Original Papers

Communication in Early Infancy:
Three Common Assumptions Examined and Found Inadequate

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Abstract. Three taken-for-granted assumptions concerning the nature of communicative interaction between infants and adults are described. Their presence is demonstrated in three differently oriented theories of early interaction. The assumptions – that interaction is instrumentally oriented; that meaning is obvious and unitary; that change has an external source – are then put to empirical test, using narrative records from video-recordings made during a longitudinal study of an infant girl and her mother. The outline of a more adequate account of communicative exchanges is proposed.

Language and communication are now placed in a central position in the philosophy of the social sciences. Language and the communicative interaction that it makes possible are seen as being the best candidates possible for the grounding of social scientific knowledge. Communicative interaction is the epistemological foundation of the knowledge that people come to have both as members of a society, in their everyday practices, and as scientific investigators. *Habermas* [1971], *Gadamer* [1976], and *Foucault* [1972], for example, each see discursive practices as playing this central role. Accordingly, there has been much empirical study of the communicative practices of persons in various roles and in a variety of types of situation. Yet little is known about the manner in which communicative practices develop before an individual achieves adult status in his or her society. There has been, of course, recent work in the field of psycholinguistics focusing on the pragmatic aspects of language use in verbal children. The research to be reported here deals, however, with the preverbal child – the infant – with the intention of catching the development of communicative practices in their earliest stages.

Adult-infant interaction has now become an area of attention for psychologists with varying interests; social development, attachment theory, psycholinguistics – each of these

gains something from investigating the social activity of an adult caregiver and an infant child. There has been a growing appreciation of the complexity of what occurs in such activity. If there is a single point at which these approaches touch, it is probably in the conception of the form of 'communication' which is involved in adult-infant interaction. But I shall argue here that, rather than fostering progress, this common shared assumption is hampering our understanding of infant competence, and the manner of development which is occurring. The common view of communication is, I believe, one that is inaccurate and confused. If this is so, then it is inevitable that it should mislead both research and theory about infancy. Yet a notion of communication is undoubtedly important; it could well serve to help unify the several approaches. From the point of view of recent philosophy of the social sciences, much of current psychological research can be considered to suffer from the 'objectivist illusion' [cf. *Habermas*, 1971]. This is the tendency to regard human actions as though they are mechanical processes or procedures, and to objectify and reduce all human phenomena, including the meaning and telos (directedness) of human action, to the product of the causal interplay of impersonal forces.

The research described here submits to empirical test three widely taken-for-granted presuppositions about the nature of communication in early infancy. These are the following: first, that communicative interaction is fundamentally instrumental; second, that meaning is transparent and unambiguous; third, that change in communicative ability is a consequence of developments occurring in other systems. Let us briefly examine each of these in turn, with reference to three separate areas of research on infant interaction:

attachment theory, the microanalytic approach of *Stern* [1977] and others, and the cognitivist orientation of *Bates* [1976] and others.

Instrumentality of Communication

The notion that communicative interaction is essentially instrumental is stated most clearly in the work of *Bates* [1976] where the pragmatic philosophy of *Searle* [1969] is linked to the Piagetian epistemological assumption that all knowledge is instrumental. *Bates* [1976] considers early communication to be the progressively developing ability to use objects to get the attention of people, and to use people to obtain objects. She states at the outset her conviction that 'language is a tool', and she clearly means this to be taken very literally; communication is simply the means towards desired material ends.

Stern [1977] assumes much the same thing; an infant's communicative actions function to affect the course that the interaction takes, and this 'functioning' is essentially causal. That is to say, an interaction has no purpose or goal other than to continue, or at least to terminate by mutual consent. Communicative actions function to regulate the course of the interchange. *Stern* [1977, p. 42] also talks about social 'tools'.

In attachment theory we find this assumption again. *Bowlby* [according to *Ainsworth*, 1969, p. 1005] considers the infant to be 'equipped with a number of behavioral systems, ready to be activated'. These behaviors 'resemble fixed-action patterns', and their 'signal function' has the effect of 'eliciting responses from human caretakers.' It appears, then, that all the signaling behaviors serve a single function, that of getting the

mother to the baby. Again, communicative actions seem to be regarded as essentially instrumentally oriented.

Meaning Is Unproblematic and Self-Evident

Second, we find the assumption that the meaning of early infant action (or at least the subsets of these actions which these theories consider) is clear, self-evident, and unproblematic. Such a simple view of the meaning of communicative action is no longer accepted in experimental psycholinguistics, where the role of the 'active listener' is recognized. For some reason, however, it persists in infancy research. We find, for example, in attachment theory a conceptualization of the 'meaning' of an action as being some representation, or signaling, of the infant's inner state. Consequently, what 'communication' entails is the recognition by the parent of this mental state (or even, more simply, the appropriate response to this state), by the transfer of information: from the infant's mind, by means of the infant's action, to the parent's mind, and subsequently to the parent's action. The function of each 'action pattern' is regarded as fixed, and obvious to an observer. The closest that attachment theory comes to allowing that there may be problems in understanding an infant's acts is to introduce the concept of maternal 'sensitivity.' Yet, even here *Ainsworth* et al. [1974] consider 'speed of response [by the mother]' as the major component of maternal 'sensitivity'. In such a view, the meaning of an infant's actions is considered to be unproblematic; all actions indicate the same thing – an emotional need for proximity. And since, in the account given by *Bowlby* and *Ainsworth* [1969] appropriate responses on the part of the mother are simply

'elicited' in an automatic fashion, there is no apparent need for a caretaker to be concerned with meaning at all.

