

# But What Do Children Really Think?: Discourse Analysis and Conceptual Content in Children's Talk

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A discourse-analytical approach to children's knowledge is offered, focusing on extracts of classroom talk between a teacher and a kindergarten class. After rejecting the possibility of defining concepts and memories as cognitive states prior to or underlying discourse, the talk is examined for how participants define and deal with such notions as a feature of the sequential and rhetorical organization of discourse. An argument is advanced for the analysis of knowledge, reality, and education as public, interactionally managed participants' concerns that can be studied as discursive practices. It is argued that the study of discourse does not ignore nondiscursive realms of mind and reality but permits analysis of how those things are defined, so that any explanatory appeal to what is beyond or behind the talk is unwarranted.

Discourse analyses in psychology and social psychology are usually presented as contrasting with more traditional methods such as experiments, tests, and interviews and, at the same time, as offering theoretical reworkings of such traditional topics as attitudes, attributions, categorization, concepts, learning, and memory (e.g., Edwards, 1991; Edwards & Mercer, 1987; Edwards & Potter, 1992b, 1993; Middleton & Edwards, 1990; Potter & Wetherell, 1987; cf. Coulter, 1990). Such analyses are sometimes taken as a threat to psychological kinds of explanations and as an opportunity to raise arguments about reductionism—of the social to the cognitive, or vice versa. Those who present discourse data are frequently asked by their colleagues what these discursive analyses tell us about underlying cognitions: "OK, thanks for the analysis of all that talk, but what does the child/adult/subject really learn, or think, or remember?" I refer to this as the *psychologist's question*. To start to answer it, I must redefine it. Although

this is blatantly unfair, it is an author's privilege and can serve as my first illustration of the discursive production of truth.

The particular idea with which I take issue is that adults and children possess underlying cognitive representations that are expressed in talk. I have no objection to there being mechanisms underlying the production of talk. The problem is with talk's conceptual content—that is, models of reality, versions of the world, explanations, that talk *expresses*: talk as a window (a dirty window, perhaps) on the mind. This is the sort of conception of the relation between talk and mind that is in Piaget's (1924/1928, 1926/1929, 1932) early work, especially in the studies based on interviews and children's talk, and also in many later and current studies of children's thought. It is the discovery of the exotic mind, the strange, yet consistent ways that children think. Given the preponderance of these sorts of ideas about relations between language and mind, the psychologist's question is not surprising.

Following Piaget's pioneering studies, children's understandings of the world have been taken to be coherent, internal cognitive representations, whose nature can be examined via careful experimentation and interview. Although some recent approaches part company with Piaget's stage-and-structure "equilibration" model of conceptual learning (e.g., Carey, 1985; Keil, 1986), still the notion persists that the object of study is the child's mind, an inner world of relatively stable and enduring cognitive representations, whose nature is revealed in the child's responses to questions. Children's conceptual formulations are held to derive from underlying cognitive "theories" of the world, of how things and plants and animals and people exist and operate. This concern with "children's minds" (Donaldson, 1978) extends into studies of educational discourse (e.g., Driver, 1983; Solomon, 1983), where what children say in the classroom is taken as evidence of underlying and stable cognitive representations, of how children think: as a kind of window on the mind.

The central concern of most of these studies is children's protoscientific conceptions of natural phenomena. Children's talk is taken to reveal such conceptions in two different senses. First, it may be assumed that children already think in the ways revealed, before they are asked, so that their talk merely reveals preexisting thought. So, it is possible, by sifting through children's talk and allowing for the fallibility of this procedure (e.g., for inconsistencies, lack of clarity, distortions due to leading questions), to construct a picture of the knowledge that lies beneath it. Second, children's verbal formulations may be taken as evidence of how they are able to think, given novel problems about which they may never before have thought. So, instead of taking children's talk as evidence of what they think or what they know, it can be examined for how they think, how they construct explanations, and so on.

In contrast to both of those approaches, this article adopts some different assumptions about relations among language, mind, and world, which derive

from ethnomethodology (e.g., Garfinkel, 1967; Heritage, 1984), conversation analysis (e.g., Atkinson & Heritage, 1984; Levinson, 1983), and discourse analysis (Potter & Wetherell, 1987). Although cognitive developmental psychology might be seen as wedded to the Wittgenstein (1922/1969) of the *Tractatus*, with language studied as representation, as pictures of mind and world, these latter perspectives adopt the later Wittgenstein (1953/1958) of the *Philosophical Investigations*: language as action. It is not a matter of proving or disproving the nature or existence of real minds or what children as individuals “really” think or learn, but rather of taking a different perspective on language, which examines verbal conceptualizations as flexible components of situated talk.

