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WHAT ARE YOU COOKIN' ON A HOT?: MOVEMENT CONSTRAINTS IN THE SPEECH OF A THREE-YEAR-OLD BLIND CHILD

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We consider an anomalous but internally consistent set of WH-questions produced by a 3½-year-old child. They are of theoretical interest because they appear to violate constraints against the movement of constituents out of noun phrases, thus raising questions about the conditions of applicability of such constraints. After giving an account of the probable sources of these questions in several kinds of verbal interactions between the child and his father, we propose that discourse patterns may affect the acquisition of sentence grammar in unexpected ways, and may even allow the language learner to temporarily modify the domain of applicability of universal constraints.*

A PUZZLE

1. This paper is about a set of grammatically anomalous questions produced by a severely visually impaired boy named Seth between the ages of 38 and 42 months. Two examples are: *What are we gonna go at* [= 'to'] *Auntie and?* and *What is this a funny?* Although only 19 questions of this type were collected, we believe that this was probably the total number of such questions ever produced by Seth. On the other hand, the form of these questions was consistent enough that we feel confident in saying that he had a set of rules for producing them. What is most remarkable about them is that they seem to violate widely accepted constraints on the movement of constituents. The first example above is an apparent violation of Ross's 1986 [1967] constraint barring movement of one member of a coordinate structure; and the second example seems to disregard another movement constraint, most recently formulated by Chomsky as a claim that only maximal projections, and not their heads alone, may be moved to a 'specifier position' like that of WH- (1986:4). Not only are these constraints basic for adult language, but to our knowledge violations of them have never been reported in the child language literature either. And yet they were produced by a quite verbal three-and-a-half-year-old boy whose language seemed otherwise to be developing normally.

Our thesis here is that a satisfactory explanation of this small but internally consistent flurry of anomalies will be found neither in the realm of pure syntax nor at the single-sentence level. Rather, we must draw on a wider background and look in some detail at the history of several kinds of verbal interactions in which Seth often engaged with his father, his primary caregiver. In reviewing these interactions we will look at them from three angles: the effects of Seth's blindness upon the nature of the verbal routines; the nature of the linguistic

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input in these routines and the way in which the input inadvertently provided models for the grammatically anomalous questions that later emerged; and the development of the routines over time, including Seth's valiant attempts at reversing roles within them, which forced him to experiment with the production patterns available to him.

After we lay out each of these strands we will show that they weave together into a revealing tapestry that provides a convincing explanation for how this fascinating corpus of anomalies could have arisen. In particular, two factors in the input seem to have been crucial: the presence of interrupted noun phrases, and the context of an information-elicitation game. We will propose that these factors affected Seth's developing grammar in one of the following two ways: either he formed his anomalous questions by simply placing a WH-word in front of the kind of sentence fragment he heard in this context—i.e. without doing any WH-movement at all—or he did in fact use WH-movement in an anomalous way, temporarily bending a universal constraint in the process. We hope to show that the evidence favors the second of these alternatives.

BACKGROUND

2.1. THE SUBJECT. The subject of this paper, Seth (also called Bird by his father), is the son of the first author. It will turn out to be relevant to our discussion that Seth is severely visually impaired: he was born totally blind, showing no pupillary response to intense light at three months of age. By twelve months he was able to avoid obstacles when crawling, and by 25 months he could grasp brightly-colored objects one or two inches in diameter, and discriminate boldly written two-inch-high letters. At 40 months he was assessed as having no central vision but a tunnel of peripheral vision (20/800) in his left eye.

Seth's care was shared by his mother and father up to age 19.1 (months.weeks), and from that time until the period covered in this paper his father (BW) was his primary caregiver.[1] BW collected data on Seth's acquisition of English from age 15.3 until about 52.0. One to two hours of audiotape per week and almost daily diary notes are supplemented by half-hour videotapes every six weeks to two months. In all, over 250 hours of audiotape were recorded, of which some 20 hours, spread over the time period, have been transcribed. The five volumes of diary notes are the most accessible part of the data, especially for the period after 30 months. The diary notes, however, tend to focus on Seth's own speech, while our explanation builds heavily on caregiver input; the transcriptions of the taped interaction between Seth and his father thus support the thesis of this paper even more strongly than does the diary.

2.2. THE PROBLEM. From about 38 to 42 months of age Seth produced some startling WH-questions in which constituents were interrupted in a way that

[1] Between 6 months and 4 years Seth attended a program for the visually handicapped which was sponsored by Sultan Easter Seals; between 3 and 4 years he also attended a Montessori preschool in the afternoons, switching to full-time attendance at age 4. He also occasionally visited his mother on weekends.

seems to defy widely accepted constraints on constituent movement. During this period only 19 questions of this type (hereinafter referred to as *WH-questions) were observed, not counting recurring tokens of some of them. For the reader's reference we present the entire attested corpus, arranged in three sections according to the kind of constituent that has been interrupted, and within each section in the order in which they were produced.[2]

A. INTERRUPTION OF NP:

(1) 38.1; talking about his cousins in Texas:
S: Kàthryn is my cóusin, Dàd.
BW: That's right, Bird.
>S: Whò's Kàthryn is mý?
BW: Huh?!
>S: Whàt's Kàthryn is mý? (repeating his earlier construction, but changing *who* to *what*)

(2) 38.2; Seth's running away at the store had been much discussed:
>S: Whàt did Í get lòst at thè, Dad? (*the* has schwa)

(3) 38.2; leaving the eye clinic:
S: I said goodbye to Dr. Moore.
> Whàt did Í sày goodbỳe to Dòctor?

(4) 38.2; BW and Seth's godfather Johnnie were going to look at some property for sale:
S: We're gonna look at some houses with Johnnie.
> Whàt are wé gonna loòk for sòme?
> Whàt are wé gonna loòk for some with Jòhnnie?

(5) 38.3; Seth initiating an interaction with BW:
S: We have to buy me some M and M's.
> That's whàt wé hàve to bùy me sòme.

(6) 38.3; playing with magnetic letters, which have large serifs, on the refrigerator:
S: Is this a T?
BW: No, that's a funny I.
S: (holding up another one):
> Whàt is thís a fùnny, Dàd?
> Whàt is thís a fùnny?

(7) 39.0; banjo and guitar cases were side by side; Seth touched the guitar case:
>S: Whàt is thís one the càse, Dàd?

(8) 39.0; waiting for the elevator; BW usually says, 'Now we're gonna push number nine':

[2] Acute and grave accents represent, respectively, primary and secondary stress. Intonation contours conform to the stress patterns of adult American English WH-questions: mid pitch before the primary sentence stress, high on the stressed segment, and low following it. Despite their anomalous syntax, Seth's sentences have terminal-sounding contours (but the placement of primary stress is not always standard). Vocative intonation is standard: *Xx, Dad* is rising. *WH-questions are flagged with >.

>S: Whàt are wé gonna pùsh nùmber?
BW: Huh?!
>S: Whàt are wé gonna pùsh número?