The same assumption turns up in the work of *Stern* [1977]. He writes of the way that infant behaviors act as 'signals' to adults, making no distinction between intention on the part of the infant and interpretation by the adult. Furthermore, the meanings are such as 'affectively-positive act of approach,' 'holding action', and so on; they are identified by *Stern* on the basis of their assumed function in sustaining interaction.

Bates [1976, p. 12] states her view of meaning clearly; 'Meaning is a set of mental operations carried out by the speaker, which the speaker intends to create in the listener by using a given sentence', thereby inducing the listener to act so as to bring about the state of affairs desired by the speaker. Interestingly *Bates,* just like *Ainsworth,* uses at times an even simpler conceptualization, essentially behavioristic and operational: she illustrates the proto-speech act of commanding as 'speaker uses sentence X so listener will do Y', dropping all reference to a speaker's intentions or a listener's recognition of them. Communication becomes simply the instrumental use of other people, and meaning just the information exchange necessary to accomplish this.

The common assumption, then, is that meaning is like a 'thing'; unambiguous, defined, and obvious to adults interacting with the infant, and psychologists observing them. This object-like entity is transferred from one person to another, and understanding is achieved when the transfer is successfully accomplished. 'Coding' and 'decoding' may be necessary, and noise can enter the 'message' during its passage through the 'channel' that connects the two people. Yet we find it likely

that *Birdwhistell* [1968, p. 24] is correct when he says that: 'Unquestioned fallacies have served as deterrents to the development of theories about communication and to the organization of research to test such theories. ... Communication behavior is masked by definitions of communication as "that process whereby encapsulated particles of meaning are transmitted between individual organisms by means of specialized sending and receiving devices."'

Change Is External

The third assumption that we can uncover is that change in communicative practices comes only from 'outside'. For some reason, many researchers believe that communicative ability is dependent upon more general (or merely different) skills, rather than, for example, the relationship being reciprocal or reversed. *Bates* [1976] sees cognitive abilities as paramount; she considers change in an infant's communication with adults to be a manifestation of the development of instrumental cognition. Communication is, after all, in her view not essentially different from action on objects, and it consequently follows the same developmental course. Change, then, is essentially an individual phenomenon, in the sense that its dependence upon other people is only in that they provide or preclude facilitative interaction. Other people cannot affect the character of development, only its speed. The path that social abilities follow is, from this point of view, determined by an internal logic, and is independent of culture and the particularities of an infant's social environment.

Stern [1977] holds that change need not unduly concern the student of adult-infant interaction; 'where the interaction between two people, and how it works and fits, is of primary interest, the degree of maturity of either partner's contribution to the interaction becomes a secondary issue.' He also maintains, in addition to this methodological advice, that an infant's maturity is of no importance to the interacting adults; '[the mother] cannot enter into a full spontaneous relationship with [the infant] unless all that [intellectual understanding of immaturity, and desire for development] is put aside emotionally.'

Ainsworth et al. [1974] also see change in the 'signaling systems' as being dependent upon other areas, though the way that change is regarded in attachment theory is not entirely clear. They state [p. 99] that the infant 'will gradually acquire an acceptable repertoire of more "mature" social behaviors without heroic efforts on the part of his parents specifically to train him', and they claim thereby to distinguish their position from that of a classical socialization view, where the infant is 'shaped' by parental reward and punishment. Change, they appear to believe, comes about from the infant learning a number of things: to distinguish its mother from other adults, to differentiate means from ends (and here she speaks approvingly of *Piaget*), and to be increasingly able to use its own resources to maintain proximity with the mother. All these changes are, they maintain, in no way a consequence of the mother's responses to the child, yet *Ainsworth* et al. [1974] also make strong claims about the facilitating role of a 'sensitive' mother. One is left presuming that what such a mother facilitates is the child's emotional development, but that *Ainsworth* et al. [1974] regard this as separable from the 'signaling systems' by means of which the emotions are expressed.

Subject and Procedure

I turn now to a concrete examination of some examples of interaction between infant and adult. The three examples presented here are taken from video-recordings made in a longitudinal study of a single first-born infant girl, during her first year of life. All recordings were made in the infant's home, with as little intrusion as possible into the daily pattern of activity between mother and daughter. Recordings were made at monthly intervals, beginning at 6 weeks of age. The written narrative transcripts were developed during repeated viewings of the tapes, at both normal and slow speed. The intention guiding the research was to describe communicative interchanges in as unprejudiced a manner as possible, and to let the observed phenomena speak for themselves. The end product of such an enterprise would ultimately be a theory of infant communication that is 'grounded' in the phenomena, rather than in logical argument about what must be the case. At this stage, however, it seems more prudent to allow the examples to provide an empirical test of the adequacy of the assumptions commonly made about the nature of infant communication, and this is the task I will address here.