How, then, do we deal with what children say? How far can we take children’s conceptual formulations as evidence of what and how they think? Do we take what they say at face value and construct cognitive models that account for what they say? How do we discount some things they say as misleading or unreliable? How would that be different from an analysis of talk-as-action? Is it an irreconcilable difference? One thing we could do, to put it crudely, is to believe them. I do not mean here to treat children as honest or dishonest. It is not so much a matter of lies and deceit but of taking seriously the content of what they say for what it tells us about what they think, know, or believe. We can examine the content of childrens’ descriptions, accounts, and explanations, for what these tell us about their minds, understandings, or mental representations.

Put this way, few people would advocate that we just believe children, that the relation between talk and mind is that simple and direct. But disbelieving children is often seen as merely a matter of methodological caution, because we know that what children say may be unreliable, transitory, or invented for the occasion of our asking instead of revealing what they already thought and will continue to think after we have gone. What do we do with the conceptual content of children’s talk? Let us take an example and see what we can say about it.

### FINDING CONCEPTS IN TALK

In Example 1 (from Edwards, 1993, p. 207; original data from Griffin & Humphrey, 1978), the teacher (*T*) was eliciting from a group of 5-year-olds some things that they “learned” during an earlier trip to the greenhouse, where they saw various plants being propagated and grown. The transcripts employ some of the conventions developed for conversation analysis (see Atkinson & Heritage, 1984). Square brackets mark the start and (sometimes) the end of simultaneous speech. Hyphens mark an abrupt cut-off, whereas colons show an elongation of the preceding sound. Other punctuation symbols (e.g., commas, periods, quotation marks) transcribe intonation rather than grammar. *X* and *Y* are unidentifiable child speakers.

Example 1:

- 52 T: OK, Meredith? What's one thing you learned at the  
53 greenhouse? About our herbs.
- 54 Meredith: That, umm, [ s:seeds, ]
- 55 T: Bobby [and John,] listen.
- 56 Meredith: Seeds don't o-, only-, No. Plants don't only grow from  
57 seeds.
- 58 T: Fabulous! ((writing)) "Plants" . . . What does plants end  
59 with? Plants?
- 60 X: "S."
- 61 T: ((writing)) Plants don't only grow from what?
- 62 Meredith: See-, umm, seeds.
- 63 T: From seeds. That's an excellent beginning.  
((The lesson is interrupted as one of the children  
goes to the bathroom))
- 81 Sally: Cuttings can grow to plants.
- 82 T: ((writing)) "Cuttings can grow-," instead of saying "to  
83 plants" you can say "grow,= [ in: ] to plants."
- 84 Sally: =You wrote Chris [ tina. ]
- 85 T: Oops. Thank you. I'll do this again. "Cuttings can  
86 grow into plants." That's also good. What is a cutting,  
87 Christina?
- 88 Christina: A cutting is, umm, I don't know.
- 89 T: Who knows what a cutting is besides Sally? Sam.
- 90 Sam: It's when you cut off a-, it's when you cut off a piece  
91 of a plant.
- 92 T: Exactly, and when you cut off a piece of a plant, what do  
93 you then do with it to make it grow? If you leave  
94 [it-,
- 95 X: [Put it in soil.
- 96 T: Well, sometimes you can put it in soil.
- 97 Y: And [plant it, ]
- 98 T: [But what-,] wait, what else could you put it in?
- 99 Sam: Put it in a pot?
- 100 T: Pot, with soil, or . . . ? There's another way.
- 101 Sally: I know another way.=
- 102 T: =Wait. Sam, do you know? No?=  
103 Sam: =Dirt.
- 104 T: No, it doesn't have to do with s-, it's not a solid, it's  
105 a liquid. What [liquid-,]
- 106 Meredith: [Water. ]
- 107 T: Right. [ . . . ]

Example 1 reveals that the children had some well-developed ideas about how plants are grown. Plants can be grown either from seeds or from cuttings, and cuttings are parts cut from plants that can be propagated in soil or water. Although

not all the children offered all their ideas, we have at least some initial information concerning what sorts of things these children know, and it seems reasonable to expect that further excerpts of such discourse, supplemented perhaps with further questions and interviews with each of the children, would reveal more and more. But however much data we obtain, the question might still be raised, what is its psychological status? What does it tell us about children's thought? For example, how far can we take the children's utterances as their concepts or as evidence of their concepts or of their spontaneous tendencies to, or capacities for, conceptualization? One problem may be that we do not know the history of this discourse. The children might merely have been reproducing adult words without understanding what they mean.

