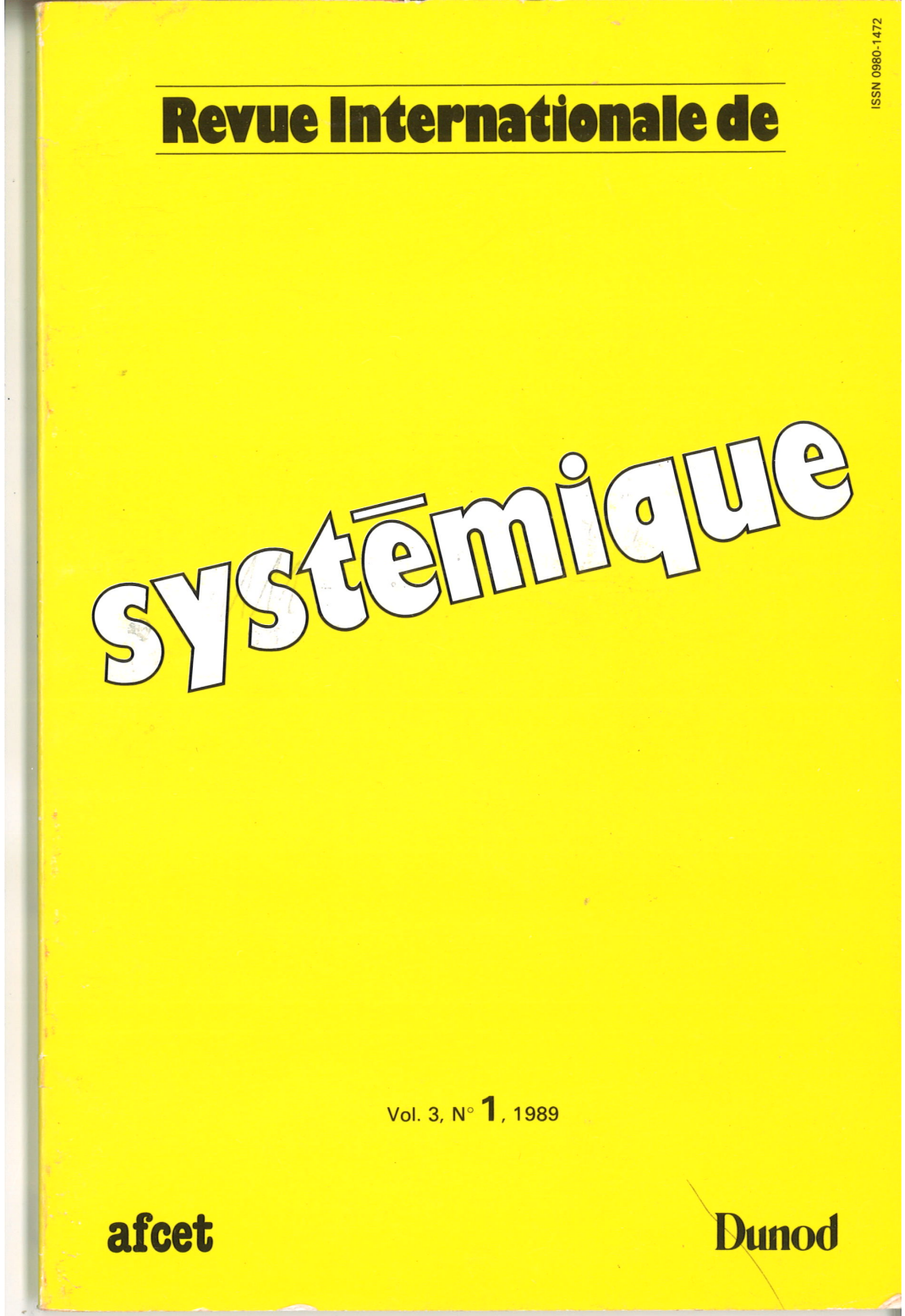

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Metaphors for language and communication

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METAPHORS FOR LANGUAGE AND COMMUNICATION

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Abstract
The cognitive model according to which language is the expression in words of semantically represented information, and communication is the cooperative transfer of such information from one person to another is criticized as untenable. The discussion suggests a reversal of cognitive perspective whereby pragmatics is primary and semantics is derived. A broad range of phenomena is examined which indicates that this reversal of perspective is highly advantageous. An alternative metaphor for the characterization of communication is offered, and suggestions for future cognitive research are made.

