From communication to language – A psychological perspective*

Dedicated to Roman Jacobson on his eightieth birthday

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Abstract

Any realistic account of language acquisition must take into account the manner in which the child passes from pre-speech communication to the use of language proper. For it can be shown that many of the major organizing features of syntax, semantics, pragmatics, and even phonology have important precursors and prerequisites in the prespeech communicative acts of infants. Illustrations of such precursors are examined in four different domains: The mother's mode of interpreting the infant's communicative intent; the development of joint referential devices en route to deixis; the child's developing strategy for enlisting aid in joint activity; the transformation of topic-comment organization in prespeech to predication proper. Finally, the conjecture is explored whether the child's knowledge of the requirements of action and interaction might provide the basis for the initial development of grammar.

Whatever view one takes of research on language acquisition proper – however nativist or empiricist one's bias – one must still come to terms with the role or significance of the child's pre-speech communication system. What is the nature of that system and does its very nature aid the passage from pre-speech communication to language? What makes for linguistic difficulty in answering such questions is that since the child's communication before language is not amenable to conventional grammatical analysis, efforts to trace continuities often seem little more than a hunt for analogies of 'grammar' in early action or gesture. On the psychological side, the difficulty inheres in the tradition of such research – usually to explain away language as "nothing but" the concatenation of simple conditioning, imitation, or other mysterious simplifications. I shall try in the following pages to show that one can establish continuities between pre-speech communication and language, and do so without recourse to inappropriate reductionism.

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The resurgent nativism that followed upon the work of Chomsky (1965) nurtured quite falsely the hope that this first step could be by-passed – although there is nothing in Chomsky's own writing that would lead necessarily to such a conclusion. The reasoning seems to have been that, if language grows from its own roots, it suffices to study the beginnings of language proper if one wishes to understand the nature of its early acquisition. The programme, in effect, was the linguists' programme: Gather a corpus of speech, with due regard for context (unspecified), and subject it to grammatical analysis. Or, to add an experimental dimension, contrive experimental situations to tap the child's capacities for producing and comprehending speech in particular contexts, and draw inferences from the child's responses concerning his underlying linguistic competence.

There can be little doubt that this programme has deeply enriched our understanding of early language and of the course of its early development. The work of Brown (1970, 1973) and his group, of Bloom (1970), of McNeill (1970a, 1970b), of Slobin (1973) of the Edinburgh group (e.g. Donaldson and Wales, 1970) – all attest to the enormous progress of the last decade.

But the early language for which a grammar is written is the end result of psychological processes leading to its acquisition, and to write a grammar of that language at any point in its development is in no sense to explicate the nature of its acquisition. Even if it were literally true (as claimed by Chomsky), that the child, mastering a particular language, initially possesses a tacit knowledge of an alleged universal deep structure of language, we would still have to know how he managed to recognize these universal deep rules as they manifest themselves in the surface structure of a particular language. Even an innate "language acquisition device" would require a programme to guide such recognition and it would fall to the psychologist to discover the nature of the programme by investigating the alleged recognition process (Chomsky, 1965, p. 27). For Chomsky, the child's problem is "to determine which of the (humanly) possible languages is that of the community in which he is placed". If there were no such recognition problems, the child would obviously learn language immediately and perfectly – at least those portions of it to which he were exposed. This is so far from what happens that we generally agree that it is eminently worth studying what might be called the prerequisites necessary for learning a language or for progressing in the mastery of that language. At the most general level, we may say that to master a language a child must acquire a complex set of broadly transferable or generative skills – perceptual, motor, conceptual, social, *and* linguistic – which when appropriately coordinated yield linguistic performances that can be described (though only in a limited sense) by the linguists' rules of grammar. Such rules of grammar may bear no closer resemblance to the psychological laws of language production, comprehension, and use than do the principles of optics bear to the laws of visual perception – in neither case can the one violate the other.

If we are to concentrate upon the prerequisite sensory, motor, conceptual, and social skills whose coordination makes language possible, we must alas abandon in large part the powerful grammar-writing procedures of the developmental linguist. For it no longer

suffices to collect a corpus of spoken language for which successive grammars may be written, though these grammars may yield valuable hypotheses about the antecedent psychological processes that brought them into being. Instead one must devise ways of investigating the constituent skills involved in language. And typically one begins well *before* language begins, following the communicative behaviour of particular children until a particular level of linguistic mastery is achieved, testing as well for other, concomitant indices of growth. Not surprisingly, then, there are few such studies available, most still in progress: Trevarthen (1974a, 1974b), Sugarman (1974), Bates, Camaioni and Volterra (1973), Lock (1972), McNeill (1974), Dore (1974, 1975), Urwin (1973), and Bruner (1975) though more are starting up.

What is peculiarly difficult in conducting such studies is that their design depends upon more or less explicit decisions concerning what beside language should be studied, decisions derived from hypotheses about the precursors and prerequisites of early language. Typically, in such work, an investigator starts by selecting a 'target' process in later speech and explores its precursors in prelinguistic communication, concentrating upon forms of communication later realized by linguistic means but earlier fulfilled (partially or fully) by gestural or other expression. Studies of this kind explore the continuity between functionally equivalent forms of communication before and after the onset of speech proper. The investigator, for example, may study the prelinguistic devices a child uses for making a *request* or for establishing a *joint referent* before these can be handled through such grammatically appropriate means as interrogatives or demonstratives. Inevitably, such an approach shifts emphasis to functions of language use, to pragmatics and communicative competence (Campbell and Wales, 1970) and away from syntactic competence in the sense employed by Chomsky (1965) and McNeill (1970a, 1970b).

If one pursues this course, one is tempted to look for the 'grammar' inherent in certain forms of social interaction, the emergence of 'proper' grammar then being conceived of as the child gaining insight about how to *express in language* an idea previously held but expressed by other than linguistic means. Both Sugarman (1974) and Bates et al. (1973) for example use non-linguistic behavioral indicators to infer the presence in pre-speech behavior of such concepts as *Agent* and *Instrument* (when the child signals an adult to help him do something that he wishes to accomplish). They see these prelinguistic accomplishments as precursors of case-grammatical categories like *Agentive* and *Instrumental* in Fillmore's (1968) sense of case grammar (of which more will be said later).

But this procedure inevitably brings the investigator to the psychological question: What makes it possible for the child to progress, say, from a prelinguistic form of expressing the demonstrative or agentive to a more advanced linguistic form of expression? It is at this point that the second side of this type of research emerges: The search for the constituent skills relevant to linguistic mastery. The commonest practice is to turn to Piaget (e.g., Sinclair, 1969). According to his well-know view, language is facilitated by the development of sensori-motor schemas, that represent the joint outcomes of percep-

tion and action. These undergo orderly changes that are nourished (though not shaped) by continued experience in acting on the world. In time, for example, the child comes to separate thought from action in his schemas, and his concepts of objects and events in the world become independent of the actions to be performed on them. Sensori-motor schemas also come with experience to transcend space and time, so that the concept of an object is no longer tied to particular contexts, but becomes somewhat more context-free. The acquisition of language is seen as somehow emerging from these developments. Thus a concept of objects that is independent of action on the object should aid the child in mastering such linguistic distinctions as Action and Object in case grammar or, even Noun Phrase and Verb Phrase in the more usual generative grammar. Bates et al., (1973), for example, attribute prelinguistic progress in signalling imperatives and declaratives to the child's maturing Piagetian sensori-motor schemas, though their basis for doing so is partly by appeal to coincidence between the times of appearance of different forms of signalling and the dates usually cited in Piagetian norms and partly to their presence in the sample studied.

Sugarman does somewhat better in this regard. She notes Piaget's observation (1952) that the child, in organizing a sensori-motor schema, will first go through a phase of dealing separately with particular objects before he is able to subordinate the use of one object to the other, as in using one as a tool for getting the other. She likens this to the process of early skill development which progresses by the combining of skilled routines that have first developed separately (Bruner, 1973). With this as background, she postulates that the child will first go through a stage in which he treats persons and objects independently, developing schemas for each, will then elaborate these, until finally he will combine them into a unified schema: Person-as-agent-to-help-obtain-object. As this schema develops, the child will acquire signalling techniques appropriate to his level of growth. And indeed, her data indicate that the child first addresses himself separately to objects or to the mother, and finally learns to signal the mother to get her help in obtaining an object, with an intermediate stage in which there is elaboration of signalling toward mother and object separately.

My principal concern with the Piagetian approach of these authors and of Sinclair (1969) is that it concentrates almost exclusively on the formal aspects of language at the expense of the functional, the emerging structure of the child's language without due regard for the uses to which language is put in different contexts. It will be clearer in the following pages why I think this is a serious and distorting difficulty. But in general, one can only applaud the aim of such efforts, for they do indeed represent the kind of 'middle way' between extreme nativism that sees no problem because it is all there in advance, and extreme empiricist reductionism that sees no problem because it dismisses what is in fact already there by way of readiness to use language in a particularly structured way.

