

STEVEN GILLIS

University of Antwerp (U.I.A.)
and National Fund for Scientific Research (Belgium)

THE DEVELOPMENT OF THE CONCEPT OF REFERENCE WITH INTERACTIONAL
CONTEXT: A CASE REPORT

Introduction

From the early seventies on the acquisition of words and semantic domains has received considerable attention. Numerous studies investigated how children learn to use words, how children build up word meanings.

A striking feature of these studies is that it is usually assumed that the words children use do refer, and starting from this assumption it is investigated how their meanings are acquired and how they develop.

Now, instead of taking for granted that the words the child uses refer, we can ask the question how a child initially arrives at the notion of reference. So, in this paper I want to address the question of how the child comes to the idea that words refer to objects, actions, etc. in reality.

I shall not go into the theoretical points of view regarding this issue. In what follows I will restrict myself to the major outlines of the insights discussed in the literature. The principal aim of this paper, however, is to describe in some detail how one child arrives at the notion of reference¹.

1. The Concept of Reference

How does a child come to grasp the concept of reference, how does he come to the idea that names can be used to recognize, identify, label and categorize a class of objects, events or

relationships?

I think that Andrew Lock in his recent book "The guided reinvention of language" comes to a nice summary of the hypotheses that have been put forward:

"if it is accepted that on the basis of a finite experience the child has come to possess some general principle, then it has to be admitted that he has not learnt this principle, but has created it for himself out of that finite experience.

Whilst it has been the mother's intention that the child should learn that objects have names, and what these names are in specific cases, she is in fact incapable of teaching him this. All that the mother can do is to teach the child to associate a specific sound with a specific object; and all that the child can learn are those specific associations. It has to be left to the child to discover creatively the principle of naming that is inherent in what he has been taught."

(Lock, 1980:120)

So the acquisition of the concept of reference has posed two problems: first, how does the child come to associate a sound sequence with certain objects or actions; and secondly, how does he overcome these associations to come to the insight that the sound sequence refers to the object or the action. Besides this conceptual issue, the acquisition of the concept of reference has an interactional side. Ninio and Bruner's (1978) investigation of "the achievement and antecedents of labelling" made very clear that reference is dependent not only upon mastering a relationship between sign and significate, but also upon an understanding of social rules for achieving dialogue in which that relation can be realised.

If the child is to learn words on the basis of, say, the ostensive definitions the adult uses in his interactions with the child, the child has to realise that what the adult does is naming the entity he is pointing to.

Moreover, the child has to use the sound sequences the adult associates with an object himself to name that object. Now it is possible, as we shall see later, that the child uses a sound sequence appropriately in the interaction, without realising that the sound sequence is a word. This implies that the appropriate interactional context or dialogue pattern is not sufficient for the acquisition of the concept of reference. Even if the child learns to vocalise on the appropriate moments in an interactional context, there is still an important difference between the appropriate use of a (conventional) vocalisation in a familiar interactional context and the realisation that this vocalisation is a word that names a certain element of the situation.

The key concept advanced with respect to the acquisition of reference is what Andrew Lock called "the principle of naming" or in John Dore's terminology "the designation hypothesis" or "nominal insight" (cf. Dore, 1978). It is hypothesized that the child comes to the insight that a linguistic category represent a concept independently of (i) the concept's own representation of objects, events, etc.; (ii) the defining characteristics of the concept; and (iii) the child's active involvement with instances of the concept. (Dore, 1978) The major support for this hypothesis comes from the fact that around the middle of the second year the child's vocabulary shows a relatively sudden and important growth. This phenomenon has been observed by a great number of investigators.

Now let us take these considerations as the starting point for our investigation of how a child comes to the nominal insight. In what follows I will follow the development of a child's vocalisations towards the use of words, and I will concentrate mainly on the period immediately preceding the sudden vocabulary growth which is thought to be characteristic for the attainment of the nominal insight.