Results

Early Communication Is neither Instrumental nor Deliberate

The first question to consider, then, is whether adult-infant interaction can be adequately described as a series of pragmatic attempts by both partners to affect the other; to 'set them off'. I will argue that the first example of interaction – and it is not a particularly extraordinary or unusual episode – demonstrates that more than this is going on. Communicative activity appears not to be – at least at the age of the infant observed here – directed solely towards the accomplishment of particular concrete end states (satisfaction of a specific need on the part of the infant, for example), but can be more broadly described as an open-ended search for mu-

tually satisfying agreement. The episode to be described in detail is one where both participants appear to be satisfied not by the accomplishment of a concrete and instrumentally achieved state of affairs in the world, but by a mutual affective orientation.

Jenny (6 weeks of age) is sitting in her baby chair, with Sarah (her mother) leaning over her. Jenny throws her head back and grins, then looks at Sarah, throws her head back again, and vocalizes 'uh!' Sarah responds to this, saying 'Yeah!' Sarah smiles, Jenny grins, and then pushes her tongue out briefly, then fully out. Sarah says to her, 'Do you want to play with me?' Jenny pushes her tongue out for a third time, her eyebrows raise and her mouth widens in a pre-smile, as she looks intently at Sarah. Sarah says something inaudible. She now puts the rattle she has been holding to one side.

Jenny grins at Sarah, and then her look becomes serious and intense. She appears to be staring at the sight of Sarah sticking her tongue out. Sarah's face is hidden from view at this point, as she leans forward en face with Jenny. Then Sarah laughs, and Jenny begins to smile, the tension on her face dissolving. As Jenny smiles, she begins to stick out her own tongue again, and at this point Sarah says, 'I've never seen you do that before with your tongue, what is that?' Jenny sticks her tongue out once more, and smiles again. Then her smile goes, she becomes serious and looks down at Sarah's mouth. This time we see clearly that Sarah is sticking her tongue out at Jenny. Jenny continues looking intently at this, then she opens her own mouth slightly, and tongues a little. Although this tongue protrusion is smaller than those that preceded it, Sarah picks up on it immediately; 'Yes, that's your tongue!' Jenny smiles, grins, apparently happy at what has occurred. Sarah laughs at her. Jenny throws her head back, waves her arms, and vocalizes 'uuh!'

Sarah once more tongues back at Jenny, but this time she varies the now-established form of the pattern; she adds the sound 'tuh tuh tuh' with her tongue and teeth. Jenny leans forward a little, interested, and looks at what Sarah is doing, but this time she continues to smile, where before she had looked puzzled and almost worried when watching Sarah's tonguing. Now she leans forward towards Sarah and grins 'Huuh!' She smiles and looks straight into Sarah's eyes. Sarah laughs at her. Jenny looks at Sarah's mouth again,

grows serious, and opens her mouth as though she's making, or trying to make, a sound. Is she perhaps straining to follow Sarah's example? But then she turns her head away slightly, with the expression that she had at the beginning of the episode. She looks around and laughs. Then she looks up at the ceiling, smiling to herself. Clearly her attention has lapsed, and Sarah reaches out for the rattle again, to again try to attract Jenny's attention, as she did at the beginning.

Several aspects of this interaction stand out as striking. First, Sarah takes Jenny's actions as manifesting intentions which clearly go beyond Jenny's actual capabilities. When Jenny pushes out her tongue, Sarah talks as though Jenny is issuing an invitation to 'play', though this is a concept Jenny cannot yet possess. Notice that Sarah does this even though she has 'never seen you do that before with your tongue'. This rules out any possibility that tongue protrusion is some sort of special signal which has been developed by this dyad.

Sarah also takes subsequent tonguings as though they are part of a 'dialog' with the infant. Notice that two of her comments make remarkable sense if one imagines an intervening reply by Jenny; a reply that she provides with an apposite tonguing. Sarah asks 'What is that?' Jenny tongues, and we fill in the words, 'It's my tongue!' Sarah's response is, 'Yes, that's your tongue'.

Of course, it could be objected that Sarah doesn't 'really' think that Jenny is replying to her in such a sophisticated nonverbal manner. We can, fortunately, eschew all speculation about what Sarah 'really thinks', because for the purposes of this analysis this is not relevant. The fact is that Sarah contributes a certain structuring of the interaction which has the consequence that it is 'as though' Jenny were replying to her. From Jenny's perspective, unanticipated consequences

arise from her actions, and they do so on the basis of the accidental import that these actions have, due to their meaning and significance for the adult to whom they are directed. That is to say, the communication here is not a consequence of attempts on the part of the participants to influence each other instrumentally. If such attempts are present at all, they play an inconsequential role in what occurs. An instrumental account is inadequate.

