

A Response To Sundberg and Michael

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Sundberg and Michael (1983) in their response to my (Place, 1981) criticism of Skinner's (1957) book, *Verbal Behavior* betray an attitude to Skinner's contribution in this area which, in my opinion, hinders rather than helps a proper appreciation of the value of that contribution. By refusing to allow that any criticism of *Verbal Behavior* is justified, they are helping to perpetuate the situation in which behavior analysis currently finds itself, whereby it has been consigned to a kind of academic ghetto—cut off by mutual suspicion and incomprehension not only from other approaches within psychology, but from virtually every other adjacent discipline from philosophy, linguistics and sociology on the one hand to ethology and the neuro-sciences on the other.

This situation is not going to change so long as the works of B. F. Skinner in general and *Verbal Behavior* in particular are treated as holy writ from which not one jot or tittle is to be subtracted or modified in the light of criticism from outside the fraternity of Skinnerian orthodoxy.

The analysis of verbal behavior should provide the essential link between the biological sciences on the one hand and the social sciences and humanities, including philosophy, on the other. Cognitive psychology, in my view, is totally disqualified from playing that role, because it rides roughshod over the vital distinction drawn by Skinner (1969) in Chapter 6 of *Contingencies of Reinforcement* between contingency-shaped and rule-governed behavior.

Cognitive psychology is committed from the outset to the assumption that the strategic control of all behavior, animal as well as human, is mediated by thoughts or cognitions which exist independently of any verbal expression they may or may not achieve in the human case. On Skinner's account, a thought or "rule" is essentially a

"contingency-specifying" verbal formula by means of which a human agent adapts to the contingencies with which he or she is confronted. Behavior that is not rule-governed in this sense is shaped to the prevailing contingencies by repeated exposure to those contingencies. Because both methods of adapting to contingencies tend in the long run to yield superficially similar results, it is possible to ignore the differences between them, either as the cognitive psychologists do, by treating contingency-shaped behavior as if it were rule-governed or, as Skinner (1953) has done in effect, by treating rule-governed behavior as if it were contingency shaped. Both these procedures are called into question by an increasing body of empirical evidence (Lowe, 1979, 1983; Lowe, Beasty & Bentall, 1983) which demonstrates a radical discontinuity between contingency-shaped and verbally controlled behavior which develops as the child acquires its verbal skills.

But verbal behavior itself, since it cannot on pain of circularity be interpreted as verbally controlled or rule-governed, must be contingency-shaped. So, the project of cognitive psychology, which aims to account for contingency-shaped behavior in terms of the principles of rule-governed behavior, cannot hope to succeed. On the other hand, if verbal behavior is contingency shaped and has to be understood in terms of the principles of contingency shaping, it is reasonable to suppose that the principles of verbally mediated or rule-governed behavior will eventually prove to be deducible from those of contingency shaping. This, I take it, is the substance behind Skinner's (1984) recent claim that all behavior, including rule-governed behavior, is contingency shaped.

That derivation, however, is more a hope for the future than anything that has been currently realized. The analysis of verbal

behavior will not fulfill its destiny and replace cognitive psychology as the link between the biological sciences and the humanities and social sciences unless and until its practitioners are prepared to recognize:

1. That criticisms like those of Chomsky (1959) cannot simply be dismissed as misunderstandings;
2. That traditional logical and grammatical distinctions based on the linguistic intuitions of native speakers of the natural language in question cannot be ignored or rejected out of hand (see Place, 1983, for a more extensive discussion of this point);
3. That *Verbal Behavior*, though not published until 1957, was in fact conceived, as Skinner himself admits (1957, 456-457), as long ago as 1934 and represents an earlier phase in his intellectual development which is much closer to traditional S-R learning theory than is the later three-term contingency analysis represented by *Contingencies of Reinforcement* (Skinner, 1969).

THE TAXONOMY OF VERBAL OPERANTS

This latter point is particularly significant in relation to Sundberg and Michael's criticism that I place "heavy emphasis on the consequences of verbal behavior with a general tendency to de-emphasize the role of antecedents and the complete three-term-contingency analysis" (Sundberg & Michael, 1983, p. 13).

This criticism reflects not a denial on my part of the role of antecedents in the control of verbal behavior, but a rejection of a taxonomy which classifies verbal operants according to their manner of stimulus or other antecedent control. In rejecting such a taxonomy, I am not denying either the reality or the importance of stimulus control. It seems, however (a) that the antecedent conditions for the emission of different units of verbal behavior are so complex and interact with one another in such a complicated way that no coherent taxonomy and no coherent analysis based on such a taxonomy is possible; and (b) that the principles governing antecedent control in the case of a complete sentence utterance are quite different from those which operate within the sentences between one word or phrase and another—

from which it follows that a taxonomy, like that proposed by Skinner, which fails to acknowledge the word/sentence distinction cannot hope to succeed.