2. Development of the concept of reference in its interactional context

2.1. Overview of the development

Scheme 1 (p.87) shows the main developments in comprehension and production in this period. These developments are given in chronological order.

I will follow this scheme as closely as possible, but for the sake of the exposition I will be switching back and forth between the achievements in comprehension and production².

2.2. Comprehension and production at 19 months of age

Around the age of 19 months, the child's production consists of vocalisations called PHONETICALLY CONSISTENT FORMS (PCFs)³ PCFs are defined as follows:

"PCFs are readily isolable units, which are bounded by pauses (unlike babbling); they occur repeatedly as items in a child's repertoire of sounds; PCFs can be partly correlated with specifiable, recurring conditions - thus their production is neither random in the sense ascribed to babbling nor do they conform to rules governing words; and they exhibit what might be described as a 'protophonemic' structure in so far as their phonetic elements are more stable than in babbling though less stable than in words."

(Dore, Franklin, Miller and Ramer, 1976:15-16)

Two types of PCFs can be distinguished.

The first type mainly occurs in noncommunicative situations. The child uses the vocalisations when interacting in a specific way with certain objects. For instance the child uses a PCF when pushing cars around, he uses another PCF when throwing objects, etc. (See Gillis 1982b for a more detailed description).

The use of these PCFs shows close resemblance to the so-called

GESTURAL NAMING: for instance the child puts keys in a key-hole, brushes his teeth with a tooth-brush, and so on. These specific activities can be considered as categorizing behaviour: certain activities such as pushing cars around and producing the PCF are only used with respect to specific classes of objects.

For instance, only keys go into a key-hole and not cars, while the child makes no driving-movements with the key and he does not produce the PCF of the carscheme when he is interacting with keys.

Although these object specific activities can be considered as categorising behaviour, it is not at all clear whether the child associated the PCF with the object or whether he associates it with the action)activity he performs with the object, since the action, the object and the vocalisation occur together, at the same time. In other words, the PCF is used PURE PERFORMATIVELY.

The PCFs of the second type function as regulators in the interaction. One of these PCFs is what we call "the all-purpose request sound" used when the child wants something. Another example is the so called PRIMITIVE DEICTIC PARTICLE or PDP³. The child uses the PDP together with showing or pointing to an object. It is generally used to come to joint attention with the adult for an element of the situation.

Let us now turn to the child's comprehension at 19 months. The child's comprehension, or the way in which he responds to language, is dominated by a number of what we may call MAGICAL FORMULAS.

For instance, if the child's mother asks "Now, how tall do you wanna be?" the child lifts his arms into the air (when he feels like it). In some cases, the child responds with a gesture accompanied with a PCF. For instance, when his father asks "What do you have to do when mummy is asleep?", the child brings his index to his mouth, on his lips and says (t).

As a further development, next to these formulaic responses to equally formulaic prompts from the adult, the child tends to

respond to language by means of so-called comprehension strategies, which take the form of ACTION STRATEGIES (Shatz 1975, 1978). The most salient of these action strategies are the following:

(1) point at the entity the adult names.

We frequently observed the child's mother asking a question like "What is person X or Y doing" or "Where are the apples or your toys or whatever?". The child typically responds to these questions by pointing to the entity and uttering the PDP. This strategy is sometimes embedded in a routine that can be repeated again and again. For instance, the adult asks "Where is your nose, mouth, etc. etc.", and after each question the child points to the appropriate (or sometimes inappropriate) entity. In this period, the initiative is always the adult's: the adult starts the interaction-routine and the child responds by means of his action strategy. Now around 19 months, the child's response in this routine changes in the following way: when the adult names an entity, the child not only responds with pointing to one instance of the category named, for instance his own nose, but he also points to a number of elements of the category the adult names. So, instead of pointing solely to his own nose, the child also points to other peoples' noses.