(9) 39.1; feeling cordless mike on his robe lapel:
S: Dìd you pìn this on my ...
> Whère did yóu pìn this on mỳ?

(10) 39.2; waiting for BW to get breakfast ready:
>S: Whàt are yòu còokin' on a hót?
BW: Well, what AM I cookin' on a hot?
S: Stove!

(11) 39.2; BW said he was shakin' all the batter and milk for the pancakes:
>S: Whàt are yóu shàkin' all thè? (*the* has schwa)
BW: What?!
>S: Whàt are yóu shàkin' all thè?
BW: Well, what AM I shakin' all the?
S: Batter and milk.

(12) 39.3; BW and Seth were looking at a collection of old medicine bottles at Dr. Wong's office. BW remarked that one of them was for cold, cough, and laxative, and wondered what you'd do if you only had a single ailment. BW then turned away and so couldn't see which bottle the next question was about:
>S: Whàt is thís mèdicine for mỳ?
BW: What did you say, Bird?
>S: Whàt is thís mèdicine for mỳ?

(13) 39.3; reading large print containing lower-case letters unfamiliar to him:
S: C, small A, small ...
> Whàt is thát smàll?
BW: T.
S: T spells CAT.

B. INTERRUPTION OF A CONJOINED CONSTITUENT:

(14) 38.3; on the way to babysitters known as 'Auntie and Priya', an irreversible binomial:
>S: Whàt are wé gonna gò at Aùntieànd?

C. INTERRUPTION OF A COMPOUND WORD:

(15) 38.2; BW has said he is gonna talk to Margene. Seth knows the name Jean, but has not heard of Margene:
>S: Whàt are yóu gonna tàlk to Màr?

(16) 38.3; Seth initiating an interaction with BW:
S: Dàd Ì made páncakes, yèah?
> Whàt did Í make pàn?

(17) 39.1; waiting, another time, for BW to cook him some pancakes:
>S: Whàt are yóu còokin' pàn?
BW (no longer responding with interest to Seth's *WH-questions):
Well, what?

>S: Whàt are yóu còokin' pàn?
BW: (silence)
S: Ha! Cakes!

After a hiatus of two months during which no *WH-questions were noted, the following two occurred:

(18) 42.0; BW was drawing big Hebrew letters with Seth in his lap trying to watch:
BW: You get right in my ... (holding the last syllable so as to breathe evenly while drawing the character, but not expecting a completion from Seth)
>S: What do I get right in your?

(19) 42.0; talking about 'silly things'—a bedtime routine:
BW: What if you sat on a hot stove?
(Seth and BW agreed that you would burn your *tokhes*)
S: Did you sit on a hot?
> What did you cook on a hot?
BW: Well, what?
S: A stove!

One's first impression is that these sentences are seriously at variance with the movement rules of adult English. Indeed, they appear to be counter-examples to claims that have been made about universal constraints. While it is not the purpose of this paper to challenge such claims,[3] let us briefly examine their nature and how Seth's productions appear to run afoul of them.

The strongest form of a movement constraint, known as the A-over-A constraint, was stated by Chomsky (1964:931) as follows: '... if the phrase X of category A is embedded within a larger phrase ZXW which is also of category A, then no rule applying to the category A applies to X (but only to ZXW).'

This constraint was challenged effectively, notably by Ross 1967, but it seems that Ross's and others' efforts were aimed rather at constraining the constraint than at falsifying it in principle. In fact, none of the discussions contain starred examples as flagrant as Seth's sentences, the implication being that everyone is in agreement about cases as obvious as these. The briefest and perhaps least controversial way to describe the situation is to say that in more than twenty years of refinement through syntactic argumentation, no discussion of movement constraints known to us contemplates relaxing them so far as to permit sentences such as the ones Seth produced.

Now if we wished to try to derive Seth's *WH-questions within a framework such as Ross's, we would have to posit rules to accomplish the following:

(20) a. Substitute *what* (or rarely *who* [1] or *where* [9]) for the final noun (except for 7).
b. Move *what* to the front of the sentence.

[3] Cases such as this one may rather provide clues as to how these constraints came to be in the first place; at least, the fact that it is hard to create a question violating constraints on WH-movement without already knowing the answer may be a clue.

c. In a few cases add *do*-support. (2, 3, 9, 16; omitted in 5)
d. Invert subject and auxiliary. (omitted in 1, 5)

It is rule 20a that does not conform to adult grammar in that the question word replaces only the final noun rather than the final noun phrase, thus violating several widely accepted constraints. These include not only A-over-A, but also the more recently proposed subjacency condition (Chomsky 1977) as well as the maximal projection property of movement rules (Chomsky 1986). If Seth did, in fact, use constituent movement to derive his *WH-questions, he would have had to violate universal constraints. Is this possible? And, if so, how could it have happened?

The fact that such a small number of *WH-questions occurred during four months of this voluble three-year-old's chatter made us first ask whether they might be due to performance errors. We dismissed this explanation for several reasons. Seth's robustness under questioning[4], combined with the stability of stress and intonation patterns and transparency of meaning, left us no choice but to regard this little corpus as rule-governed, albeit in a way that was not immediately obvious. At first glance it seemed interesting enough to document in a brief review of claims about movement constraints followed by a statement of the rule(s) necessary to generate such a corpus. But such an exercise seemed a little like describing one of those two-headed snakes which don't seem to disturb anyone's theory of zoology. Besides, movement constraints are intuitively satisfying and may indeed reveal something about the way human minds are wired. Why then would a little boy with an otherwise ordinary pattern of language development suddenly come up with such anomalous constructions, produce them for four months, and then stop?

In order to answer this question we have found that we must consider a broader range of phenomena than single-sentence syntax. Specifically, clues will be found in certain types of verbal routines which evolved between Seth and his father. Before we move to this level of detail, however, we must first present a brief review of two important background areas: the nature and development of interactive verbal routines in sighted children, and language development in blind children.

2.3. INTERACTIVE ROUTINES AND LANGUAGE DEVELOPMENT. Over the past ten years an extensive body of literature has emerged on the role of caregiver–child routines in both cognitive and linguistic development (see especially Bruner 1975, 1978; Cazden 1983; Peters & Boggs 1986; Schieffelin 1979; Watson-Gegeo & Gegeo 1986.) While we do not have the space to give a comprehensive review of this work, three important themes that have developed within this context are crucial to our argument: social interaction as a motivation for acquiring specific linguistic forms; the role of systematically diminishing caregiver support (SCAFFOLDING) in the learning process; and the ways in which routines change over time, either dying out or evolving as competence grows.