To illustrate these points, suppose that I am looking at a water butt on which is inscribed a *graffito* which reads, *You said you would, but you didn't*. And suppose that at the same moment I have just reprimanded student for failing to submit an essay on time; and suppose further that in these circumstances the student begins to excuse himself by means of a sentence beginning with the word *But* . . . , at which point I cut him short by uttering the quotation from Sir Walter Scott's novel, *The Antiquary*, "But me no buts!" The sentence I utter contains two occurrences of the word *but*, the second of which is an echoic with respect to the first and both of which are echoic with respect to the student's *But* But given the principle of multiple determination, both occurrences of the word *but* are also, presumably, textual responses with respect to the occurrence of the word *but* in the text of the *graffito*. The whole sentence moreover can ultimately be interpreted as the repetition of what was originally a textual response to the words on the printed page of a copy of Scott's novel. The connections between the individual words of the sentence, whereby one leads on to the next, would presumably be classified as intraverbal connections as would the connection between the student's *But* . . . and my *But me no buts*. The word *but* as used in the *graffito* and by the student is evidently what Skinner (1957, p. 341) would call "a manipulative autoclitic." By contrast, Scott's two uses of the word, though obviously derived from the standard autoclitic use (i.e., its use as a conjunction) are, respectively, a verb formed from the conjunction and a noun formed by nominalization from the verb so formed. At the same time, my sentence (insofar as it functions as a command to the student not to try to excuse himself) qualifies as a mand; while (insofar as it is a response to the nonverbal stimulus constituted by the water-butt) it also qualifies as a "tact" by what Professor Skinner himself (personal communication) regards as the official definition of that term.

There is, I submit, something seriously wrong with a taxonomy of utterances such that the same utterance can be an example

of just about every variety of utterance which the taxonomy distinguishes. We would not think much of a taxonomy in biology which allowed one to classify whales as fishes by virtue of some of their characteristics and as mammals by virtue of their other characteristics. I, therefore, make no apology for adopting an alternative taxonomy which (a) draws a fundamental distinction between sentences and the words and phrases of which sentences are composed, (b) recognizes the sentence as the effective unit of verbal behavior in the sense that a grammatically complete sentence is normally required in order to evoke a determinate response from the listener, whereas words and phrases produce an effect only insofar as they contribute to that of the sentence of which they form part, (c) classifies sentence utterances according to their effect on the behavior of the listener and the way in which their emission by the speaker is reinforced (e.g., the mand), (d) classifies words and phrases according to their contribution to the sentence of which they form part (e.g., the autoclitic), and (e) uses only categories which are mutually exclusive in the sense that each sentence utterance, word or phrase is unambiguously assignable to one and only one category, except in obvious cases of equivocation.

THE WORD-SENTENCE DISTINCTION

In replying to my criticism of Skinner's failure to draw a clear distinction between words and sentences, Sundberg and Michael use the argument that many utterances which do not add up to syntactically complete and well-formed sentences can nevertheless "convey" something to the listener and thus have a determinate effect on the listener's behavior. While it is easy to exaggerate the incidence of grammatically ill-formed sentences by following the traditional grammarian in rejecting as ill-formed any sentence which does not conform to the conventions accepted for purposes of written communication among the so-called "educated" and "professional" classes, this point has to be conceded. I have, nevertheless, anticipated this objection in a recent paper (Place, 1983) in which I discuss in greater detail the problem of defining the sentence as a unit of verbal behavior. In this paper I suggest that we should begin by

defining a sentence in pragmatic terms as any word or string of words whose utterance produces a determinate effect on the behavior of the listener by acting as a discriminative stimulus with respect to a given contingency. We need, however, to distinguish in this connection between "an effective sentence," a word or string of words which actually has such an effect on the behavior of a particular listener on a particular occasion, and "a conventional sentence." A conventional sentence is a string of words which in that combination are capable of producing the same determinate effect on the behavior of any competent listener who is a member of the verbal community constituted by speakers of the natural language, dialect or code to which the sentence belongs. The implication of this distinction is that whereas conventional sentences are always grammatically complete and well-formed relative to the conventions of the dialect or code involved, effective sentences are often incomplete, ill-formed or both. Nevertheless for every effective sentence which is incomplete or ill-formed, any competent speaker/listener can invariably supply a complete and well-formed conventional sentence of which the effective sentence is a shortened or garbled version.

