Can Linguistics Contribute to the Study of Verbal Behavior?

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A number of publications during the last decade reveal a growing interest in linguistics and psycholinguistics among some radical behaviorists, who have proposed a direct rapprochement between a formal analysis of language and a functional account. It is argued that whereas function has to do with the circumstances under which verbal behavior is emitted, structure has to do with its "internal organization," the ways in which sentences or parts thereof are presumably interrelated. These are said to be different dimensions of verbal behavior; together they should lead toward a coherent psychology of language. But psychologists bent on incorporating techniques from linguistics should be aware of its underlying assumptions, lest their work be deflected in essentially unproductive directions. The line between rapprochement and subservience is thin indeed, as the extant literature shows. This paper traces the development of mainstream contemporary psycholinguistics and examines the linguist's assumptions about the subject matter in the light of a behavioral analysis. The possibility of an effective reconciliation seems to be a long way off.

A recent article in *The Behavior Analyst* concludes that a terminology based on the notion of generalization class has advantages over other terminologies. Concepts, categories, and the like, are to be rejected because they

bring the psychologist to ignore the dependence . . . on the nature of the original entities. This may be the reason why some of the treatments of so-called cognitive psychologists are methodologically unsatisfactory. (Stemmer, 1980)

This should hardly come as a surprise to the behavior analyst. Stemmer draws a distinction between "normal" generalization classes, which are strongly determined by genetic factors, and "uncommon" generalization classes, which are determined, to a great extent, by experience. (Why so bold a tone for the former and so guarded a style for the latter?) The author brings his discussion to a close with a brief reference to language. Rather surprisingly, he does so in terms of the capacity to acquire uncommon generalization classes, which play a fundamental role in human life, especially in language acquisition. This capacity, which in his view has been neglected,

underlies the learning of such terms as *toy, clothes, furniture* and the creative use of language in general, i.e.,

The capacity . . . to understand and to produce sentences we have never heard before

We further read,

. . . this capacity appears to stand behind the psychological reality of syntactic categories, such as the category of noun or of verb phrases . . . such syntactic categories must be available for children in order to enable them to learn a generative grammar. (p. 47)

So, when it comes to language we still need categories after all! The explicit reference given is Chomsky (1965). Is not language a form of behavior?

Statements of the sort are merely symptomatic of a broader trend. It was not so long ago that the *Journal of the Experimental Analysis of Behavior* published the following sentences: "It may be more accurate to say that some internal trace or representation may serve as a cue" and "S(ubjects) learned a representation of the sentence" (cf., Branch & Malagodi, 1980, for more).

It is perhaps not too far-fetched to suggest that this "sudden" fascination with internal cues, mental representations, capacities, and so on, has been greatly facilitated, at least among radical behaviorists, by early attempts to translate a certain brand of formal analysis of natural language into behavioral terms (Catania, 1972). After discussing the

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status of such formal concerns as language universals, transformations, syntax and semantics, hierarchical organization, linguistic competence, etc., Catania summarized his position as follows,

The controversy between cognitive and behavioral accounts is in part simply a matter of speaking of the same things in different ways. But sometimes also, as when we fail to distinguish between structural and functional problems, controversies arise because we mistakenly speak of different things as if they were the same. (p. 15)

Only a year later Catania (1973) writes.

It is not unfashionable these days to be a mentalist; only dualism is reprehensible. . . . In fact, the possibility of an internally consistent mentalism is implicit in the notion that a behavioral translation of mental or cognitive vocabularies is feasible. (p. 441)

. . . psychogenesis must deal with the development of the organism's behavioral or mental capacities; this is what the psychology of learning is supposed to be about. (p. 441)

Conciliatory repertoires must have been at an unusually high strength at the time. Segal (1975) is perfectly aware that

. . . the direction of research on verbal behavior, the different kinds of data that behaviorists and psycholinguists collect, the different methods of collecting them, and the different conclusions drawn from them (p. 158)

differ; even so she writes:

. . . the languages, the linguistic and the behavioral, are roughly equivalent, that is they display comparable respect for the phenomenal complexities of grammatical processes. (p. 154)

It is perhaps only natural that psychologists concerned with verbal behavior turn to the linguist for help. But incorporation of techniques and procedures from another field is always a delicate matter—one that should not be taken lightly. So it is probably reasonable to ask whether linguistics can contribute to the study of verbal behavior. To answer this question we must look closely at the nature of the linguist's data, what he does with them and, above all, what are his underlying assumptions about the subject matter.