Several researchers interested in the emergence of language have noticed

[4] See 1, 8, 11, 12. In 1, when he feels he has been challenged, he retreats to a more familiar WH-word but stands pat on his constituent order.

that a child's first words are often produced (and understood by caregivers) in the context of familiar routines (e.g. Griffiths 1986).[5] Similarly, first word-combinations often occur in familiar contexts (e.g. Ewing 1984). It seems that when this happens, a crucial factor is the child's desire to take part in an activity sequence which she has come to anticipate through many repetitions. Caregivers often encourage such active participation by the child through scaffolding the interaction in such a way that specific signals are given to the child concerning just what to do or say, and when. For example, pauses are made in which the child can vocalize; if she does so, then acknowledgment and praise are given. If she does not, then the appropriate move is (once again) modeled. (An example of this will be seen below in 36.) As the child learns to make particular moves more and more reliably, the caregiver's expectations rise accordingly—not only is backsliding discouraged, but more advanced levels of participation are encouraged. (Bruner 1978:254 uses a metaphor of the caregiver as 'communicative ratchet'.) The result is ever-diminishing caregiver support within any given routine. As any parent or teacher is well aware, if the caregiver's expectations fall within what Vygotsky calls the 'zone of proximal development' (1962:103), the learner is neither bored with a task that is too easy nor frustrated by one that is too hard: the payoff is maximal for the effort invested. But once a routine becomes fairly well learned it is in danger of losing its fascination and dying out. This is, in fact, what happens to some routines, such as peekaboo (Ratner & Bruner 1978). Other routines, however, are open-ended enough to survive through the addition of complexity. This is the case with labelling (Ninio & Bruner 1978) and book-reading (Snow & Goldfield 1983), which start out with simple naming but can evolve into fairly complex descriptions or storytelling.

Another important ingredient in the development of routines involves role-taking and role-reversal. At first the learner is sufficiently occupied with learning her originally assigned role, which is invariably that of follower. But eventually she wishes to take the lead and must learn to perform adequately in the opposite role. If the caregiver resists this reversal, the routine may either die out or evolve in unexpected directions. We will see that the dynamics of role-reversal within well-established routines played an important part in the development of Seth's *WH-questions. First, however, we must consider the effects of Seth's visual handicap on the types of social interactions he was able to engage in.

2.4. LANGUAGE DEVELOPMENT IN BLIND CHILDREN. A number of studies of the early development of communicative interaction in sighted children have emphasized the importance of the establishment of eye contact and the sharing of mutual gaze (e.g. Bruner 1975, 1978; Trevarthen & Hubley 1978). Since

[5] Of course, this is not always the case—we are well aware that there are many children for whom this is not true. (We would like to thank Elizabeth Bates for reminding us about these children.) While we are not prepared to say anything about these latter children, we do feel that we can say something interesting about what we can observe of the language development of those children who do rely overtly on the support inherent in verbal routines.

blind children and their caregivers cannot make use of these mechanisms, they must either fail to establish meaningful communication (e.g. Adelson 1983) or find alternative routes (Kekelis & Anderson 1984).

Urwin (1978, 1983) found that the mothers of the three blind children whom she studied introduced various physical and vocal interactive routines, starting with devices for getting attention (touching, tickling, blowing) and initiating turntaking (imitating the babies' coughs, sneezes, babbles). They also sang songs and played hand-clapping games. In fact, these blind children entered into games and routines that were quite similar to those of sighted children of the same age, except that the medium was more heavily vocal. The blind children showed an ability in the preverbal stage to learn body play routines (pat-a-cake, ride-a-cock-horse) and to gain some control over the next step in the game; subsequently, their early words accompanied pre-existing vocal and/or action procedures which conveyed particular communicative intentions, the preverbal dialoguing paving the way 'for an unusually early mastery of basic conversation-maintaining procedures' (1983:149). As the children grew older some routines were dropped, some new ones were introduced, and 'certain routines persisted to become generative' (Urwin 1978:89)—that is, their form did not remain fixed. Rather, variations were introduced within the framework of the routine to accommodate the children's expanding interests and developing abilities for both participation and role-reversal. In this way, according to Urwin (1983:148),

> '... the parents would use the predictability inherent in these games to build up expectancies, encourage anticipation, and eventually to "push" the babies toward taking more active roles. By the end of the first year all three infants were capable of dictating the "next step" in these games, using their own bodies to control their parents' actions and reactions.'

The consensus of the literature on the early verbal development of blind children seems to be that there is not only an unusually heavy reliance on verbal routines for initiating and maintaining communicative interaction, but that, compared with sighted children, blind children imitate a relatively high proportion of the time (see e.g. Dunlea 1982). In particular, Dunlea observes that blind children characteristically imitate their mothers' speech in somewhat anomalous ways, often repeating holistic chunks which are probably only partially analyzed. This seems to be especially true of the questions their mothers tend to use as initiators of interaction. For instance, Dunlea cites requests that take forms like *Wanna hear a record?*, and reports of one's own actions expressed as *Did you drop the horsie?* (289–90).

SETH'S LANGUAGE DEVELOPMENT

3. This sketch characterizes Seth's development very well. In the three months before his blindness was diagnosed his parents found their inability to establish eye contact with Seth to be disconcerting and sometimes overwhelming. BW recalls that he seldom entered the room without tickling, squeezing or hugging the baby, or tossing him in the air, all the while watching his mouth for a smile that would indicate that there was 'somebody home'. He often feared there was not. The news that Seth's visual inattention was permanent removed

some of the pressure, and his parents began to get used to the idea that they would have to learn new ways of interaction. The discovery that voices and sounds would elicit the desired smile or chuckle from Seth led his father to intersperse verbal stimulation with the physical.

Seth's memory for sounds and voices developed well and early. At two or three months of age he could hold the memory of a friend's voice over a period of two weeks' absence, breaking into a broad smile upon hearing that one voice among a crowd of others. His sensitivity to intonation contours made him a proficient turntaker in conversations long before his control of the segmental phonology had progressed beyond coos and squeals. As Seth grew older, he imitated many sentences taken from the 'fatherese' to which he was exposed, including many interactive questions. For instance, for a while he used *didja* as a past tense marker in reportative sentences, e.g., *Didja dump it out* meant 'I dumped it out'.[6] And, like Dunlea's subjects, he used adult questions as requests, e.g., *D'ya wanna get cookie* meant 'Get me a cookie', and *Are ya pau ya water* meant 'I've finished my water'[7] (examples from 28.0).

Certain aspects of Seth's language development can be shown to be closely connected to specific interactive routines introduced by his father. Many of these routines share a common teaching character as well, although the social-interaction aspect is stronger in some of them than in others. In retrospect, it seems that the teaching component may have been stronger for his father, whereas the interactional component was probably stronger for Seth. This will become especially clear when we see how Seth began to use these routines to initiate interactions with his father, a move in which role-reversals engendered status conflicts since it did not seem appropriate for little Seth to take on the teacher role. In 18 there is a mild attempt at such role-reversal by Seth, and in 10, 11, 17, and 19 we see a hint of his father's resistance to being questioned. We will look at the development of four kinds of routines: (1) formulaic sequences and interchanges; (2) *Say X*; (3) rehearsal of bundles of known information; and (4) the three-dot (sentence completion) routine. As our last piece of evidence we take a brief look at the development of Seth's ability to produce normal questions.