Whoever studies prelinguistic precursors of language must, I believe, commit himself to what Cromer (1974) has recently called the "cognition hypothesis". The cognition

hypothesis has two parts to it. The first holds that "we are able to understand and productively to use particular linguistic structures only when our cognitive abilities enable us to do so" (Cromer, 1974, p. 246). The second holds that when our cognitive abilities allow us to grasp a particular idea, we may still not have grasped the complex rule for expressing it freely but may nonetheless express it in a less complex, if indirect form. He provides as an example the perfect tense and the conceptual idea of completed action: A child who has not yet grasped the perfective device embodied in such sentences as

Have you peeked?

can nonetheless express the same meaning by using the simpler rule of combining a known form with the word *yet*, yielding utterances like,

Did you peek yet?

Presumably, this capacity to express a cognitive insight by means short of the fully realized linguistic rule can be pushed down in age to the point where one asks whether the child is able to use pre-linguistic devices for expressing a cognitive insight even before sentential grammar is present in his language.

Both parts of the cognition hypothesis presuppose the doctrine of functional substitutability or at least of continuity. Neither is a doctrine to be facilely accepted. In semantics, substitutability is represented by Bloomfield's (1933) 'fundamental postulate' that in any given speech community one can find formal and semantic equivalents of certain sentences that serve as 'glosses' of each other. The transformational grammarian usually handles these matters by invoking "a common 'underlying' structure for semantically equivalent 'surface' syntactic arrangements" (Silverstein, 1975). But while in Cromer's example of the more and less compact versions of the grammatical perfective, one can arguably make the case for a gloss, it becomes progressively more difficult to do so as communicative devices become more separated in ontogenetic time. What is the relationship, for example, between a gestural sign of pointing to an apple and the uttering of the word *apple*? They are plainly not glosses of each other in any formal sense. Yet, one is prepared, if only intuitively, to grant that they may be continuous with each other. We say that the two serve the same function of indicating, or at least *some* aspect of this function. If we make a further separation in time and compare a gestural indication with a simple sentence, *That apple* (whether or not we assume that the existential copula is absent because of a deletion rule), then the gap becomes so great as to seem discontinuous. For example, the predicational form of the more advanced utterance makes it amenable to truth testing, the word *that* already presupposes diectic marking, etc., etc., – none of which are remotely attributable to ostensive pointing. Yet, again we assume there is *some* continuity. In what does it consist?

I would suggest that continuity can be attributed for two reasons: The first is by a principle of incorporation, that in achieving competence to utter a simple sentential indicative the child necessarily incorporates prior knowledge implied in his mastery of the

ostensive indicative. But this is surely a weak form of continuity by incorporation, no stronger than the indubitable claim that an infant must stand before he can take his first step. It is strengthened by two additional considerations, one treated below in examining some bases for attributing continuity, the second being the following. If we can show that the child's prior grasp of ostensive indicating by pointing provides knowledge that permits him to 'crack the code', say, of lexical indicating, that it is in fact a stepping stone in a line of prerequisites leading to the use of a simple sentential form of indicating, then incorporation ceases to be merely logical and becomes psychological. The stronger form would be, then, that lexical indicating occurs if and only if the child has previously grasped a more primitive device of indicating and can be shown to use that device instrumentally in the acquisition of the more advanced form. In a word, for a precursor utterance to become psychologically and linguistically interesting, it must be shown to be an instrumental prerequisite to a more evolved utterance.

A second basis for attributing continuity is provided in a more comprehensive view of the nature of language use within any given culture, a subject too readily overlooked in our headlong pursuit of structural regularities in grammar. Stated at its most banal, it is that speech is meaningful social behaviour. But at the same time, it is crucial to bear in mind that articulate phonetic speech is only one of the devices by which meaning is transmitted in such social behavior. Whatever the device employed, "this functional sign mode always involves some aspect of the context in which the sign occurs" (Silverstein, 1975). This pragmatic aspect of sign use is dependent upon a mastery of cultural conventions and it is the linkage of signs to conventions that assures the 'meaningful' use of any signalling system, language included. It is not surprising that Cohen (1974) has recently lamented that, in applying speech-act theory, it is very difficult to decide where linguistics ends and where the study of 'manners' begins. For, as we shall try to show, many of the conventions that underlie the use of language are learned prior to the onset of articulate phonetic speech. Silverstein (1975), proposing to extend the tradition of pragmatics in the line from Peirce to Jakobson and beyond, puts the matter as follows:

> To say of social behavior that it is meaningful implies necessarily that it is communicative, that is, that the behavior is a complex of signs (sign vehicles) that signal or stand for something in some respect. Such behavioral signs are significant to someone, participants in a communicative event, and such behavior is purposive, that is goal-oriented in the sense of accomplishing (or failing to accomplish) certain ends of communication... In general, then, we can say that people are constituted as a society with a certain *culture* to the extent that they share the same means of social communication.

He then goes on to point to various of the properties of communicative events – notably the nature of the relationships that prevail between communicator and recipient. These relationships, interchangeability of roles being one of the most obvious, are highly structured by some subtle mix of human endowment and cultural convention. Silverstein is not concerned directly with the ontogenesis of these role relations, but they lie at the

base of the concern of much of what follows in this paper. These are the functioning communicative acts that give shape to the infant's discourse with adults in his immediate environment: Referencer and recipient, demander and complier, seeker and finder, task-initiator and accomplice, actor and prohibitor, etc. A close analysis of the first year of an infant's life provides not only a catalogue of the joint 'formats' (see below) in which communicator and recipient habitually find each other, but also provides a vivid record of how roles developed in such formats become conventionalized. The infant is not only learning, as we shall see, what constitutes indicating something to another, or having something indicated to him, but he is also learning how to substitute new means for doing so in order to achieve less uncertain outcomes by the use of more ritualized techniques. When, finally, he reaches a stage at which lexical indicating is psychologically within his reach, he already knows a great deal about the nature of indicative contexts and conventions for dealing with them.

It is in this second sense that continuity becomes of special importance. For if the child, say, already knows (as we shall see) many of the conventions for give-and-take exchanges and how to conduct them by appropriate non-linguistic signalling, he is equipped better to interpret or "crack the code" of linguistic utterances used as regulators of such exchanges. We too readily overlook the fact, perhaps in celebration of the undoubted generativeness of language, that speech makes its ontogenetic progress in highly familiar contexts that have already been well conventionalized by the infant and his mother (or other caretaker). In this sense, it is not extravagant to say that initial language at least has a pragmatic base structure.

Let one matter, finally, be made abundantly clear. The point of view that has been set forth in this introductory section is in no sense to be interpreted as a rejection of the role of innate predispositions in the acquisition of language. In the opening paragraphs of this section I commented in passing that there is nothing in Chomsky's writings that would in any sense deny the role of prelinguistic precursors of prerequisites in aiding the acquisition of language. Indeed, it would be absurd to imagine that the Chomskean Language Acquisition Device could operate without considerable pre-tuning achieved during the period that precedes the use of articulate phonetic grammatical speech. Chomsky comments (1965, p. 58): "The real problem is that of developing a hypothesis about initial structure that is sufficiently rich to account for acquisition of language...". Surely, part of that richness is the representation built up of communicative requirements established over the long period of interaction between infant and caretaker. I have argued in this section, and will develop the argument further in what follows, that these representations help the child crack the linguistic code. As I have stated elsewhere (Bruner, 1972), there is a long evolutionary history that has shaped human immaturity and many of the elaborated forms of mother–infant interdependence are sufficiently invariant in our species to make inescapable the conclusion that they are in some crucial measure based on innate predispositions, however much these predispositions require priming by experience. What other forms of innateness must be present for the child to

acquire language proper – its grammar and phonology particularly – I cannot debate, though it is worthwhile pointing out that until we discern more clearly the contribution of prelinguistic concepts it is premature to conclude that *innate or even acquired ideas about grammar* are all that operative. Grammar may itself be a product of the evolution of joint action in the species and one does well therefore to examine how the human ontogenesis of joint action contributes to the mastery of that grammar.

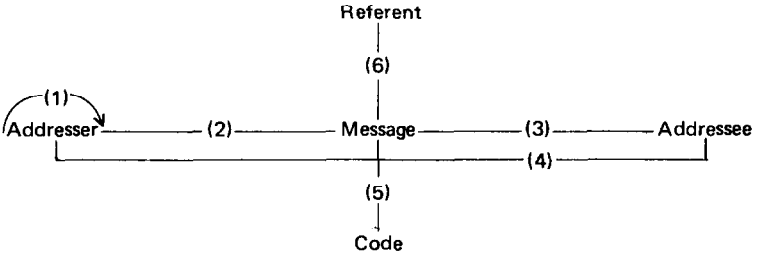
The present paper is an attempt to throw some light on some of the persistent problems that are encountered in the study of the transition from prespeech communication to early language. There are, as this introduction hopefully makes plain, many such problems. I have chosen four of them as illustrative. In a concluding section I shall try to formulate a general conclusion about the role of the three branches of semiotics in such work: Syntax, semantics, and pragmatics (Morris, 1938). The four topics are: (1) The inference of communicative intent, (2) the nature of early reference, (3) the use of language in the regulation of joint action, and (4) the precursors of predication.

Communicative intentions

Communication, as Silverstein (q.v.) has already noted, presupposes intent or purpose in communicating in the sense that a communication succeeds or fails in its objective. Grammarians usually take intent for granted but one does so at one's peril. To underline the intentionality of language, linguistic philosophers like Austin (1962), Grice (1968), and Searle (1969) have been particularly insistent on drawing the distinction between the performative or illocutionary functions of utterances, judged both by their conventional felicity and their efficacy in achieving desired results, and the locutionary function, to be judged against such criteria as well-formedness or truth value.