THE STRUCTURAL OUTLOOK

Origins

It is customary to trace structuralism in

linguistics to F. de Saussure (1916), who conceived language as "a system where everything is related to everything else and which recognizes no rule but its own." Subsequent developments have been predicated on this view of the subject matter to this very day.

Structuralism is brought about by the need to go beyond individual speech utterances and zero in on features shared by the members of a speech community. Thus viewed, language becomes an abstraction; but the study of language as an abstraction is hardly an improvement on previous practices and forces similar conceptual and methodological twists. When the description of the so-called "system" is brought to bear on the actual activity of speakers and listeners, one inevitably brings in ostensibly undemonstrated notions. Thus, de Saussure's *la langue*, the system, is only part of the over-all verbal phenomenon, *le langage*, which is then referred to a *faculte de langage*. This faculty of language makes possible *la parole*, the speech of individuals which constitutes, so to speak, the data from which *la langue* or abstract system is abstracted.

Under the leadership of L. Bloomfield, structural linguistics in America eschewed the mentalistic outlook and emphasized the actual speech utterances. For this reason, as well as for his stand on the "problem" of meaning, much has been made in recent years of Bloomfield's behaviorism. It is true that in his attempt to set up an autonomous science of language Bloomfield insisted on dispensing with what he called "random theorizing," "teleological explanations," and "premature psychologizing." But does that alone make him a behaviorist?

While he often appealed to terms like "stimulus," "situation," and "response," the case has been overstated. What Bloomfield had to say about meaning was often inconsistent and ultimately proved less than constructive: in one case, meaning is the situation in which the speaker utters a linguistic form and the response it evokes in the listener; in another, meaning would embrace relations between speech forms, on the one

hand, and objects, events, and the persons participating in the speech event, on the other. Rather surprisingly, he also includes relations between speech forms and other speech forms. Elsewhere Bloomfield (1927) takes Jespersen (1924) to task for considering forms apart from meaning and "the actual necessities and conveniences of communication," which do not include the "thoughts and feelings of speakers." In Bloomfield's view, these are a matter of *parole*; since prediction of what somebody will say and how he will say it is not possible (as he put it), linguistics must concentrate on *langue*,

. . . those features . . . which are common to all speakers of a community—the phonemes, grammatical categories, lexicon, and so on. These are abstractions, for they are only (recurrent) partial features of speech utterances . . . They form a rigid system—so rigid that without adequate physiological information and psychology in a state of chaos, we are nevertheless able to subject it to scientific treatment. (p. 144)

By 1943 Bloomfield seems to have reduced meaning to the traditional notion of reference and though still maintaining that both form and meaning must be taken into account in any linguistic description, he insists that "in all study of language *we must start from forms* and not from meanings" (emphasis added).

Though clearly insightful at times, his views on meaning were certainly outside the pale of a narrow S-R psychology, to which he sometimes explicitly appealed. His ultimate retreat to this kind of formalism was probably inevitable; it was also fraught with difficulties, as subsequent workers found out.¹

Taxonomic Period

In the 1940's and 1950's linguists emphasized data, generally from as large a variety of languages as possible. They did much field work, later to analyze their recorded samples of speech. But the data gathered reflected primarily a concern with form, not the doings of speakers and listeners in the course of their everyday in-

teraction. In the words of Harris and Voegelin (1953),

As long as our informant repeats what he said, or even what we have said, or as long as he repeats the morphemes we seek in a repetition of the environment in which we are interested, we have an utterance of the language, that is, a combination of phonemes and morphemes of the language. (p. 66)

This is "one of the indications that we are dealing with authentic linguistic material." "Environment" here means, of course, linguistic environment, not environment in the behavioral sense. Harris and Voegelin's classic paper is a plea to go beyond the merely "morphological" stage of data gathering and to elicit materials that will reveal syntactic properties as well, including intersentence relations. As to the nature of the task itself, they go on to say,

Eliciting is therefore a method of selecting utterances out of the great body of utterances which an informant may say in the course of speaking his language. . . . the linguist is not studying the frequency of occurrence of elements or combinations, but only the fact that they occur. (p. 74)

It goes without saying that the data thus gathered were narrowly determined by the eliciting setting itself. As a result, decisions over segmentation and classification of those recurrent partials that Bloomfield had talked about became difficult and often arbitrary. Problems proliferated from the comparison of forms with forms (supplemented with an unavoidable measure of implicit meaning); so did the number of classes and subclasses of morphemes set up to account for them. To cite but one example, Hockett (1954) reports five different solutions, much discussed in the literature of the time, for the derivation of *took* from *take*. This paper was also the first explicit argument for the construction of models in linguistics and was to have enormous repercussions (not always acknowledged).