This is the point I was trying to make when I suggested in the paper to which Sundberg and Michael are responding (Place, 1981, p. 140) that the two one-word effective sentences *Fox!* and *Dinner!*, discussed by Skinner in Chapter 5 of *Verbal Behavior*, are both short for and parasitic on a pair of conventional sentences *Look! There's a fox!* in the case of *Fox!* and *Dinner is ready! Come and get it!* in the case of *Dinner!* An ambiguity in Skinner's use of the term "functional."

In this connection, Sundberg and Michael (1983, p. 15) criticize my "repeated use of the word 'functional' when referring to behavior and its consequences rather than a three-term relation." What Sundberg and Michael are responding to here, I suggest, is my attempt to avoid what I see as a confusion within Skinner's writings between two senses of the adjective "functional." One use of this word derives from the notion of "a mathematical function" used to describe the relation of causal dependence between an independent and a dependent variable as determined by experimentally manipulating

the independent variable and recording the resultant changes in the dependent variable. To describe a relation as "functional" in this sense is to do no more than give an air of (often spurious) mathematical precision to the assertion that two states or events are casually related. It is only in this sense, so it seems to me, that the relationship between behavior and its antecedents can be described as "functional" and it is in this sense of "functional" which I try to avoid in my own verbal behavior.

The other sense of "functional" which I endorse and use extensively in my own writing derives from the sense of the word "function" in which a characteristic is said to "have a particular function" in biology or in which the various parts of a machine or a living organism are said to "perform a particular function." To say of something that it has or performs a function in this sense, is to say of it (a) that its existence as a part or feature of the entity or system of which it is a part or feature has certain consequences (its function) such that (b) its having those consequences is a cause of its existence as a part or feature of the entity or system in question. How the consequences of any entity or system's possessing a part or feature bring it about that the entity or system in question possesses that part or feature can be accounted for in one or other of three different ways, (1) in the case of a human artifact, in terms of a preconceived plan or design prepared by its original creator or inventor, (2) in the case of an inherited biological characteristic, in terms of what Skinner (1975) has called "the contingencies of survival," and (3) in the case of learned behavior, in terms of the contingencies or reinforcement and disinforcement.

CREATIVITY

I am fully prepared to acknowledge that I have done Skinner an injustice in suggesting that he has failed to give sufficient emphasis to the creative aspect of behavior in his writings, both with respect to behavior in general and verbal behavior in particular. Nevertheless I still stand by my claim that, having failed to acknowledge the importance of the word/sentence distinction, he has failed to grasp the significance of the human ability to construct sentences in which familiar words are put together in familiar

patterns so as to form articulated strings which, in that precise form, have never before been emitted by the speaker or responded to by the listener. As argued in a subsequent paper (Place, 1982)—which had not yet appeared when Sundberg and Michael were writing—it is this ability to construct novel sentences which enables the speaker to construct both what Goldiamond has called "instruction stimuli" (which can evoke behavior which the listener has never previously emitted) and what Harzem and Miles (1978) have called "informative stimuli" (which provide the listener with "information about" contingencies which he or she has never previously encountered).

The notion of "a response class" which Sundberg and Michael appeal to as the explanatory principle which enables Skinner to account for the phenomenon of creativity is totally inadequate as an explanation of the kind of creative improvisation involved in the construction and interpretation of novel instruction (mand) and information-providing (tact) sentences. There are, of course, phenomena in verbal behavior which can be usefully explained in terms of the notion of "response class." One example would be the well known propensity of listeners to obey instructions and follow suggestions when uttered in an authoritative voice by someone in apparent authority within the context of utterance. Another example is the use of verbal reinforcers like *Really? Did you? You did?* etc., as devices for maintaining the telling of "news," as in a study by Jefferson (1981). In neither of these cases is there any "topographical" feature which unites different instances of the response class constituted in the first example by the different manifestations of suggestibility and in the second example by the telling of different items of news. Despite this lack of common topography, it is evident that such behavior does behave as a discrete response class insofar as the probability of observing instances of the class so defined is increased by the reinforcement of previous instances of the same class.

