on (see Gelman et al. 1998). Children, for their part make use of this information, relying on it, as we will see, in order to establish how new terms contrast with familiar ones or with each other.

2.2 Relating one word to another

Adult offers also contain information about how different words are related to each other. These relations, of course, are derivative from relations in the world that link entities and events in various ways. Some common relations in the data we are currently analyzing include the following:

(a) SET RELATIONS AND SET MEMBERSHIP: Adults introduce new terms and relate them to the superordinate term for the relevant domain, using such expressions as ' sort of', 'kind of', as in utterances like 'Oaks are kinds of trees', 'A pug is a kind of dog', where *oak* and *pug* are presented as included in the larger set or domain. Or they may identify the term for set in relation to known set-members, as in 'A cat and a dog together are both animals', or 'All of them together are vehicles' (Callanan 1985, Clark 1997, 1998). But adults do not always make the relation of inclusion here explicit, but simply tell children what an instance of the superordinate set IS CALLED, as is the exchanges in (12) and (13) (from Sachs and Kuczaj, in CHILDES, respectively):

(12) Naomi (3;3.27): and I like that flower.
Mother: that's called a shamrock. (N83,599)

Here, the child offers the superordinate term, *flower*, and the mother supplies the more specific term, *shamrock*, that is included in the set of flowers, introducing it with 'that's called a ——'. The exchange in (13), between Abe and his mother, is very similar: here the mother introduces the term *ram* implicitly as a kind of *sheep*:

(13) Abe (3;2.26, looking at a picture of a ram): and this is a sheep?
Mother: uhhuh.
Abe: know what? sheeps don't have horns and stuff like this.
Mother: some do I think. that one's called a ram. (Abe80,214)

(b) PARTS AND PROPERTIES: Adults also introduce parts and properties related to wholes for which the child already knows a term. Parts are introduced, typically, with the phrase 'is part of', as in 'Your thumb is part of your hand'. Properties are generally introduced by 'is made of' or 'has a ', as in 'A walrus has tusks' or 'The ball is made of rubber', or 'belongs to' (Clark 1997). Two typical offers of part-terms are illustrated in (14) and (15), again from Sachs and from Kuczaj, in CHILDES respectively:

(14) Naomi (2;7.16, looking at an alphabet book):
Father: 'E' is for ....
Naomi: train.
Father: engine. engine is the part that pulls the train. (N68,72)

(15) Abe (2;10.3): what's in there? what's in there, mom?
Mother: it's a wick. you can't burn a candle if you don't have a wick.
Abe: a wick is a candle.
Mother: not exactly. a wick is part of a candle. (Abe044,228)

In fact, parents appear to offer part-terms to young two-year-olds in a very consistent fashion: they typically introduce the terms for the whole entity first, then identify the part, as in sequences like 'This is a rabbit, and there are his ears' (see further Masur 1997).

(c) COMPARISONS AND ALIGNMENTS: Adults often offer comparisons as a prelude to either indicating that something belongs to same larger set, or as a way of highlighting points of difference between two entities that, although similar, must be distinguished from each another. Typical utterances of this type are ones like

'A zebra looks a bit like a horse' or 'Tusks are like teeth'. A typical exchange with distinguishing information is (11), repeated as (16), where the parent waits until the child has offered a term (*snake*), and then provides an alternative (*eel*), followed immediately by a piece of information about habitat ('it lives in the water') that will allow the child to distinguish between snakes and eels:

(16) Child (2;11, looking at a book)
Mother: Do you know what that one is?
Child: Ummm.
Mother: I don't know if you know what that one is.
Child: That's a snake.
Mother: It looks like a snake, doesn't it? It's called an eel. It's like a snake only it lives in the water. And there's another one.
(Gelman et al. 1998:97).

Adults may also offer a new word as an element in a larger list of familiar terms, as in an alignment like 'This is a bear, this is a lion, and this is a LEOPARD' (where *bear* and *lion* are already known). In fact, this manner of introduction was used in some of the earliest studies of children's ability to make appropriate inferences about possible meanings for unfamiliar words. In one of the first of these studies (see Dockrell 1981, Dockrell & Campbell 1986), four- and five-year-olds were presented with a scenario much like the following:

> Adult and child have just gone into a small room where they find a number of plastic toy animals 'out' on the table; the adult asks the child to help her put them away:
> Adult: Can you give me the pig? Give me the cow. Give me the gombe.

