The comprehension of simple sentences. The representative perspective and the communicative perspective

BRONCKART, Jean-Paul, GENNARI, M., DE WECK, G.

Available at:
http://archive-ouverte.unige.ch/unige:37367

Disclaimer: layout of this document may differ from the published version.
Studies and research

The comprehension of simple sentences: the representative perspective and the communicative perspective

J.-P. BRONCKART, M. GENNARI and G. DE WECK

Abstract

The present paper is an introduction to a series of studies on the comprehension of simple sentences by French-speaking children. Its first aim is to evaluate experimental findings obtained in the last 10 years, from Bever’s (1970) work up to 1980. Three types of processing (or strategies) are analyzed and discussed: pragmatic, positional and morphosyntactic. Particular attention is devoted to the way children interpret positional cues; arguments are advanced in favor of the hypothesis that children use a perceptual and cognitive system of reference. The second aim of the present paper is to discuss the respective contribution of the ‘representative’ approach, inspired by Chomsky’s work, which is centered on the manner in which the protagonists of the action are expressed in the sentence, and of the ‘communicative’ approach, centered on the discourse and the context. This second trend, derived particularly from Halliday’s (1967) work, elicited experimental studies which are briefly discussed. In the authors’ view, both approaches should be pursued, one centered on the text, the other on the sentence; proposals for doing experiments in both perspectives are advanced.

1. (1) The soldier is attacked by the Indian.
   (2) The box is opened by the boy.
   (3) It is the baby that the mother washes.
   (4) The boy pushes the girl.

How are children able to understand the basic relations of agent and patient (or subject and object) expressed in simple sentences as the ones exemplified in (1), (2), (3) and (4)? For a long time, this question seemed of no interest, until Chomsky formulated the hypothesis that there exist deep structures which
differ from surface structures, and proposed a model of grammatical rules which generate surface structures from deep structures. Psycholinguists then seized upon this problem and their first aim was, as it is known, to demonstrate the psychological reality of the Chomskyan model. The first studies carried out within this perspective (Mehler and Carey, 1967; Savin and Perkonock, 1965) seemed to demonstrate the existence of processing rules isomorphic to the rules of the generative grammar, but these results were soon called into question by several authors who revealed the importance of factors which were not purely syntactic (for example, Wason, 1965; Johnson-Laird, 1968a and b). As early as 1966, Fodor and Garrett recapitulated the results obtained in this framework in the following terms:

While there can be no serious doubt that a speaker who understands a sentence does so by recovering its structural description, it is by no means obvious that the processes by which he converts a wave form into a structural distinction are identical to (or isomorphic with) the operations by which a grammar converts an axiom string into a structural description.

This statement initiated a new orientation in psycholinguistic studies derived from Chomskyan linguistics. From then on, these psycholinguistic researches became less dependent on a particular linguistic theory and concentrated upon the identification and analysis of sentence processing in perceptual and/or cognitive terms.

Beaver's paper 'The cognitive basis for linguistic structure' (1970) was the point of departure for this second research trend and constituted its main reference.

Beaver analyzes the procedures of sentence comprehension in terms of perceptual strategies that would allow assignment of underlying grammatical functions (i.e. the functions of agent and patient) to the constituents in the surface structure. One type of strategy consists of isolating sequences of lexical items corresponding to clauses in the deep structure. This strategy consists of isolating in some way simple clauses within complex utterances and will not be considered here. Once a simple clause is isolated, grammatical functions are attributed by using either semantic 'information' or 'information' deriving from the order of lexical items, or else a knowledge of potential deep structures underlying a given lexical item. These three types of procedure are called respectively semantic strategies, sequential labeling strategies and particular lexical strategies. They deserve some comments. According to Beaver, semantic strategies assign the functions of agent and patient without taking syntactic cues into consideration, and by combining lexical items in the more plausible manner. In sentence (3), for example, one can claim that the most plausible relation between the elements represented by the items 'baby' and 'mother' is an action in which the mother washes the baby. According to Beaver, to apply this procedure the subject would refer to the semantic constraints in the deep structure. The strategies of sequential labeling analyze the structural relations on the basis of the apparent order of lexical items in the sentence; when they are used, the sequences Noun-Verb-Noun (NVN) are understood as expressing a relation Agent-Action-Patient. Finally, lexical strategies constitute a heterogenous set of procedures related to a particular lexical item, generally a verb or a morpheme.1

In Beaver's view, children's dependence on semantic strategies is maximal at three years of age, and the sequential labeling strategy is established at about four years of age.