However, we can see the difference between the reinforcement of a highly abstract non-topographically defined response class, which is illustrated by the two examples I have mentioned, and the problem that is presented by the phenom-

enon of novel sentence construction and interpretation. Besides its effect in maintaining news-telling behavior, the verbal reinforcers in Jefferson's (1981) study also, insofar as they indicate that a successful act of communication has been performed, serve to strengthen both the propensity to repeat the same words and phrases when constructing similar sentences in the future, as well as a propensity to construct sentences of the same grammatical form though containing different words and phrases. This effect of the reinforcement of verbal behavior is much more difficult to observe than is the effect of reinforcement on a response class like news-telling behavior. One reason for this is that instances of the response class constituted by the use of a particular descriptive and hence, in my sense (Place, 1985) "tact" word or phrase or of a particular pattern of sentence construction as defined by its autoclitic features, tend to be widely separated in time. At the same time the propensities to use such words, phrases and sentence patterns are so deeply ingrained in the verbal habits of adult speakers that changes in their response probability as a consequence of one or two isolated reinforcements would be impossible to detect. Nevertheless continual reinforcement of appropriate habits of word use and sentence construction must be postulated in order to explain the maintenance within a verbal community of syntactic and semantic conventions on which the intelligibility of discourse within the community depends.

But what is distinctive of (if not unique to) this kind of reinforcement is that what is strengthened when a particular sentence utterance is reinforced is not just one response class of which that sentence utterance is an instance, but a large number of different response classes corresponding to each different word or phrase employed in the sentence and each different autoclitic feature of the way those words are put together so as to form a syntactically well-formed and semantically effective sentence in a particular natural language. Furthermore the simultaneous strengthening of all these different response classes only has a significant effect insofar as it contributes to the complex process of novel sentence construction; and *that* process, although it presupposes the prior existence of the rele-

vant response classes within the speaker's repertoire, cannot be accounted for as a simple summation of the response classes of which the sentence in question is an instantiation. We cannot hope to understand the process of sentence construction without understanding what it is about the context of utterance (i.e., the antecedents of the utterance both verbal and nonverbal) which makes the selection of a sentence which instantiates that particular set of response classes an appropriate utterance to emit in that context; and *that* is something that the notion of "response class" by itself cannot hope to give us.

THE CONFUSION BETWEEN TACTS AS WORDS AND TACTS AS SENTENCES

Since the different senses in which the word "tact" is used in Skinner's (1957) book is the subject of a recent paper (Place, 1985), I will respond to what Sundberg and Michael have to say about my previous remarks on that score (Place, 1981, p. 136) only by observing that I now distinguish three senses of the word, as used in *Verbal Behavior*. The first of these senses is the one which Skinner himself (personal communication) regards as the only correct sense. In this sense a tact is a verbal operant under the control of a nonverbal stimulus which it names or describes. It may consist in a word, a phrase, or a complete sentence. Tacts in this sense contrast with intraverbals in which the verbal operant is under the control of a preceding verbal stimulus emitted as a response by the same or a different speaker. In the second of my three senses, a tact is a word or phrase whose role in the sentence is to establish reference to some recurrent, but not necessarily present, feature of the common environment of speaker and listener. Tacts in this sense contrast with autoclitics which are likewise words or phrases, but whose function is purely within the sentence to which, along with autoclitic features like word order, they give form or syntactic structure. In the third of my three senses a tact is an information-providing sentence or sentence utterance. The tact in this sense "works for the benefit of the listener by extending his contact with the environment" (Skinner, 1957, p. 85) and contrasts with the mand which controls the behavior of the listener for the benefit of the speaker.

THE FAILURE TO ACCOUNT FOR THE STIMULUS CONTROL OF THE LISTENER'S BEHAVIOR

In this connection I am, of course, perfectly well aware that the response of the listener "plays a major role in Skinner's analysis" (Sundberg & Michael, 1983, pp. 16-17). The response of the listener plays a crucial role in Skinner's account insofar as it is this response which provides the essential reinforcement for the verbal behavior emitted by the speaker. My complaint, however, is that while he is fully aware of the listener's response as a controlling consequence of the speaker's verbal behavior, Skinner does not adequately account for the way in which the response of the listener is controlled by the verbal stimuli provided by the speaker's utterance; and re-reading the passages cited by Sundberg and Michael has not caused me to change that opinion. Indeed it appears to me from re-reading his initial discussion of the listener's response on pages 33-34 that Skinner has failed to appreciate the problem which the response of the listener presents. This is the impression created by such remarks as, "Much of the behavior of the listener has no resemblance to the behavior of the speaker and is not verbal according to our definition" (pp. 33-34), and "The behavior of a man as listener is not to be distinguished from other forms of his behavior" (p. 34). While Skinner is entirely right to reject traditional theories of meaning which are "... applied to both speaker and listener as if the meaning process were the same for both..." (p. 33), he is equally certainly wrong in claiming that there is nothing which distinguishes the listener's response to verbal stimuli from the response to stimuli of any other kind. This is an extraordinary claim in face of the obvious fact that there is no other kind of stimulus where familiar stimulus elements (words) can be put together by another organism (a speaker) into new combinations (sentences) which the listener has never before encountered and can thereby act as a discriminative stimulus with respect both to behavior which the listener in question has never before emitted and contingencies which he or she has never previously encountered. Any combination of stimulus elements which could be put together by one organism so as to have that kind of effect on the behavior of another

organism would simply be another system of verbal stimuli, another form of language.