By and large, descriptions of this period were little more than inventories of items present in a corpus of data together with their contextual variants; hence the label "taxonomic" (and often, oddly enough, "taxonomic-behaviorist"!) later assigned to them. To make a long story short, a more complete characterization of the times would include: (1) a limited yet

¹No history of American structuralism, however sketchy, can ignore the enormous contribution of E. Sapir. Influential though he has been throughout, it was nonetheless Bloomfield's methodology that prevailed (cf., Joos, 1957).

growing interest in syntax; (2) a concern with “predictive power”—descriptive devices should account for data outside the corpus at hand; (3) the need for rules; (4) Harris’ (1952) introduction of the notion of transformation into linguistics, which opened the door for the unabashed mathematization of the field.

Linguists of this period were unquestionably anchored in data, narrow as these might be. It would be tempting to say that they emphasized topography rather than function. But this would be inaccurate: with the qualified exception of articulatory phonetics, they did not deal with the actual responses but with their *traces*, acoustic or, more likely, graphic (through transcriptive techniques—which alone raise a host of methodological problems). The emphasis on structure is the result of these self-imposed limitations and the belief that valid, non-arbitrary units of analysis will emerge, somehow, from the comparison of forms with forms. (Note 1)

But, of course, languages do not exist apart from speakers and listeners; when a community disappears as such and we are left with the fossils of their verbal activity, we call their “language” dead.

Generative Period

The advent of the generative-transformational school of linguistics and psycholinguists must be judged against this background. Unlike his predecessors, Chomsky did speak about speakers and listeners (rather carefully at first); in fact, it is probably safe to say that his overwhelming impact is due to this fact. In any case, this is the reason why we are talking about linguistics in the present connection. It is no coincidence that psychologists concerned with verbal behavior turn to generative grammar rather than to any of the other available methods of linguistic analysis.

Chomsky’s interest in speakers and listeners came in a round-about way. Back in 1957 he was interested in what he called “the justification of grammars”: linguistic descriptions should yield insight into speaking and understanding. In view of the inherent arbitrariness of structural analysis, the question was far from irrele-

vant. Chomsky went on to argue that the linguist’s heuristic devices (which he termed “discovery procedures”) should be abandoned in favor of an “evaluation procedure.” Given two descriptions of the same data, which one should we select as the more adequate? This called for a metatheory which would dictate the form of individual descriptions. A grammar of a language became now a theory about that language; it is the task of linguistics to provide the necessary adequacy criteria. This metatheory was at first conceptualized as a machine with inputs and outputs; in go, say, two grammars and the data and out comes the selected grammar—the set of rules that best accounts for class *K* of the data (Quine’s well-known formulation of “infinity”) in the simplest possible way.²

The remedy proved worse than the malady. The entire linguistic enterprise receded to the level of theoretical discussion. Data are now by and large a handful of putative examples (generally from English) culled to illustrate a set of problems of dubious relevance (we will see a number of them in the sequel). The trend has persisted: Chomsky (1965), a favorite among psycholinguists and contaminated psychologists, is based on almost literally a handful of fully worked out cases.

Associated with evaluation is of course the so-called “explanatory power” of linguistic theory. There must be a way to select one among the various sets of rules that will cover the same domain. Predictably, the machine with inputs and outputs was not as aseptic as it looked. It eventually became a built-in evaluation procedure whereby the child, faced with variegated data, generates hypotheses about these data and finally selects the right set of rules (presumably those indicated by generative-transformational

²Quine (1953) proposed a four-level characterization which goes from *H* (the simple finite corpus of data already gathered) through *I* (*H* plus what might be gathered in today’s field trip) on to *J* (*I* plus those utterances which, though never collected, might be produced by a native speaker) to *K* or infinity, which includes all those “utterances” which might conceivably never be uttered but which, so to speak, are constructed according to the rules of the language.

grammarians). The initial false step is of course the view that all that is needed for language learning is (passive) exposure to a verbal environment—by which Chomsky et al. mean the acoustic effects of other people's speech. These are the "data", necessarily finite, on the basis of which the child, very much like a linguist, will construct the grammar that will allow him to go on producing and understanding an indefinite number of sentences. (This is the gist of the first indented quotation above, which is standard phraseology.) Linguistics should now be concerned with "competence," the underlying mental-innate apparatus which permits such a feat. Without competence there would be no language learning, nor would verbal performance be possible—we are told over and over.