2. From 1970 to 1980, Beaver's interpretative hypotheses inspired a number of studies whose aims can be briefly summarized as follows:
- To confirm the existence of comprehension 'strategies' of simple sentences, in English as well as in other languages.
- To provide more detailed analysis of the information on which the attribution of functions is based, in order to answer the following questions: do semantic constraints derive from the deep structure or are they essentially extralinguistic? Is sequential information universal or specific to certain types of utterance and/or certain types of language?
- To offer a description of the stages of acquisition of these strategies and to provide evidence of their mode of functioning in order to determine whether they are mutually exclusive or whether they interact.
To reach a better understanding of the status of comprehension strategies, and especially to determine their relationships with more general cognitive processes (perceptual laws, order rules, operations in the Piagetian sense, etc.),

The results obtained by different groups of workers converge on many aspects; they also raise several questions and problems that should be dealt with in further studies.

3. Let us review first the points of convergence. Most experiments consisted of presenting children with simple utterances (six or seven words on the average) and asking the children to act them out with toys. As suggested by Noizet (1977) and Vion (1980), such a setting necessitates that children process the utterance; this processing is evidenced by the acting-out behavior, and results in a final configuration of toys. Experimenters infer from the child's behavior and from the resulting configuration that a certain mode of processing (cf. Vion, 1980) has been executed. For the moment, we shall limit ourselves to this concept of mode of processing, for reasons that we shall discuss later.

Most authors observed incomplete processing, especially in the youngest children. Incomplete processing consists of acting-out which correspond only to a part of the event expressed in the sentence. The action executed may be intransitive, i.e. imply only one of the protagonists mentioned in the utterance. It may also have the form: X-agent, the child himself or herself performing the action on the two protagonists (cf. Sinclair and Bronckart, 1972; De Villiers and De Villiers, 1973; Bridges, 1980). These two types of response have been considered by some authors as 'primary'. According to Sinclair and Bronckart (1972), they consist of processing the utterance as if it could be decomposed into two components only: Subject NP-VP, or VP-Object NP. This interpretation needs however further investigation. Is it due to a perceptual, a cognitive, or a linguistic difficulty?

The overwhelming majority of responses consists of an acting-out in which the action corresponds to the verb and the agent and patient to the two nouns mentioned in the utterance. This complete processing is based on two general operations, one on the perceptual level, the other on the lexical level. On the perceptual level, the processing implies that children have taken the whole sentence into consideration, without giving priority to any part. On the lexical level, it requires that children have understood the 'meaning' of every word. Once these two operations are achieved, the subject has representations at his disposal; he can then combine them in different ways and translate them into different acting-out. Complete processing is then differentiated according to the type of cue (type of 'information' in Bever's sense) taken into consideration for selecting the combination of representations and the acting-out. Three categories or modes of processing are clearly established: pragmatic processing, positional processing, and morphosyntactic processing.

When using the processing that we termed 'pragmatic' (cf. Bronckart, Sinclair and Papandropoulou, 1976), the child selects the agent and the patient by using exclusively extralinguistic cues, namely cues concerning the plausibility of the event (plausibility depends itself on the child's empirical knowledge of the world). For utterance (2), for example, having an empirical knowledge of what a boy is, what a box is, and what the action of opening consists of, leads 'naturally' to the solution: 'the boy opens the box'. To a lesser extent, the analysis of what a mummy is, what a baby is, and what is implied in the action of washing leads to an interpretation of the utterance (3) as 'the mother washes the baby'. On the other hand, no empirical cues of this type are available in sentences (1) and (4); the soldier and the Indian may attack each other, and equally the boy and the girl may push each other. Several authors have termed sentences such as (1) and (4) as reversible sentences, in contrast to non-reversible sentences, as in (2) and (3) (cf. Slobin, 1966; Turner and Rommetveit, 1967; Noizet, 1977; Sinclair and Ferreiro, 1970). This term is not appropriate, we will argue, since on the syntactic level all these utterances are reversible. As a matter of fact, the events expressed in these utterances are more or less reversible; more precisely, the expression 'non-reversible' means that the utterance (2), for example) corresponds to a plausible event, and that if it is reversed ('the boy is opened by the box') the event expressed has a lesser or even zero degree of plausibility. The plausibility of an event may sometimes correspond to a certain distribution of the features of lexical
items that designate the protagonists (animated vs. unanimated, alive vs. not alive, etc.); it may also depend on the characteristics of the process expressed by the verb (cf. Sinclair and Ferreiro, 1970; Cambon and Sinclair, 1974), but these semantic features are not sufficient for characterizing the plausibility of all events and do not constitute per se cues that are accessible to children. When using a pragmatic processing, n representations corresponding to n lexical items in the sentence are available to the child who combines these representations so as to produce the event that is empirically most plausible.