But intent in communication is difficult to deal with for a variety of reasons, not the least demanding of which is the morass into which it leads when one tries to establish whether something was *really*, or *consciously* intended. Does a prelinguistic infant *consciously* intend to signal his displeasure or express his delight? To obviate such difficulties, it has become customary to speak of the *functions* that communication or language serve and to determine *how* they do so. This has the virtue, at least, of postponing ultimate questions about 'reality' and 'consciousness' in the hope that they may become more manageable.

Jakobson (1960) proposes an analysis of language functions based upon the familiar 'information' diagram, functions being noted by numbers. Function 1 is *expressive* and is made up usually of accompaniments to the addresser's feelings. In a primitive sense, its 'success' or 'failure' depends upon innate or early learned recognition routines. In time, the form and the recognition of expressions of state become increasingly conventionalized. Function 2 is *poetic* and involves modes of structuring messages to achieve the illuminative or exhibitive effects of an art form. Again, it comes increasingly to use



the conventions and devices of a language community (Gombrich, 1975). Function 3 is *conative* and is concerned with forming messages in such a way as to produce desired behavior in the addressee. It encompasses the philosopher's illocutionary force. Function 4 is *phatic* and relates to the maintenance of a channel of communication between addresser and addressee. Its conduct too may be governed by standard procedures as represented by permissible pause lengths, etc. Function 5 is *metalinguistic* and it serves to explicate, usually by reference to a code, e.g.,

> Why do you call it *meta*linguistic?
> Oh, because it is talk about talk itself.

Function 6 is *referential* and its use is to make clear the referent of a message by clearing up the context for interpreting an utterance. In the stringent terms of the philosophers of language, we may say that "If a speaker refers to an object, then he identifies or is able on demand to identify that object for the hearer apart from all other objects" (Searle, 1969, p. 79). But it is usually much sloppier than that in practice, viz.,

> What did you mean, in front of the house?
> It's right in front of the house, by the wall.

Any linguistic community has, as noted, conventions for dealing with the functions of language. So do sub-communities. Scientists in communication follow conventions of appearing to 'avoid' conative, poetic and expressive functions by the use of meticulous declaratives, passive voice, and words of compact rather than diffuse associative value, etc. The sociologist Garfinkel (1963) notes that in virtually all communities, excessive request for metalinguistic clarification in ordinary discourse is often taken as a sign of hostility or disbelief in one's interlocutor. To be felicitous requires learning a great many such conventions and rituals.

To characterize these conventions Grice (in press) invokes conversational postulates that govern discourse, from which rather loose-fitting maxims are derived – maxims of relevance, of quantity, of quality. Speakers in conversation are expected to stick to the point, to give neither too little nor too much information about context, to speak the

truth as they see it. When they depart from these maxims, it is expected that they will do so in a patterned way, with specific intent – irony, humor, or some effort at manipulation. The pre-linguistic child is probably not much under the sway of such maxims. The postulates governing their communication cannot be taken for granted. But we as their tutors in communication very soon learn their speech proclivities and very early try to shape them to those of the adult community. Unfortunately, there are no studies that have investigated the ways in which this is done, although work on social class differences seems to be making a start (Bernstein, 1960; Hess & Shipman, 1965; Schoggen & Schoggen, 1971; Howe, 1975).

Generally (and often unconsciously) adults impute communicative intent to the utterances of infants and children – intent with respect to all the Jakobsonian functions. Indeed, Macfarlane (pers. comm.), in studies of birth 'greeting behavior', finds mothers irresistably imputing intent to the cries, gestures, expressions, and postures of newborns. And there is often a strikingly moralistic approach to the imputations. Infants are seen to be showing off, to be asking more than their share, to be 'buttering up' mother, to be 'going on too much about it'. Let us postpone for a bit the question whether these inferences about intent are 'correct' or even 'consistent'.

Joanna Ryan (1974) puts the issue of a child's communicative intent and its interpretation by an adult in a useful light. She notes "that much of what a child utters in the early stages is difficult to understand, if not unintelligible," though the "child's speech and other vocalizations take place within a context of interaction with adults who are motivated to understand the child's utterances" (p. 199). She continues: "Many young children experience extensive verbal interchanges with their mothers. During these the mother actively picks up, interprets, comments upon, extends, repeats, and sometimes misinterprets what the child has said," a point which our own observations would certainly confirm as characteristic of even the three-month-old and his mother. Ryan properly complains that the grammarian's emphasis on well-formedness and semantic sense obscures the role of these interpreted exchanges in preparing the child for language use. Not only do mothers interpret the child's gestures and vocalizations in conative terms – what he wants – but also in terms of Grice-like maxims like 'sincerity' ("He's really faking when he makes that sound") and 'consistency' ("Won't you please make up your mind what you want"). Our own observations during the first year of life point to the importance of the creation of what Garvey (1974) has called 'formats', habitual exchanges that provide a basis for interpreting concretely the intent of the communications of the child and of the mother. We shall have more to say in a later section about the nature of such formats and their transformations. It suffices to note here that they serve not only to concretize but to socialize and give pattern to the child's communicative intentions as well as providing the adult with a basis for interpreting them.

There is, of course, a great deal of variation in the attitudes of mothers toward their children's communicative intent, variation that produces considerable disparity in the manner in which mothers interact and talk with their young children. Howe (1975)

has shown the extent to which middle-class mothers conceive their role toward their infants as being more "instructive", not only responding more to their infants efforts to vocalize by speaking in return, but also attempting more often to initiate exchanges. The working-class mothers in her study were more often laissez-faire in their approach. By the time, then, that he is two-and-a-half or three years old, the middle-class child is on average not more *competent* to handle more advanced forms of utterances – propositions of state and of action – but in fact is using such advanced forms more often. For their mothers continued to *interpret* their child's utterances as having to do with state and action (in contrast to propositions of naming only) until the child explicitly replied with such propositional forms. The mother's interpretation of the child's communicative intent is what seemed to keep the verbal interaction going and it keeps going until the child conforms or the mother gives up. While Howe's data begin at 18 months, when holophrases and early two-word utterances were appearing, the same principle can be shown to govern the mother's persistence even when the criterion the mother is applying relates to pre-linguistic communicative exchanges.

In interpreting the infant's communicative intent – correctly or incorrectly – the mother has a rich variety of cues to use. So too the child, for if the mother is at all consistent, he gives forth cues that come increasingly to have a predictable consequence as far as her behavior is concerned. In this sense, they are in a transactional situation; their joint behavior determining its own future course. Ryan (1974) adapts a classification of the cues used by the mother prepared originally by John Austin (1962) for the analysis of performative aspects of speech. (1) *Aspects of the utterance* itself including intonation patterns that suggest insistence, pleasure, protest, request, etc. As Ryan puts it, "what is important is that adults interpret children's use of intonation in a systematic way, thus allowing children to learn what is conventional usage". Wolff (1969) was one of the first to indicate that the early cries of infants were interpretable by parents. Ricks (1971) has shown even more convincingly that cries of normal babies obtained under controlled conditions (expressing greeting, pleased surprise, request, and frustration) were correctly categorized – although the cries of the parent's own children included in the sample were not reliably identifiable. And Dore (1975) has suggested that intonation contours may be the first carriers of primitive illocutionary force in the child's utterances. (2) *Accompaniments of the utterance* provide a second set of cues for interpretation – 'pointing, searching, playing with specific objects, refusing'. These are evident enough and need no comment here. We shall meet them again in a later section. (3) And finally, *circumstance of the utterance* constitutes the third source of cues, the context of the communicative event. Families of the children in our present study at Oxford typically classify their infants' vocalisations by context; babbling contentedly in his cot on first waking up, calling for attention on waking from the afternoon nap, hunger-fretting before feed time, annoyance at not being able to reach an object, etc. For what it is worth, we have also found distinctive voicing patterns in these calls as early as four months, suggesting that it may not be context alone that is being used as a cue.

When, then, does infant come to 'intend consciously' to communicate? Early students of prelinguistic communication were given to classifying pre-speech utterances of children into expressive (early cries of discomfort and pleasure), stimulative (producing reactions in others) and representational (Bühler, 1934). The process of going from expressive to stimulative was conceived much as Piaget's (1952) secondary circular reaction for producing or prolonging a desirable state of affairs previously produced inadvertently. Was intent involved in going from the expressive to the stimulative, and could one tell that the trip had been made? That debate does not seem worth a repeat performance, for we surely have no better basis for deciding than did our forbears. Rather, I think we would do better to concentrate instead on the description of particular intention-imputing situations and their outcomes to determine the child's and the mother's course in learning to deal with Jakobson's communicative functions. How indeed do the child-and-mother cope with the joint reference requirements in communicating? How is the phatic link maintained? How do the child and mother handle misunderstandings and their disambiguation? How do the child and mother express and recognize states of feeling? Is there an early poetic function and what well-turned babbles are rewarded by smiles? Can one discern a systematic trend in the conative devices a child uses to produce desired behaviour in his listeners?