That is, the adult first listed two or three terms for familiar animals known to the child, then, as the next item, added a completely new word. On the table, all the toy animals except one, an ant-eater say, were familiar. The result: all the children immediately inferred that the unfamiliar word went with the unfamiliar animal, and none of them asked the adult what that new word meant.

Alignments or lists of familiar terms, then, offer a basis for making inferences about the possible meaning of an unfamiliar term included at the end of the list (here, a list of animals) because the earlier (familiar) terms in the list identify the domain the new word belongs to and simultaneously also license the inference that the new entity mentioned contrasts at the same level with the familiar entities. That is, such lists allow children to infer both category membership (a gombe must be an animal) and status within that category (a gombe must be a subtype of animal on a level with pigs or cows).

In summary, whenever speakers relate a new term being offered to some term or terms already familiar to the child, they license a range of inferences about the possible meaning of that new term. These connections within the lexicon are provided by way of a variety of metalanguage directions on how to link unfamiliar words with familiar ones.

2.3 Further evidence for uptake

Further evidence for the ready uptake of information about words by young children comes from some recent experimental studies of word learning (Clark & Grossman 1998). In order to complement the observational data on uptake, we posed two experimental questions: first, could two-year-olds learn two distinct terms for the same referent (in violation of mutual exclusivity, for example)? And second, could they take into account a single metalanguage direction, used just once, linking those two terms, to make use of subsequently?

We introduced each of two new words in relation to sets of referent-objects, for example: the term *dax* in connection with a set of six honey sticks with different colored handles, in such utterances as 'Can you stir the water with a dax?', 'Can you give me another dax?' 'D'you want to play with that dax?'. The general procedure was (a) to teach word-A for set-1 (e.g., *dax* with the intended meaning of 'honey-stick used to stir water'), then (b) to teach word-B for set-2 (e.g., *ruk* with the intended meaning of 'small whisk used to stir water').[4] In teaching the second word, the experimenter offered a single instance of an inclusion relation linking words A and B (here, *dax* and *ruk*), right after introducing the term *ruk* for the first time, saying: 'A *ruk* is a kind of *dax*'. Once the teaching session for the second word was complete, each child was tested on what they knew about the meanings of both words. If they had taken in the information about how A and B (*dax* and *ruk*) were connected, they should choose objects from both set-1 (honey-sticks) and set-2 (whisks) as instances of A (*dax*), but only the whisks as instances of B (*ruk*). When shown objects from both sets plus some additional, unrelated objects, and tested on both words just taught with a series of questions like 'Can you show me all the As?', 'Are there any other As?', 'Is this an A?' (asked of a B or some third type of object), even the youngest group of children gave evidence of uptake for how words A and B were related from the single utterance offering them that information. In fact 94% of the two-year-olds (mean age 2;2) gave evidence of inferring that while A included B, B did not include A (Clark & Grossman 1998).

In short, these children provided strong evidence (a) they could learn two different terms for the same referent, and (b) they could learn how those terms were related to each other when given just one exposure to the pertinent information. The children's ability to take up both new words and the relation between them, from as young as age 2;0, offers further support to the generality of the observations made of spontaneous uptake in the course of conversation. As in the conversational data, children in the experimental study would repeat the new words and, after hearing them only once or twice, make spontaneous use of them. In short, children as young as 2;0 readily take up new words when they are offered, whether in the course of conversation or in pragmatically natural experimental settings.

3. The process of acquisition

What do these offer-and-uptake exchanges tell us about the process of meaning acquisition? They tell us is that adult offers can provide a sequence of

pieces of information pertinent to a new meaning. Consider what is needed in order to set up a potential meaning for an unfamiliar term:
the word form itself,

- any categorial information that can be inferred in context from the most probable referent,
- any information that distinguishes that meaning from near neighbors already known,
- any linking information that relates the new word to others already known.