The processing that we termed positional (cf. Bronckart, 1977) consists of choosing the functions of agent and patient by taking the position of the noun phrases into account, without considering the other morphosyntactic cues that are available. As early as 1963, Fraser, Bellugi and Brown found evidence of this type of processing in the comprehension of passive sentences; four-year-old children interpret type (1) utterances as active utterances (i.e. as (4)). This result was confirmed by Slobin (1966), Turner and Rommetveit (1967), Berlin and Spontack (1969), Bever (1970), Sinclair and Ferreiro (1970), De Villiers and De Villiers (1973), Maratsos (1974), Sthroner and Nelson (1974), Bronckart (1979a), Bridges (1980) and Lempert and Kinsbourne (1980). According to Bever, this behavior may be explained by the fact that, at a certain age (about four years of age), children interpret ‘any NVN sequence contained in an internal unit’ as an agent-action-patient sequence; the child would apply a law of interpretation according to which NVN equals Agent-Action-Patient, or else NVN equals SVO. With type (2) utterances which do not follow the canonical form NVN, this law would be generalized in the FENA format (‘first noun equals agent’, Abrams et al., 1978): the first noun in the sequence corresponds to the agent and the second one to the patient. This more general rule was advanced by Bever (1970) and again by Bronckart (1979a) for analyzing the results obtained in the processing of cleft sentences in English or in French. This interpretation was challenged by Lempert and Kinsbourne (1978, 1980) as well as Kail and Segui (1978) who analyzed their subjects’ behavior as due to the application of a partial processing: the noun that precedes the verb is the agent. On the other hand, without denying the existence of a mode of processing based on the noun phrases order, Sinclair and Bronckart (1972) defined a more precocious procedure, based on the proximity of the verb (the noun closest to the verb is the agent). As underlined by Vion (1980), three types of positional processing may be distinguished: the first is based on the order (N₁ = Agent/N₂ = Patient); the second is centered on a partial order (N before Verb = Agent); and the third is centered on proximity (N closest to the Verb = Agent). If nobody denies the existence, at a certain stage of development, of the rule NVN equals Agent-Action-Patient, the other positional types of processing raise several problems that we shall analyze later.

The morphosyntactic, or syntactic (cf. Noizet, 1977; Bronckart, 1977) strategy coincides with the full comprehension of a simple sentence; it consists of attributing the functions of agent and patient on the basis of strictly morphological and/or syntactic cues other than positional cues. The age at which these cues are actually taken into account varies with the type of utterance and the language; it seems that this variation depends on the linguistic complexity of utterances.

The various investigations just reviewed all underline the earliness of pragmatic processing which can be observed at three years of age. Except for Vion (1980), the authors mentioned above consider furthermore that syntactic processing would appear rather late and its intervention would depend on the complexity of the structure to be interpreted. Positional processing, when observed, would appear at an earlier age than morphosyntactic processing. Most authors also agree that, once they are constructed by the subject, the various modes of processing remain available and constitute a kind of ‘répertoire’. When confronted with an utterance, the child might hesitate about the processing to be used, a phenomenon frequently observed and described as a ‘conflict of strategies’. 

4. In spite of the homogeneity of the results obtained in the last 10 years, several important problems still remain unsolved. We shall now expand on two of them: the identification of strategies themselves and the origin and generality of positional processing.
4.1 As discussed elsewhere (Bronckart, 1982), and as suggested by Vion (1980), the expression ‘processing strategy’ should be used to describe those cases in which the same subject uses regularly and systematically the same category of cues for attributing the functions of agent and patient. Finding evidence of strategies implies, consequently, an analysis of the patterns of response for each subject. This type of analysis has been done by only a few authors (Sinclair and Bronckart, 1972; Lempert and Kinsbourne, 1980; Bridges, 1980; Vion, 1980). Other studies have been restricted to analyses of the responses given by a group of subjects of a given age, and this is the reason why we formulate the present synthesis in terms of modes of processing. To what extent does the predominance of a mode of processing at a given age imply the existence of corresponding individual strategies? Would it not rather be a question of dominant (but not systematic) choices made by the majority of subjects? This important question has received no conclusive answer until now, especially with respect to pragmatic and positional processing.

4.2 Positional processing is presently the object of most controversies and debates. As noted above, studies on the comprehension of passive sentences evidenced an indisputable regularity of processing, at a relatively precise developmental stage. English or French speaking children interpret every NVN sequence as expressing a functional relationship Agent-Action-Patient. Before discussing this type of processing any further, we would like to come back to the notion of strategy. Any strategy implies that a precise category of cue is extracted (morphosyntactic, positional, or extralinguistic cues) but once extracted, these cues should be exploited, i.e. interpreted by the subject. This second phase of the processing may be analyzed by taking into consideration two types of factor: the subject’s goals (we shall not insist on this point here) and the system of reference chosen for interpreting these cues (cf. Bronckart, 1982, for a more detailed discussion). All types of processing called positional are characterized by extraction of cues concerning the relative position of noun phrases, but the question of the system of reference adopted still remains open. Concerning the NVN law (Agent-Action-Patient) mentioned earlier, the hypothesis that the system of reference is linguistic has been rapidly adopted; children would induce this law from observation (or practice) of the basic order in their native language (SVO in English and in French). This interpretation raises problems as soon as one considers non-canonic utterances. Let us first remind ourselves that there is no general agreement concerning the positional procedure used to understand type (3) sentences. Let us disregard positional processing by proximity which has been found only in the comprehension of sequences of lexemes and concentrate upon the two procedures based on word order. One could maintain that both procedures have a linguistic system of reference to the extent that in most utterances (oral and written) in French and in English the subject comes before the verb and the verb before the object. However, it is only a statistical dominance and we cannot exclude the hypothesis that order rules would be constructed ‘elsewhere’ in the framework of the perceptual and cognitive development of the subject. In other words, as far as English and French are concerned, positional processing could refer to language as well as to perceptual and cognitive rules. In order to overcome this difficulty, one should analyze possible types of positional processing in the acquisition of languages that involve basic orders different from those in French and English.