Résumé
On récuse le modèle cognitif du langage comme expression en mots d'une information sémantiquement représentée et de la communication comme transfert d'une telle information d'une personne à une autre. Une toute autre perspective est suggérée où la pragmatique est essentielle, et la sémantique dérivée. Une variété de phénomènes est présentée à l'appui de cette nouvelle perspective afin d'en souligner l'intérêt. Une métaphore renouvelant la caractérisation de la communication est proposée et des suggestions pour la recherche cognitive future sont faites.

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The following is a discussion of what an appropriate framework for the study of verbal communication should be. The discussion consists of a critical examination of some fundamental notions regarding language and representation and it suggests the need for a radical shift in cognitive thinking. The shift would certainly involve much subsequent research which is well beyond the scope of the present investigation. Here, my aim is to attempt a new perspective of things cognitive, to intrigue, and to raise some doubts. For this, I believe, metaphors are most suitable, as well as questions which at first glance seem to be simple and also far afield. Thus, consider the question, what do the birds say when they sing ? Do they say «Good morning», «What a lovely morning» or simply «Wake up» ? The different alternatives noted all reflect the same basic view, namely, that communication consists of the transfer of semantic information. It is this view which is the subject matter of our discussion and which defines the metaphor we shall consider.

Consider the following four propositions , (*) :

(*) 1. Linguistic production is the expression of thoughts in words.
2. Words are the verbal carriers of semantic information.
3. Verbal communication is the cooperative transfer of words.
4. Linguistic comprehension is the inverse of linguistic production, i.e., the decoding of words to thoughts.

These four propositions are the tenets that together define the conceptual model which metaphorically regards communication as the transfer of a package (the message) from one container (one mind) to another. Graphically, the model is presented in the scheme shown in Figure 1. This model seems to be implied by practically all cognitive research. It is noted in philosophical writing from Plato's «Meno» (see Shanon, 1984a) to Wittgenstein's «Tractatus» (1922), information theorists (Shannon and Weaver, 1949), linguists (Jakobson, 1971), experimental and theoretical psychologists (Miller, 1951 ; Atkinson and Shiffrin, 1968 ; Miller and Johson-Laird, 1976) and has also received a computational realization in current work in artificial intelligence (cf. the characterization of mental verbs in Schank, 1973). Following experimental psychologists, neuro-psychologists also standardly use this model as a theoretical basis (Geschwind, 1974) [1]. Yet, self-evident as the box and package model may seem to be, there are reasons to doubt its adequacy ; the consideration of

these is the subject-matter of the present discussion. The discussion will begin with proposition (2) and continue with propositions (3) and (4) ; the critical examination of these three propositions will then lead to that of (1).

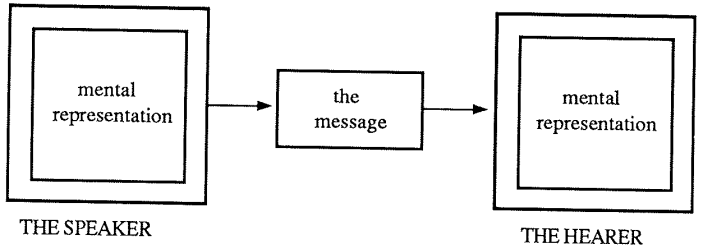

Figure 1. The model of the box and the package

Proposition (2) is tantamount to saying that the physically realizable entities words are each associated with well defined abstract entities, that is, with fixed meanings. Yet, since Wittgenstein (1964) arguments have been marshalled to the effect that such an exhaustive semantic definition of the meaning of words is not possible (see also Fodor, Garrett, Walker and Parkes, 1980 ; Kripke, 1972 ; Putnam, 1975). As demonstrated by Winograd (1980), no matter how specified a definition is, a context may always be set for which this definition is not sufficient. By way of example Winograd considers the word «bachelor», a word whose traditional semantic definition is paradigmatic. As pointed out by Katz and Fodor (1963), a «bachelor» is an adult, unmarried human male. Banal as this definition is, it is not always functional. There are contexts in which the conditions posited by the definition are met, yet the label «bachelor» is not appropriate (as in the case of a member of a steady homosexual couple), and others in which the conditions are violated, yet, in certain current dialects of English, the label is employed nonetheless (as in the case of an independent career woman). Similarly, «water» may be defined as «H_2O» but there are cases in which the term refers to entities whose chemical composition is different, whereas in others the term is not appropriate even though the chemical composition is met. The contexts specified in (1) and (2) are examples following the spirit of Winograd (1980) :

(1) Do you have water in your refrigerator ? Yes (pointing to lemonade).