3.1. FORMULAIC SEQUENCES AND INTERCHANGES. Starting quite early, BW introduced a number of little routines which Seth learned verbatim. We will illustrate with a selected sampling. One of the earliest goes as follows:

(21) You know what? I love you.

In the earliest tapes we find BW producing the whole sequence, solo. But very soon Seth learned to produce an approximation to *I love you* when he heard the *you know what?* cue.

Another such interchange is the Clark Gable routine. By 32.0 Seth had learned this one so well that he could either participate in it interactively or produce the whole thing on cue:

[6] See Wilson 1985 for a full treatment of tense and aspect in Seth's language development.

[7] *Pau* is Hawaiian English for 'all done', or 'finished'.

(22) BW: Hey, wanta do Clark Gable?
S: Yeah. Fwankly my dear, I don't give a danh.

A less literary but obviously well-known routine appeared on the same tape from 32.0:

(23) BW: Here we are! So nice ...
S: Lyin' down togedder.
BW: And talk to ...
S: to da each udder.

And finally, at 36.0 we find:

(24) BW: That sounds like a ...
S: Good idea.

3.2. SAY *X* AND VOCABULARY LEARNING. Seth's father also taught him how to say many things, both by providing implicit models for imitation and through explicit requests for Seth to repeat a specific model. Some of these served to teach new vocabulary:

(25) 22.2; they are feeling the bark of different trees while out walking:
BW: Say *It's rough*.
S: Wuff.
BW: Yeah. That's right.
A bit later, by a different tree:
S: Wuff.
BW: No, not rough. It's smooth. This one is smooth.
Say *smooth*.
S: Mooth.
BW: Yeah, that's good.
S: Moof.

(26) 24.2; Seth feels BW's hair:
S: Daddy wet.
BW: Daddy's hair is wet.
S: Daddy's hair is wet. Daddy's hair.
BW: Yeah, Daddy WASHed his hair.
S: Oh ... (5 sec. pause)
Nice. Nice.
BW: Daddy's hair is nice. Where's YOUR hair.
Say *MY hair*.
S: My hair.

The formulaic routines illustrated in §3.1 must also have been taught partly by means of the *Say X* routine. This kind of teaching is evident in the next example from age 24.2 in which Seth and his father are saying morning prayers. Seth already knew some of the sequence well enough to say it on his own, but other parts needed prompting:

(27) BW: Can you say prayers? Let's do our prayers.
S: God Daddy.
BW: God bless Mommy.

S: {An' Mommy.
BW: {God—
Say *God bless Daddy.*
Say *God help me.*
S: /hit/day.
BW: Every day.
S: {unh
BW: {Amen.
S: Amen.
BW: Thank you God.
S: Amen.
BW: Thank you God.
S: Thank God.
BW: Love you God.
S: Love God.

Although some of the *Say X* interchanges were aimed at modeling vocabulary to be learned (in the sense of providing names for things), the greater proportion was directed at linguistic socialization and modeled politeness phrases, such as *please, thank you,* and *please help me.* Examples 28 and 29 are from age 24.2:

(28) S: Apple juice? Apple juice?
BW: Say *please, apple juice, please.*
S: Apple juice?
BW: Say *please, Daddy.*
S: Pease Daddy.
BW: OK.

(29) Seth has been eating a cookie, hands remains to BW:
BW: You want this cookie?
S: Want da cookie?
BW: Did you want it?
S: All pau?
BW: Well then say *no.*
S: Say no.
BW: Say *no THANK you.*
S: No sank you.

By 32.0 Seth sometimes tried to get his father to take the follower's role in one of their routines by instigating the *say X.* But Seth already seemed to sense that an unmitigated command to his father would not work, so he softened his request by asking *Can Daddy say X?*

(30) 32.0; BW and Seth are playing their game of identifying spices by smell. This entails opening and closing many small jars. Here BW is helping Seth put a jar lid on:
BW: 'M put top on?
Yeah. Get it straight.
OK now you can ...

Now put it on. Good.
You ... keep goin'.
Just ... that's right ...
Just like you're doin'.
Good job!
Now say *unh*. (what they say when tightening a jar top)
S: Unh.
BW: Good.
S: Can Daddy say *unh*?
BW: OK, unh!
A bit later:
BW: Well, what's in there?
S: Cloves.
BW: Cloves. You're right.
Yes, Bird, that's right.
S: Can Daddy take a clove out?
BW: Yeah. You want me to get one out for ya?
S: Yeah.
BW: Here.
Say *thanks, Dad.*
S: Thanks, Dad.

As Seth performed more and more reliably within these routines, his father began expecting him to produce the appropriate language with less and less of a prompt. For instance, by the time Seth was three years old BW could often elicit the desired language with a mere *Say* ... (Here we see Bruner's communicative ratchet at work.)

(31) 36.0; Seth is in the bathtub. He knows that BW will fuss if he splashes the floor:
S: Help ... Close the curtain.
BW: Say ...
S: Say would you close the curtain?
BW: OK. (closes sliding door)
Say ...
S: Thank you, Dad.
BW: You're welcome, Bird.

3.3. REHEARSAL OF PAST EXPERIENCES. At an early stage Seth's dialogue openers consisted of words like *Hug, Kiss*, or *Light* (asking to help turn the light on). As his vocabulary grew he developed what we call ASSOCIATION BUNDLES of words that tended to occur together within interactive routines (e.g. light/switch/on/push-hard, or tree/leaf/bark/root, or names of relatives they had visited). He and his father often engaged in interactions that consisted in rehearsing the contents of these bundles, Seth more and more often taking the lead by using a key word to initiate the exchange. For instance, at 20.3 Seth led off the following recitation of the names of the inhabitants of the house where his mother then lived (Sean, Eji, Zach, Lady, and Kitty were children,

roommates or dogs belonging to Mommy's household, but Mommy's name was not part of this bundle):

(32) S: Sean.
BW: Sean.
S: Eji.
BW: Eji.
S: Zach.
BW: Zach.
S: Vlakich.
BW: And Lady. (knows what Seth means)
S: 'Ng Kitty.
BW: And Kitty.
S: 'N Zach.
BW: Well, who else is there?
Who are you forgetting?
How 'bout your Mommy?
(BW has now initiated a new bundle: Mommy/call-you/guy/buddy)
S: 'Ng call-you.
BW: What does your Mommy call you?
S: 'N fan on? (supposed to say *guy* or *buddy*, but changing subject instead)
BW: (jumps up and turns the fan on)

Here we see that by 21 months, even though he was still at the one-word stage, Seth's control of this mode of interaction was such that he could initiate a topic of his choice and pursue it through five interchanges. When his father tried to introduce a new (but associated) bundle, Seth cooperated for only one turn before he changed the subject again, this time succeeding in getting BW to get up and turn the fan on. Within his limited capabilities Seth was already able to lead this conversation.