According to Domenichini-Ramiaramanana (1976), Malgasy presents two basic orders; in spoken language, the deep structure is VOS, but one may put the subject in the initial position, especially in written language, by introducing either a pause or a disjunctive between the subject and the verb; in this case, the deep structure is SVO. Using Sinclair and Bronckart’s (1972) technique of lexemes, Rajaonarivo (1980) asked 4.5- to 6-year-old children to interpret NVN, NNV and VNN sequences. The results showed that younger children systematically decode the VNN sequences as Action-Patient-Agent and the NVN sequences as Agent-Action-Patient. In a first stage, the majority of children decode NNV sequences as Patient-Agent-Action. Then, by six years of age, half of the interpretations are Agent-Patient-Action and half are Patient-Agent-Action. It seems that the system of reference of these subjects is linguistic: the language offers two basic orders,
VOS and SVO, that children apply to the corresponding sequences of lexemes. However, the research of Segalowitz and Galang (1978) on the comprehension of Tagalog sentences equivalent to passive and active English sentences leads to opposite conclusions. In Tagalog, the deep structure is VOS, with an ‘active’ form in which the subject is agent, and a ‘passive’ form in which the subject corresponds to the patient. Children 3.5 to 7 years of age tested by the authors all showed a better comprehension of passive utterances as compared with the corresponding active ones, a result which might be due to the fact that a universal cognitive system of reference is available to them: ‘We attribute to both Tagalog and English-speaking children a common perceptual strategy or predisposition to identify the first noun in the sentence as the agent and the second as the patient, regardless of the grammatical functions of the words’ (1978: 60). It seems indispensable to carry out more studies on the comprehension of simple sentences in language which have a VOS structure in order to determine whether the FNEA rule becomes predominant. Studies by Frankel et al. (1980) on Hebrew and by Bronckart and Idiazabal (in preparation) on Basque provide some further information. In both languages, noun phrase order in the surface structure plays a minimal role — or even no role — in expressing the functions of agent and patient. The results show that positional processing is not very frequent, but that it has always the NVN form or even the FNEA form.

Two main tendencies emerge from these results. First, to the extent that positional processing is executed by using surface structure cues (the location of noun phrases), its importance in the processes of comprehension of simple sentences depends upon the positional regularities in the native language; consequently, it is more predominant in languages in which word order has a determinant role for the attribution of the functions of agent and patient (as in French, English, Malagasy and Tagalog) than in languages in which word order is not fixed (as in Basque and Hebrew). However, the system of interpretation applied to these cues does not seem to depend upon the characteristics of the surface structure. With the exception of certain types of sequences in Malagasy, the rules used are either N₁ equals Agent, N₂ equals

Patient, or NP before Verb equals Agent, whether or not there are positional regularities in the surface structure of the language and whatever these regularities may be. Consequently, we claim that the system of reference in processing positional cues is perceptual and cognitive.

Basic orders are defined in terms of subject (S), verb (V) and object (O) (cf. Greenberg, 1961; Lehmann, 1973; Parker, 1980), whereas most psycholinguistic studies describe the functions in terms of agent, action and patient. These two sets of notions were often confounded in the different analyses for reasons that we shall now discuss.

5. As we said in the introduction, studies dealing with the comprehension of simple sentences are an extension of Bever’s work, i.e. share a common Chomskyan perspective. Chomskyan psycholinguistics derives from generative grammar and from some of the preceding structuralist trends. It conveys a set of epistemological and theoretical postulates that we discussed in detail elsewhere (cf. Bronckart, 1977, 1978). We shall mention three of them.

A. Language constitutes primarily a system of representation and secondarily a communication tool (cf. Chomsky, 1975: 85 et seq.); the psycholinguistic approach will then consist of studying the referential function at the expense of the communicative functions.

B. The basic unit of language is the sentence, a linguistic entity which stands for itself. Consequently, this trend in psycholinguistics will be devoted to the processing of sentences, be they simple or complex.