(2) Do you have water in your refrigerator ? Yes (pointing to the distilled water in the pipes of the appliance).

The consideration of literal meanings indicates that semantic analysis is not sufficient, the consideration of metaphor further suggests that it may even be fortuitous. The standard analysis is to derive the metaphorical reading from the underlying literal one, but as pointed out by Rumelhart (1979) this line of reasoning is not valid. Referring to sentences such as (3) and (4) Rumelhart notes that the differentiation between literal meaning and metaphor is not clear cut :

(3) The policeman raised his hand and stopped the car.
(4) Superman raised his hand and stopped the car.

The labels attributed to each of these sentences may or may not be different, but the processes that lead to their interpretations appear to be the same, for in both cases they necessitate the evaluation of entire contexts. Coupled with the appraisal that the so-called literal sense is itself dependent on contextual evaluation, these observations suggest that the standard analysis of metaphor is of no avail. This verdict, note, is both substantive and methodological. Substantively, contexts are open (that is, the range of their interpretations is logically unconstrained), hence, in general, the senses of linguistic expressions cannot be lexically fixed. Methodologically, given that the distinction between literal and metaphorical interpretations is not categorical, and since both interpretations require contextual evaluation, then by considerations of parsimony one might as well say (cf. Lakoff and Johnson, 1980) that language is all metaphor.

An analogous state of affairs is encoutered with speech acts. Standardly, speech acts are differentiated into ones which are direct and ones which are not. The former are «the simplest cases of meaning in which the speaker utters a sentence and means exactly and litterally what he says», whereas the latter are ones «in which one illocutionary act is performed indirectly by way of performing another» (Searle, 1975).

(5) Can you pass the salt ?

Interpreted directly, (5) is a question, and the answer to it is either «yes» or «no». Usually (for instance at the dinner table), however, it is indirectly interpreted as a request, in which case the appropriate response is rather the passing of the salt. The standard analysis of this phenomenon is based on Grice's (1975) cooperative principle. According to this analysis, participants in conversations are maximally cooperative : they say only what is pertinent – they convey the most using the minimum of their and their interlocutor's resources. Consequently, uttered at a dinner and

interpreted as a question, (5) constitutes a violation of the cooperative principle. The speaker knows that the hearer can, in fact, pass the salt, and the hearer knows that he does. When the speaker poses question (5), then, he is not abiding by the assumed conversational contract. Rather than drawing this undesirable conclusion, the hearer concludes that (5) does not mean what it appears to, and he interprets it (by means of a transformation called conversational implicature) in an indirect fashion. While this analysis has been the basis for both linguistic (Gordon and Lakoff, 1971) and psychological research (Clark and Lucy, 1975), it seems to me to be conceptually flawed. In order to conclude that the cooperative principle is violated, the hearer has to arrive at a global interpretation of the context. In our example, he would have to realize that the participants in the conversation are engaged in eating behaviour, that there is a salt shaker which is closer to him than to the speaker, his interlocutor, and that he (the speaker) is in need of it. What this amounts to is that the very mechanism that assumedly detects the violation of the cooperative principle is the one which constitutes the comprehension of the so-called indirect reading of the speech act in question. If so, however, then the decypherment of the direct meaning and the employment of the conversational implicature both become utterly superfluous. In other words, not only is the so-called indirect reading not dependent on the so-called direct one (cf. Clark, 1979) but, in fact, the former reading is primary and the latter secondary (or derivative).