Now let's look at how identifying each type of information plays a role in one child's uptake of the unfamiliar term *owl*, in the exchange given earlier in (10), repeated below as (17):

(17) Child (1;8.12, looking at a picture of owls in a new book): duck duck.
Mother: yeah those are birds. (looks at the picture) they're called owls. (points at the picture) owls, that's their name. owls. (looks at child)
Child: **birds**.
Mother: and you know what the owl says? (points at the picture again) the owl goes 'hoo'. 'hoo.'
Child: **owl**.
Mother: that's what the owl says.
Child: **hoo**. (smiles)
Mother: that's right. (NE20:0571, 1936)

The first step in the process of setting up a meaning for the new word is captured by the first three turns in this exchange, shown in (18a):

(18a) Child (1;8.12, looking at a picture of owls in a new book): duck duck.
Mother: yeah those are birds. (looks at the picture) they're called owls. (points at the picture) owls, that's their name. owls. (looks at child)
Child: **birds**.

New word: **owl**
Category: bird
Distinct from **duck**?

The information offered by the parent, along with the new word *owl* is that owls (like ducks) are birds, and it is this that the child seizes on first, as shown by the uptake of *birds*. The offer and this ancillary information is represented in the box below (18a). As the exchange continues, in (18b), the child can now add to the information already adduced, and infer both that an owl is a subtype of bird and that owls differ from ducks:

(18b) Mother: and you know what the owl says? (points at the picture again) the owl goes 'hoo'. 'hoo.'
Child: OWL.

New word: OWL
Category: bird
Subtype: owl
Differs from DUCK

Notice that just prior to the child's production of *owl* in (18b), the mother has provided a property that distinguishes owls from other birds (including ducks), by telling the child what the owl 'says'. So now the child can add the information that owls are a kind of bird (subtype), as shown in the amended box below (18b). As the exchange continues, the parent stresses the property ('says 'hoo'') that distinguishes owls from other birds, as shown in (18c):

(18c) Mother: that's what the owl says.
Child: HOO. (smiles)

New word: OWL
Category: bird
Subtype: owl; differs from subtype: duck
Property: says 'hoo'

So the child can add that distinguishing property to the information about the term *owl*, and can add to the subtype line the information about ducks being another subtype of bird. And after the child then says HOO, the mother ratifies the whole exchange by saying 'that's right.' Notice that in the course of this one exchange, the child has potentially made a whole series of inferences about the new word *owl*, and, with each inference, has added information about the category involved, the subtype (or subtypes) now known, and at least one distinguishing property.

The same process of setting up a possible meaning for an unfamiliar term can be seen at work in older children too. Consider the introduction of the supposed color term, *chromium*, for an unfamiliar color, to four- and five-year-olds (Carey & Bartlett 1978:18), illustrated in (19), and the inferences each part of this introduction licenses for child-addressees, shown in (20).

(19) While setting up the classroom for snacks, the teacher says to a child:
You see these two trays over there. Bring me the chromium one.
Not the red one, the chromium one.

The steps each child might go through in reasoning about the possible meaning of the unfamiliar term *chromium* are represented in (20a) and (20b), where the shadow-boxed segments specify the child's tacit inferences at each stage in the teacher's request:

(20a) Teacher: You see those two trays over there.
Bring me the chromium one.

Child: New word: CHROMIUM
Domain: trays
Property?

First, the child identifies the new term (*chromium*) and assigns it to the domain of trays, the object-type to which the teacher applies it in his utterance. As a color term, of course, it will actually apply to a wide array of domains and, itself, belongs to the domain of colors, but at this point, the child can not yet infer this. As the teacher continues, the child can both add to and adjust her initial inferences:

(20b) (Teacher continuing) Not the red one, the chromium one.

Child: New word: CHROMIUM
Domain: colors
Property of objects (trays)
Subtype: specific color; differs from RED

By mentioning 'the red one', the teacher licenses the inference that *chromium* is also a color term since he contrasts it with *red*, one of the colors for the trays he is talking about. The child can therefore adjust her inference about the domain from trays to that of colors, where these (on this occasion) are a property of trays. And she can add the information that the new term designates a subtype in that domain, a color that differs from the color red.

Effectively, the inferences licensed for one- to two-year-olds appear very similar to those licensed for four- to five-year-olds in the two scenarios just analyzed. In both instances, the adult speaker offers information that allows the child-addressee to make appropriate inferences about the domain the new word belongs to and about the subtype it designates in that domain. In both instances, the adult also offers some distinguishing information that allows the child to both relate the new word to one already known (and thereby get a fix on both domain and subtype) and to contrast it with what is already known.