C. Sentences have a deep structure which expresses basic functional relationships and which is expressed ‘directly’ in the surface structure in the SAAD form and ‘indirectly’ in transformed sentences. There would be a quasi-isomorphism between the functions of agent and patient and the grammatical notions of subject and object in the SAAD framework. This correspondence would be perturbed in the other types of sentences for thematic reasons which are not very clear. Within this perspective, the only aim of sentence processing is to detect the surface cues which refer to the functions of subject (or agent) and object (or patient).
6. Chomsky's conception of language contrasts, not with some trends in structuralism of which it is a sort of outcome, but with several views which have a common characteristic: a centering on the communicative function of language and on the discourse or text unit (see Slama-Cazacu, 1973/1968). In linguistics, this view has often been expressed in an analysis of language into distinct levels. As early as 1947, Hjelmslev distinguished in all sign systems the axis of process and the axis of system. The process is constituted, in the case of natural languages, by the text, a chain oriented from left to right and immediately accessible to observation. The system, or language itself, is a more theoretical construct intended to explain the mechanisms of how the text functions. An analogous view is found in Benveniste's work, especially in his papers entitled 'Levels of linguistic analysis' (Les niveaux d'analyse linguistique, 1966) and 'The formal apparatus of enunciation (L'appareil formel de l'énonciation, 1970). In Benveniste's view, it is crucial to distinguish within language the formal system, whose unit is the sign, and the communicative system (or discourse), whose unit is the sentence. There would be no continuity between these two systems but rather a real gap: language would be organized into two modes: the semiotic mode, which specifies the conditions of use of signs, and the semantic mode, which governs the way language intervene in discursive acts.

The suggestions advanced by Hjelmslev and Benveniste were mainly programmatic and did not lead to a veritable analysis of discursive units in language. However, such an analysis can be found in works which extended the work of Mathesius and that of the Cercle Linguistique de Prague. Danes (1964), in particular, proposed a ‘three-level approach to syntax’ and distinguished the level of grammatical structures from the level of semantic structures and from the level of organization of utterances. In Danes’ view, the notions of agent and patient would be relevant at the semantic level, while the notions of subject and object would be characteristic of the grammatical level. Utterances would be organized according to the degree of ‘communicative dynamism’ that they convey and could always be divided into two parts, the theme (or topic) which provides known elements and the rheme (or comment) which conveys new or unknown elements. The same proposal was worked out in greater depth by Halliday (1967) who distinguishes three systems in language functioning: the transitivity system, centered on the sentence and its representation of extralinguistic reality, the modality system, which regulates the relations between speakers (questions, commands, statements, etc.), and the theme system, which concerns the structuration of the information transmitted in utterances. It is no more a question of linguistic units participating in the representation of the process and its protagonists, but a question of the elements composing a message, i.e. jointed to the preceding elements in the discourse and organized in a real act of communication. The theme system advanced by Halliday is based on two subsystems: thematization on the one hand and informational focus on the other. Thematization remains a system internal to the statement which it organizes into a first part, the theme, specifying ‘what is spoken about’, and a following part, the comment. The informational focus system defines structural units that it links to what came before in the discourse, and delimits the known information (the topic) and emphasizes the new information (the focus). The notions introduced by Halliday have an indisputable kinship with the concept of presupposition which derives from the trend of the philosophical analysis of language thoroughly discussed by Ducrot (1972). As underlined by Kail and Plas (1979), this concept, which is centered on the notion of implicit in language functioning, is still quite unclear.

The different conceptions we just presented have a common characteristic: on the one hand, they distinguish a system of signs and its ‘transitive’ organization, which concerns the representation of extralinguistic units in language, and on the other hand, a communicative system and its discursive organization, which concerns the transmission of information, within the framework of the text and the general context of enunciation. In these conceptions, the surface morphosyntactic marks of an utterance not only serve to indicate the action, agent, and patient categories, but also (or even essentially) to indicate to the speaker the topic in the discourse, the theme in the utterance, the informational focus, etc. Drawing the consequences of this proposal, various psycholinguists have analyzed the effect of the theme system and of presuppositions
on language functioning in adults, particularly on the choice of the passive form (cf. Olson and Filby, 1972; Johnson-Laird, 1968a, b; Klenbort and Anisfeld, 1974; Kail, 1979). Such an approach has only been adopted very frequently in psycholinguistic studies on children. However, the work of Bates (1976) should be mentioned; she attempted to show that, in certain circumstances, 18-month-old children produced one-word utterances which corresponded to the informational focus, and dropped the implicit topic. Hornby (1971) has shown that 6- to 10-year-old children were capable of distinguishing the topic from the comment. He also showed that from eight years on, the development of a procedure for identifying the topic based on the location of noun phrases in the utterance. In a series of experiments where children were asked to describe a vignette after having heard an introductory text centered on a given topic, Tannenbaum and Williams (1968) and Turner and Rommetveit (1968) showed that the passive voice was used more rapidly when the topic of the introduction corresponded to the subject of the passive sentence. These results were partially contradicted by Parot and Kail (1980) who did not observe any effect of thematization on the recall of sentences by 8.6-year-old children, and found an effect opposite to what Tannenbaum and Williams observed in children aged 9.7.