If only for methodological reasons, I would propose that we avoid *a priori* arguments about 'conscious intent' and 'when' it is born. For questions whose answers are not in principle recognizable are rarely useful, and it is likely that 'consciousness' and 'intention' are opaque in this way. The issue, rather, is how communicative functions are shaped and how they are fulfilled. In fact, when one examines the development of specific communicative functions, the issue of conscious intent and its dating seems to wither away. An example is provided by one of our own subjects, Jon A., and the development of a signal pattern involving reaching outward bimanually while in a sitting position, hands prone. It had usually been interpreted by the mother as a signal that Jon wanted some familiar, hand-sized object beyond his reach's terminus, and she generally provided him with it, often heightening his anticipation by advancing the object slowly or 'dramatically' toward his hand with an accompanying rising voice pitch. At eight months, one week, Jon used the signal; *M* interpreted it as calling for her hand, since there was no object close by, and performed her 'walking hand' body-game format, with the fingers walking up Jon's front to his chin. He tolerated it, though not entering as exuberantly as usual. That over, Jon then reached out again. *M* interpreted it as request for repetition. He participated even more reluctantly. *M*, on completion, then repeated the game though Jon had not signalled. He averted his gaze and whimpered a little. She repeated again and he was totally turned off. Pause. Then, 27 seconds after Jon first reached out, he reached again, this time pulling *M*'s hands to a position where he could take hold of the ulnar edges and raise himself to a standing position. There was a following sequence of 14 episodes extending for slightly over 9 minutes in which *M* and Jon played a game of alternating irregularly between the two 'formats' – *M*'s hand either walking on fingers to tickle position, or

M's hands in stand-supporting position. Under *M*'s control, it was made into a 'surprise' evoking, alternating format, with her alternative interpretations of his reach gestures being rendered explicit.

In the course of such exchanges, as Ryan (1974) has already noted, "The child is developing skills that are at least as essential to speaking and understanding language as the mastery of grammar is supposed to be". Much of that learning is based upon the mother interpreting the child's intent, the child sometimes conforming with the interpretation, sometimes not, but learning, en route, what interpretations his efforts evoke and how these may be modified.

We shall return to these issues in a more general way in the concluding section. Here it suffices to say, with Dore (1974), that any theoretical framework for understanding language development requires a consideration of pragmatics, and a theory of pragmatics must have some way of coping with the communicative intentions of speakers. Dore proposes that communicative intent be defined as the inducement in a listener of the speaker's expectation. In this section, we have looked at intent as being realized in a transactional situation, with mother providing an interpretation to which the infant 'speaker' can conform, dissent, or which he can attempt to modify by correction or persistence. In the following sections we shall deal with more specific communicative intents – referring, regulating joint action and predicating.

Reference

The issues raised in traditional philosophical discussions of reference have often been introduced into the debate by invoking the example of a hypothetical infant learning that a given sound, word, or gesture "stands for" something in the extralinguistic environment. Though such exercises are logically stimulating – else they would not have continued over the centuries – they are, alas, principally empty or irrelevant in explicating psychologically the infant's real problem in mastering reference. I find myself strongly in agreement with Harrison's (1972) contention that the psychological (and even arguably the philosophical) problem of reference is how the child develops a *set of procedures for constructing a very limited taxonomy* to deal with a limited set of extralinguistic objects with which he traffics jointly with adult members of the linguistic community. What adults do for the child is to teach him or help him to realize how these taxonomic procedures operate in assuring joint reference in relatively well established situations until, finally, the child can go on quite on his own in coping referentially with larger arrays of objects in novel situations. The procedures of reference, I believe, are generative. The issue is how to differentiate among a set of objects, and how to refer precisely to any single one. I am quite prepared to accept Wittgenstein's (1953) demolition of empiricist–associationist theories of naming based on pointing or other forms of ostension on his grounds: That ostension, even with negative feedback, can never specify what it is that

a sign refers to in the complex welter of properties that any object necessarily displays. The negative feedback, moreover, is rarely in evidence in the data on language acquisition and when it does occur (e.g., Nelson, 1973), it is usually followed by the child abandoning his effort to use a name to indicate an object. Moreover, associative theories of naming or reference are beleaguered by the presupposition that uttering a sound or making a gesture in the presence of a referent somehow evokes a nascent or innate recognition in the child that the name is associated with some feature of something that is at the focus of the child's attention, so that any concatenation of sign and referent is as likely as any other to be learned, and that is plainly not so. Whatever the reference triangle is (Ogden & Richards, 1923), it is plainly not an isolated bit of mental furniture produced by the linking of a sign, a thought, and a referent. The objective of early reference, rather, is to indicate to another by some reliable means, which among an alternative set of things or states or actions is relevant to the child's line of endeavor. Exactitude is initially a minor issue. 'Efficacy of singling out' is the crucial objective, and the procedures employed are initially quite independent of the particular nature of objects and their defining or essential properties. If what I have boldly asserted here is even arguably so (and for a more carefully reasoned presentation of the same argument, the reader is referred to Harrison's 1972 discussion), then we would do well to avoid falling into the classical empiricist trap of the theory of naming or referring (even Quine's (1960) seductively common sense version of it in *Word and Object*) and look instead at the procedures earliest used by the infant and adult in indicating and differentiating the very limited set of objects with which they traffic.

I shall want to deal with three separate aspects of early reference, and for convenience I shall give them labels. The first we may call *indicating* (if only to avoid the term ostension!), and it refers to gestural, postural and idiosyncratic vocal procedures for bringing a partner's attention to an object or action or state. The second is *deixis* and refers, of course, to the use of spatial, temporal, and interpersonal contextual features of situations as aids in the management of joint reference. The third involves the development of standard lexical items that 'stand for' extralinguistic events in the shared world of infant and caretaker and I shall call the process *naming*. Our task, as already indicated, is to explore the procedures employed in all three of these considerable linguistic accomplishments.

Take indicating first. Studies by Collis and Schaffer (in press), by Kaye (1976), and by Scaife and Bruner (1975) all point to a highly primitive form of indicating early in the child's first year. Collis and Schaffer have shown the extent to which the mother's line of regard follows the infant's, she constantly monitoring and following where the child looks as an important feature of inferring what is at the focus of his attention – better to interpret his demands, to elaborate upon what he is attending to, etc. Kaye has shown the extent to which mothers, asked to teach their child a simple task of taking an object from behind a transparent barrier, actively enlist the child's attention by 'marking' the target object in various ways – touching it, shaking it, etc. Strikingly, such manoeuvres occur

far in excess of chance expectancy when the infant *looks away* from the task. In sum, she follows his line of regard, and when it diverges from where the task requires it to be, she uses effective procedures of indicating to reestablish joint attention. The findings of Scaife and Bruner provide the final piece in this picture. Not only, as indicated by Collis and Schaffer (in press), does the mother follow the child's line of regard as an indicator, but in this experiment the infant seems able as early as four months to follow and increasingly does follow an adult's line of regard when it is turned toward a locus removed from the child. We do not yet know what the processes are that bring this accomplishment about, but there are some tantalizing indications of the kinds of factors that are involved and that will have to be unravelled by experiment and close observation. What Scaife and Bruner (1975) have found is that as early as four months in some children and with high frequency by nine months, the infant turns his regard in the same direction as a facing experimenter turns his. To what extent imitation is initially involved is difficult to say, but it can be said that there is no confusion among their young subjects as to which way to turn, though imitation might lead to head turning in either direction. Work is continuing at Oxford on these tangled issues by Scaife and by Churcher, and hopefully a clearer indication of the origins of this behavior will emerge. Qualitative analysis of the responses of Scaife and Bruner's babies seem to suggest that the head turns of the infants are not of a magnitude to match imitatively the degree of head turn by the adult. Yet, it is quite possible that initial imitative turning might lead the child to 'pick up' an interesting object and thereby provide a perceptual reinforcement to the child's head turning. Again, this would very likely depend upon the density and discriminability of targets available to the child who orients in the direction of an adult's gaze. In any case, what we can say at this early juncture is that there is present from a surprisingly early age a mutual system by which joint selective attention between the infant and his caretaker is assured – under the control of the caretaker and/or of the child, eventually managed by joint pickup of relevant directional cues that each provides the other.

Plainly, such devices for assuring a joint focus are insufficient for indicating what feature of a focus of attention is being abstracted – by the mother or by the child. That, of course, is the shortcoming of all ostensive indicating. But it is far more to the point to note not this shortcoming, which in a practical sense seems trivial in terms of what the child is actually doing, but the nature of the accomplishment (whether it be innately primed or somehow learned). What has been mastered is a *procedure* for homing in on the attentional locus of another: Learning where to look in order to be tuned to another's attention. It is a discovery routine and not a naming procedure. It is totally generative within the limited world inhabited by the infant in the sense that it is not limited to looking at oranges or dolls or rattles. It has also equipped the child with a basis for dealing with space that transcends egocentrism, or, in any case, the child's egocentrism does not prevent him from following another's attention. For the child is able to use both a second origin of reference, another's line of regard, as well as various forms of

marking or highlighting of objects (as in the Kaye experiment). These accomplishments would surely qualify as precursors of Piagetian decentration, their earlier occurrence being attributable perhaps to the more personal, less object-orientated testing situations used in Oxford. In this sense, these accomplishments guarantee the first bases for spatial, interpersonal deixis.