Skinner's failure to appreciate that point stems partly from his failure to draw the word/sentence distinction, and his consequent failure to recognize and appreciate the significance of the speaker's ability to construct and the listener's ability to construe novel word combinations in the form of a sentence. It also stems in part from the fact that at the time when *Verbal Behavior* was written, he had not yet developed the three crucial notions he deploys in Chapter 6 of *Contingencies of Reinforcement* (Skinner, 1969);

1. The three-term contingency consisting of antecedents, behavior and consequences,
2. the distinction between "contingency-shaped" and "rule-governed" behavior, and
3. the notion of "a rule" or, as I prefer to say, "sentence" as "a contingency specifying stimulus."

The absence of these later notions in his discussion of the response of the listener to verbal stimuli in *Verbal Behavior* is most apparent in the passage on pages 357-362 when he gets closer (than in other passages cited by Sundberg & Michael) to what I take to be the right answer to this problem. This is the passage in which he discusses the effect on the behavior of the listener of conditional mands like *When I say "three," go!* *When the fire burns out, close the damper,* *When I call your name, answer "present,"* and *If the resulting number is less than 2000, try again!*, and conditional tacts like *When I say "three," you will feel a shock,* *When I Say "Soup's on," dinner will be ready,* *When the kettle whistles, tea will be ready,* and *When the light is on, the door is unlocked.* Had the notion of the three-term contingency and the notion of a rule or sentence as "a contingency-specifying stimulus" been available when he wrote this passage, Skinner might perhaps have hit on what I take to be the correct interpretation of such sentences—namely, that they serve to specify or depict two of the terms (or "legs," as I call them) of which the contingency is composed, and the contingent relation between them, and thereby act as a discriminative stimulus with respect to the complete contingency which is thereby partially depicted.

Thus all the conditional mands mention-

ed by Skinner in this passage consist of an antecedent clause which specifies the antecedent term or leg of the contingency and a consequent clause which specifies the behavior to be performed given those antecedent conditions. Likewise, in his examples of conditional tacts, the antecedent clause specifies an antecedent condition relative to some (unspecified) behavior on the part of the listener, while the consequent specifies the consequences to be expected from the emission of that behavior. The behavior remains unspecified, in the case of *When I say "three," you will feel a shock*, because the consequence is unconditional. The shock will occur, given the antecedent, regardless of what behavior is or is not emitted by the listener. In the other cases the behavior required to secure the reinforcing consequences (food, liquid refreshment and access to the space on the other side of the door) will be given by the context of utterance.

Another form of conditional tact, which is not illustrated by Skinner's examples in this passage, but which completes the picture as far as the depiction of the three-term contingency is concerned, is the type illustrated by *If the match is struck against the sandpaper, it will ignite* and *If you give the baby a bottle, it will go back to sleep* (Place, 1983). Here the antecedent clause specifies the behavior to be performed and the consequent specifies the consequences to be expected if it is.

Had Skinner hit on this notion of sentence as maps or pictures of contingencies which the listener can use to guide his/her behavior in relation to those contingencies without having had a previous encounter with them, he might also have hit on a more sophisticated account of the conditions under which verbal stimuli arouse the emotional reactions of the listener than the account of the respondent conditioning of emotional reactions to verbal stimuli which he deploys in two of the passages cited by Sundberg and Michael in this connection (Skinner, 1957, pp. 154-158 and 161-163). I outlined what I regard as a more sophisticated account of the relationship between emotional reactions on the one hand and the contingencies and discriminative stimuli that warn of their impending presence on the other in the third of my series of papers on Skinner's book (Place, 1982, pp. 125-127).

CONCLUSION

None of us is infallible. We honor a great scientist and original thinker like Skinner by building on those aspects of his work which have demonstrably contributed to our scientific understanding, while abandoning those parts which are plainly unsatisfactory, if not actually mistaken. Adhering to everything a man has written, for no better reason than because he wrote it, does not make for good science.

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