These considerations conclude the (schematic) refutation of proposition (2) of (*) ; they also serve as the basis for the refutation of proposition (3). The primacy of metaphor implies that in every communication the number of sources of information is unconstrained. When talking, one not only conveys information by words, but also by tone of voice, gesture, and facial expression. In other words, in confronting the other, one fully exposes oneself. Clearly, this is a rather uneasy situation, and logically, it should have inhibited all communication. What keeps communication possible is the fact that others behave as if they do not see what they see, as if they do not hear what they hear. In other words, the fundamental principle that governs conversation is not a principle of cooperation a la Grice but rather a gentlemanly trust to ignore. Thus, it is not the case that participants in conversations make an effort to convey as much information as possible using the minimum of resources. Rather, each participant trusts that the other will ignore all information available to him except that within the constrained focal context of the situation. In a

scientific meeting only the very verbal utterances are within the permissible realm, in a social interaction the realm is expanded and in an intimate encounter it is even less constrained. The peculiarity of a psychoanalytical session is that it defines a context in which nothing is to be ignored and everything is pertinent. To transfer the rules defining this particular context to the context of everyday interaction constitutes a psychopathological behaviour : specifically, the schizophrenic cannot constrain his sensitivity, whereas the paranoid does not trust his interlocutor's ignorance.

The primacy of contextual considerations leads to the refutation of proposition (4) of (*). Clearly, the hearer is one determinant of context. The semantic factors may be the same, yet given different speaker-hearer coupling the verbal scenario may be totally different. An example was noted by Rumelhart (1974) and Norman (1973) who observed that while (7), (8) and (9) are all true answers to a question such as (6), they are not equally adequate :

(6) Where is the Empire State Building ?
(7) In the United States.
(8) In New York City.
(9) On 34th Street.

The adequacy of the answers, it appears, varies with the physical distance between the participants in the conversation and the target of the question. Specifically, (7) would be appropriate in Israel, for instance, (8) in California and (9) in New York City. In other words, question-answering behaviour does not receive a full account within the realm of semantics (a realm defined by the notions of truth and falsehood), but it necessitates the further consideration of pragmatic (contextual) factors. (For further empirical psychological research to this effect, see Shanon, 1984b). Furthermore, it is also the case that for the same speaker and for the same message, different hearers may compute different interpretations which will reflect their beliefs and interests. This hermeneutic pattern (Habermas, 1979) implies that there is no reason whatsoever for comprehension to be the inverse of production : no regular, systematic relationship need hold between the two.

By now the refutation of proposition (1) of (*) should be clear. To say that language is the expression of thoughts is tantamount to saying that meaning is based on the mental representations of semantic information. The entire foregoing analysis attests against the validity of this

characterization. Given that the meanings of messages are context-dependent and since contexts are unconstrained and even vary with hearers, words may not be viewed as the reflections of the covert conceptual representations which underly them, but rather as the overt substrates upon which conversing interlocutors may act. This last conclusion defines a break with the standard cognitive perspective, for it implies that semantic representation cannot be the basis for the modelling of language and thought processes. The conclusion may be justified on both substantive and methodological grounds. The substantive argument is the corollary of our discussion of proposition (2) : if the meanings of words cannot be fixed by semantic definitions, they cannot be exhausted by mental representations either. Exhaustive characterizations of meanings would require the unconstrained modification of representations (modifications which are reminiscent of the epicycles of Ptolemian theory) as well as an unconstrained number of representations. Both accounts hold against structured representations constituting the specifiers of meaning. The foregoing remark, note, does not imply that there are no mental specifications of meaning. Clearly, there are different words in the language (and different languages have different words) and speakers differentiate between them. The particular lexical distinctions of the language should be mentally represented. As suggested by our discussion, however, these are minimal (neither sufficient nor necessary) specifications guiding the process of interpretation. Given that the meanings of words cannot be fixed by semantic representations and since what is represented cannot exhaust these meanings, we conclude that words are not the reflections of meanings which are covertly represented in the mind but rather the bases upon which meanings can be constructed.

The methodological argument is analagous to the ones invoked in the analysis of metaphors and indirect speech acts. Thus, consider the structure of the general theory of communication. The moral of our discussion is that such a general theory has to include as one of its components a model of human action in the world. It is also clear that a component specifying whatever is arbitrary in each particular language (its lexicon, its syntax) is needed as well. The question is whether a third, intermediate component of semantic representations is further required between the two components noted. We have seen that semantic considerations cannot be separated from the more general pragmatic ones, and that the consideration of the latter is, usually, needed. Thus, from a theoretical point of view, there is no principle of demarcation by which the contextual considerations may be

factored out. Hence, by parsimony, representation need not be postulated as a distinct component of the general theory of communication.