There is a further procedural accomplishment implied by Kaye's (1976) study of the 'implicit pedagogy' of mothers, their use of 'marking' in indicating an object or event to be attended to. Without going into the details, it is plain that mothers of six-month-olds succeed in getting their infants to attend to and capture the object intended, in spite of the barrier. They not only mark the object, but evoke the action either by a process of tempting – putting the object nearer and at the edge of the barrier - or by modelling the behavior themselves. The marking involves a combination of 'highlighting' features and exaggerating the structure of acts to be performed. They do both in a manner that is highly contingent on the child's state, his attentional deployment, and his line of activity.*

We may now profitably introduce the concept of "natural categories" so interestingly expounded in a recent series of papers by Rosch (1974). She argues that in development, categories of objects are built on the basis of a common sharing of 'motor programs' and of those perceptual features required for their execution. In this sense, they are 'practical' objects that are marked by features of use and their structuring into equivalence classes is based upon that use. In this sense, jointly managed activities provide an essential contextual basis for parent indicating to child and child to parent. As Nelson (1973) notes, categories of use are the first to develop and the childish definition 'a hole to dig' is to be taken as something more than quaint. But what is apparent is that indicating in either direction – child to mother or mother to child – occurs in situations where *both* are involved jointly in the act of digging or of reaching or of knocking down. The indicating that is used by each is based on the joint knowledge of the course of these actions and initially takes the form of exaggerating or 'marking' some phase of the action as a signal (often accompanied by ancillary vocalization and gesture, as in the child indicating a target of reaching by exaggerating the reach toward an object and making an 'effort' or 'fretting' vocalization, or by the mother shaking or vocally marking by *'C'mon'* a proffered object). Note again that the procedure is independent of the conventional defining properties of the objects involved and relates instead to the programme of use.

Generative procedures for indicating undergo three striking changes over time: *Decontextualization, conventionalization,* and increased *economy*. Decontextualization involves the development of indicating strategies that are not so closely linked to the specific action patterns in which they are embedded. Rather than indicating by exaggerating a feature of the reach (like extension) and fretting, the child now uses a more peremptory reach toward the object. This manoeuvre appears to signal more the child's

*For a fuller account of earlier implicit pedagogies concerned with such 'marking', see Wood, Ross, and Bruner (in press).

line of regard and less the next step in his line of activity. *The extended hand becomes an external pointer for noting line of regard rather than direction of activity.* It is probably this crucial fact that leads to an increase in economy in indicating. For by eight months, and often earlier in 'comfortably familiar' joint action formats, the child holds his hand out toward the object in a non-grasping directional gesture. By a year, when he is presented pictures on the page of a book, he rarely 'grasps' at the picture, but touches it, and eventually touches it only with the index finger.

With respect to conventionalization, its basis is somewhat problematic. Its origin may be in the phenomenon of visual 'cross checking' between mother and infant: Each looking at the other *en face* while in the process of indicating (present from the start for the mother, but increasingly evident for the child after six months in our own observations as well as in those by Sugarman, 1974, and by Bates et al., 1973). They appear to be seeking agreement on a referent. The term conventionalization may, perhaps, be inappropriately grandiose for such a minimal sign. I use it nonetheless to indicate that mother and child seem increasingly in the second half of the first year to be checking whether their gesturing or marking is 'getting through' to the other, as if there were mutual recognition of a correct way to signal.

It is after all of this prior learning that holophrastic 'naming' comes into the picture. Again, it seems highly unlikely that naming is what in fact is at issue. For as I have argued in a previous paper (1975), and as Bloom (1973), Greenfield and Smith (in press) and others, I think, abundantly illustrated, the child's holophrases are grammatically contextualized in a Fillmore-like (1968) case form that highlights some aspect of who is doing what with what object toward whom in whose possession and in what location and often by what instrumentality: Agent, Object, Recipient of Action, Location, Possession, Instrument. And it is not surprising, as Eve Clark (1973) has pointed out, that from a sheerly referential point of view, the child's usage is highly overgeneralized, since he is still grouping objects and actions in terms of function rather than properties – a point well made in Greenfield's (1973) paper on "Who is Dada?" In this sense, the emphasis is upon a rough taxonomic procedure rather than exactitude of response.

Equipped with such useful and generative procedural rules, the child may then get on with the Augustinian business of learning to refer – but in no sense can it be taken as claimed by St. Augustine (cf. Wittgenstein, 1953) as learning language through naming *ab initio*. For if the child now fails to be able to discern the properties to which orange or rattle or Dada refer, he has an extensive repertory of procedures available for disambiguation – though, to echo Wittgenstein's critique again, there is no set of ostension procedures that can ever *uniquely* determine reference or meaning.

We may now turn to the issue of *deixis* and its development. Recall that from the fourth month there is already some basis for spatial deixis in the line-of-regard following of mother and infant and, probably, this implies some appreciation of deixis of person – at least the recognition that it is *another's* line of regard being followed. Much of the 'reality of discourse' depends upon the establishment of what Benveniste (1971) calls a

locution-dependent I/You concept. Adult speech would be impossible without it and Lyons (1974) has argued that reference is dependent for its growth upon it to deal not only with the shifters *I* and *You* but with spatial and temporal indicators like *here* and *there, now* and *later,* etc. Benveniste's point is worth quoting (1971, pp. 217 - 218):

> Between *I* and a noun referring to a lexical notion, there are not only the greatly varying formal differences that the morphological and syntactic structure of particular languages imposes; there are also others that result from the very process of linguistic utterance and which are of a more general and more basic nature. The utterance containing *I* belongs to that level or type of language which Charles Morris calls pragmatic, which includes, with the signs, those who make use of them. A linguistic text of great length – a scientific treatise, for example – can be imagined in which *I* and *you* would not appear a single time; conversely, it would be difficult to conceive of a short spoken text in which they were not employed. But the other signs of a language are distributed indifferently between these two types of texts. Besides this condition of use, which is itself distinctive, we shall call attention to a fundamental and moreover obvious property of *I* and *you* in the referential organization of linguistic signs. Each instance of use of a noun is referred to a fixed and "objective" notion, capable of remaining potential or of being actualized in a particular object and always identical with the mental image it awakens. But the instances of the use of *I* do not constitute a class of reference since there is no "object" definable as *I* to which these instances can refer in identical fashion. Each *I* has its own reference and corresponds each time to a unique being who is set up as such.
>
> What then is the reality to which *I* or *you* refers? It is solely a "reality of discourse," and this is a very strange thing. *I* cannot be defined except in terms of "locution," not in terms of objects as a nominal sign is. *I* signifies "the person who is uttering the present instance of the discourse containing *I*." This instance is unique by definition and has validity only in its uniqueness. If I perceive two successive instances of discourse containing *I*, uttered in the same voice, nothing guarantees to me that one of them is not a reported discourse, a quotation in which *I* could be imputed to another. It is thus necessary to stress this point: *I* can only be identified by the instance of discourse that contains it and by that alone. It has no value except in the instance in which it is produced. But in the same way it is also as an instance of form that *I* must be taken; the form of *I* has no linguistic existence except in the act of speaking in which it is uttered. There is thus a combined double instance in this process: the instance of *I* as referent and the instance of discourse containing *I* as the referee. The definition can now be stated precisely as: *I* is "the individual who utters the present instance of discourse containing the linguistic instance *I*." Consequently, by introducing the situation of "address," we obtain a symmetrical definition for *you* as the "individual spoken to in the present instance

> of discourse containing the linguistic instance *you*." These definitions refer to *I* and *you* as a category of language and are related to their position in language. We are not considering the specific forms of this category within given languages, and it matters little whether these forms must figure explicitly in the discourse or may remain implicit in it.
>
> This constant and necessary reference to the instance of discourse constitutes the feature that unites to *I/you* a series of "indicators" which, from their form and their systematic capacity, belong to different classes, some being pronouns, others adverbs, and still others, adverbial locutions.

If we can interpret Benveniste as implying psychologically that a grasp of reciprocal roles in discourse is the essential prerequisite for deixis of person, place, and time, then some very interesting questions arise about the development of reference. For one thing, the Benveniste hypothesis places pragmatics – the relation of language to those who are speaking it – at the heart of the problem of reference.

Again, the beginnings of a locution-dependent reciprocal concept emerges in action well before it is ever used in formal language. Established and reversible role relationships obviously provide a primitive base for later linguistic deixis. The universal prelinguistic game of 'Peekaboo' is a striking example (Bruner and Sherwood, in press; Greenfield, 1972) of such reversible role structures, bound as it is by rule constraints with respect to who is the recipient and who the agent of coverings and uncoverings and how these may be reversed. Give-and-take routines, early established between mother and infant, again with reversibility of roles, and often marked by distinctive vocalizations for marking the giving and the receipt of an object (Bruner, 1975) provide another example. In such games, once developed, the child looks mother directly in the eye for a signal at crucial pauses in the play, as if to calibrate his intended actions with hers and to check which one is playing which role. In the first year of life, then, the child is mastering a convention – checking procedure not unlike that of adults – indeed, even using eye-to-eye contact for determining intent, readiness, and whose 'turn' it is (Argyle & Ingham, 1972).

But there is a big step from 'behavioral' to 'linguistic' deixis. In the latter, the context is contained in the message, in the former in the behavioral field of the speakers. Are there any small steps that help the child scale the heights from extralinguistic to intralinguistic deixis?