(2) A second action strategy frequently used as comprehension strategy is look for and, if possible, get the entity named and bring it to the adult. When the child brings the entity to the adult, he shows it and utters the PDP, and then gives it to the adult. Again the PDP-sequence, that is, showing or pointing plus the production of the PCF is integrated in the action strategy.

(3) A third strategy used in comprehension is "do with the entity named what you usually do with it". For instance, no matter what the adult says about the entity "door", the child runs to a door and shuts it, or he knocks on it when it's already shut. In terms of Nelson's (1974) concept matching model we can describe this action strategy as follows:

"Use of the word by someone in the vicinity often elicits the action or routine that forms the core

of the concept, that is, in the context of the object the action component of the concept is run off when the word is heard."

(Nelson et al. 1978:966)

2.3. Development of the focus-sharing-routine

From this brief description of the child's production and comprehension it appears that the child and the adult have developed a way for coming to share the same focus.

In child initiated as well as in adult initiated interactions, they can arrive at joint attention for an object, and in both cases the child uses the PDP to mark his focus of attention.

A characteristic of these focus-sharing interactions initiated by the child is that they occur in what we could call "gratuitous" or "nonfunctional" contexts.

For instance, the child puts keys on a chair, he points at them, produces the PDP and looks at the adult. Or the child is walking around with a handbag, shows it to the adult and utters the PDP.

We call these situations or contexts confunctional because the child does not make clear in any way that he wants something more than the adult's attention. That he wants the adult's attention can be inferred from his repetition of the PDP-sequence until the adult comes to focus the same entity. If the child wanted the object he would have used the all-purpose request sound when the adult did not immediately react to the PDP-sequence.

A second reason for calling these contexts nonfunctional is the fact that the objects the child attends to hardly have a manipulatory value in the given context, the child does not manipulate them in their object-specific way. When he does so, for instance when he puts a key in a key-hole, he hardly ever uses the PDP to come to joint attention.

Until now we have seen the child trying to direct the adult's attention to just one object. In his comprehension strategy we already saw that he could point at a number of elements of the

category the adult named. This capacity can now be observed in interactions the child initiates: he directs the adult's attention to the elements of a category one after the other. That category consists of a number of toy animals. A characteristic feature of the elements of that category is that the child has come to associate a sound sequence with certain objects. For instance, he uses (pus) for a cat, and (pus) is just that special animal, (best) is associated with the red owl and not with any other animal. The same holds for the other PCFs.

These PCFs are only uttered in the context of the following interaction routine: the child brings his toy animals one after the other to the adult, he shows the animal he is holding and utters the PCF. So, the child and the adult come to joint attention for an object, and the child is the initiator of the interaction, but instead of using the PDP-sequence as he did before, he uses an object-specific PCF. Again, coming to share the same focus seems to be the child's sole aim:

irrespective of the exact nature of the adult's response, the child returns to get another animal once the adult has taken the previous one.

The context in which these interactions occur can, again, be characterized by the nonfunctionality of the objects the child brings to the adult. At least this can be said from the perspective of the manipulation of the toy animals: they are only used to draw the adult's attention to them.

From the perspective of Rosch's (horizontal) categorization principle, the toys are optimally differentiated by the associated vocalisations, the PCFs, since no other feature that could distinguish between them on the level of function or manipulation, is actualized in the given context.

The PCFs associated with the elements of the category "toy animals" are hardly different from the PCFs described before: the child uses them only when he is manipulating them. However they do differ with respect to categorization: the things the child uses in the interaction routine are now "named" (between quotes) by means of different PCFs. As we already indicated,

the child uses to produce the PDP in this routine. So, now different individuals have different "names" (again between quotes). A certain sound sequence has been associated with a certain object. This implies that the things with which the child has not yet associated a sound sequence, will not be named since the child has no generative principle such as the nominal insight. Or in other words, due to the fact that the child has not yet discovered that things have names, he will not use the sound sequence associated with one object for another object, he will not generalise a PCF over a whole category, and hence there will be no overextensions. Overextending is an activity the child can only perform when he starts generalising a word over a whole category. And indeed, we see that the PCFs (pus, pat, peɹ and be st) are only used for four specific animals when they are introduced in the routine. The other toy animals still elicit the PDP-sequence.