Instead of taking Example 1 as a problematical window on children's minds, we can treat it as a piece of discourse whose nature is *social*-psychological. We are now interested in the intersubjective organization of talk—not in divining its underlying conceptual content, but in examining how concepts are displayed in talk. The analyst's examination of talk can be founded on the participants' own practical activity of displaying their thought for each other and on successive responses by participants, in the sequencing of talk, to what each other has said. Participants publicly reveal the interpersonal concerns to which their talk is addressed. Furthermore, such concerns also may be of direct psychological interest; distinctions between concept and memory, between one's own thought and the quotation of others, or between truth and confabulation are the sorts of things about which participants themselves may be concerned. I return to this issue of discourse and its organization shortly. Let us stay for a moment with the idea of children's talk as an expression (however problematical) of children's minds.

One problem concerning Example 1 is its conceptual status: To what extent are we looking at children's spontaneous concepts and reasoning or else at mere reiteration of talk they have heard? With a bit more data, such as what came before it, perhaps we could resolve that problem. The immediate history of the discourse in Example 1 seems to confirm the suspicion that the children were merely repeating what they had been told. Example 2 (from Edwards, 1993, p. 209) presents some of the talk that preceded Example 1, where the teacher was clearly formulating the nature of the talk that followed. It says something about how the children came up with their contributions in the way that they did. The teacher was referring to an earlier lesson in which the children visited a greenhouse and talked to Mark, the gardener.

*Example 2:*

14	T:	The first thing we're going to do this morning is: last
15		week, when we went to the greenhouse, we drew pictures
16		about the greenhouse, but we didn't talk about the kind
17		of things that we learned about cuttings and seeds, and
18		growing herbs, and I'm going to call on every single
19		person and ask you what you remember about what Mark



We now have grounds for taking the children's discourse in Example 1 as an exercise in remembering somebody else's words rather than in formulating their own conceptual understandings. Apparently, the children were not inventing but remembering. But again we must ask: What does this mean for the study of children's concepts? Are these data not now useful for looking at how children spontaneously form concepts? What other kinds of conversational data would we need to study that: discourse without remembering, perhaps, where children are asked to creatively explain things that nobody has previously explained to them?

There are two major objections to such a pursuit. First, it is not clear that there ever could be a discourse without remembering. All discourse has a history; even when children are inventing novel explanations for new phenomena, even under controlled experimental conditions, they can do so only by employing discursive resources, modes of explanation, and terms of reference that they have at their disposal, whose precise history (for the children) is unknown. Second, it is a feature of remembering, a commonplace of cognitive psychology and especially of discursive remembering, that memory is not merely a reduplication of experience, altered only by error and omission but also rich in constructive and reconstructive conceptualizations, where reports and repetitions are altered, embellished, schematized, and imbued with the psychological and communicational concerns of the rememberer (Bartlett, 1932; Bransford, 1979; Edwards & Middleton, 1987; Neisser, 1967, 1982). Another study of a different set of data (Edwards & Mercer, 1989) explored such talk, in which teachers and pupils recapped what they had learned and, in doing so, took advantage of the opportunity such occasions offered for adjusting the verbal record of classroom events to fit the concepts that those events were later understood to have supported.

Our brief examination of Examples 1 and 2 supports the idea that the pursuit of children's minds through the analysis of their discourse is no straightforward matter (cf. Cole, Hood, & McDermott, 1978/1982). We cannot straightforwardly determine conceptual content from children's talk. So what do we do? Conclude that discourse data are of little use for studying children's cognitions and head for the laboratory? The trouble is that all the old problems are still there waiting for us, including the nature of experiments as social occasions and discursive events. But we have another option, which is to take discourse more seriously and to start asking a different set of questions. Children's discourse is informative about conceptual development but not as a window on the mind. In fact, the very features of discourse that render it opaque with respect to individual cognitions are just the ones that are especially revealing about the social shaping of thought and the local, situational, and pragmatic organization of conceptual thinking. Let us pursue, therefore, the notion that children's concepts can be studied as formulations that occur within and are to some extent constituted as situated discursive practices.