Perhaps one such step is through early phonological marking. One of the children we are studying showed at six months a difference in range of pitch for vocalizations accompanying the manipulation of objects in hand and those accompanying his interactions with his mother. Vocal 'comments' or babblings while manipulating objects were higher pitched than those accompanying exchanges with the mother. The mother was observed to look back to the child when the pitch of his vocalization dropped, to check whether he had redirected his attention toward her, though pitch difference did not develop as a systematic calling device to which the child and mother had recourse. The

same child used a sharper onset of voicing when reaching toward out-of-reach objects than when taking one in hand that was within easy reach, a distinction akin to Lyons' (1974) second-order deictic marker, proximal/non-proximal. When the child did use sharper onset voicing the mother responded by moving an out-of-reach object toward him. It may well be, to be sure, that the sharper onset was an accompaniment of the effort of reaching for the more distant object – and in this sense be 'expressive' – but the fact remains that the distinction provided a *vocal* cue to the mother as to topic of the child's attention. We cannot know whether the child 'deliberately' used the distinction for signalling purposes, but the mother responded as if it were deliberate and he continued to use such signalling in appropriate situations. In one other instance with the same child, again at six months, he was observed to use a distinctive vocalization that soon was able to produce a particular act by the mother. The situation was the familiar one in which mother 'looms' an object toward the child, the termination of the looming being to touch the object to the child's chest or hand or forehead. It is a standard body game play 'format' for this child–mother pair. The child responded to looming with a pharyageal fricative, shifting to velar stop, and terminating with the achromatic vowel, *aah*. When the mother delayed looming, the child used this call. If mother delayed too long, the vocalization shifted to a fretting call. This signalling was observed over two observational sessions separated by three weeks.

Kaplan and Kaplan (1971) have set out a plausible case for such phonological marking as a beginning of a semantic referential system that may precede or operate independently of syntax. Cromer's (1974) admirably concise summary of the Kaplan's position will serve:

> (They) propose that the child's semantic position develops out of the early distinctions present in his communication system. They feel that with adequate data one will be able to identify a set of semantic features and chart the developmental order of their emergence. For example, when the infant makes the early distinction between human and non-human sounds, the Kaplans suggest the feature '± human' has become operative. When the infant differentiates himself from others, as observable in the effect of delayed auditory feedback on crying (i.e., indicating that the infant can distinguish between his own voice and other sounds), he is credited with the feature '± ego'. As the child develops his knowledge of object properties he adds such features as '± existence' and '± presence'. Other later acquisitions would include '± agent', '± past' and the like. These semantic features would place constraints on the child's language acquisition.

May not such devices provide the beginnings of the idea of vocally marking different positions of play in the relation between mother and child? I am all too aware that such instances do not provide a proper 'tracing' of the course from behavioral to linguistic deixis, yet I would urge that an effort be made to examine the small steps that might, in combination, provide the big insight that must be involved in learning to handle the classical deictic 'shifters' – those expressions whose interpretation varies as a function of

which member of a pair uttered them, ranging from *you* and *me* to *in front of* and *behind*. We shall pursue this matter further in the following section.

With respect to naming proper, finally, there is ample evidence that well before language, the *idea* of the word or label as an instrument of reference becomes firmly fixed. Indeed, Nelson's (1973) study of language acquisition indicates that one of the two 'styles' of language acquisition is referential – exercises in labelling being at the center of certain mother–infant verbal interactions. (The other style, expressive, will be considered in the following section.) It takes the form, prior to word *production*, of playing: 'Where's your nose', or 'Show me your eyes'. Thus the *concept* of a label must be a very early feature of language competence. Indeed, it too may have a deictic element as evidenced by the very common phenomenon of labelling both the infant's mouth, eyes, nose, etc., *and* the infant then indicating the mother's corresponding parts.

How early a start the lexical concept or label may get is indicated in some recent work by Ricks (1971). He distinguishes at eleven to eighteen months three classes of vocalization: Babble sounds with no evident referent, 'dada' words with a loose referent, and 'label' words. He lists seven properties of the last of these (like 'bow-wow'): They are not found in babbling, they are used only in the presence of a particular object or event, they are not modified toward conventionality but rather are adopted by the parents, they are frequently generalized and over-generalized (Clark, 1973), the expression of the 'word' is often accompanied by excitement, mention of the label word alerts the child to searching and also leads the child to repetition of the word. Ricks' data start at eleven months. By eighteen or twenty months, some children have even introduced a word that stands for 'label-lacking' objects as with Matthew in Greenfield, et al., (1972) who uses 'Umh' for unknowns and Bloom's (1970) Allison whose 'widə' is even more ambiguous.

We know very little about the onset of labelling as an instrument of reference. It seems highly likely that, at least later and possibly earlier as well, it is related to IQ, for after three or four, the single best indicator of a child's measurable intelligence is the size of his vocabulary (Raven, 1948). Surely, if we are to understand the origins of and the later elaboration of reference, we shall have to explore more fully the kinds of phenomena reported by Ricks as they begin to manifest themselves in the first year of life. They may be a natural outgrowth of the phonological labels mentioned earlier or may indeed be an elaborated and later accompaniment to mutual pointing and joint gaze direction. All of these phenomena point to the early existence of means for managing joint reference. Yet none of them move very far along the line toward discourse-sensitive, deictically dependent reference of the kind so carefully described by Benveniste. We turn next to a form of development that may explicate the early phases of such reference.

Language and joint action

As we have already noted, emphasis upon linguistic competence can easily distort the study of acquisition toward or preoccupation with syntax. Joanna Ryan's critique (1974,

p. 185) is doubtless correct: "Recent psycholinguistic work has neglected the earliest, presyntactic stages of language development, concentrating exclusively on the details of the child's later mastery of grammar. This approach can be characterized as exclusively cognitive, in the sense that it regards language as something to be studied as the *object* of the child's knowledge, and ignores all the other skills that determine actual language use. This neglect of what has come to be known as 'communicative competence' (Campbell & Wales, 1970) is not only serious in itself, but has also led to a distorted view of the child's grammatical abilities."

Perhaps the best antidote to syntactic preoccupation is to examine closely how the infant masters the task of communicating to others his needs, wishes, and objectives in order to assure either assistance or joint action. It is this that constitutes the beginnings of the more elaborated speech acts that are developed to 'get things done with words'. Rejecting as incomplete Chomsky's definition of the task of linguistics as the specification of rules that relate sound and meanings, Searle (1975) comments: "I don't think that his picture is false, so much as it is extremely misleading and misleading in ways which have unfortunate consequences for research. A more accurate picture seems to me this. The purpose of language is communication. The unit of human communication in language is the speech act, of the type called illocutionary act. The problem (or at least an important problem) of the theory of language is to describe how we get from the sounds to the illocutionary acts. What, so to speak, has to be added to the noises that come out of my mouth in order that their production should be a performance of the act of asking a question, or making a statement, or giving an order, etc.?" To the beginning of this process we turn now.

From the start, the child is well equipped with communicative routines in what we shall call the *demand mode*, many derived from innate patterns of expressing discomfort. By the third or fourth month of their baby's life, most mothers claim to be able to distinguish forms of satisfaction expressed by vocalization. The demand cries almost always include pain or physical discomfort, hunger, demand for social interaction, and fatigue-frustration. Whether these cries have a universal phonological pattern or are idiosyncratic is not clear. Alan Leslie and Christopher Pratt at Oxford are currently carrying out analyses of changes that occur in such cries recorded in the child's familiar home setting.

'Pleasure' vocalizations usually include 'chatting' upon awakening and then playing by oneself and also the gurgling accompanying 'happy' interactions with a familiar caretaker. We can say little about these as yet save that they are recognizable to the mother and do not sound 'troubled' to the naive listener. Characteristically, 'trouble' demand cries, on the other hand, are insistent, with no pauses in anticipation of response, are 'wide spectrum' in their distribution of energy across a range of audible frequencies, and if unattended are followed by uncontrolled scream-crying. In practice, they are usually responded to, with the effect of establishing an expectancy of response. When such expectancy is established, at least three changes occur, marking the beginning of what I call a *request mode*. One major change is moderation in the wide-band intensity and

'insistence' of initial calling. Its wide band spectrum is reduced. A second change is condensation of the call to a more limited time span with a pause in anticipation of response. If the response is not forthcoming, the infant reverts to the demand mode. There also ensues an increasing 'stylization' of initial calling with each infant developing a more recognizable 'signature' call. Studies of crying and fretting (e.g., Sander et al., 1970; Ainsworth, 1975) point to the important role of a consistent caretaker in effecting this transition from demand to request.

There next appears a distinctive *exchange mode*. It begins with indicating a demand for an object gesturally and often with vocal accompaniment. By 8–10 months, the child not only calls for and receives an object, but hands it back, calling again, receiving it, and handing it back again. As noted in the discussion of deixis, he reverses roles with himself first as recipient of action, then as agent. Indeed, exchange may make an even earlier appearance at the gestural level for as early as 2 weeks of age, an infant will imitate facial and manual gestures (Moore and Meltzoff, 1975). If the child's imitation of the mother is then imitated in turn by the mother, the rate of the child's responding with matching gesture can be raised (Rheingold, Gewirtz, and Ross, 1959). Meltzoff (pers. comm.) has preliminary results indicating, moreover, that if the mother responds to the child's imitative gesture with a non-matching one, the child will either start imitating that gesture or will stop and may show distress or gaze aversion. It is difficult to say whether this early gestural exchange has any role in supporting the later exchange patterns first described, for the later pattern involves tasks with objects rather than directly interpersonal ones.