Psycholinguistics

The competence-performance distinction has determined the course of psycholinguistics as an interdisciplinary field. The proposal that a formulation of linguistic competence based on a priori theory of linguistic structure constitutes a prerequisite for the study of verbal performance has been taken seriously. Perhaps this should not be too surprising. Psycholinguistics was originally conceived as the convergence of linguistics, information measurement, and learning theory (Osgood & Sebeok, 1954). It may be that, under the circumstances, some specialists expected to find in the generative-grammarian's "explanatory claims" a measure of much needed direction for an essentially heterogeneous field. As a result, psycholinguists have found themselves progressively more committed to the justification of the formal outlook on language (cf., Fillenbaum, 1971; Johnson-Laird, 1974; Miller, 1962, 1965).

Individual performance has been discredited as a source of data from the start. It has simply been ruled out by decree. The disturbing fact is how readily experts have submitted to the view that performance is inherently chaotic ("degenerate" is the usual epithet) and that the object of study must therefore recede to another level altogether. The

field of behavior has known similar situations before (Skinner, 1961).

The present state of affairs is illustrated in a recent chapter (Smith, 1979) presumably written to enlighten psychologists: "A language is a rule-governed system. Human beings have tacit knowledge of these rules, or have 'internalized' them. A grammar attempts to make these rules explicit (p. 54)."

How far experts have gone from the data can be seen in the following two statements by the same writer:

Linguistics is the formal study of language. It attempts to provide a definition of the notion 'possible human language' . . . As language provides the most obvious and most acceptable manifestation of human thought, the interests of linguistics are subsumed under those of cognitive psychology. (p. 3)

In point of fact, cognitive psychology, in need of direction itself, has gathered considerable strength from this latter-day return to mentalism and nativism in language studies.

A definition of grammar as a device that generates all and only the grammatical sentences of a language (and assigns structure to them) is an elegant construct. But a definition of language as a recursively enumerable set amounts to the ultimate reification of that rigid system of forms which knows no other rule but its own (to blend Bloomfield's and de Saussure's definitions). Chomsky in particular often speaks of language as a "tool or instrument." A treatment of natural language on the pattern of the formal sciences makes the strong assumption that natural languages *can* be effectively described in formal terms. If successful, the rules of the resulting grammar permit a kind of prediction of novel "utterances." But this provides, at best, an indirect form of prediction of behavior from behavior alone.³

And so things stand. The details of the formal apparatus keep changing and one

³It is perhaps fitting to point out that after 25 years of feverish activity generative grammarians are nowhere near to providing anything like a reasonably complete grammar of English. Arguments still center around metatheory and actual descriptions remain fragmentary and at variance with one another (cf., Gross, 1979).

need not wonder why. For instance, witness, e.g., the ongoing revision of the distinction between "deep" and "surface" structure, which was hailed as a turning point in linguistics some 15 years ago. Whereas surface structures account for relations between elements of a sentence on the basis of their "linear sequencing," deep structures reveal "inherent" grammatical relations not immediately apparent from a surface analysis. Sentences like *John expected mother to bring a present* and *John persuaded mother to bring a present* share the same surface structure (nominal + verb + nominal + marked infinitive + determiner + nominal). A "deeper" analysis shows, however, an underlying difference between them, which stems from the relation between *expected* and *persuaded* and what follows them: whereas *persuaded* is directly related only to *mother*, *expected* is related to the entire sequence coming after it. But the point is not, or should not be, whether there are in the language (whatever this may mean) utterances made up of apparently related morpheme sequences, but the status of this relation so far as the speaker is concerned.

There have been good "formal" reasons all along to disregard the deep-surface distinction. More important for us, what becomes of the proposal (Segal, 1977) to replace the autoclitic formula (difficult as this may be) with the deep-surface dichotomy? More generally, what becomes of the same writer's statement that competence : performance :: structure : function?