3.4. THREE-DOT, OR SENTENCE COMPLETION, ROUTINES. Seth's father introduced another kind of routine in order to encourage Seth to rehearse information that he (unconsciously) felt that Seth should already know. This was a sentence-completion routine in which BW would start a sentence on a well-known topic, pause partway through, and encourage Seth to supply the missing information. Because of the way it looks in transcription we have named this the THREE-DOT ROUTINE. As with the other routines we have discussed, when Seth became aware of its interactional possibilities he was motivated to try to reverse roles within it. But even more significantly, as we shall show in our examples, this routine was crucial in the development of *WH-questions since it provided Seth with explicit models for interrupting NPs at points not normally considered possible (by grammarians, at least, though the phenomenon of sentences suspended just before major content words may be much more common than has been realized). Let us look at the history of this routine and how it could have been the precursor of Seth's *WH-questions.

From Seth's nineteenth month, transcriptions of the input show the begin-

nings of his father's Three-Dot strategy for getting him to rehearse information which BW thinks he should know. Even though Seth was not yet even making his own word combinations, BW built little sentence frames and indicated by pause and intonation that Seth should fill the empty slots at the ends (usually with just a simple noun or verb). Two of the earliest examples—so early that Seth has not yet learned the routine—are found at age 18.3. They occurred within seconds of each other:

(33) 18.3; Seth has just felt a towel and mistakenly called it Teddy:
BW: What is this?
> You thought it was Teddy, but it's ...
S: Teddy! (hoots like chimp)

(34) 18.3; asking to be swung in the swing, located in the living room:
S: Swing swing swing swing?
BW (continuing a previous line of thought):
> Yeah, we went outside and ...
S: Swing swing swing? Swing swing swing?

But BW persisted. In the next two examples he is found creating a framework into which he tries to finesse the missing word:

(35) 19.1; Seth touches BW's mustache:
>BW: Daddy's ...
> What is that?
S: Tass.
BW: Daddy's mustache! That's right! Good! You're so smart!

(36) 19.1; in swing, Seth stretches out his hand to BW:
S: Faai.
BW: Give me FIVE! (grabbing Seth's hand)
> Hold out your hand and give me ...
S: (silence for a second)
BW: FIVE! (grabbing Seth's hand again)
S: Faai!

In 35 BW interrupted an NP just before its head. When Seth successfully supplied the desired word, BW reinforced his performance with repetition and praise. In 36 BW, suspecting that Seth was set for a whole string of 'fives', simply put a frame in the path in hopes that the word would fall into it. When it did not, he supplied it and Seth followed suit.[8]

Jumping now to Seth's twenty-fifth and twenty-sixth months, we find BW's persistence paying off. Seth would now finish sentences for him some of the time:

(37) 24.2; getting ready for breakfast:
>BW: Put your ...
S: Bib on.
BW: Put your bib on.

[8] This unconscious strategy is startlingly reminiscent of what behaviorists call SHAPING.

(38) 25.2; Seth is throwing toys out of his toy box:
S: That red! That orange! (then throws his keys)
>BW: Didja throw your ...
S: Keys?

(39) 25.2; after breakfast:
BW: What did you eat?
> Eggs and ...
S: Mbacon. (wrong: giving a more usual answer)
BW: Eggs and cheese.
S: Mbacon. (stuck on the same answer)
>BW: And ...
S: Turkey. (right)

In 37 and 38 BW interrupted NPs just before the head nouns, and in 39 a conjoined constituent was interrupted just before the second noun. Except for 37, none of the Three-Dot sentences in 33–39 requires Seth to supply anything more than a single noun; 37 seems somewhat more formulaic.

In the same month there is one instance of Seth's setting up the game himself, but here it is clear that he has memorized the whole missing noun phrase, probably without understanding its grammatical structure:

(40) 25.2; listening to Granddaddy on his tape recorder for the thousandth time:
G: It is obvious that you're getting to be
S: (shuts off recorder) Sech a big boy!
(pushes PLAY button)
G: Sech a big boy!

In Seth's twenty-eighth month we find BW interrupting just before an expected prepositional phrase:

(41) 27.0; telling Seth an Indian story about a crocodile:
>BW: And the monkey jumped up ...
S: Croppodile's back.

(42) 27.3; asking about a departed house guest for the hundredth time:
S: Where's B.J.?
>BW: B.J. went ...
S: To Big Island and see her doggies.

From about this time there is ever-increasing evidence of Seth's desire to reverse roles and take his turn as questioner, too. Thus, in 42 Seth asked his father for information that both of them already knew. His father, however, who is quite status-conscious, won't always cooperate. In this case he reassumed the lead, giving back to Seth the task of supplying the missing information.

In Seth's twenty-ninth month BW discovered that Seth had enough vision to read letters four inches high, and a tightly structured teaching game evolved in which they worked on both Roman and Hebrew letters. The Three-Dot strategy was a main ingredient, as will be seen in the next few examples:

(43) 28.2; getting his flash cards out of the drawer:
S: Which one ya gonna take? Which one ...
>BW: (interrupting) Boy, you got the ...
S: Hebrew letters.
BW: Hebrew letters.
S: Which one ya gonna take? What's that?
BW: (not allowing Seth to question him)
> Oh, that's a ...
S: Aleph.
BW: That's a aleph (sic).[9]

The next 4 examples are all from age 28.2 and involve flash cards and blackboard:

(44) S: Which one ya gonna take? Where's the samekh?
BW: I don't know. Somewhere in there.
> Oh, there's ...
S: The resh.

(45) BW: Bird, you know almost half of these Roman letters.
You know 'em so well!
> There's ...
S: M.
>BW: M for ...
S: Ma ... Mommy.
BW: M for Mommy.
And there's H.

(46) >BW: Here's your ...
S: F.
Jeff.
BW: No, not F.
Look at it.
S: E.
BW: E.
S: That's right, Bird. (reversing roles)
BW: And that's right, Bird. (taking the lead back)
> And here's ...

(47) 28.2; wanting BW to write on the blackboard:
S: Cha make a kaf?[10]
BW: (makes him a big Hebrew kaf with the flat of the chalk)
S: Cha make another kaf?
>BW: That's a nice ... (making another one)
S: Other kaf.

In none of these examples is BW eliciting more than a noun phrase, and in most cases it is a simple noun. To do this he tended to start the NP and break

[9] Caregiver's focus on simplifying input overrides the grammatical rule requiring *an* before vowel.

[10] *Cha* is a Hawaiian English request marker derived from English *try*. It has a certain amount of mitigating force, and is more polite than a bare imperative.

off after the article (43), or just after an adjective (46, 47). He also fished for nouns by pausing just after a copula (44, 45, 46) or after a preposition (45). In most cases Seth supplied simple nouns, exceptions being (43, 44, 47).