How then do we describe what has occurred? There is more in the episode. Notice that Sarah acts as though Jenny has identified something with her tonguing ('Yes, that's your tongue!'); Jenny's tongue protrusion is taken here not just as a fitting reply, but also as an act that demonstrates understanding. And, finally, Sarah acts as though Jenny herself has also recognized this understanding. Jenny smiles and grins, and vocalizes and, in response to this, Sarah laughs, and then proceeds to modify the now-established pattern; she adds an auditory element to the visual display. The exchange ends, then, in a consensus: a shared feeling of excitement and satisfaction based – at least on Sarah's part – not on the accomplishment of some concrete goal, but on the achievement of a joint understanding. I use the term 'consensus' in its original meaning of 'feeling together', rather than to imply the presence of a shared propositional content. Again, the point is not whether Jenny knows what Sarah thinks she does, but that a certain structuring of the interaction has been accomplished with joint affectivity and meaningful coaction. The significance that can be attributed to this structuring will become clearer below.

It may seem strange to argue that there is communication when there is apparently no intentional attempt on Jenny's part to in-

fluence Sarah. There is a strong temptation, as we have seen above, to *define* communication as being instrumental, or deliberate. But there is a distinction between these two terms that is often lost. To do something instrumentally is to do it to have a certain effect or consequence. It is action with the goal of controlling, of predicting and producing an outcome. To do something deliberately, on the other hand, is to do it in the knowledge of what one does, whatever the nature of the effect one is trying to have. The two are run together because of the prevalence of the view that knowledge in infancy is of necessity knowledge of means-ends relationships of an instrumental type. That is, to know what I'm doing is to know the instrumental relationship between my action and my goal. This is the Piagetian conception of epistemology. I wish to argue that early infant communication is certainly not *instrumental,* but that this is a lack of a particularly uninteresting and inessential aspect. It also does not imply that the infant is not at all *deliberate* and the more interesting developmental issue is to examine the degree of deliberateness involved, and how interchange with adults may foster it.

It is worth considering that, even for adult communication, it is not at all clear that we can say communication is something that happens entirely deliberately. If adult communication fails to fit the 'deliberate and instrumental' model of communication, then, a fortiori, the same must be true of infants. There are aspects of a person's communicative actions that are, though unintended as such, communicative; they play a role in any communicative interchange that occurs. Consider the features of a person's mood that have become constant components of that person's personality, or temperament, which they are unaware of, but which are communicated immediately to others when the person speaks. Since such an example might be dismissed as involving only 'paralinguistic' aspects of communication, let us consider that it is also the case that the choice of an entire speech act can rarely be said to be the result of rational, conscious choice and decision alone. Unconscious desires may intrude; a 'promise' may really be a threat, when, for example, I promise one of my academic collegues that I will examine his argument with the utmost care, unconscious of the fact that I am threatening him, and challenging his point of view. The fact that such an interpretation is possible shows that understanding does not stop at the point where conscious intentions are exhausted. We interpret and infer the presence of desires, wishes and so on (which we may then call unconscious) that find expression in an utterance without the deliberate, conscious planning of their effects. It is possible, perhaps even likely, that it is by observing the effects on others of our utterances that we discover our own intentions, make them conscious, and hence are able to act more deliberately in the future. (For a heated discussion on this issue, see *Derrida's* [1977b] reply to *Searle's* [1977] criticism of the former's position [1977a].) In a similar way, the earliest communication between adult and child is not fully deliberate; the infant does not yet have full knowledge of what her actions mean to adults, or what their consequences will be. The infant cannot fully anticipate these effects, but nor is she totally unaware of them.

Before Jenny has any full awareness of the effects that her actions have on others – and presumably long before she tries instrumentally to have a certain effect on others by means of her actions (the point that *Bates*

[1976] picks as the beginning of 'true' communication) – Sarah is interpreting these actions, giving them her attention, making sense of them. and responding to them as though they are deliberate. This means that communicative exchanges are not something that the infant has to learn 'how to do'; they happen inevitably when the infant is confronted with adults.

A temptingly simple account of what occurs when Sarah structures her interactions with Jenny would be to say that she 'attributes' a meaning or intention to Jenny's acts which is not actually there. Jenny's actions are treated by Sarah as meaningful, and we will argue below that they must have a meaning for Jenny as well. Furthermore, we must not make the mistake of considering that meaning as some sort of fixed entity; it is more complex than that, turning out to be part hidden, part visible. It is related to Jenny's intentions, but it goes beyond them. Because Sarah interprets Jenny's actions, their meaning is due to both of them. This is the topic we turn to next.

Meaning Is Problematic and Is Worked Out in Practice

We have argued that, although early communication is probably not instrumental, this negative characterization is of no great import. Moreover, a positive account can be begun, in terms of degrees of awareness that are involved in deliberate action, and the reaching of a social consensus which is unlikely to be an intended 'goal' for either participant. What does such an account imply about the character of the meaning of the infant's actions? Our analysis so far has focused primarily on the ways that the adult works to structure her interaction with her daughter; we must now consider how this

work takes account of, and fits in with, the infant's contribution to interaction. We shall see in the next example that breakdown of understanding can occur; we will examine an occasion where Sarah proves unable to uncover the meaning of Jenny's actions. Cases of misunderstanding are extremely useful when it comes to testing theories of communication; the taken-for-granted view of infant communication can explain misunderstanding only as the occurrence of error; the coding or decoding of messages has gone astray. This may be the consequence of the adult being 'insensitive' or of 'noise' entering the system. Such an explanation fails, however, to account for what occurs in the following example:

Jenny (4 months old) is sitting on Sarah's knees. She is staring at the floor, with a solemn expression, and her upper lip pushed out petulantly. Sarah says, 'You look uncomfortable', and asks 'What's wrong? I can't tell what you want to do.' She asks, 'Do you want to sit down?' and sits Jenny on her left knee. Jenny continues to stare at the floor.