This general process, I propose, is what takes place whenever children are offered unfamiliar words. And once they have set up preliminary information about a word, they can add to it, adjust it, and also remove irrelevant information as they are exposed to further uses and so make further inferences about its conventional meaning. On many occasions, of course, their inferences will be tacit ones, and children may give no outward sign at that point that they have taken in the new word and any attendant information. Nonetheless, I argue that they actively store such inferences and rely on them later as they observe further uses of the same words. On other occasions, their uptake of a new word is attested right away by their producing it in the course of the relevant conversational exchange.

4. Interaction or constraints?

Let me return to the contrasting views that I began with. In the interactional view, children notice and acquire new words in conversational interactions, either with parents and other adults, or, in some cultures, at first with older siblings. Furthermore, every use of a term children hear can tell them more about the conventional meaning of that term — how it can be used, what it contrasts with, and what it is related to. In this paper, I have shown how children make use of such information when they are offered new words and information about those words. The interactional view stresses the metalanguage directions adults offer to children in the general course of conversation. In interaction, children — like adults — depend critically on joint attention and Gricean cooperation between speaker and addressee for identifying the object or event being talked about. Along with Gricean cooperation, notice that speakers also depend critically on the pragmatic notion of CONTRAST to guide their inferences about the

general domain of meaning for a new word as well as for their more specific inferences about differences between the meaning of the new word and any near neighbors.

In the constraints view, children are viewed as virtually autonomous in their approach to learning word meanings. They notice new words and infer possible meanings on the basis of a priori constraints. These constraints limit their possibilities far beyond any actual limits in adult usage, so children eventually have to give up each constraint in order to be able to learn the options that are available in the conventional lexicon. However, the interactional data contradict the predictions of the constraints view, both in general and in detail. For example, children as young as 2;0 can readily learn and use two distinct terms for the same referent, and they are able to take up information that relates two terms from an early age (e.g., Clark & Grossman 1998, Waxman & Hatch 1992).

In the course of learning unfamiliar words, children take up what adults offer, and consistently repeat the target word. By doing this, they both ACKNOWLEDGE what the adult speaker has offered, and RATIFY it as the term to be used. At first, these repeats are simply single-word utterances. (They have often coded simply as imitations in children at the one-word stage.) Older children incorporate the new words offered into longer utterances that have the same functions as the earlier one-word repeats: they simultaneously acknowledge what the adult has offered and ratify it as the 'right' term. Finally, children take up not only information about how words can be kept apart (the 'local' contrasts within a domain), but also information about how these words may be related to others already known.

In short, children are far from autonomous in their assignments of possible meanings to unfamiliar words. They make active use of the pragmatic information offered them by adults about (a) which word to use, (b) how it differs in meaning from near neighbors, and (c) how it is related in meaning to other words in the same domain. So in order to find out more about the PROCESS OF WORD ACQUISITION, we must pay more attention to just what adults say to children about both words and word use in the course of conversation.

5. Conclusion

In their conversations with children, adults offer metalanguage directions within everyday conversational exchanges about which (conventional) words to use when and where, how they are distinguished from other words, and how they are related to them. Children in their turn take up this information about words and word use, the distinctions among words, and the relations among them, from the very start. This collaborative process of offer and uptake is critical to models of lexical acquisition: it informs us about the process by which children ADD to what they know about a new word meaning. We need to take into account how pervasive information about words and word-meanings is: Children can and do make use of what they hear about words and word uses from every exchange in which some target form appears. It's time for us to take all this into account when

we propose theories about what children can draw on as they build up their lexicon.

NOTES

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[1] Golinkoff and her colleagues summarized this position as follows: '[...] lexical acquisition proceeds in the rapid, relatively effortless way that it *does because the child operates with a set of principles that guide the task of word learning*' (Golinkoff et al. 1994:126; my italics).

[2] See further Clark 1997, Clark & Svaib 1997, Deák & Maratsos 1998, and Waxman & Hatch 1992.

[3] The exchanges cited in this paper are all drawn from one of several sources: the CHILDES Archives (the New England corpus collected by Catherine Snow, and the longitudinal corpora collected by Roger Brown, Stan A. Kuczaj II, and Jacqueline Sachs) see further MacWhinney & Snow 1985, my own unpublished diary study (Clark, unpublished diary), and several published articles.

[4] We assigned the same function to the objects in each pair of sets; the objects were also similar in size, but differed in overall properties between sets, and in many small details within sets (see further Clark & Grossman 1998).

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