A sequence at almost 31 months even shows BW breaking a compound word (compare Seth's 15, 16, 17):

(48) 30.3; lying on BW's bed. 'Feathers' is an old family word for body hair:
S: Daddy ha' feathers on his eyebrows.
BW: You have feathers on your eyes.
> They're ...
S: Is it /kayk/?
BW: I don't know what /kayk/ is.
That's when you don't know a word.
What is it when you have ...
What are those feathers on your eyes?
> They're eye ...
S: Lashes.
BW: Eyelashes, that's right.

Two more complex examples show BW eliciting embedded sentences. Once he stops just before a complement and once he splits an infinitive:

(49) 32.2; in Seth's bed:
>BW: We forgot ...
S: To do our prayers.

(50) 30.3; telling the crocodile story again:
BW: And his (the monkey's) heart must be very sweet.
> I want to ...
S: Eat it.

Although these last two examples are more sophisticated than any of Seth's *WH-questions, we will see similar constructions a bit later when we consider a set of questions which Seth produced and answered himself.

All of BW's Three-Dot sentences can be seen as providing grammatical models for Seth's *WH-questions in that they interrupt sentences just before important content words or phrases. The breaks tend to come in the middle of NPs just before the head nouns, leaving dangling articles or prepositions. The case for Three-Dot sentences as models for *WH-questions becomes even clearer if we take some of BW's Three-Dot sentences and convert them to questions using the following oversimple rule:[11]

(51) S ... → What/ta S? (with intonation and stress changes)

(38′)	*Whàt did yóu thròw yòur?	(see 1, 9, 12)
(43′)	*Whàtta yóu gòt thè?	(2, 11)
	*Whàt thát's à? (schwa)	(52)
(45′)	*Whàtta thére's?	(57)
(47′)	*Whàt thát's a nìce?	(6, 10)

[11] This is for illustration only. Here 'S ...' indicates a Three-Dot sentence. In Seth's grammar at that time, *whatta* was a variant of *what* which occurred before pronouns.

(48′) *Whàt/Whàtta théy're èye? (15, 16)
(50′) *Whàtta Í wànt tò? (schwa) (60)

There is no longer a native speaker of Seth's idiolect available whose intuition we can tap for the acceptability of these starred sentences, but some of them are quite similar to those attested for Seth. Others are dubious but might have occurred, given a larger corpus.

A logical missing link would have been the production of Three-Dot sentences by Seth himself. The nearest we have found to a non-*WH-construction designed to elicit information from his father turns up in the diary, almost at the end of the *WH period:

(52) 39.2; before bedtime:
S: Ì'm gonna slèep in á, Dad. (final schwa, terminal contour, but obviously expecting BW to complete the sentence)
BW: Oh, you're gonna slèep in á.
S: My futon! (Japanese folding mattress)

This little sentence is anomalous in the same way as the *WH-questions (final stressed article with no head noun), although it does not have Three-Dot intonation. It also clearly belongs to the game of eliciting information known to both parties.[12]

Although not all of the tapes have yet been transcribed, we are quite sure that we will not find Seth himself producing Three-Dot sentences. None appear in the diary. Our intuition is that Seth knew that his father would not cooperate if Seth simply tried to produce a Three-Dot sentence on his own. In his desire to take the lead he had to invent a more compelling kind of question. (His father CAN be made to answer almost anything if he doesn't feel he's being manipulated.) We have already seen that Seth had discovered how to mitigate *Say X* by 32 months. BW recalls that during the *WH-period Seth was also demanding equal status in other areas, including trying to call his father Bob, so that status considerations enter in as well as simple interactional needs. In fact during this period there were daily collisions over Seth's (and his father's) refusal to be questioned about information the questioner already had. An example is taken from the diary at about 35 months, where it is accompanied by the note, 'This is a typical exchange':

(53) 34.3; talking about Seth's visit to Knott's Berry Farm:
S: What the train did?
BW: I don't know, Bird. (refusing to play— he does know) Tell me.
S: What the train did? (thinking BW has asked him to repeat)
BW: TELL ME! (bristling at Seth's presumption)
S: What the train did? (meekly)

[12] Lest the reader form the impression that all interaction between Seth and his father is of this nature, it should be duly noted that much real information passes between them as well—food, clothes, outings, bedtimes are negotiated, new persons and objects introduced and described, and at the end of the day one shares the events of his day with the other. Three-Dot sentences and *WH-questions are not normally a part of these exchanges.

>BW: Oh, it ... (softening, realizing there's been a misunderstanding but not giving in)
S: Went through the tunnel.

Though the examples given show BW emerging as the winner in these conflicts, Seth did succeed in getting his father to supply known information quite a lot of the time. At this writing Seth is six years old, and the contest continues in increasingly elaborate forms.

Another piece in the puzzle is provided by a related set of questions which Seth produced at about this time showing some of his experimentation with adult WH-words. He tried *who's, where, how older*, and *what else* (as in *What else book do you like to read?*), and notably lacked *how* and *which*. When pushed he would fall back on the less marked *what/whatta* (see also example 1). The set of questions in 54–62 is grammatically much more complex than the *WH-questions we have already seen, in which only single nouns were missing (except for 7). The missing constituents include prepositional phrases, predicate complements, verb phrases, and even embedded sentences. Here, too, Seth was rehearsing known information, but his motivation to interact with his father seems to have been less strong, since in most cases he provided the missing information himself. An alternative explanation might be that the missing information might have seemed too complex to elicit by means of a *WH-question (though see 53).

(54) 32.0; lying on sofa with BW:
S: Whàt Dáddy's lỳing?
Hè's lỳing with Séth.

(55) 35.2; finally being less rough with AP's globe:
S: Sèth's very géntle.
Whàtta hé's?

(56) 36.2; BW had complained that the turkeys were late with the newspaper again:
S: Dìd the tùrkeys brìng the néwspaper yesterdày?
Whàt did the tùrkeys díd?

(57) 36.3; learning about age:
S: Hòw ólder Ì'm nòw?
BW: You're three.
S: Whàtta Í'm?

(58) 37.3; carrying Seth from a building to the car:
S: Whàt are yóu càrrying?
Àre you càrrying mé?

(59) 38.1; Seth was helping pour the batter into the skillet:
S: Ì'm hèlping you màke páncakes.
Whàtta Í'm hèlping yòu?

(60) 38.2; pretending to drive his little car somewhere:
S: Whère Í'm drìving tò? (*to* has schwa)

(61) 39.0; BW switched the stereo on with the volume already turned loud:
S: Whāt did yóu tùrn it?
Dìd you tùrn it lóuder?

(62) 39.2; BW showed him the umbrella ribs that might stick him in the eye:
S: See this edge here? Whàtta we dòn't dò to our éyes?

We can see that during this period he was experimenting with WH-questions and WH-words. Although some of his self-answered questions involve AUX inversion (56, 58, 61), others could have been formed by preposing a WH-word in front of the kind of sentence fragment he heard in his father's Three-Dot prompts (53, 54, 55, 57, 59, 60, 62). On the other hand, the occurrence of these question–answer pairs does argue that he could have been using true WH-movement to generate his *WH-questions as well.