Even though these results are interesting, they are however not very reliable and are difficult to interpret. This is due to the confusion which persists not only concerning the notion of presupposition (cf. Hupet and Costermans, 1976; Kail and Plas, 1979) but also concerning the opposition between theme and rheme or between topic and comment. It is significant to note that the 'theme' in the work of Tannenbaum and Williams and of Parot and Kail corresponds in fact to the notion of topic advanced by Halliday, to which these authors refer explicitly. In our view, this terminological confusion might be due to the lack of a theoretical framework dealing both with the structuration of text and the way the text is articulated with the context and the situation of enunciation. Even though such attempts as those of Culioi (1976) and Cressel (1979) are full of promise, for the moment the basic concepts of the linguistics of discourse are still not anchored in a theory and consequently vary.

7. Some trends in contemporary psycholinguistics are faced with two different approaches, both of which present serious disadvantages. First, there is an orientation derived from the linguistics of sentences, which is indisputably insufficient because it neglects communicative and discursive factors, but which is a coherent system and, consequently, has a heuristic value. Alternatively, there is a perspective derived from probably more satisfying theoretical conceptions but which are in the initial phase of their development and, hence, which generate rather heterogeneous studies. What should be chosen?

8. Our conception is based on a set of theoretical considerations presented in detail elsewhere (cf. Bronckart, 1977, 1978, 1982 and Bronckart and Ventouras-Spycher, 1979). They lead us to study language both as a system of communication and as a tool of representation. Concerning the comprehension of simple sentences, we consider that it is legitimate to try to discover how a child processes the functions of agent and patient 'represented' in the surface structure. But we also consider it to be legitimate to analyze the role that various types of textual organization may have in the comprehension as well as the role of the articulation between the discourse and the context. However, these two approaches may be adopted only if a certain number of conditions that we shall now comment are met.

9. Concerning the communication framework, our aim is to analyze the way in which children process surface markers, taking into account textual and contextual factors. Since no satisfactory linguistic frame of reference is available (see section 6), we shall attempt to elaborate a description of textual functioning or, more precisely, of different types of textual functioning. Our approach is based on the following principles.

A. Utterances are organized into texts; they have autonomous rules of functioning, and the texts themselves are articulated to the context (the nature of context is then exclusively extralinguistic).

B. Certain contextual parameters have a particular influence on the textual system (speakers, time, space, etc.). They define the situation of enunciation itself.
C. Within each type of text, organized configurations of the surface markers produce effects of thematization, emphasis, presuppositions, etc.

Our research carried out in this framework was presented elsewhere (Bronckart, 1979b). It follows four distinct steps. The aim of the first is to define and delimit some situations of enunciation clearly contrasted. At this point, the question at issue is essentially theoretical: it consists in identifying the contextual parameters which generate very specific texts. Until now, we have defined two textual axes: the axis of discourse – which is characterized by its immediate relation to the situation of enunciation – and the axis of narration, which requires a mediation (temporal and possibly spatial) between the processes evoked in the text and the situation of enunciation. Each of these two axes would constitute a continuum at the ends of which would be located two subcategories of contrasted texts, with, of course, several intermediate forms. The second step in our approach is to advance hypotheses concerning the different configurations of morphosyntactic markers which characterize each of the contrasted texts. On the basis of these hypotheses, a grid of analysis was built. The third step is experimental; it involves collecting texts produced in situations of enunciation as defined previously and analyzing them with our special grid. The last step is characterized by an analysis of the interdependence between surface markers within each type of text and by the formulation of hypotheses concerning the status of each of these configurations on the level of the thematic structure.

Such an analysis should allow us to extract discursive units functioning in the different types of French texts. Once the relevant discursive categories are defined, we will attempt to determine how children understand them by performing psycholinguistic experiments.

10. Concerning the referential (or representative) perspective, it seemed to us indispensable to examine in detail all the parameters intervening in the comprehension of simple sentences. This analysis should lead to the elaboration of a frame of reference which will be used in the analysis of recent data on the acquisition of French and Basque. In order to avoid the trap of hybrid notions of traditional grammar (such as subject and object), it seems to us necessary to distinguish first of all very clearly the surface units and the referential functions that they have.

Concerning surface elements, we shall note the lexical units (nouns and verbs essentially), the noun phrases and their location, the verb form and the clauses. These elements are integrated into larger structures (actives, passives, emphatic sentences, etc.). They all constitute potential cues which define the level of the morphosyntactics of French (cf. Table 1).