Sarah lifts Jenny, moves her face close to her own. She calls her name, and bounces her on her knee. Jenny turns her head just slightly towards Sarah, but keeps her eyes averted.

Sarah bounces her again, and calls her name again. Again Jenny turns her head a little and begins to smile, but she still doesn't turn fully to face Sarah. Some more bounces, and then Sarah stops and watches Jenny, presumably aware that what she's trying is not going to work.

Sarah lifts Jenny into a standing position and supports her by holding her hands. The posture necessitates that Jenny actively maintain her own balance, and doing so her face turns to the front, towards Sarah. But she immediately looks away again, this time to the other side. Sarah asks again, 'What's wrong?' She tries to keep Jenny upright, but Jenny bends at the waist, looking down.

Sarah now looks irritated. She asks, 'Do you want to sit up?' and sits Jenny down on her knee. Jenny looks impassive, and Sarah says, 'I don't know what you want to do.'

Sarah begins to lean Jenny backwards. Jenny makes an effort sound and glances up at Sarah. Sarah moves her head quickly, trying to maintain the engagement, but Jenny just as quickly averts her gaze. Sarah looks upset. She tries putting Jenny in a feeding position, lying in her lap, and asks 'How's that?' Then she lifts her over her shoulder saying 'Oh, a little gas, huh? A little gas?' However, Jenny's body is very rigid; she doesn't relax over her mother's shoulder. Sarah is now looking angry and upset.

It is clear that in this example there has occurred a breakdown of understanding. If we consider the form the breakdown has taken, we see, first, that it seems Sarah can't get Jenny to participate, to do what Sarah wants the two of them to do, namely to engage her in playful en face interaction, probably for the benefit of the researcher. Second, Sarah says that she doesn't know 'what you want to do'. She appears to feel that Jenny's behavior is due partially to an absence of knowledge on her own part – specifically, knowing what it is that Jenny wants to do. Indeed, Sarah's remarks indicate that she takes Jenny's actions as indicating that she wants to do something. Finally, it seems that Sarah wants to resolve the conflict by discovering what it is that Jenny wants to do, and then presumably going about doing it.

Let us focus first on Sarah's expressing that the problem is due to Jenny wanting to do something other than what Sarah is trying to get her to do. Here, she is acting as though Jenny has a desire or intention which is not immediately apparent to others, yet nor is it entirely hidden. What becomes apparent is that the strategy that Sarah adopts for dealing with this situation of breakdown is one of seeking knowledge; furthermore, it is knowledge that only Jenny possesses; namely, the knowledge of what Jenny wants to do. Yet this epistemological issue has a very practical

basis; there is a breakdown in practice involved, and we shall see in the next of our examples that its solution involves a practical outcome. In summary: (A) Sarah can't get Jenny to participate in what Sarah wants her to do. (B) Sarah doesn't know 'what Jenny wants to do', i.e., she acts as though Jenny has a definite motive for acting as she does. It appears that, for Sarah, (B) is the key to solving (A), and that she will try to solve (B) in order to resolve (A). The root of the problem, though, is the breakdown of practice (A).

It follows that we must regard Jenny's actions as having a semantic structure from Sarah's perspective; rather than having an object-like unity, they have a structure that renders them part visible, part hidden. And we infer from the strategy that Sarah adopts in this situation that what is hidden has the potential to become apparent to her. Although Sarah can see clearly that Jenny is uncomfortable, she still doesn't know what Jenny wants; 'You look uncomfortable. What's wrong? I can't tell what you want to do.' Sarah knows that something is hidden from her; Jenny is not simply uncomfortable, but uncomfortable *about something*.

It seems that an act such as Jenny's crying is understood as having a meaning that is structured; as meaning, 'uncomfortable about X'. It's not entirely clear how this structure should best be considered: It seems to involve an apparent intention and a latent, hidden content. The distinction is not quite the same as, for example, *Searle's* [1969] illocutionary force and propositional content, since *Searle* regards both these as 'encoded' in an utterance (at the level of deep if not surface structure), and so the two are equally apparent. Nonetheless, let us for the time being use the terms 'force' and 'content' for the two components. In the case we are consid-

ering, then, Jenny's wanting to do something is the force of her acts, while the unknown thing she wants to do is the content.

With this distinction in mind, our reconstruction leads us to believe that on this occasion Sarah has understood the force of Jenny's actions, but not their content; she knows that Jenny is uncomfortable, but not what she wants to do. In these terms, what Sarah is trying to work out in the activities she goes through next is the content, what Jenny 'has in mind'.

Theories of infant communication generally fail to make this distinction in their treatment of meaning. They treat the meanings of an infant's actions as though they either (1) have only force, and no content (e.g., signal 'discomfort', and not 'discomfort about wet diaper'), or (2) a single, fixed content (e.g., signaling 'discomfort about the absence of caregiver'), as in the case of attachment theory.