To say that the structural model approach in psycholinguistics has generated a great deal of research is of merely anecdotal interest unless someone can show that this research is geared toward something more than testing, at every stage, the plausibility of the postulated formal relations or the cognitive processes invoked in order to turn something that could easily become a game with signs into something significant.⁴

⁴ Appropriately, e.g., Blumenthal (1970) labels the section on prototypical research on the Chomskian model "The Psychology of the Sentence." Nor have

FIVE BASIC ASSUMPTIONS

What is then the working conception of language that ensues from contemporary formulations?

Natural languages are assumed to be made up of an infinite set of grammatical sentences. The emphasis being on syntax, the sentence becomes the initial category; presumably we should expect to stay within its boundaries. Fixed structural assignments are taken for granted, as well as their immediate relevance to both speaking and understanding. These are construed as equally a matter of linguistic rule; the rules of the grammar specify the sound-meaning pairs which constitute the sentences of the language.⁵

The psychologist tempted to adopt a formal descriptive framework should be aware of its underlying assumptions. Elsewhere I have argued (Julià 1980; also, Julià, in press) that close inspection of the formal outlook in general, and Chomsky's in particular, reveals five of these assumptions. Briefly, these are:

(a) *Infinity*. Modern linguistics capitalizes on the notion that we can say and understand an indefinite number of sequences. These (and many more) are what the grammar generates. For empirical significance, however, we must inquire into the relation between the two sets.

There is a vast difference between a theoretical formulation of what *could* be in a language (as the expression goes) and the actual behavior of speakers and listeners. Presented with numberless well-formed and perfectly *real* English utterances, all the average listener can probably say is that "they're English." But the real issue is "intelligibility" or, more precisely, effectiveness: the behavior of the speaker is shaped by its effects on his

things subsequently changed in any substantial way despite growing disenchantment with the so-called "psychological reality" of linguistic constructs and the simultaneous realization that "larger contexts" (linguistic and non-linguistic) must also be taken into account (Danks & Glucksberg, 1980). For a behavioral analysis of the nature and status of such research, see Julià (in press).

⁵ For a different perspective, see, however, Harris (1965) and Hiz (1967, 1970).

listener. Naturally, formal analysis emphasizes formal properties—in particular the formal properties of sentences. But in the absence of grossly distorted phonological features, thematic properties are far more important. The units revealed in a functional analysis rarely coincide with the categories the linguist simply takes for granted: we can question, for example, that we speak in sentences at all.

We do say and (sometimes) understand things we have never heard before. But we do many other things we have never done before—where no claims of “ceaseless creativity” are made and no recursive characterizations are proposed. The fundamental problem lies in a view of language as made up of things, say, words that are put together to form sentences or pulled apart in order to understand them.⁶

(b) *Grammaticalness*. Similar remarks apply to the “problem” of well-formedness. Here too discussions are tied up with the false notion that ordinary speakers and listeners, like linguists, push words around.

We do make mistakes—a fact that has been vastly exaggerated in the process of arguing for descriptions based on an idealized speaker-listener. But these mistakes have nothing to do with the artificial collocations of words usually brought to bear on grammaticalness.

⁶Witness a growing concern with the manipulation of structurally defined response classes in the experimental literature (cf., Lovaas & Newsom, 1976, and references cited there). Similarly, a number of widely cited studies define their problem in terms of “generative sentence usage,” “novel and grammatical utterances,” “the productive use of . . .” (given types of morphemes), and so on—all of which suggest a reification of language as something people “use” (Clark & Sherman, 1975; Lutzker & Sherman, 1974; Sailor, 1971; Schumaker & Sherman, 1970; Whitehurst, 1972, among others). Much of the confusion might innocently stem from the term ‘generate’: linguistics borrowed the term from the formal sciences, where it simply means ‘specify’; the rules which define a system specify the permissible combinations of its elements. Instead, the psychologist casually speaking of “generating behavior” literally means “producing” or “bringing the behavior about”; it is the controlling variables, natural or arranged, that do the generating (cf. also the discussion of rules below).

Some classics: *Furiously sleep ideas green colorless* (ungrammatical as well as meaningless) vs. *Colorless green ideas sleep furiously* (which is at least grammatical).

Interestingly enough, such examples are generally described as “sequences of unrelated words.” The question immediately should be asked (but is not), What does the notion of “unrelated words” suggest? Verbal segments, whether these are words or not, do not occur together by chance but for sound behavioral reasons. This is why certain patterns “feel right,” “make sense,” are easily responded to and remembered, and so on. People often misunderstand one another, but we can hardly expect grammaticalness as discussed by the linguist to shed any light into the relevant behavioral relations.