Events acted out by subjects may be considered from two different points of view. On the one hand, they constitute an action which has ‘objective’ characteristics (duration, result, etc.), executed by protagonists who also present precise characteristics. These objective parameters depend partly on the toys and the experimental setting, and partly on the choices made by the subjects in the course of the experiment. They define what we shall call a ‘physical’ level. Since these physical characteristics are never known ‘as such’, it will furthermore be necessary to introduce a second level of analysis, the level of knowledge of the event that the subject has. At this cognitive level, the characteristics of the action and the protagonists are integrated into larger sets (or

<table>
<thead>
<tr>
<th>Table 1. Analysis'levels of the expression of an event in French</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis'levels</strong></td>
</tr>
<tr>
<td>I. Physical</td>
</tr>
<tr>
<td>Events and their physical characteristics</td>
</tr>
<tr>
<td>II. Cognitive</td>
</tr>
<tr>
<td><img src="image" alt="Diagram" /></td>
</tr>
<tr>
<td>III. Semantics of French</td>
</tr>
<tr>
<td>Nominative</td>
</tr>
<tr>
<td>Dative</td>
</tr>
<tr>
<td>Accusative</td>
</tr>
<tr>
<td>IV. Morphosyntactics of French</td>
</tr>
<tr>
<td>SN₁ or 'subject'</td>
</tr>
<tr>
<td>SP Prep.</td>
</tr>
<tr>
<td>SN₂ (post-verb)</td>
</tr>
</tbody>
</table>
classes). The action will be ‘read’ as transitive or intransitive and the protagonists will be considered as participants assuming a role. The main roles are those of agent (an animate responsible for the action), instrument (an inanimate responsible for the action), patient (animate ‘undergoing’ the action), and acted upon (un-animate undergoing the action). In various linguistic theories (Fillmore, 1966; Anderson, 1971; Pottier, 1962) other roles (or cases, according to these authors) are also defined, such as the beneficiary, object, locative, etc. In our experimental studies, we shall restrict ourselves to the four main basic roles mentioned above. As underlined already, they designate extralinguistic characteristics of the event and function as cognitive analyzers.

The three levels of analysis just presented do not suffice to describe the set of parameters which intervene in the comprehension of a linguistic structure. As demonstrated by the founders of contemporary linguistics (Saussure, 1916; Sapir, 1921), the cognitive representations of a speaker are not transmitted as such to the hearer: they must, on the contrary, be casted into a particular mold, the mold of semantic categories of a language. We shall hence assume the existence of an intermediate level of analysis, the level of the semantics of language, that we shall define as the organization imposed on cognitive categories (namely on roles) by the configuration of the surface units selected by a language for expressing them. The existence of this intermediate level, not clearly evident when the analysis bears on only one language, becomes evident in a comparative approach. French, like most Indo-European languages, has a basic system of semantic categories termed ‘nominative-accusative’ (cf. de Rijk, 1978), whereas other languages (Basque, Avar, Tongien) are organized according to an ‘absolutive-ergative’ system. In French ‘nominative’ is a broad semantic category, expressed in the morphosyntax by the NP1 of the active sentence and which groups quite different roles: agent, instrument, and object (in Fillmore’s sense, 1966), as shown in sentences (5) to (7):

5. The sailor threw the buoy (Sailor: NP1-nominative-agent).
6. This knife cuts well (Knife: NP1-nominative-instrument).
7. This knife is big (Knife: NP1-nominative-object).

In a language such as Basque, there exists an ‘ergative’ semantic category which expresses only the role of agent and which has a specific marker (-k) in the surface structure and a second category which groups the roles of instrument, object, acted upon, and patient, and which is marked (Ø) in the surface structure. In the same way as the ‘signifiers’ and the ‘signified’ constitute a regroupment and a reanalysis of sonorous representations and of individual representations of meaning (de Mauro, 1972; Bronckart, 1977), the nominative, ergative, accusative, etc. categories constitute linguistic reanalyses of the individual representations that roles are. It is at this level and at this level only that we shall speak of ‘cases’ (cf. Table 2).

In experiments on comprehension, the interpretation of acts—out performed by the subjects is made into two steps. The first consists in identifying the type of action performed and the roles attributed to the protagonists. If, when responding to a type (8) sentence, the subject produces an action in which the boy hits the girl, the action will be classified as transitive and the boy will be given the role of agent, the girl being the patient.

8. It is by the girl that the boy is hit.

The second step will consist of identifying the cues within the utterance (or outside the utterance) on which the attribution of

<table>
<thead>
<tr>
<th>Table 2. Analysis’ levels of the expression of an event in Basque</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analysis’ levels</strong></td>
</tr>
<tr>
<td>I. Physical</td>
</tr>
<tr>
<td>II. Cognitive</td>
</tr>
<tr>
<td>III. Semantics of Basque</td>
</tr>
<tr>
<td>IV. Morphosyntactics of Basque</td>
</tr>
<tr>
<td>N + k</td>
</tr>
<tr>
<td>N + Ø</td>
</tr>
<tr>
<td>N + rat</td>
</tr>
<tr>
<td>N + ri</td>
</tr>
</tbody>
</table>
the roles of agent and patient were based. The interpretation itself will aim at extracting regularities in the procedures for attributing the roles, at defining them, and possibly at explaining them.