The use of different PCFs we just described, undergoes a change in the following observation:

Mother and child are sitting in an armchair. The child is playing with keys. At a certain moment, the mother asks: "Where is your animal?" The child looks at a toy animal in another armchair. He points at the animal and whispers (be st). He then looks at his mother. He gets off his mother's lap while again looking at the animal. He points to the animal and he again says (be st).

(1; 7,20)

What we see in this observation is first the mother trying to direct the child's attention towards an object she names (be st), the same sound sequence the child uses. The child responds by means of one of his action strategies, viz. pointing to the entity named. But instead of using the PDP as usual, he integrates another PCF in it. For the rest the strategy remains the same.

It is not clear whether the child makes a distinction between

the attention directing function of the PCF and its naming function. We find evidence for his making the distinction between labelling and attention directing in the next session where he does not use the PDP plus the PCF (best) when he is holding a toy animal but only when one of the toy animals is at a certain distance and when he wants to direct the adult's attention to it.

After (best) entered the comprehension strategy, the category of toy animals undergoes a reorganization, at least as far as we can judge from the use of the associated PCF. What happens is that instead of using (pus) for just one object and (pat) for another, and so on, the PCF (best) or (bist) comes to be used for all toy animals. This means that the child does not only use (best) or (bist) for the animals for which he previously had an associated PCF, also the animals that were introduced into the interaction by means of the PDP-sequence, are now introduced into it by means of (best, bist). The interaction routine itself remains unchanged: the child brings his toy animals to the adult.

Although all animals are called (best, bist), the other PCFs that were used before (pus, pat, and peŋ), do not disappear completely. They are still used sporadically under the following circumstances:

(1) in the comprehension strategy, that is, in an interaction introduced by the adult. For instance, the child's father asks "Where is Peng?" the child starts looking for Peng, brings it to the adult, shows the animal and says (peŋ).

(2) a second type of situations in which the associated vocalisations still occur are situations in which the PCF seems to appear out of the blue.

For instance, the child is quietly playing with something. All of a sudden he says (peŋ) and starts looking for the animal. The child uses the PCF here as a light weight mental token, a sign standing for an entire knowledge package. But, as we saw in the child's use of the original PCFs the use of the knowl-

edge still has some pure performative aspect: in this case the activation of one aspect, the name or associated vocalisation, activates the rest of the knowledge, and hence, the child starts looking for the object.

The development described so far has brought us on the threshold of naming. Let me illustrate this on the basis of the following example:

The child and his father are sitting in an armchair, surrounded by the child's collection of toy animals. The child points at the animals one after the other and says each time (best). (1;7,24)

So he names all the elements of the category (be st), and the only actions he performs are pointing and naming. Now it could be argued that what the child is doing is producing PCFs that are not different from the PCFs he used before - recall the instances of the child pushing around cars while producing a specific vocalisation. Likewise he could be using (best) only when engaged in the interaction routine of bringing things to the adult, showing them and so on.

Now the fact that what he is naming are the members of the (best) - category and no other things can be inferred from the following observation:

Just before the interaction described above, the child once again brings his zoo to his father. At a certain moment, he takes a goblin, and as he did with all the other things he calls it (bist).

But without any response or reaction from an adult, he switches to the PDP-sequence and stops the normal course of the routine: he points at the goblin and looks at it, utters the PDP and then looks at his mother. He goes to his father, shows the goblin and again utters the PDP.