## THE DISCURSIVE ORGANIZATION OF THOUGHT

It has been noted that much of everyday thinking has a rhetorical or argumentative organization (Billig, 1985, 1987; Billig et al., 1988; Edwards & Potter, 1993), so that important features of children's conceptual thinking can be examined in terms of the discursive practices of argumentation (cf. Edwards, 1990; Edwards & Mercer, 1989; Edwards & Middleton, 1988). With this in mind, consider Meredith's opening contribution (Example 1, Line 56) to the list of factors in plant growth: "Plants don't only grow from seeds." This is not merely a disembedded statement, but it also possesses a rhetorical structure, denying a plausible alternative assumption that plants do always grow from seeds. It is a formulation that not only denies one kind of assumption but also opens up implicational possibilities for further contributions. The ensuing discourse can be read in this light, as a development of those argumentative implications. The next contribution to the teacher's request for a list of factors in plant growth was Sally's: "Cuttings can grow to plants" (Line 81). This spells out precisely the implication of Meredith's statement: that there are sources, other than seeds, from which plants can grow.

The notion that children's formulations of conceptual understandings might follow a rhetorical or argumentative pattern is supported by other features of the data. Another child's later contribution also took the form of a denial: "When cuttings are first grown, they don't, they don't grow roots" (Edwards, 1993, p. 211, Lines 136-137). It is also possible to examine the extended discourse between children and teacher for the ways in which children's verbal formulations are dialogically situated within a kind of cross-examination by the teacher. The teacher's and the other children's interventions can be seen as argumentative, as challenges to each other's formulations, so that it becomes impossible to separate what the children "really think" (the traditional cognitive developmental issue) from how they pursue conceptual distinctions during conversation, in relation to the thought and speech of other people (see Edwards, 1993, for an elaboration of this analysis of these data).

Another feature of classroom talk, which various researchers have described (Edwards & Mercer, 1987; Griffin & Humphrey, 1978; Mehan, 1979; Sinclair & Coulthard, 1975), is how it often falls into a recognizable discursive pattern, controlled by the teacher. The teacher initiates an exchange; the child responds; the teacher evaluates. It is possible to examine how patterns of discourse, of turn-taking between children and teachers, may play an important part not only in the social organization of talk but also in the nature of the conceptual understandings that are the content of talk. For example, I have just outlined some features of a rhetorical organization of thinking, in which conceptual contributions are occasioned by and constructed with regard to potential disagreements. In contrast, the dominant discursive organization in these kindergarten materials was one of a turn-by-turn accumulation of items, a list of discrete factors in plant growth, a kind of empiricist

order of knowledge that appeared to be dictated not by the epistemology of plant growth itself or by the ready-made nature of children's understandings but, rather, by the organization of talk.

Rather than allowing concepts to be formed in the context of argument or debate, the teacher organized the children's talk into a sequential accumulation of separate bits of knowledge. In fact, efforts by the children to talk with each other, to dispute each other's formulations, or to take turns at talk that were not invited by the teacher were systematically sanctioned. Furthermore, the teacher's accounts for the imposition of such structures and sanctions (i.e., the reasons and justifications she offered while doing them: cf. Garfinkel, 1967; Heritage, 1984) invariably appealed not to epistemological considerations (i.e., what we know about plants or what children think about them) but to the need for social orderliness, coherence, and discipline so that everybody can have a turn, make a contribution, and hear and understand what each other says. The result was not merely a social ordering of children's contributions but a conceptual one also. For the children, their own knowledge was publicly displayed as cumulatively empirical, not by direct epistemological instruction from the teacher, or by its being merely elicited from them in that way as if it were like that already, in the head, but rather, implicitly, via the teacher's organization of conversational turn-taking.