The reader has noted that the traditional concepts of ‘logical subject’, ‘grammatical subject’, ‘object complement’, etc. do not appear at any of our four levels of analysis. These terms used in school characterize either cognitive relations (logical subject), or syntactic relations (grammatical subject), or hybrids (object complement or essential complement). We shall get rid of them definitely and replace them with the terms of roles (agent, acted upon, patient, instrument), case (nominative, accusative) and surface units (NP1, NP2, PrepNP, VG, etc.).

Our proposals elicit two final remarks. The first concerns the notion of semantics, frequently used in linguistics and psycholinguistics, but rarely defined clearly (cf. de Mauro, 1969). We have restricted the extension of this concept to the reorganization imposed upon functional cognitive categories by the syntactic structures of languages. The relationship between semantics and morphosyntax would be analogous to the relationship between ‘signifiers’ and ‘signified’ (cf. Bronckart, 1977). It would be the ‘verso’ of morphosyntax, according to an image which Saussure (1916:157) was fond of. Within this perspective, universal semantics, mentioned particularly by linguists belonging to the generativist trend, either is confounded with the cognitive level, and consequently becomes an empty concept, or designates universal constancies of segmentation and reorganization of cognitive categories originating in the morphosyntactic units of languages. In the latter case, universal semantics presupposing a universal syntax whose existence is very questionable, in spite of the claims of many linguists (cf. Chomsky, 1968).

Our last remark concerns the status of the surface markers which characterize the passive, emphatic, or participle forms. As we said earlier (see Section 6), selecting these forms is based on enunciative or textual considerations. In our analysis these functions are not taken into consideration and only the referential categories expressed through them are analyzed. Besides the method of analysis described in Section 9, a way to rectify this omission consists in distinguishing two subcategories in the physical level defined above. There would be, on the one hand, the content itself, the transmitted information, and on the other hand, the situation in which the utterance is produced. These two physical domains will be termed ‘eventlike’ and ‘contextual’ even though, in some cases, the frontier between them is difficult to establish. This distinction must be reproduced in the three other levels defined in Tables 1 and 2. Every speaker constructs cognitive categories which embrace contextual parameters of time, space, persons, etc. The relations between the speaker and the contextual parameters are expressed by specific morphosyntactic categories (verb tense, auxiliaries, pronouns, etc.). There consequently exist enunciative structures which differ from predicative structures expressing referential categories. To these surface enunciative structures should correspond an enunciative semantics analyzing the selections made by a particular language. At this level, we shall speak of enunciative functions (like the temporal function, selected by most Indo-European languages, at the expense of the spatial function, selected by some Amerindian languages (cf. Whorf, 1956)), and we shall distinguish them from case functions.

Table 3. Analysis' levels of the expression of 'eventlike' and 'contextual' in French

<table>
<thead>
<tr>
<th>Analysis' levels</th>
<th>Eventlike</th>
<th>Contextual</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Physical</td>
<td>role 1</td>
<td>role 2</td>
</tr>
<tr>
<td>II. Cognitive</td>
<td>PROCESS</td>
<td>role n.</td>
</tr>
<tr>
<td>III. Semantics</td>
<td>Nominative</td>
<td>Accusative</td>
</tr>
<tr>
<td>of French</td>
<td>VERB</td>
<td>Dative</td>
</tr>
<tr>
<td>IV. Morphosyntax</td>
<td>Predicative structure</td>
<td>Enunciative structures</td>
</tr>
</tbody>
</table>
Table 3 clearly shows that the event expressed by an utterance, as well as contextual parameters, is part of a physical continuum. In our view, analogous relations exist at the semantic and morphosyntactic levels. According to the conception of language we presented elsewhere (Bronckart, 1977, 1978), enunciative structures and functions should be considered as 'primary'. The utterance is first and above all articulated to the text and the context, and even though they seem simpler (and if, consequently, they were the first to be identified by grammarians), the structures that have a case function are second and related to enunciative structures. The semantic categories: nominative, accusative, etc. and their modes of syntactic expression can be defined only by abstraction from enunciative relations. Such an abstraction is not illegitimate, however, and provided they are redefined as we have, the concepts of case and predicative structures are coherent on the linguistic level, and they correspond to entities that speakers actually take into account, as evidenced in recent experiments that we shall report in a future article.

Notes

1. Nowadays, these strategies would rather be said to be morphemic to the extent that they are based on free morphemes (pronouns, prepositions, conjunctions, etc.).
2. In most experiments reviewed here, the authors speak of pragmatic, positional and morphosyntactic strategies, even though they are referring to modes of processing, in the sense defined in the present article.
3. This exception could be due to the fact that the experiment on Malagasy was done with sequences of lexemes instead of sentences.
4. The concept of sentence, in Benveniste's work (1966: 123), refers to a linguistic unit that would be termed 'utterance' in present literature.
5. A view envisaging both aspects was presented in Slama-Cazacu (1961/1959).

References

The comprehension of simple sentences


Received: February, 1981

Université de Genève
Faculté de Psychologie et des Sciences de l'Education
Section des Sciences de l'Education
24, rue du Général Dufour
1211 Genève, 4, Suisse