(c) *The Language-construct*. We do not go around “generating” sentences. We talk about different things in different ways depending on our current “interests,” audience, the place, the time, etc. Certain topics we simply avoid. People tell the truth (a basic notion in formal logic and some brands of linguistic semantics), but they also distort “the facts” through exaggeration, understatement or downright lying. Different fields and different people have different styles.

A formal-theoretical account is powerless before the all-important question: Why does verbal behavior occur when it does, and why does it have the form it has on every occasion?

The fact is that nobody speaks a natural language as a whole; we all speak and understand various “sublanguages.” When tallied against the facts, the grammar that is supposed to generate all and only the grammatical sentences of a language and most of the “subtleties” that follow from it become irrelevant constructs. So does the corresponding conception of language: natural languages are not well-defined systems. The answer lies again with the relevant contingencies.

(d) *Speaker≠Listener*. Linguistics has an ambiguous view of the role of the listener. The notion that grammatical descriptions should yield insight into the “use” of language is usually framed in

terms of the listener (see below); yet, as Sapon (1971) has pointed out, so far as the linguist is concerned, the listener begins to exist only when he begins to talk.

The prevailing linguistic philosophy claims to be neutral as between speaker and listener: grammatical descriptions cover the activity of both. This, however, directly contravenes experience: the behavior of the listener *qua* listener cannot be described in linguistic terms.

Furthermore, understanding precedes speaking in the normal "developmental process." The differences between so-called "active" and "passive" repertoires among adults have long been recognized: we are all in a position to understand a great deal more than we can say, and this is scarcely a matter of vocabulary alone. Speaking and understanding simply cannot be accounted for by one and the same description.⁷

(e) *Rules*. Do we then need two different sets of rules? The view that ordinary speaking and understanding are a matter of rule must of course be challenged altogether. Formal analysis culminates in the formulation of rules; the immediate implication is that they play a role in verbal behavior which they do not play elsewhere. But rules are to be found in the behavior of the analyst. A schedule of reinforcement can be thought of as a rule for reinforcing behavior; it does not necessarily describe the behavior of rats.⁸

Confusion along these lines is illustrated by an article in the operant

literature entitled "Procedures for the Acquisition of Syntax" (Robinson, 1977); also, by various proposals to reinterpret trees representing multioperant repertoires (Findley, 1962) as on a par with the hierarchical structures of, say, phrase structure grammar. If taken literally, accommodations of this sort can easily turn the field into an effort to find a behavioral reality for what are only convenient notational devices.

AMBIGUITIES

The problem of ambiguity brings all these points together. By and large, linguists deal with it on the basis of isolated textual examples; this is how *They are flying planes* and *The shooting of the hunters* have become classics. But what ambiguity can there be for the *speaker* (if such there be) of these "utterances"? The treatment of ambiguity clearly reflects the linguist's position with respect to the subject matter. He is a listener or reader of a very special sort: he responds to traces of verbal behavior and finds ways to assign structure to them. At best, linguists write grammars for the listener—as the emphasis on "decomposition" of sentences shows.

Catania (1973) argues, however, for structure as well as function in language studies. Taking his cue from Chomsky, he discusses the example *Dropping bombs can be dangerous*, which "has one of two structures depending on whether the speaker is concerned with the people in the air or those on the ground." He recognizes that structure will not help us choose between its two possible interpretations and is aware that if spoken rather than written, different stress patterns will make all the difference. (We could also mention the contribution of kinesic behavior to the total speech episode—which is often decisive.)

But of course we do not have one sentence but two: the fact that there are two possible "interpretations" suggests different independent variables; and when responses are a function of different variables they cannot be considered "the same response," no matter what their formal similarity may be. To insist that

⁷Much of the behavior of the understanding listener comes to resemble speaking. But even so, speaking and understanding have to be studied for what they are—each in terms of its determining variables.

⁸As Skinner (1966) has pointed out, "Nothing which could be called following a plan or applying a rule is observed when behavior is a product of the contingencies alone. To say that 'the child who learns a language has in some sense constructed the grammar for himself' is as misleading as to say that a dog which has learned to catch a ball has in some sense constructed the relevant part of the science of mechanics. Rules can be abstracted from the reinforcing contingencies in both cases, and once in existence they may be used as guides. The direct effect of the contingencies is of a different nature."

Dropping bombs can be dangerous is a sentence with two structures is to fall prey to unnecessary dualisms. Responses are uniquely determined.