The important thing to note here is that mutual understanding between mother and infant can break down, not because the adult lacks some 'sensitivity' to the infant's 'signals', but because the young child's actions can have an inherent ambiguity; their meaning is essentially problematic. Sarah is constantly working to understand Jenny, and she frequently fails. In the example considered she works systematically to try to uncover the content of Jenny's actions. She does this by putting Jenny in those postural orientations that typically characterize the activities that Jenny often enjoys, and that she might want to engage in; sitting on Sarah's lap, feeding, winding, playing Clap Hands, etc. In this particular case, Sarah fails to discover just what it is that Jenny wants, or what is making her uncomfortable; at the end of the episode Jenny is still unhappy, and Sarah is irritated and apparently at a loss at what to do.

The work that Sarah does involves a kind of practical interpreting of Jenny's acts. To say that interpretation is necessary is to recognize that the meaning of the actions can be a problem, something at issue. It is also to recognize that the first-apprehended meaning of an action or utterance will not exhaust its semiotic potential; some form of effort will be needed to make better sense, or to grasp the meaning more completely. In adult conversation this is expedited by the possibility of asking the other for further information. Sarah is denied this form of inquiry with Jenny and, furthermore, she is faced with a being whose actions are more ambiguous than an adult's.

Several forms of ambiguity give rise to the need for Sarah to do interpretive work to make continuing sense of Jenny's actions. First, Jenny's moods change rapidly. Second, there is no way of asking her what she means by a particular action, as there would be with an adult. There is also a lack of similarity between most of her acts and those of adult communicators. Fourth, she may use apparently adult forms, but in an inappropriate context. Finally, there is, as we have seen, the inherent ambiguity of infant actions, where 'content' is part visible, part hidden.

The example just considered illustrates the work that has to be done by Sarah. Interaction is not a simple 'flow' of action and reaction; Sarah is constantly trying to make reasonable sense of Jenny, and to structure the interaction in appropriate ways. We see what she is doing on this occasion because her work of interpreting happens to fail. It would be tempting to conclude that the agency behind these early interactions was entirely Sarah's. It might appear that what she does is to interpret as meaningful things that are not; to take as deliberate behaviors

that are accidental. But despite all that is a consequence of Sarah's skills, abilities, and interests, it is also the case that Jenny plays a part in structuring the interaction. She too has needs, interests, and tendencies, and so Sarah's values and intentions don't go totally unchallenged. The very possibility of misunderstanding would not exist if Jenny had no active involvement which Sarah must try to comprehend and come to terms with. This contradicts any simple statement that Sarah is the sole agency structuring the communicative exchange. It cannot be that Sarah simply interprets as meaningful actions that have no meaning. It is apparent that Jenny's actions do have some genuine meaning at even this young age (that is to say, a meaning for Jenny herself), that this is what Sarah is trying to understand, and that cases of misunderstanding mark those occasions when Sarah's reading of an action fails to correspond to the meaning it has for Jenny.

How is such a correspondence ever to be assessed, however? When Sarah understands Jenny as wanting to play with her, when Jenny puts out her tongue, can we say that this is 'really' what Jenny means? Such a statement would fall back into an objectivist view of meaning; instead we must say that the important thing in these interactions is that an interpretation by Sarah of Jenny's actions must have what we will call 'practical validity'; it is not the literal 'match' between Jenny's meaning and Sarah's interpretation that is important – for how would such a match be assessed? – but that the interpretation allows the interaction to continue without further hitch. An interpretation that has practical validity (as the interpretation of Jenny's 'invitation to play' does, as the rest of the episode demonstrates) is, for this reason, taken as correct by Sarah.

This means that the understanding that Sarah reaches of Jenny is worked out in practice, and stems from that practice. There is nothing 'outside' the joint activity that serves to unambiguously specify intentions and meanings. All that is brought to the interaction is the set of intersubjective skills that Sarah uses when she makes an interpretation. This is why it is of such interest to see what is done when misunderstanding occurs and is resolved. Presumably one way for a misunderstanding to be resolved is when Sarah makes a new interpretation of Jenny which works, and here this practical validity must mean a joint validity; the new form which the interaction takes must be acceptable to both Jenny and Sarah.

Potential for Change Exists within the Interaction

Many researchers have pointed out that early interactions between infants and adults are brief, repetitive, highly structured by the adult, and so on. *Stern* [1977] notes this. *Bruner* [1977] has described the adult's role as providing 'scaffolding'. However, these researchers have described these exchanges as patterned sequences of objectively identifiable behavioral elements; 'moves', 'units of behavior', 'repertoires of expressions', 'signals', and so on. Such a description of these 'routines' or 'formats' ignores, however, the importance of what is accomplished during them. Description of their structure precludes any consideration of their meaning to the participants; as though the formal structure of any human institutionalized interaction is all there is to it. Would a description of the formal organizational structure of a government, for example, fully explain its functioning, its aims, or how successful it was at achieving them?