The children's conceptual knowledge was constructed as a set of individual contributions via the teacher's control of dialogical turn-taking and was then reified in the written record ("our book about facts"), in which separate statements about plant growth appear, each statement listed alongside a different child's name, providing a record (available for later parental examination) of each child's active part in the lesson. Example 3 (from Edwards, 1993, p. 214) records a particularly informative moment in the process:

*Example 3:*

- 400 Sally: I have another one.  
 401 T: OK, wait, Sally.  
 402 ((To group)) I'm going to [ read, shh, ] I'm going to  
 403 X: [Under the sun]  
 404 T: under the *light*. I'm going to read all that we have, OK?  
 405 So you will know when I copy it over what I have.  
 406 ((T Reads list))  
 407 OK, that's one=  
 408 Sally: =I have [another one.]  
 409 T: [ two, ] three, four, five, six, seven,  
 410 eight, nine, ten. That means I need nine more,=  
 411 Sally: [=I have ano-]  
 412 T: [and not ] two from you yet Sally, 'cause I want to  
 413 see what everyone else can (do) [ . . . ]

The teacher had thus far written a list of 10 contributions, each assigned to a different child, and calculated (Line 410) that 9 more were required; there were 19 children in the room. It was not that there were 19 things to know about plant growth—19 discrete, simple statements—or 19 things observed at the greenhouse, or conceived by the children, or said by Mark, the gardener. In fact, the lesson soon ended, its allotted time being up, with only 10 discrete statements collected. The numbers 19 and 10 were dictated by the requirements of how the lesson's discourse had been organized, as a series of prompted individual contributions, one per child, within a bounded lesson period.

Although this was the dominant, overall organization of talk, in which conceptual understandings were socially constructed as a list of discrete contributions, there were also, within that overall organization, various other discursive frames within which concepts were placed. Many of the children's conceptual contributions took the familiar discursive pattern of completions of utterances begun by the teacher (cf. Griffin & Humphrey, 1978), so that the concept thus expressed was dependent for its sense on a jointly constructed discursive form:

*Example 4:* (from Edwards, 1993, p. 216)

- 265 Lisa: Plants take, umm, three days to have roots.  
 266 T: When they're under what?  
 267 Lisa: Uh, soil.

Frequently the form and content of the teacher's question (Line 266) gave the child's contribution its place in a larger conceptual order, constructing a set of conceptual relations for the children's rememberings. These contextual scaffoldings also included narrative frames for plant growth ("Then what happens?": Lines 362–368 in Edwards, 1993, p. 217), as well as the rhetorical structure of contrasts, denials, and argument:

*Example 5:* (from Edwards, 1993, p. 217)

- 379 T: [ . . . ] Who said, oh Lisa said, plants take three days to  
 380 grow under light. What we should have said, it's not that  
 381 they start to grow, but that they start to do what?  
 382 Lisa.  
 383 Lisa: Sprout.

One option for dealing with the conceptual content of children's talk is the approach taken by cognitive psychology to look behind content to process and to ask not *what* do children think but *how* do children think. This immediately distances us from the content of talk. It suggests that whatever children say, irrespective of whether we "believe" it, must be based on some underlying cognitive representations. From this perspective, it hardly matters what kind of data we use; any will do. We may as well set up experimental studies, conduct

interviews, perform psychological tests, and so on, and while we are doing that, we can build in the kinds of constraints that will tidy up children's talk—it will be answers to questions set by us, with inconsistencies carefully excluded by how we set the agenda (we can create slots and relevances for children's talk) and by methodological procedures (sampling and statistics). One such methodological procedure is the most common of all, that of taking talk out of the context for which it was produced, so that its relation to surrounding talk is ignored.

Procedures adopted by cognitive approaches to the minds of children and adults are designed to exclude variability within descriptions and explanations. If the same children offer different and contrasting versions on different occasions, that shows either developmental change—that they have reliably changed their minds—or that our results are unreliable, that we are failing to tap into what we are after: real, underlying cognitions. It is an argument that Piaget used, for example, against studies that claimed to demonstrate unexpectedly precocious cognitive achievements in young children; those achievements could be shown to be unreal (nondevelopmental) if they could be shown to be transitory, subject to reversal on subsequent occasions, or specific to the materials and procedures of a tightly defined test situation.

But that sort of argument is fraught with problems, some of which are familiar to us, as parts of what have become standard critiques. The divorcing of content and process quickly becomes unsustainable, as models of cognitive structures are seen to be inevitably predicated on what children actually say, which in turn seems inextricably bound up with the context of situation and interaction in which it is said. Once we are alert to context, all findings become inextricable from the methods that produce them and from the situations in which they are found. But again, once we become interested in what children actually say on specific occasions and in the kinds of social actions that talk performs, we have to take a different line on such notions as variability and consistency. Variability in such things as descriptions and explanations, which is an embarrassment to models of underlying cognitive representations, becomes the very essence of a study of talk as situated action (Potter & Wetherell, 1987). We become interested in how children's versions of the world vary as a function of the context for which they are produced, of the question asked, of considerations of intersubjectivity, and of the various social actions performed by speaking. Variability becomes the signal instead of the noise.