The foregoing discussion, I should emphasize, does not imply that particular representations may not exist in people's minds. Clearly, on the basis of their beliefs, experience and practices, people may fix specific mental structures and shelter them from the fluctuations of context, thereby defining them as semantic representations. These representations will save mental resources in that they will not require de novo generation with every performance. What is claimed here, rather, is that these representations are the products of, not the basis for, cognitive activity. The postulations of representation, in other words, cannot constitute a final explanation for cognitive functioning ; rather, it is a cognitive phenomenon (perhaps the most important one) that has to be explained.

The foregoing critique of (*) suggests a fundamental reversal in cognitive-psychological perspective :

(**) It is not the case that semantics is primary and pragmatics is derivative, but conversely, pragmatics is primary and semantics is derived.

In particular :

(a) It is not the case that well-defined literal meaning is the basis from which contextual-metaphoric meaning is derived, but rather context is primary and literal meaning is the product of its fixation.
(b) It is not the case that direct speech acts are basic and the indirect ones derived ; rather, the converse is the case.
(c) It is not the case that verbal communication is governed by cooperation which maximizes information ; rather, at its heart are processes which filter out information.
(d) It is not the case that representation is the basis for cognitive processing ; rather, representation is the product of such processing.

The reversal noted may, on first glance, appear peculiar, but further inspection suggests that actually it implies a more natural ordering of things. Specifically, under the standard view it appears that states of affairs which are phenomenologically simple are theoretically characterized as complex, and ones which are phenomenologically complex are characterized as simple. This generates curious puzzles and defines unnatural global patterns between phenomena. By contrast, the reversal of perspective implies natural orderings and marks sound relationships between phenomena. Thus, consider the following phenomenological domains :

A. Children's language. Children acquire the pragmatic aspects of language before they master the semantic ones (see Bates, 1976 ; Bruner, 1975 ; Halliday, 1975 ; and MacNamara, 1977). If, chronologically, the pragmatic use preceeds the semantic one, it is only natural to assume that it (the former) is also simpler. This order of complexity conforms with the reversed perspective proposed here, not with the standard one. Furthermore, the reversed perspective places the developing stage of children's language between non-verbal communication on the one hand, and fully articulated verbal communication on the other hand. The standard perspective, by contrast, would place semantic behavior in the middle, between non-verbal communication and linguistic pragmatics. Clearly, the first order is natural, the second is not.

B. Infra-human communication. An analogous argument holds with respect to the communication of animals, a communication which is not semantic in the strict sense, but one which pertains to the general acting of the organism in the world. For obvious phylogenetic considerations, it is only reasonable to regard it as simpler than any human communicative behaviour. This natural order of complexity is immediate only from the point of view of the reversal of perspective proposed here.

C. Non-verbal communication and body-language. This set of phenomena is noted as a natural extension to the phenomena considered in (A) and (B) above. Specifically, non-verbal communication and body-language consitute the point where action in the world and inter-personal communication meet. Thus, a gesture may be viewed as the limiting case of a speech act such as (5), whereas the body and face of a person offer a non-mediated understanding of him (Indeed, a basic postulate of clinical psychology is that the patient's manner of talking may be more revealing than the context of what he says, cf., for example, Greenson, 1968). The saying «the eyes tell everything» is not for nothing. Any attempt to translate this multifarious information into words is critically problematic. There is no single verbal phrase which is one, exhaustive rendering of a physical expression, and descriptions of some physical expressions may require narrative sequences which are, for all practical purposes, unconstrained. Is the facial expression, the posture or the gesture the condensed form upon which the rich multitude (perhaps an infinity) of underlying representations converges ? It would be much simpler to say that the physical expressions do not denote anything. They simply are, and the linguistic descriptions are derivative articulations of particular aspects of them.