When we focus not on the structure but on the meaningful actions that are structured, as in the final example, we see that the infant is being 'encouraged' into fundamental forms of conduct – of action and disposition – that are likely to be the basis for subsequent development of her communicative and broader social competence. The adult's structuring of their interaction has the consequence that the infant's energies – her interests and needs – are channeled into social interchange, through an exploitation of their object-directedness and hence their inherent openness to different, substitute, forms of gratification, and are thereby brought into contact with an inherently social pedagogic activity.

Consider an example that follows immediately upon the last one considered, where it becomes clear that Sarah structures interaction to get certain results.

Jenny (4 months) is looking down; her expression is sober, her posture rigid, and she is wriggling uncomfortably. Sarah says, 'Are you still uncomfortable? You certainly seem to be.' She changes Jenny's position, but Jenny starts to cry, and Sarah grimaces, saying tersely 'What *is* this, what *is* it?' She lifts Jenny into a standing position, supporting her first under the arms, then by holding her forearms. Jenny stops crying, looks around, and raises her arms to balance herself. Sarah looks calmer, and starts to smile.

Sarah starts to sway Jenny to and fro, singing a familiar tune to her. Jenny looks up at her, and vocalizes. Then she looks to her left, and tries to move her left hand towards her mouth, but Sarah is holding her arm. Sarah's eyes widen, she tilts her head to one side, smiles widely, and says 'Look at *you!* Look at *you!* You're standing on your own two feet!' in a voice of surprise and admiration. Jenny covocalizes with each of these last two utterances, and grins up at Sarah. Then Jenny tries again to get her hand in her mouth; it slips out of Sarah's grip, and she gets it half way before Sarah grabs hold of it. Jenny straightens up again, looking at Sarah, who says to her, 'It's exciting, isn't it!' They remain in this position for a while, and then

Jenny bends forward, and this time manages to get her mouth to her hand. She sucks on her fingers, swaying a little as she maintains her balance. Sarah grins, saying, 'And you want to suck at the same time!'

What is happening here, I suggest, that Jenny is being socialized to manifest a certain style in her interactions. When Sarah bends towards Jenny, strongly beams a happy expression at her, and says 'Look at you!' she is infecting Jenny with a sense of the success of her struggles for balance, despite the fact that Sarah is actually playing a large part in maintaining that balance.

Sarah manoeuvres Jenny's verticality, just as she did her mental equipoise. Having encouraged her to cheer up, she encourages her to stand. Certainly she had Jenny's 'participation' – the upright stance and the happy mood were not forced upon Jenny – but neither would they have occurred without Sarah's active attempts to encourage and maintain them. And having built up these accomplishments, Sarah gives the credit for them to Jenny. As before, we see her crediting Jenny with a competence that the latter does not yet have; here, the competence is one that Sarah has very clearly played a part in producing, yet she attributes it to Jenny. Thus this early communicative exchange seems to be intimately linked to the encouragement of certain forms of conduct that involve basic bodily 'management'; emotionality, posture, gratification, and the delay of gratification of needs.

At the same time as Sarah is helping Jenny balance and cheer up, she is preventing Jenny from sucking her finger. Clearly, as much as she is pushing Jenny in one direction – towards a balance that is at the same time mental and physical – she is holding her back in a second direction, which she must regard as in some way retrogressive. She encourages

Jenny to overcome the impulse towards oral behavior; not because finger sucking is 'bad', but because the impulsive energy can be channeled into other, more social, activities.

If this is the case, then Jenny becomes 'social' (in the twin senses of becoming oriented socially, and developing the abilities of the socially skilled) because her interactions have such a structure that she has no other option. This is not completely accurate; she can break down into tears, and does so on other occasions, but here Sarah succeeds in channeling the interaction towards two sanctioned social and personal goals; happiness despite hunger, and upright balance. Both of these represent an achievement by Jenny to 'stand on her own two feet'; to manifest a more mature style of behavior. Once Jenny has gone along with this, Sarah compromises; she lets Jenny suck once she is standing. But she clearly interprets this as Jenny wanting to suck at the same time; i.e., as a compromise, and not a regression. Jenny can suck if she will also 'at the same time' perform some other more respectable activity. Presumably Jenny has more than fulfilled her half of the social contract; she has stood up, cheered up, and engaged in a prolonged period of face to face engagement. All this despite her initial discomfort, and her failure to respond to comforting in the previous episode. Now Sarah allows Jenny to suck, and even assists her.

We've now described several of the ways that Sarah's actions play a structuring role in her interaction with Jenny. We've suggested already that such structuring provides the condition for the possibility of change in Jenny's behavior that amounts to her developing a more advanced communicative competence, and it is now possible to consider this in more detail. We turn now to examine specifically the manner in which Sarah's actions can have consequences for Jenny. This is the way that Sarah interprets Jenny's actions as though Jenny has social competence which she actually does not, and responds in such a way that there is the possibility for Jenny to acquire this competence.