This is the approach taken by discourse analysis (Edwards & Potter, 1992b; Gilbert & Mulkay, 1984; Potter & Wetherell, 1987), an approach derived from the study of talk among adults. One of its prime concerns is with the discursive construction of factual knowledge, including both scientific and lay knowledge. It studies how versions of events are flexibly constructed for their rhetorical and sequential placing. Talk is studied in the context in which it is produced, and the preference is for talk that is spontaneously produced in some setting other than one especially created as part of the analyst's methodology. It is not just a matter of

leaving talk in its context, in the ecological sense, to ensure that only real or natural specimens are collected. Discourse analysis is specifically concerned with how the content of talk is designed for the context in which it occurs.

This means that some of the features of ordinary talk that are difficult for cognitive approaches to deal with, such as its inconsistency with regard to internal or underlying mental representations, are just the sorts of things to look for. Inconsistencies and variability in how something is described or explained are particularly informative about how talk performs situated actions. So the very features that make the content of talk difficult to map onto underlying cognitive representations are just those features that bring to life a study of how such verbal formulations of mind and world are occasioned phenomena. Talk is designed for its context in two senses, both in its placing within other talk and text and in terms of its content, how it is constructed for that placing. We ask a different question: not, Is this (or this, or this) bit of talk the bit to believe, the one that tells us what children really think? It is not, What does this talk tell us about underlying conceptions? Instead, we ask, What is the contextually situated action being done here? As for Harold Garfinkel (1967) and Clifford Geertz (1983), in their different ways, and for the Wittgenstein (1953/1958) of the *Philosophical Investigations*, the question is not, What does it represent?, but, What is going on?

This approach to children's concepts is part of how "discursive psychology" reformulates a wide range of cognitive notions, such as memory and attributional reasoning (Edwards, Middleton, & Potter, 1992; Edwards & Potter, 1992b, 1993). We stop asking how people generally can remember or explain events and ask how people actually do those things. It is not now a matter of what are the mental representations of the world that underlie memory, because these are elusive and even artefactual, a product of method. We ask instead, What underlies the capacity to do remembering in this situated, actual way? Discourse analysis treats conceptual thinking as something people actually do rather than abstractly can do—a situated practice, rather than an abstracted ability. But this is not to say that there are no such abstracted abilities and that psychology should not be concerned with them. We part company not with the psychology of cognitive competence but only with a particular version of cognitivism, which is the notion that people's talk is the overt but messy expression of an underlying conceptual order of knowledge and explanation. There is still plenty of room for a fruitful dialogue between discourse analysis and cognitive psychology, but it is a dialogue of a different sort.

We begin not by questioning the existence or ontology of underlying cognitive representations but by questioning their epistemological basis in discourse. That is, we cast the question as a methodological one: How do we identify concepts in actual talk and action? As soon as we start to examine actual discourses, actual descriptions, versions, accounts, and explanations, the flexibility of versions and

the number of possible versions multiplies alarmingly, so that the notion of abstracting the underlying consistencies of cognitive representation is replaced by the abstraction of principles of version formulation, of account construction, of factual reporting, of rhetoric and persuasion—the stuff of discourse analysis.

We change the question we are asking for a more parsimonious one. As Luria (1932/1976) showed, when it comes to the difficulties of studying the individual versus the social, mental representations versus public communications, the conventional psychological wisdom has it the wrong way. The social is the simpler case. Having shifted our attention from underlying representations to overt performances, it may appear that we lose sight of the goals of cognitive science, of ultimately specifying the neural bases of cognition and the aims of machine intelligence. But by stepping away, we may paradoxically be stepping closer. It may turn out that whatever underlying neural bases there are to conceptual activities such as thinking and remembering, and whatever the requirements are for successful human–computer interaction, these will turn out to be organizations for situated actions, rather than for representational abstraction and reflection (cf. Suchman, 1987). In displaying conceptual talk as situated action, the analysis of discourse provides a description of performance for which any model of underlying competence must account.