D. Psychoanalysis. Following Freudian analysis (Freud, 1900), two types of cognitive processes are distinguished : the primary ones which govern primitive, irrational thinking, including the workings of the unconscious, and the secondary ones, which govern rational, conscious thinking. It is evident that both phenomenologically and from the theoretical perspective of psychoanalysis the primary processes are simpler than the secondary ones. It is also the case that the former are much more metaphorical than the latter. A natural order of complexity is attained, then, only from the reversed perspective of (**). Indeed, if the ill-defined, condensed metaphorical senses are to be viewed as derived from the fixed, well-articulated literal ones, we would have to face a curious state of affairs : when idle and asleep we can all generate dramatic happenings which only a few of us (the rather talented ones at that !) can compose with much effort by day. An analogous state of affairs is encountered in the psychoanalytic process. Freud (1964) likened this process to an archeological excavation of the mind in which hidden information, blocked by childhood amnesia and censorial mechanisms is retrieved. Would we want to say, then, that as a rule, the child knew all that which for the adult is so difficult to perceive ? An alternative perspective is to view human actions as holistic undifferentiated patterns and the psychoanalytic process as an attempt to transform these patterns and fix them so that they are conceptually grasped and verbally articulated. In this process, out of the rich but amorphous emotional substrate particular forms of representation are being created.

E. Writing. Teachers, students, scientists and laymen all know that writing exactly what one thinks is not simple. From the perspective of (*) this banal fact appears extremely puzzling. Specifically, if proposition (2) of (*) is correct, nothing should have been simpler. The fact that writing is difficult suggests that the language of thought and the language of writing are markedly different. The former is metaphoric, whereas the latter forces the exactitude of literal meaning, which is artificial. An analogous argument may be made on the level of the development of culture. It is no accident, I think, that poetry developed before prose, and that the writing of banal scientific articles is an extremely recent cultural phenomenon. The primacy of poetry is a direct correlate of the primacy of metaphor, and hence the pattern receives a natural characterization only from the point of view of the reversed cognitive perspective advocated here.

F. Anthropology. Consider the rituals of so-called primitive societies ; for instance those employed for curing, for gaining mastery over nature, and for divination. Are the utterances made in these rituals fixed ? Can they at all be verified ? To approach the rituals from such a scientific perspective is, I think, missing the whole point. The scientific perspective assumes that the utterances in question define semantic relations between signifiers and things signified. This, however, is not the case. The utterances are not semantic signs, but rather pragmatic acts which are, like dreams and poems, direct expressions of the metaphoric dynamics of the human psyche ; as such they precede any representational characterization.

Interestingly enough, parallel patterns are also noted in the biological domain. Properly speaking, of course, this offers no additional argument in favor of the reversal (**), yet, it is unlikely that the parallelism is accidental, hence it is, I think, relevant.

G. Biology. Complex patterns of both development and recognition encoutered in various biological domains seem to be processes of selection : immunological recognition, Darwinian evolution and even learning (see Young, 1979). Standardly, the selection is regarded as the choice between priorly given entities, and in some cases, such as immunology and genetics, the choice is very much like the processing of representations. Yet, as noted by Varela (1979), the selection need not be viewed as a process that chooses amongst a set of already existing candidates. Rather, it may very well amount to the realization of actual particulars by the channeling of a potential whole. If there is to be a non-representational cognition there might as well be a non-representational biology.

The different cognitive domains noted all attest to the same basic pattern. It is not one in which fixed, well-defined entities are shuffled and manipulated in the boxes of the mind. Rather, the pattern is one in which an amorphous whole is fixated so as to generate particular crystalizations. In this process, the undifferentiated becomes particularized and articulated and the direct contact of one's being with the world in which one acts gives place to a cleavage that introduces the distinction between signifiers and things signified. This differentiation is encountered diachronically as well as synchronically. Diachronically, the differentiation is the guiding force driving both ontogenetic and phylogenetic development ; synchronically, the differentiation constitutes man's ability to make himself locally (in time and in context) independent of the environment in which he is immersed by the very fact that he is an organism living in the world. It is this independence, which is in some cases permanent (thus giving rise to particular semantic representations), but in most others, temporary, which

allows us not to be metaphoric, to engage in rational thinking, to have memories of the past and plans for the future, and to be reflectively conscious.