The significance of the fact that structured exchanges, such as those in the three examples presented here, have been actualized lies in the fact that they are beyond the capabilities of Jenny alone. Although we know that the structuring is established by Sarah, one consequence of the form that the interaction takes is that Jenny can appear – to an observer, and also to herself – to be the initiator, an equal partner in what occurs. Sarah uses her own adult competence not just to treat Jenny as though she is herself competent, but also to create the conditions for the development of the very ability she is attributing. In as much as Jenny can reflect on what has happened, she will perceive a regularity in their interaction which she is responsible for. Through being already involved in structured interaction Jenny can become, in time, skilled in its construction herself, and she is involved because of the particular structuring role that the adult adopts with her. She now has only to take control of a structure that is already established, a far easier task than trying to create a totally new structure of interaction.

From a clinical perspective, *Watzlawick* et al. [1967] have discussed the alternate perspectives possible in a dyadic interaction when either person attempts to decide who was responsible for a particular occurrence. Depending on how (from whose point of view) one 'punctuates' the interaction, either interactant can be considered responsible for

what is, on a broader level, a jointly constructed event. In just the same way the exchanges we have considered can be 'punctuated' either as structured by Sarah, replying to a random and meaningless noise from Jenny, or, alternatively, as an attempt by Jenny to say something which would elicit a predictable response from Sarah. I am suggesting that this ambiguity in the 'reading' is very important; it is a necessary requirement for the development of Jenny's communicative skills.

The ways that Sarah structures interaction with Jenny, and consideration of the forms of communication that are evolving in these episodes, lead to the conclusion that there is sufficient 'force' for change in the communicative system inside that system. Social relations and communication have no need to be driven from outside by developments in cognition. This is not to say that in practice developments in one system have no effect on the other, but that there is no logical necessity for cognitive developments to precede and produce communicative ones. Communication has the potential to develop from inside out, so to speak, as the child gains increasing mastery over what it is that she is already doing. This view of development is a form of constructivism – the infant actively engaging the world, acting in it, and so assimilating it to her schemes of 'sedimented' action – but it differs from *Piaget's* constructivism of physical cognition. When the infant interacts with the social world, she is engaged in meaningful dialogue with adults who adapt to her psychological characteristics. They do not behave like objects, nor treat her as one. There is a level of shared meanings that is constantly referred to, and constantly developed; and so the infant's schemes will inevitably take a form that de-

pends not only on her bodily structure (the basis of knowledge for *Piaget)* but which also reflects the norms, values, expectations, and roles – in short, the practices – of the society she is born into. These social meanings are at first not represented, but simply lived; the infant's bodily dispositions will reflect and express them in an unreflective, preconscious fashion. The 'task', so to speak, for the adults who interact with the infant is to make available to her the shared meanings of their society by making them relevant to her own interests and needs, at the same time redirecting those interests into more mature forms. The child is involved in communication from birth. Her task is not to learn how to begin to communicate, but to learn how to gain mastery of what she is doing already. The assumptions that research on infant communication is guided by, often unwittingly, are back to front; it is not that the child learns how to manipulate others (through certain developments in the cognitive domain), and consequentially starts to communicate. Communication is 'there' all the time – albeit in a variety of developmentally-specific forms – and an infant is interacting with others in systematic ways without being aware of the fact. It is as a consequence of this that she is able to learn how to interact with others deliberately; the 'learning how' follows, and depends upon, a period of 'doing it without knowing how'.

Discussion

It is now possible to summarize briefly what we have uncovered in these interpretive descriptions of the everyday communicative practices of mother and infant, and to

consider again the three assumptions which characterize currently accepted views of early communication in much research. These points were the following: (1) The infant's actions have a communicative function that is fundamentally instrumental – they are directed towards attaining certain concrete end states, possibly of emotional satisfaction, or perhaps merely the regulation of the interactive structure itself. (2) The meaning of early infant actions is taken to be unproblematic, and self-evident. (3) Early communication changes, because it is affected from without, probably by changes in cognitive ability.

We are now in a position to state a positive account of early communication which differs significantly from this objectivist version. It seems that, although we must say that Jenny lacks many social skills, she is already engaged in interactions that can accurately be called social, because they make reference to a level of meanings that a purely organic or instrumental form of interaction would not touch. In Wittgensteinian terms, Jenny is already playing language games. She is never outside the social system, lacking the skills, abilities, and powers necessary to enter in. She is never *not* a member of the communicative practices of her culture; instead, the defining criteria that determine who counts as a member of society are modified to allow her to satisfy them. She is able to play the language games, because their rules have been modified to allow her to do so, to fit them to her as yet modest level of accomplishment.

Communicative activity is an ongoing compromise, a cooperation and a working-out, between infant and adults. Communication is not simply instrumentally oriented; consensus in its preconventional manifesta-

tion as shared affectivity is one outcome. The meanings of the infant's acts are essentially ambiguous, have a structure of 'force' and 'content', and are negotiated in practice. The manner in which adults structure interaction – attributing competence the infant does not truly possess – , and the forms of activity which are encouraged, indicate that there is at least the potential for change to occur from within. In the first half year of life the infant is caught up in social exchanges that inevitably shape basic aspects of bodily management, in ways that reflect, and are a consequence of, the forms of conduct that adults recognize and follow. This happens in the absence of the symbolic representation or the conventionalized communication of social meanings by the infant. Yet it is an activity that is a direct precursor and anticipation of communication in adulthood.

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