In this sequence the child seems to overextend the name (bist) to an object that, according to his criteria, does not belong to the category. Consequently he uses the PDP-sequence, which he uses to bring in the interaction routine objects he has no

name for, as can be seen in the following observation:

After the (bist) -naming game described above, the following happens:

- (i) the child points at his father's head, eyes, ears, and so on;
- (ii) his father names the entity pointed at;
- (iii) the child points at his head, eyes, ears, ...
- (iv) his father confirms and again labels the entity.

So in this example we see that although the child seems to have a category head, and eye and ear, and so on, he does not have a name for them, and hence he produces the PDP. However the interaction routine shows the structure Minio and Bruner described as the structure "par excellence" for the acquisition of words.

There is still one last development that seems to occur before the vocabulary explosion, that is, the distinction between action and object. Convincing evidence for this distinction can be found in the child's introducing two different words in his lexicon, one for the action and one for the object.

What seems to happen is that a differentiation takes place: beside the PCF characteristically accompanying the action and the object, a PCF appears which the child uses only for the object out of action.

For instance next to the PCF the child uses when he pushes cars around the PCF of the carscheme, a new vocalisation is introduced. It is used when he brings cars to an adult in the focus-sharing interaction routine. That is, when the cars are not manipulated in their characteristic way. (1;8,1)

3. Summary and conclusion

Summarizing, we have described the following development in the acquisition of the concept of reference: within the dyad an interaction routine develops through which mother and child can come to joint attention.

In other words mother and child can establish a joint referent interactionally. This interaction routine serves as a basis in which two other capacities are integrated:

The first capacity is the categorization behaviour we observed in the use of the original PCFs. Initially these PCFs were not used interactionally. The child used them in noncommunicative contexts. However, it is striking that the child does not bring these PCFs in the interaction. The categorization behaviour is introduced in the interaction via comprehension strategies in which the PDP plays an important role, instead of being introduced via the object-specific PCFs, which are in fact closer to genuine word use than the interaction-regulating PDP. First the child learns to arrive at joint attention for the entity the adult names. Next, he points at a number of elements of the category the adult names.

In the production a PCF is first associated with just one object, and next a PCF is associated with a whole category. So, the initiative moves from the adult to the child, a process in which capacities already present in comprehension are transferred to the productive use.

A second change we witness in the interactional focus-sharing routine concerns the way in which the child interacts with objects. The use of the first PCFs was characterized by an active manipulation of the referent. One of the possible ways of handling objects seems to be producing a vocalisation. In a next step the child can come to joint attention for objects outside their functional context. The toy animals which are frequently used in the interaction routine play an important role with respect to this nonfunctionality, in that they form a category of things of which the only manipulation seems to be that of bringing them into the routine. But in that case there is still manipulation: the child brings the animals to the adult. In the next step, this manipulation also drops, so that only pointing and naming remain. Finally the child distinguishes between action and object, so that also the PCFs he initially used in an undifferentiated action/object/PCF whole,

can be integrated in the interaction routine.

In short, the child has acquired an interaction routine in which naming things seems to be the principal activity, but in order to arrive at this, the nameable things had to be stripped from their functionality.

NOTES

Paper presented at the 15th Annual Meeting of the European Linguistic Society, Athens, September 1982

¹ The data used in this paper were gathered in the course of a longitudinal case study of the language acquisition of a child. This child, a monolingual boy acquiring Dutch, participated in biweekly unstructured observation sessions from the age of 0;11,15 onwards. The data consist of videorecordings of the child in interaction with his parents. The recordings are supplemented by a diary the child's parents kept on a regular basis.

² x;y,z: read x year(s); y months, z days

³ The PDP is defined as follows:

"a single deictic particle which is neutral with respect to any distinction of gender or proximity. Its function is to draw attention to some feature of the situation or some entity in the situation, and it will be normally accompanied by some paralinguistic movement of the head or hands indicating the direction to which the addressee should turn in order to identify the feature or entity in question. We may think of the deictic as meaning something like 'Look!' or 'There!'"
(Lyons, 1975:64-65)

For a detailed description of the development of the PDP, see Gillis (1982a).