The series of phenomenological patterns noted above, along with the picture just described, bear important ramifications for actual cognitive research. They both define new questions and suggest new formulations which may answer them. Rather than asking what are the representations people have in their minds and what are the computational operations associated with them, the cognitive scientist is invited to examine questions like the following : how are representations generated, how are meanings fixed, and how is information ignored. To answer these questions various new cognitive functions will be offered : functions of abstraction, which enable one to disregard the medium of a message and to focus on the information it conveys ; functions of ignorance, which allow one to disregard irrelevant information ; functions of particularization, which extract specified meaning from their overall metaphoric contexts, and functions of crystalization, which fix semantic entities and make them distinct from the general cognitive milieu in which they occur.

Coming to the end of our discussion, let us return to the bird question with which we started and consider an alternative metaphor to that of the box and the package. The birds, it appears, do not say anything. Due to factors which are external to the communicative process – the temperature rises, the wind blows – one bird wakes up, and because of its biological make-up – again an external factor – it emits a call. The process repeats itself in a cascade reaction until all the birds have woken up, at which point a stable state is attained. Thus, order was achieved by the progressive propagation, in the given substrate, of a perturbation initially triggered at random (cf. Atlan, 1979). In other words a package of semantic information was never transferred as a message. And the alternative metaphor ? I suggest one which regards communication as the dropping of a pebble into a lake. The pebble generates a series of perturbations whose pattern is determined not only by the pebble's structure and by the manner of its fall, but also by the form of the lake and whatever surrounds it. The hypothetical ornithological example just described is a limiting case in which the pebble has no significant internal structure, it is simply the point trigger of a perturbation. In human communication the pebbles, the words,

have a mass and shape of their own, their lexical specifications, and these do contribute to the communicative act. These specifications, however, do not fully fix the meanings of utterances ; rather, they serve as devices for the channelling of the currents in the otherwise undifferentiated contextual lake. What import these will eventually have will depend on the context of utterance, the lake, and the recipient, the banks [2].

And yet, even the metaphor of the pebble and the lake suffers from some materialistic reification, that is from the very fundamental weakness of the metaphor of the box and the package. Our discussion of representation suggests that the mind is a lake which generates its own pebbles. It is a liquid which can be locally crystalized. At times the crystalizations are rendered into pebbles which erupt out, at other times they are kept as islands of relative stability and at other times still they dissolve back into the liquid which produced them.

Acknowledgements

This paper is based on lectures delivered at the Cerisy Colloquium on auto-organization in june, 1981 and at the First European Workshop on Cognitive and Neuropsychology held at Bressanone in January, 1983. The ideas presented here were since developed into a comprehensive critique of the representational view of mind. A general sketch of the critique is presented in Shanon (1987) ; and an elaborate argument against the postulation of underlying semantic representations for the characterization of meaning in natural language, is presented in Shanon (1988). Thanks are due to Prof. Henri Atlan for helpful discussions, and to Helen Baron and Naomi Goldblum for their help with the preparation of this manuscript. The preparation of the manuscript was supported in part by the Martin and Claire Rabson endowment grant.

Footnotes

1. While practically all cognitive research is conducted within the framework of the representational perspective, a few exceptions should be noted : the theory of autopoiesis of Maturana and his students (Maturana, 1978 ; Maturana and Varela, 1980 ; Varela, 1979 ; and Winograd and Flores, 1986), the ecological approach to perception developed by Gibson and his followers (Gibson, 1966, 1979 ; Shaw and Turvey, 1980 ; Turvey, Shaw, Reed and Mace, 1981 ; for a general review see Michaels and Carello, 1981 ; and Zajonc's, 1980, model of emotion). Recently, models of neural networks have also been suggested as an alternative framework for cognitive research (see McClelland and Rumelhart, 1986 ; Rumelhart and MacClelland, 1986). These works differ from one another as well as from the present one in both subject matter and lines of argumentation, but essentially they all lead to the same fundamental appraisal, that the representational computational modelling of cognition is severely limited.

2. The human analog to the limiting case of bird song borders on the mystical. For interpersonal communication to be totally immersed in the context of discourse, intimate non-mediated understanding between people is needed. As noted in the closing phrases of Maturana (1978), in such cases silence, not language, is to reign (See also the end of Wittgenstein's Tractatus and, of course, the mystical writings of different religions). It is no accident, then, that in many fables, religious and otherwise (e.g. Hassidic tales), he who understands what animals say is not the scholar, but rather the withdrawn sheperd without words.

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