Discourse analysis does not directly answer the question, What is the conceptual content of children's minds? What it does is recast the question as one that an analysis of discourse can answer. It studies what counts for participants as, for example, understanding, thinking, and remembering, so that the psychologist's question can always be recast, methodologically, as a matter of discursive definition. That is to say, it is not the study of concepts, memory, and thinking, as revealed in discourse. Rather, it is the study of discourse itself, which includes as part of its business how participants deal with those matters. Discourse analysis studies the nature of descriptions, versions, reports, formulations about mind and world, and so on, in terms of the situated, communicative actions that they perform. It inverts the psychologist's question about underlying competence from, What are the real thoughts, real concepts, real memories that underlie versions? to, What is the psychological basis of all this talk-as-action?

Note that once the inversion is done, we cannot just bolt it onto the original question; it is not a separate topic, another brick in the wall of knowledge. With regard to children's conceptual thinking, for example, it is not clear that they "really think" anything, at least not in the sense of carrying around in their heads ready-made explanations that merely await discursive opportunities to be revealed. The orderliness of children's discourse may be better accounted for in terms of how they construct thoughts for occasions as they talk. Similarly, we can study how children's explanations are derived from and are subjected to a discursive process, so that the psychology of conceptual development would at the very least be unwise to ignore how concepts are culturally derived, culturally

formulated (in words that make sense to a common culture), and culturally processed, in that their articulation is called for and takes shape within the organization and conventions of current talk and action.

## THEORY AND METHOD

Objections to the discursive treatment of concepts, cognition, educational processes, and the like usually take the form of pointing out that there is more to psychology, more to education, than discourse. There is also mind, learning, cognitive change, and external reality. We can see that discourse takes place in a context, refers to things in the world, and both refers to and depends on mental contents and processes. The counterargument to these kinds of objections is that mind and external reality are the very things with which people are dealing in their discourse. Indeed, it is precisely the status of those things that is the business of education—investigating what the world is like, what we know, and how we know it. The analytical task is to discover how those matters are defined, dealt with, made relevant, and so on by participants. The temptation is to look over (or into) the heads of participants, as it were, to see how and when they are getting it right. But that merely substitutes our own categories of mind and reality for theirs. The analysis of discourse is designed to reveal participants' categories of mind and reality, to reveal what counts for them as real, or observable, or as the appearance that belies a deeper reality, or what is a proper basis for claims to knowledge, what is a useful and clever, or wrong contribution, and so on.

This notion of "participants' categories" requires some elaboration. It is not a psychological claim about how people actually think or what their mental concepts are; at least, it is not directly such a claim. Rather, it is a claim about what participants treat as interactionally significant and accountable. This is the point at which discourse theory and method meet. Participants' categories are *participation* categories—that is, those categories of knowledge, mind, person, and reality that are constructed and used as a basis for interaction—for warranting and denying, as criteria for repairing false claims, as grounds for knowledge claims. In other words, they are the interactional categories of accountability and argument. Because they are interactional categories, they are available for analysis in discourse.

This latter principle is derived from ethnomethodology and conversation analysis. Social interaction (including educational discourse) is organized by participants in such a way as to be mutually intelligible, and accountably so; this includes a constant monitoring and repairing of intelligibility as interaction unfolds sequentially. It is not that interaction happens to be organized this way, but that this is what makes interaction possible. Public performance *is* interaction, or at least it is a constitutive feature of it. At the same time, it is exactly what makes interaction analyzable. What is done publicly by and for participants is

available for analysts, too. This is not to say that analysis is easy, but that analysis is possible, and it provides some principles for how to proceed.

Another basis for discourse analysis is in social studies of science (see, e.g., Gilbert & Mulkay, 1984; Potter & Wetherell, 1987; Woolgar, 1988). Here again, the concern is with how knowledge and reality are defined by participants (in this case, scientists). Rather than conceiving of reality as a kind of prior state or input to scientific procedures waiting to be discovered, social studies of science effectively invert that assumption and place scientific practices prior to reality. Discovery is a story told by claimants about claims to knowledge. Once we start looking at how science works in practice (Latour, 1987)—how consensus is achieved, disputation arises and is resolved, evidence is offered, and so on—then what is real, true, and accurate can be judged only by reference to whatever practices scientists have for doing all of that. In effect, then, reality is the (provisional) outcome of scientific procedures, not their starting point, although it is a pervasive feature of scientific discourse to attribute claims and findings to such an externally existing and prior reality. What this means for the study of educational and other knowledge-defining discourse is that we have to take a similarly cautious view of knowledge and reality. Education and understanding are what teachers, pupils, examiners, and testers publicly accomplish; whether they do so accurately is not something that can be resolved outside those procedures, any more than a study of the practices of scientists can include a check, a glance over their heads, or a look at their procedures to see if they are getting it right. We may want to recommend changes or prefer some procedures to others, but then we are joining in those public procedures, becoming participants rather than superseding the essentially public and accountable nature of how knowledge and reality are defined.