COMPREHENSION	PRODUCTION
<ul style="list-style-type: none">- "magical formulae"- action strategies:<ul style="list-style-type: none">(i) point at the entity the adult names;(ii) look for and, if possible, get the entity named and bring it to the adult;(iii) do with the entity what you usually do with it;- categorization in action strategy; (1;7,10)- (best, bist) in action strategy; (1;7,24)	<ul style="list-style-type: none">- PCFs:<ul style="list-style-type: none">(i) object-specific PCFs, e.g., carscheme(ii) PCFs used in the interaction, e.g. the all-purpose request sound, the primitive deictic particle;- focus-sharing in nonfunctional contexts: use of the PDP-sequence; (1;7,0)- focus-sharing in nonfunctional contexts and association of a PCF with one object (cat: (pus); tortoise:(pat); sheep: (pɛŋ); red owl: (best, bist)) Other objects: use of the PDP-sequence; (1;7,20)- Reorganization of the category:<ul style="list-style-type: none">(pus)(pat) (best, bist) (1;7,24)(pɛŋ)(best)and initiation of routine with (best, bist) and PDP-sequence for other categories;- distinction between action and object. (1;8,1)- sudden and important growth of vocabulary. (1;8,10)

Scheme 1: Overview of the development of the concept of reference in its interactional context.

REFERENCES

- Dore, J. (1978) Conditions for the acquisition of speech acts.
In Markova, I. (Ed.) The social context of language.
New York, Wiley. pp. 87-111
- Dore, J., Franklin, M.B., Miller, R.T. and Ramer, A.L. (1976)
Transitional phenomena in early language acquisition.
In Journal of Child Language 3, 13-28
- Gillis, S. (1982a) Een pretalige voorloper van linguïstische
referentie.
In Dominicy, M. (Ed.) Linguistics in Belgium 1982.
Brussels, Didier-Hatier. (in press)
- Gillis, S. (1982b) On prelinguistic prerequisites for linguistic
reference.
In Daalder, S. and Gerritsen, M. (Eds.)
Linguistics in the Netherlands 1982.
Amsterdam, North-Holland. pp. 157-165
- Look, A. (1980) The guided reinvention of language.
London, Academic Press
- Lyons, J. (1975) Deixis as the source of reference.
In Keenan, E.L. (Ed.) Formal semantics of natural language.
London, Academic Press. pp. 61-83
- Ninio, A. and Bruner, J. (1978)
The achievement and antecedents of labelling
In Journal of child language 5, 1-16
- Nelson, K. (1974) Concept, word and sentence.
In Psychological Review 81, 461-479
- Nelson, K., Rescorla, L., Gruendel, J. and Benedict, H. (1978)
Early Lexicons: what do they mean?
In Child Development 49, 960-968
- Shatz, M. (1975) How young children respond to language:
procedures for answering.
In Papers and reports on child language development 10,
97-110
- Shatz, M. (1978) On the development of communicative under-
standings.
In Cognitive Psychology 10, 271-301

ROZWOJ KONCEPCJI REFERENCJI W KONTEKSCIE
INTERAKCYJNYM, RAPORT Z BADAN

Streszczenie

Artykuł dotyczy sposobu, w jaki dziecko nabywa pojęcia referencji językowej, tzn. w jaki zaczyna łączyć pewien ciąg dźwięków z pewnymi przedmiotami lub czynnościami, a także w jaki przewycięża te asocjacje, aby ostatecznie osiągnąć intuicję, że dany ciąg dźwięków odnosi się do danego przedmiotu lub danej czynności.

Akwizycja pojęcia referencji zależy również od perspektywy wzajemnego oddziaływania, referencja zależy nie tylko od opanowania relacji między formą a znaczeniem, ale także od zrozumienia społecznych reguł dialogu, w którym ta relacja może być realizowana.