3.5. DEVELOPMENT OF QUESTION SYNTAX. Meanwhile, Seth's ability to form questions in more ordinary circumstances was also developing. Let us look briefly at how his control of question syntax increased between 36 and 40 months, just before and during the time of his *WH-questions.

In a half-hour tape recording made at 36.0, Seth produces the following kinds of questions with normal adult syntax: 13 requests beginning with *can*, all with correct inversion, e.g. *Can I make a triangle?, Can Daddy put gas in here?*; 9 questions beginning with *is that* (although their syntax is adult-like, they may be formulaic); 4 questions of the form *do we slap X* (playing slapjack), which may also be formulaic; and 1 question beginning with *what do, Wha'da WE slap*. It is possible that this *what do* has not been analyzed so as to distinguish it from *whatta*. He is, however, struggling with AUX inversion in three of his questions. Two begin with *is* (*Is a ace is for play in the band?, Is a kitchen light is blinking?*), and one begins with *what* (*What J is for?*). On the other hand, he does produce a correct *What is—four for?*, as well as one echo-type question: *It's for what?*

A half-hour tape made at age 38.1 reveals that Seth has made progress in his ability to produce questions, but that he is still working on particular problems. Adult-like questions include 4 of the form *Where's X?*, as well as *What's Dabee gonna bring me?, Which color do you like?, What do you call me?* He also produces 4 questions in which *whatta* is the question word (*Whatta I(m) {wearing, lying on}?*), as well as 10 questions beginning with *what're* (*What're you {doing, wearing, putting your foot/head on}?, What are dese?*). It is still not clear whether he distinguishes *what're* from *whatta*. Except for problems with number agreement, he also correctly produces 4 questions of the form *What does {squirrels, cows, pigs, chickens} eat?*, and 5 of the form *Where does {chickens, lions, cows, bees} live?* Syntactic struggles on this tape involve questions of the form *What does X do?* Although he correctly produces *What does your car do?* and *What does the lion make?*, he has trouble with the placement of *does* in *What does a sound does a {lion, pig} make?* This is similar to his problems with *is* two months earlier.

In a half-hour tape from 40.0 we no longer find questions formed by preposing *whatta*. Although there are still vestiges of problems with placement of *is* (e.g. *What's your brother name is?*), we also find well formed and even quite com-

plex questions such as: *What were their names?, What do we have in here?, An' what does a bank* DO *when it sits there?, What did the other one do?, What would I say if you splash in da water?*, and *If you wake up and get in* MY *bed at night, what will I say?* It seems clear that by this age Seth has acquired the necessary mechanics for forming most WH-questions, and that under ordinary circumstances he has no need to rely on a rule of question formation that would prepose a WH-word in front of a declarative sentence.[13]

One last question that needs to be addressed is why Seth stopped producing *WH-questions. With the data we have we can only speculate. It is quite clear that the first *WH-questions were unconsciously and naively produced, in the sense that Seth did not expect to send his father scurrying for his notebook or talking to other linguists about his questions. These effects were not lost upon Seth, however, and the diary notes show him repeating several of his earlier, naively produced questions in the hope of gaining more of this kind of attention. Other than these reruns his last genuine *WH-question occurs at 39.3.[14] Moreover, at 39.2 he starts providing answers himself when prompted by his father (10, 11), indicating his awareness of the pragmatic goals of this linguistic game. At the same time he seems to have been becoming more aware that noun phrases are more appropriate constituents to manipulate than simple nouns. The best evidence for this is at 39.2 when he produces the following updated version of 8:

(63) 39.2: What number are we gonna push when the elevator comes?
(8) 39.0: What are we gonna push number?

Thus two factors in the disappearance of the *WH-questions must have been his growing ability to achieve pragmatic ends by other means and his developing grammatical competence.

CONCLUSIONS

4.1. CONCLUSIONS ABOUT SETH'S *WH-QUESTIONS. Through our review of Seth's language development, in which we have looked at both his verbal interactions with his father and his developing syntactic control, we have presented evidence in support of the following points:

(a) Seth had a good deal of experience in participating in interactive verbal routines with his father. In the absence of eye contact, hand gestures, and 'Watch me, Dad' routines, these took on a larger role in the development of social interaction in this dyad than they might have in the case of a sighted child.

(b) Some of the time Seth's father used these routines, especially *Say X* and the Three-Dot routine, for didactic purposes—both to teach Seth new material (vocabulary, politeness) and to rehearse known information.

[13] This strategy is well documented in the child language literature. See e.g. Brown, Cazden, & Bellugi-Klima 1968; Klima & Bellugi 1966.

[14] Question 18 at 42.0 also seems to have been genuine, in that it was not a rerun and Seth did not know the answer. It seems, however, to have the flavor of an adult echo question.

(c) These didactic routines provided Seth with considerable experience with sentence fragments that interrupt NPs, many just before the head noun (but some include an adjective, and some involve verb phrases and even whole sentences).

(d) Many of these routines were formulaic, but others were more open-ended. Like many children, once he had learned the role originally assigned to him, Seth was motivated to try out the other role as well.

(e) Seth did not produce Three-Dot sentences himself, probably because he knew they would not succeed in getting his father to fill in the blank with known information.

(f) Meanwhile, Seth was developing his ability to handle complex syntax. By the end of this period he was able to produce coordinated and embedded clauses, as well as quite complex questions. He was certainly well beyond the stage of having to form a question by putting a WH-word in front of a declarative sentence.

(g) On the other hand, he adopted the following solution to the interactive problem of trying to elicit known information from his father: first, take the kind of Three-Dot sentence fragment that his father would have produced in such a situation; and then fall back on an old strategy of sticking a WH-word in front of it.

(h) One possible conclusion is that Seth's *WH-questions were specially engineered to solve a particular discourse problem. Under this interpretation he was using all the tools at his disposal in order to produce utterances compelling enough to get his father to cooperate. In this analysis, then, Seth's *WH-questions constituted a quite consistent and fairly ingenious solution to a linguistic problem that lay in the intersection of discourse pragmatics and syntax; and they no longer seem particularly anomalous except insofar as they provide evidence that even at this young age a child can suspend major linguistic constraints (much as linguists do, albeit more consciously) in order to accomplish a pragmatic goal.[15]

4.2. BROADER CONSIDERATIONS. What sorts of wider conclusions can we draw from this exercise? First, we have shown that it was not sufficient to seek an explanation for this small but internally consistent set of anomalies in the realm of sentence syntax. It was necessary, rather, to draw on discourse data—

[15] Further support for our analysis of these sentences as attempts by a child to form questions for which the answer is already known comes from the following anecdote supplied by Barbara Partee. One day she heard her 7½-year-old son, David, asking his 6½-year-old brother, Joel, *What do dogs sweat through their?* When Joel failed to comprehend, David repeated his question verbatim. Meeting with continued non-comprehension, David rephrased as follows: *How do dogs sweat? What part of their body do they sweat through?*, making it clear that he was trying to elicit a predetermined answer such as *Their tongues*. It would seem that here we have another instance of an attempt at conducting a social interaction centering around known information, and employing a similar syntactic solution: put a WH-word in front of a sentence fragment. Note that since this child has no visual impairment, that is not a necessary ingredient for the production of such sentences.

both the history of interactive routines and the restrictions of Seth's blindness on possible kinds of social interaction, as well as the specific linguistic information available to him in the context of these routines—in order to make sense of these constructions. This case reminds us that language development may take unexpected detours. Studying these detours in all their complexity (without confining ourselves to the level of sentence-grammar) can reveal how children make use of the information they glean from both the language and the language use in their environment. In the struggle of trying to account for 'anomalies' such as Seth's *WH-questions, we may be forced to revise our theories in important ways, for instance to acknowledge the importance of discourse in the development of sentence grammar.