The methodological procedures that this approach to instructional (and other) discourse recommends fit within its theoretical framework. It requires a form of transcription that is designed to reveal interactional features of talk as a sequential unfolding of situated actions. That is to say, it requires something like the conventions developed for conversation analysis by Gail Jefferson (see, e.g., Atkinson & Heritage, 1984; a subset of these are used in the extracts cited in this article) rather than the conventional orthography of a play script or the sorts of phonetic and intonational features that linguists have designed to explore principles of phonological and syntactic structure. The analysis itself will focus on the ways in which formulations of knowledge and reality are occasioned, how they occur at specific junctures, as responses, or repairs, or as parts of arguments, rather than as decontextualized revelations of thought. Each new utterance is predicated on a participant's reading of whatever came before it and is available to be read as such by other participants and, therefore, by analysts, for what it tells us about participants' categories. *Variability* in talk's content is a key to such sequential occasioning, to the business at hand that talk is always designed for, rather than as a noise element to be removed statistically or methodologically

in the pursuit of underlying cognitive consistency. *Accountability* is a pervasive feature, important not only as something to notice for its own sake, as a key to the social nature of mind and reality, but also as an analytical lever on the rest of talk's business; it reveals the normative order, the things people treat as given, externally real, or proper. Talk's *rhetorical organization* offers a similar dual importance, revealing not only the rhetorical structuring of public knowledge-making procedures but also the background set of ideas, realities, or suppositions that are treated as grounds for claims and counterclaims. These rather condensed principles of theory and method are fleshed out in more detail in Edwards and Potter (1992b).

### CODA: ON REFLEXIVITY

Discourse analysis brings into focus the issue of reflexivity, of how our own understandings (of children's minds or of discourse itself) are themselves discursive constructions. Cognitive psychology is a situated practice involving the production of talk and text, and, of course, it is from the recent study of scientific texts and practices that discourse analysis (in the sense used here) most directly derives. The same principles by which we study other people's talk and texts are applicable to our own practices. Cognitive and developmental psychology become not only legitimate concerns of the practitioner, as they always were, but also amenable to study in the same way and on the same basis as we study everybody else—as talk and text, studiable for how it constructs its own reality, via its own rhetorical organization (cf. Edwards & Potter, 1992a, on Ulric Neisser's study of John Dean's testimony to the Watergate Committee).

Of course, discourse analysis itself is another such method for the production, as well as the analysis, of talk and text and can be turned upon itself. The specter of an infinite regress raises its head, as we are confronted with the possibility of an analysis of the analysis of the analysis, ad infinitum. But rather than running fearfully from such a specter, analysts recently have taken to enjoying the prospect and pursuing reflexivity for what it reveals not only about our own knowledge-producing practices and their textually embedded nature but, by implication, those of everyone else as well (Ashmore, 1989; Woolgar, 1988). I do not pursue the reflexive line here, except to point out that it mirrors some of the concerns of anthropologists and ethnomethodologists for how the analyst is able to understand or "read" other people's talk and action. It seems to involve a kind of vicarious participation, based on the idea that, when people talk, their mutual intelligibility is publicly done, so that what they make available for each other to understand is, at the same time, also made available for the analyst. Of course, we are immediately back to the problems of the exotic, to how the analyst can vicariously participate with members of other cultures, or with children whose very enculturation is at question, or for that matter, with friends and neighbors, who are to some indeter-

minate extent also a little bit different from ourselves. Reflexivity inexorably but pleasurably haunts us all, whatever our theories and methods.

The study of children's discourse brings into focus the study of all kinds of discourse: How do we deal with what anybody says? And what happens when an analysis of discourse is disputed? The thing to recall is that all descriptions and analyses are contestable and arguable. This is not a refutation, as it might be for positivistic claims to truth and objectivity, but rather a voice in a debate, in a discourse about discourse. If ordinary descriptions are analyzable for their otherwise possible and rhetorical natures, so must be the products of discourse analysis itself, unless it becomes self-refuting. That is not to say that all analyses are equivalent, any more in discourse analysis than in ordinary talk or scientific texts. That is what the argument is about, and arguments can be, at least temporarily and for the participants, won.

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