It will not do to say that once uttered, the listener may still be faced with an ambiguous verbal stimulus and that he must assign a "reading" to it. Such a view is forced by the prevailing sentence atomism in linguistics. A response like this would simply not occur alone. The rare occasions when we must reckon that a sentence, phrase, etc. stands by itself and is ambiguous (take, e.g., *The shaping of a behaviorist*) are hardly a matter of grammar at all. It may take careful study of an entire paper to disambiguate its title.

Verbal behavior does not take place *in vacuo*, as most theoreticians are too wont to forget: speakers and listeners interact in nonverbal settings; moreover, segments of verbal behavior are usually preceded and/or followed by other verbal behavior—the speaker's own or his interlocutor's.

Adjacent verbal behavior often constitutes an important source of disambiguation. But schemes worked out on the basis of extended discourse still emphasize texts. In a sense they illustrate some of the special problems of the reader who, unlike the listener, does not have the current nonverbal environment to support his verbal history. The relevant intersentence relations resulting from such analyses need not apply to the spoken case: e.g., some so-called "referentials" change status as soon as the nonverbal environment is brought into the picture.

So, a multiplicity of cues usually come together to offset possible sources of ambiguity. Unlike the linguist, the ordinary listener does not have the luxury of unlimited time to compare sentences and try out different structural assignments. As Salzinger (1975) has pointed out, he is more likely to ask simply, "What do you mean?" The reader is likely to reread the text a number of times, ask someone else, or expose himself to supplementary materials.

This is not to say that ambiguity does not obtain sometimes: we often qualify our verbal behavior to prevent confusion;

on occasion we deliberately build ambiguity into what we say or write. But we are in no doubt as to what we mean. In the face of nontrivial sources of ambiguity, the listener or reader has no alternative but to come under the control of the contingencies governing the behavior of the speaker or writer. What is really at issue is highlighted by how we eventually "see the point" of an epigram or a metaphor "we have known all along." (Note 2)

ENVOI

It is perhaps time to go back to the question with which we began. It is clear that linguistics has become a highly sophisticated discipline; but it is also obvious that, as formulated, most of the problems it addresses are largely irrelevant to a functional account. We are looking for different things in different places and with different means.

The prevailing view that grammar is at the core of verbal activity overestimates the importance of grammar and plays down the multiple causation, plasticity, and variability of the units of analysis at issue (Skinner, 1957). This plasticity and variability may bother the formalist, who seeks universally valid descriptions. But such is the nature of the behavioral beast.

Current interest in semantics and pragmatics is at least in part a reaction to the notion that meaning is intrinsic to the sentences generated by the grammar. To that extent, it can perhaps be seen as a healthy trend. But the over-all outlook has not really changed. Although paying lip service to the individual speaker (e.g., through appeal to his "intentions"), experts are still largely concerned with structure and what is and is not "acceptable in the language" as a system. Its rules presumably describe what people "do" with sentences. Discussions still hinge on competence: disagreements among pragmatists often are brought to an end with some such acknowledgement as "I guess our intuitions differ."

Some fundamental differences of outlook should be clear: where as the linguist, in his concern with the language construct, deals at best with *traces* of behavior, the behavior analyst is in-

terested in the *behavior itself*. The rest follows from this: the commitment to *structure* leads, as we have seen, to a special concern with the listener. But structure, here as elsewhere, is a matter of organization of final products; and we know that the best way to account for final products is through the study of *function*, which implies the study of the individual organism: we are back with speakers and listeners in real life episodes.

The adoption of a formal frame of reference entails immediate decisions as to what constitute relevant questions, what are pertinent answers, and how we are to relate the former with the latter. In particular, a commitment to the analysis of sentences and parts thereof leads to a concentration on the response term of the contingencies and indirectly supports the view that responses can be analyzed as independent objects. This is what a functional account was supposed to set right.

Efforts at reconciliation are always laudable. But in view of the facts, any rapprochement between linguistics and an analysis of language as behavior which is verbal will take a great deal more than "some culling, some paraphrasing and interpreting, and some granting the benefit of the doubt," as Segal (1975) has phrased it. The ultimate question is whether the imported techniques yield greater insight into the properties of verbal repertoires; no matter how you look at it, the final questions remain functional (Julià, in press). We are less interested in translating formal frameworks into behavioral terms than in designing more effective techniques for the control of the subject matter in all its functional complexity.

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