The exchange mode is gradually transformed into what we may call a *reciprocal mode.* Interactions are now organized around a *task* that possesses *exteriority, constraint,* and *division of labour*. The two participants enter upon a task with reciprocal, though non-identical, roles. It may involve nothing more complex than the mother holding steady the ever-present toy pillar box into which different shapes can be inserted. Elsewhere (Wood, Ross, and Bruner, in press) we have referred to this as 'scaffolding' activity by the mother on the child's behalf. In time, and with the development of anticipatory schemas, the child's conception of the task is elaborated. He may now hold up a form to his mother's view before placing it in the pillar box. The mother may hand him one to put in. He may hand her one to insert. Much intermittent eye-to-eye checking and vocalizing accompanies these variations. The task is gradually being structured into reciprocating roles, the roles defined into rounds, each composed of turns, often with turns interchangeable (Garvey, 1974). The *task* and its constituents have become the objects of joint attention. Betimes, more complex tasks emerge and task formats are combined, with a strong quality of play and pleasure. But however playful, the striking thing about such task formats is that they are rule bound and constraining.

The progress from demand to request to exchange to reciprocity during the first year is, I believe, of central importance to the development of speech acts (or, more properly, communicative acts) and, as well, to the establishment of a ground work for the later

grasping of case in language. An unexpected source of information about the elaboration of communicative acts comes from Ainsworth and Bell's study of mother–infant pairs (1974). They report that as 'crying and fretting' – what we could call the demand mode – recedes, more subtle forms of communicating increase, and those children who persist in the demand mode are slow in developing communicatively. More directly relevant are contextualized observations of my own (Bruner, 1975) and of Edwards (1975).

The first example is from the Oxford corpus: Ann had learned between 8 and 10 months to play a well modulated exchange game involving the handing back and forth of objects. When, at 13 months, the game was well organized, Ann picked up her mother's receiving *Thank you*. She used it both when giving and when receiving an object. After two weeks the expression dropped out of the giving position, nothing at first taking its place, but remained in the receiving position. Meanwhile, the demand demonstrative *Look* was appearing in Ann's lexicon, used in referential situations, as when looking at pictures in a book. At the end of the thirteenth month, *Look* was transposed as well into the position at which Ann handed her mother an object. *Look* was later replaced by *There* in the giving–taking format.

I would interpret Ann's performance in terms of Searle's (1975) earlier quoted comment on how we go "from sound to illocutionary force". Initially, she accompanies *both* roles in the exchange format by a single expression, in recognition of the compact of exchange. In time, each role is appropriately and conventionally accompanied by differentiated vocalizations, one of them borrowed from a demonstrative speech act (*Look*), but shortly replaced by one more appropriate to the act of bestowal. One is reminded of Cohen's (1974) discussion of 'markers' used for characterizing such semantic force properties as imperative, optative, interrogative, exclamatory, or performative. He goes on to raise the issue of whether there might not also be markers used for differentiating the uses to which performatives are put: Indicating explicitness/implicitness, noting intention/inadvertence, whether a verdict, commitment, or promise is being made, etc. One has the impression in examining protocols that something of this order is occurring, and in the present case, the final shift on the 'giving' end from *Look* to *There* is a subtle recognition by Ann that exchange and demonstration involve different accompanying performatives.

The second example illustrates a somewhat different point: That a joint-action format provides, as already noted, an opportunity for the child to master major elements of case grammar as it relates to specific and familiar action formats. Edwards (1975) shows how a child's knowledge of a 'prohibitive' format – having to do with objects she was not to touch – provided an opportunity for her to develop grammatical concepts. Initially, she used the simple negative *No* to characterize situations in which she was not to touch an object. This was followed, in comparable formats, by the introduction of possession, *Yours* or *Mine* for objects she was forbidden to touch or play with. Still later, a verb form was inserted into the format – *Leave it* for what was prohibited. And finally, again in the same format type, the adjectival form appeared: *Hot* or *sharp* for the object

that was prohibited. Edwards' Alice was learning not only grammar, but learning it as an adjunct to social situations whose structure she was having to learn *and* to manage. The case variants were all embodiments of a self-directed imperative – to keep clear of the object in question.

We turn next to predication and its prelinguistic precursors and prerequisites.

Predication

Looked at in its linguistic sense, "predication involves affirming or asserting something of or about the subject of a proposition'. (Wall, 1974, p. 9). It might seem then somewhat jejune to inquire about the precursors or even the prerequisites for predication in the prelinguistic child, for surely he can in no sense be thought to be dealing in propositions. What has made the issue of pre-propositional predication a persistent and interesting one, however, was the early insistence of DeLaguna (1927) that the single words of holophrastic speech could profitably be treated as compacted sentence forms, and that single words could be conceived within that framework as comments upon extra-linguistic topics inferent in the contexts in which the child found himself. The primitive topic, then, was implicit rather than explicit. This interpretation of early one-word utterances persisted in the literature – cited principally in general reviews of language development – until picked up again in McNeill's (1970a, 1970b) work, and then further developed by Bloom (1973) and more recently in a rather widely circulated manuscript by Greenfield and Smith (in press) who were specifically concerned with interpreting the run-up in early speech development from single word utterances to the patterns that are found when M.L.U.'s approach two morphs. Like DeLaguna, these investigators were interested in the manner in which the 'unmentioned' topic finally found its way into explicitness to be represented by a nominal or other grammatically interpretable form that could carry language development beyond dependence on unspecified context – DeLaguna's famous claim that language development could be conceived as a process of decontextualization.*

McNeill (1970a, 1970b) carried the argument one step further. Arguing from the existence of the predicational postpositions in Japanese, *ga* and *wa*, indicating respectively extrinsic and intrinsic predicates, the latter being habitual or essential and the former temporary or transitory, he proposed that initial predication with unmentioned topic could be conceived of as the intrinsic form, while extrinsic predication was more of the *ga* type. In Japanese, the postpositions could be noted by the contrast: 'The dog-wa

*With respect to the issue of the sentential or predicational status of the holophrase – still a very lively theoretical issue – the reader is referred to Bloom (1973), whose conclusions will be taken up in the final section, and Dore (1975) who reviews the arguments for and against sentential status for the holophrase and ends by opting for the view that holophrases represent a first step along the hard path from primitive force to grammaticalized illocutionary force, a path one traverses by successive mastery of grammaticalizing devices such as using word order, intonation, etc. in the spirit of Harrison (1972).

has hair', versus 'The dog-ga is on the chair'. He found that for both Japanese and English speaking children, early sentences contained about twice as many intrinsic as extrinsic predications, and that subject noun phrase topics that referred to the speaker were particularly rare. This led him to conclude that "holophrastic utterances consist largely, if not exclusively, of intrinsic predicates.... Children would add subjects to predicates... when the predicates become extrinsic. Such an event appears to happen first when the children are 18 to 24 months old" (1970b, p. 1093). To this interesting finding (or contention) should be added two others. Quite counter-intuitively, Wall (1968) found that the mean length of dialogue between children and parents was *shorter* than dialogues between the same children and strangers. Chafe (1970) had, meanwhile, urged that one must make the contrast between 'new' information and 'old' or shared information, that the two are handled grammatically in different ways. Wall (1974, pp. 232-3) makes the point "It seemed possible that the difference in utterance length might well be explained on the basis of presence or absence of shared information between participants in the conversations. That is, it is necessary for relative strangers to state explicitly whatever it may be that they are trying to communicate verbally for efficient information transfer, whereas among friends and close associates remarks are often greatly abbreviated with little or no resulting loss of information transferred." Vygotsky (1962, p. 139) has made the same point (en route to presenting his argument that the nature of inner speech is condensed predication, with topical subject left implicit): "Now let us imagine that several people are waiting for a bus. No one will say, on seeing the bus approach, 'The bus for which we are waiting is coming'. The sentence is likely to be an abbreviated 'Coming', or some such expression, because the subject is plain from the situation". And, indeed, in Wall's (1974) study too, her 18 to 30 month-olds conformed to the rule in an interesting way. She compares the number of constituents in sentences given in response to a question (where the topic, of course, is shared in advance) and sentences spoken spontaneously. Just half of the spontaneous sentences contained two or more constituents, but only 18 percent of those in reply to a topic-setting question.

We may now, in the light of the foregoing, consider afresh the significance of established, mutual-action formats discussed in the preceding section. They constitute the implicit or shared topics on which comments can be made by the child without having to be mentioned. These are the implicit topics about which comments can be made. And as these formats become differentiated into reversible or complementary roles during the growth of exchange and reciprocal modes, implicit topics become that much more contextualized in the action that adult and child share. I used the three terms, division of labor, exteriority, and constraint to characterize the nature of the shared action formats that developed during the onset of the reciprocal mode – terms borrowed, of course, from Durkheim's (1933) characterization of the requisite properties of social norms – to specify the manner in which formats seemed to take on a shared existence binding the two partners in discourse. And it is this development that is, in my view, crucial to the course of prelinguistic predicational activity to which we now

turn – particularly to the development of intrinsic predication in McNeill's (1970b) sense.