Although Seth's *WH-questions could have been produced by simply putting a WH-word in front of a sentence fragment, our review of Seth's developing ability to produce WH-questions shows that during the *WH-period he did have a rule of WH-fronting, although he was still having some difficulties with AUX inversion. Moreover, the question-answer pairs in 54–62 provide an intermediate link which would support the view that the *WH-questions were in fact being produced by WH-movement. If this were indeed the case, it would suggest that the universal constraints on WH-movement did not immediately block Seth's constructions which violated them. Now when linguists draw a box representing the limits imposed by formal universals (as does, e.g., Bickerton 1981:298, Fig. 5.1) they do not, as do architects, specify the material the outer wall is made of. If indeed Seth did manage to bend or stretch the wall for several months before giving up the effort, this would support a general position that constraints on the application of rules, while formidable, are also negotiable, given relevant input and/or sufficient pragmatic motivation. Under this interpretation this case can also be seen as providing some insight into the way that specific characteristics of the input (e.g. utterances consisting of sentence fragments with interrupted NPs), or pragmatic considerations, or both might provide leverage with which a language learner might stretch the wall beyond the limits imposed by formal universals. The resolution of such speculations will require examination of the data of both first and second language acquisition for evidence of apparent violations of generally accepted universal constraints. It will then be necessary to analyze the input to see if there is a detectable interaction between the forms in the input and/or pragmatic features of the context and the anomalous structures themselves.

REFERENCES

ADELSON, EDNA. 1983. Precursors of early language development in children blind from birth. Language acquisition in the blind child, ed. by Anne E. Mills, 1–12. San Diego: College-Hill Press.

BICKERTON, DEREK. 1981. Roots of language. Ann Arbor: Karoma.

BROWN, ROGER; COURTNEY CAZDEN; and URSULA BELLUGI-KLIMA. 1968. The child's grammar from I to III. Minnesota symposium on child psychology, Vol. 2, ed. by John P. Hill, 28–73. Minneapolis: University of Minnesota Press.

BRUNER, JEROME S. 1975. The ontogenesis of speech acts. Journal of Child Language 2.1–19.

——. 1978. The role of dialogue in language acquisition. The child's conception of language, ed. by A. Sinclair, R. J. Jarvella, & W. J. M. Levelt, 241–56. New York: Springer-Verlag.

CAZDEN, COURTNEY B. 1983. Peekaboo as an instructional model: Discourse development at home and at school. The sociogenesis of language and human conduct, ed. by Bruce Bain, 33–58. New York: Plenum Press.

CHOMSKY, NOAM. 1964. The logical basis of linguistic theory. Proceedings of the Ninth International Congress of Linguists, ed. by H. Lunt, 914–78. The Hague: Mouton.

——. 1977. On WH-movement. Formal syntax, ed. by Peter Culicover, Thomas Wasow, & Adrian Akmajian, 71–132. New York: Academic Press.

——. 1986. Barriers. Cambridge, MA: MIT Press.

DUNLEA, ANNE. 1982. The role of visual information in the emergence of meaning: A comparison of blind and sighted children. Los Angeles: University of Southern California dissertation.

EWING, GUY. 1984. Presyntax: The development of word order in early child speech. University of Toronto dissertation.

GRIFFITHS, PATRICK. 1986. Early vocabulary. Language acquisition, 2nd edition, ed. by Paul Fletcher & Michael Garman, 279–306. Cambridge: University Press.

KEKELIS, LINDA S., and ELAINE S. ANDERSON. 1984. Family communication styles and language development. Journal of Visual Impairment and Blindness, Feb., 54–65.

KLIMA, EDWARD S., and URSULA BELLUGI. 1966. Syntactic regularities in the speech of children. Psycholinguistics papers, ed. by John Lyons & Roger J. Wales, 183–213. Edinburgh: University Press.

NINIO, ANAT, and JEROME S. BRUNER. 1978. The achievement and antecedents of labelling. Journal of Child Language 5.1–15.

PETERS, ANN M., and STEPHEN T. BOGGS. 1986. Interaction routines as cultural influences upon language acquisition. Language socialization across cultures, ed. by Bambi B. Schieffelin & Elinor Ochs, 80–96. Cambridge: University Press.

RATNER, NANCY, and JEROME S. BRUNER. 1978. Games, social exchange and the acquisition of language. Journal of Child Language 5.391–401.

ROSS, JOHN R. 1967. Constraints on variables in syntax. Cambridge, MA: MIT dissertation.

——. 1986. Infinite syntax. Norwood, NJ: Ablex.

SCHIEFFELIN, BAMBI B. 1979. Getting it together: An ethnographic approach to the study of the development of communicative competence. Developmental pragmatics, ed. by Elinor Ochs & Bambi Schieffelin, 73–108. New York: Academic Press.

SNOW, CATHERINE E., and BEVERLEY M. GOLDFIELD. 1983. Turn the page please: situation-specific language acquisition. Journal of Child Language 10.551–69.

TREVARTHEN, COLWYN, and P. HUBLEY. 1978. Secondary intersubjectivity: Confiding and acts of meaning in the first year. Action, gesture and symbol: The emergence of language, ed. by Andrew Lock, 183–229. London: Academic Press.

URWIN, CATHY. 1978. The development of communication between blind children and their parents. Action, gesture and symbol: The emergence of language, ed. by Andrew Lock, 79–108. London: Academic Press.

——. 1983. Dialogue and cognitive functioning in the early language development of three blind children. Language acquisition in the blind child: Normal and deficient, ed. by Anne E. Mills, 142–61. San Diego: College-Hill Press.

VYGOTSKY, LEV S. 1962. Language and thought. Cambridge, MA: MIT Press.

WATSON-GEGEO, KAREN ANN, and DAVID W. GEGEO. 1986. Calling out and repeating: Two key routines in Kwara'ae children's language socialization. Language socialization across cultures, ed. by Bambi B. Schieffelin & Elinor Ochs, 17–50. Cambridge: University Press.

WILSON, BOB. 1985. The emergence of the semantics of tense and aspect in the language of a visually impaired child. Honolulu: University of Hawaii dissertation.

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