What, we may first ask, are the forms of 'comment' that can be made prelinguistically (or pre-propositionally) on such shared topics as the joint action patterns described in the preceding section? Before we can answer this question, we must first consider the function of predication in a communicative act. Its functions are three in number: (a) To specify something about a topic that is explicit or implicit, (b) to do so in such a way that topic and comment can be rendered separable (e.g., *John is a boy* and *John has a hat*), and, (c) to specify something in a way that is subject to truth testing or, more simply, negation. I do not know whether prelinguistic 'comments' (in forms we shall consider) upon implicit topics fulfill all three of these functions, and I should prefer to leave out of consideration the last of these, (since it is now just in the process of being studied by Roy Pea in our laboratory), to treat the second rather lightly, and to concentrate principally upon the first function.

The first and perhaps simplest form of comment is, I think, giving indication that a topic is being shared in joint action, and it is principally revealed in the child's management of gaze direction. Typically in our own protocols, the child when involved in a transaction over some object or activity, looks up at some juncture and makes eye-to-eye contact with the mother, often smiling as well. The topic is the joint activity, the comment is the establishment of 'intersubjective' sharing in connection with that activity, after which the activity goes on. A good example is provided in the account of glance management in an exchange game reported by Bruner (1975). The 'comment' consists of noting whether both partners are 'with it', engaged in the game. Similarly, when one of our mothers uses a toy such as a clown that disappears inside a cone, when the clown has disappeared and then reappeared, the child will usually then turn from the clown to the mother for gaze contact. I would interpret this 'joining' as an act of reasserting the joint action, a primitive version of the 'interpersonal concept' in respect of which Benveniste (1971) was cited in a previous section.

This form of confirming comment is supplemented and extended at around the ninth month by the emergence of a form of vocalization we have dubbed 'proclamative'. It occurs at two points during joint action sequences: First, at a point where the infant is about to undertake his part of a jointly attended action, seemingly as an accompaniment to intention; second, when the act is complete. The vocalized babbling may be coincident with the child looking back at the mother or may precede it. The vocalization, in short, appears to be initiating or completive with respect to an act embedded in a jointly attended task. In this sense, it may be considered as a 'candidate-comment' on an implicit topic. In time, the pattern becomes further elaborated, and the child may not only vocalize in these positions and make gaze contact, but also hold up an implicated object to show the mother, as when picking up a brick and placing it on a pile.

Elsewhere I have commented on the fact that attentional deployment as revealed in eye movement records (Bruner, 1975; Mackworth and Bruner, 1970) may itself predis-

pose to topic-comment structures in the very organization of information processing. For typically, large saccades that move attention to a sharply defined focus in the visual field are followed by smaller inspection saccades that play around features of this focus. Heywood and Coles in our laboratory are now exploring this feature of early attention, and while it is too early to say anything definitive about the onset of these focus-inspecting eye-movement patterns, their stabilization might surely be thought of as a further predisposing factor to topic-comment communication – linguistically or pre-linguistically.

Finally a word about the separability of topic and comment achieved in predication. It is by now a common observation that the child's play with objects takes one of two forms (a point also noted for chimpanzees by Köhler, 1926, and commented upon by Bruner, 1972, 1973). An *object* is successively placed into as many different action-patterns as the child can manage: A ball is successively mouthed, squeezed, banged on the table, thrown down, called for, etc. Or an *action* is fitted to as many different objects as it will accommodate: Successively a cup is banged, then a spoon, then a doll, then any other loose object to hand. These play patterns, while in no sense direct precursors of propositional predicating, are nonetheless striking examples of separation and variation of comments on topics, with either the object serving as topic and actions-upon-it as comments, or the action serving as organizing topic and a variety of fitting objects as comments. Typical of the play of both higher apes and children (Loizos, 1967), this focus-variation pattern should not be overlooked as a factor that predisposes action, attention, and eventually language to the pattern that at the propositional level we call predicational.

In conclusion, I find myself in strong agreement with Lyons (1966, p. 131) when he comments:

> By the time the child arrives at the age of eighteen months or so, he is already in possession of the ability to distinguish 'things' and 'properties' in the 'situations' in which he is learning and uses language. And this ability seems to me quite adequate as a basis for the learning of the principal deep-structure relationship between lexical items (the subject-predicate relationship), provided that the child is presented with a sufficient amount of 'primary linguistic data' in real 'situations' of language use.

Before he reaches eighteen months, indeed during the second half of his first year, he is well on the way toward conceptual mastery of these concepts in the extralinguistic sphere.

Conclusion

The developmental psychology of language is currently in a rather confused state. The initial optimism that grew out of Chomsky's formulation of a generative-transformational

grammar has not been sustained by the torrent of work that it provoked. His was a powerful idea, one that will want a revisit after other aspects of language acquisition become clearer. The central notion – that the child in some sense 'has a knowledge' of the rules of language and that he is attempting to generate from this knowledge hypotheses about a local language – while boldly suggestive, is plainly insufficient.

Principally as a result of the studies of Brown (1973) and his students, it has become increasingly apparent that language acquisition is enormously aided by the child's prelinguistic grasp of concepts and meanings that make it easier for him to penetrate grammatical rules. In a closely reasoned and provocative paper published in 1972, Macnamara formulated the case well, arguing that syntactic rules are discovered by the child with the aid of meaning. His view was that the child roughly determined the referent of principal lexical items in a sentence and then used previously acquired knowledge of these referents to decode the grammar of the sentence. Sinclair's (e.g. 1969) work too has alerted the psycholinguist to the link between development and the child's emerging, extralinguistic knowledge of the world. And Bloom's most recent work has also dealt a strong blow in favor of the early semantic origins of single-word utterances. She concludes that "children develop certain conceptual representations of regularly recurring experiences, and then learn whatever words conveniently code such conceptual notions" (1973, p. 113). The effect of this recent work has been to put the semantic element back into the developmental picture and make more attractive such ideas as Fillmore's (1968) semantically relevant case categories.

But neither the syntactic nor the semantic approach to language acquisition takes sufficiently into account what the child is trying to do by communicating. As linguistic philosophers remind us, utterances are used for different ends and use is a powerful determinant of rule structures. The brunt of my argument has been that one cannot understand the transition from prelinguistic to linguistic communication without taking into account the uses of communication as speech acts. I have, accordingly, placed greater emphasis on the importance of pragmatics in this transition – the directive function of speech through which speakers affect the behaviour of others in trying to carry out their intentions. I find myself in sympathy with Dore's effort (1975) to understand the process whereby 'primitive forces' or 'orectic intentions' are gradually conventionalized and 'grammaticalized' so that they can be reformed into communications with illocutionary force. I am not dismayed at all by Jonathan Cohen's (1974) warning that the conventionalizations by which illocutionary force is achieved are often, strictly, extralinguistic 'manners', for perhaps, as Silverstein (1975) suggests, there is not so sharp a boundary between social convention and grammatical devices. Dore's account of how illocutionary skill is augmented by the acquisition of such 'grammaticalizing devices' is interesting. He defines a primitive speech act "as a rudimentary referring expression plus a primitive illocutionary force" (such as requesting, answering, etc.) so that the child "communicates *what* it is he means or wants" through referential tricks and, through prosodic pattern initially and then by other means, "*that* he intends or wants something".

How the child gets from the primitive to the grammaticalized is left to rather mysterious processes like 'emergence' and 'grammaticalization' that may do no more than paper over the discontinuous course of language acquisition with some new words. Yet, my sympathies are with Dore's effort to examine how the requirement of 'getting different things done with words' constantly alerts the child to appropriate devices and conventions and, in an evolutionary sense, may even have equipped him with special sensitivities for picking these up. Yet, for all that, I hope I have not seemed to deny that syntactic and semantic precursors can also be explored fruitfully: Grammar-like principles underlying reference, predication, privileges of occurrence, etc. But if there is one point that deserves emphasis, whether one is searching for syntactic, semantic, or pragmatic precursors of early language, it is that language acquisition occurs in the context of an 'action dialogue' in which joint action is being undertaken by infant and adult. The joint enterprise sets the deictic limits that govern joint reference, determines the need for a referential taxonomy, establishes the need for signalling intent, and provides a context for the development of explicit predication. The evolution of language itself, notably its universal structures, probably reflects the requirements of joint action and it is probably because of that evolutionary history that its use is mastered with such relative ease, though its theoretical explication still eludes us.

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Résumé

Toute approche réaliste du langage, se doit de rendre compte du passage de la communication par prélangage de l'enfant à l'utilisation de la langue à proprement parler. Pour cela, on peut montrer qu'il existe de nombreuses bases, préalables ou nécessaires aux traits organisationnels de la syntaxe, de la sémantique, de la pragmatique et même de la phonologie, dans les activités prélangagères des enfants. Des illustrations de ces bases préalables sont étudiées ici dans 4 domaines différents: le mode d'interprétation, par la mère des intentions de communication de l'enfant, le développement de la combinaison des référentiels, rendant le langage conforme à l'environnement, l'évolution de stratégies permettant l'utilisation de l'activité conjointe au langage, la transformation d'une organisation de type topic-comment à la prédication.

En dernier lieu on propose la conjecture suivante: la connaissance, par l'enfant des besoins de l'action et de l'interaction peut elle fournir la base à l'élaboration initiale de la grammaire.