

On Skinner's Definition of Verbal Behavior

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ABSTRACT

Descriptive definitions in science are useful insofar as they identify natural phenomena that hang together in some distinctive way. In 1957, Skinner proposed an unusual definition of verbal behavior that has subsequently been criticized even by fellow behavior analysts. Although Skinner did not justify his definition at length in his published work, two unpublished manuscripts show that he put considerable effort into identifying the implications of his definition. Certain passages in these manuscripts identify Skinner's view of the features that covary to make verbal behavior a coherent topic of study. A consideration of these passages does not imply that Skinner's definition is better than alternatives, but it does clarify that which Skinner thought was distinctive about the subject matter to which he devoted so much of his career.

Keywords: definition of verbal behavior, descriptive definitions, prescriptive definitions, Skinner, verbal behavior.

RESUMEN

Las definiciones descriptivas en ciencia son útiles en tanto identifiquen fenómenos naturales que vayan juntos de un modo distintivo. En 1957, Skinner propuso una definición inusual de conducta verbal que ha sido posteriormente criticada incluso por colegas analistas de la conducta. Aunque Skinner no justificó su definición de modo amplio en su trabajo publicado, dos manuscritos no publicados muestran que hizo un esfuerzo considerable para identificar las implicaciones de su definición. Ciertos pasajes en estos manuscritos identifican la visión de Skinner sobre las características que co-varían para hacer de la conducta verbal un tema coherente de estudio. Considerar estos pasajes no implica que la definición de Skinner sea mejor que otras alternativas, pero clarifica lo que pensaba que era distintivo del tema de estudio al que dedicó mucho tiempo de su carrera. **Palabras clave:** definición de conducta verbal, definiciones descriptivas, definiciones prescriptivas, Skinner, conducta verbal.

Definitions in science can be either prescriptive or descriptive. In formal modeling, one defines one's terms in advance to suit one's purpose: The mean of a distribution is defined as the sum of the scores divided by the number of scores summed; a rhombus is defined as an equilateral parallelogram, a sphere as a surface in three-dimensional space equidistant from a point. Such definitions are prescriptive in the sense that one can assert them from one's armchair in advance of looking at the world, and they need

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not be tested. Moreover, one can sort candidates into examples and non-examples using such definitions as filters, and no one can gainsay the result. A square, for example, meets the definition of rhombus, so defined, but a ball is not a sphere, for no ball, nor even a ball-bearing, be it ever so smooth, is perfectly spherical if one looks closely enough. One may object that a square does not suit one's notion of a rhombus, that the definition should not embrace rectilinear figures, but there are no facts of the matter. The definition is a fiat determined by him who does the defining; it need not satisfy the needs or intuitions of another. One may grumble that of course a ball is a sphere, that he who says otherwise is a silly pedant, but to argue so is to confuse types of definition. Prescriptive definitions need not mirror nature; they are created to serve formal modeling. They allow deduction and other formal operations because they can determine classes with perfectly sharp boundaries. Of course, formal modeling will be useful only to the extent that the assumptions of the model do indeed mirror nature. Our definition of a sphere will permit us to predict with only a small error how many ball-bearings of a given size will fit into a rigid container. Our error will be proportionally larger when packing oranges and still larger when packing apples or pillows, as the model becomes ever less apt.

Descriptive definitions attempt to capture some regularity in nature and cannot be imposed in advance. What is a tree? What is a shrub? Is a cattail a grass? Is a wolf a dog? Such questions require a survey of the subject matter; in a sense, the scientist must discover appropriate definitions rather than formulate them. That is, if the definition does not respect the orderliness of the subject matter, it is the definition that must yield, not the subject matter. In contrast, a prescriptive definition is immune from refutation: A sphere is a sphere, and it matters not at all if the earth is flattened at the poles or if the moon is pocked with craters. Moreover, descriptive definitions are both tentative and vague. When we speak of order in nature, we are speaking of classes determined by the processes of discrimination and generalization, either of the observer or of some other organism. Variability, not essence, is fundamental to such classes (Palmer & Donahoe, 1992; Skinner, 1935). It is characteristic of such classes that its members fall into a distribution: Some members are central and unambiguous; others are marginal and doubtful. This characteristic structure apparently arises from contingencies of selection, both ontogenetic (shaping) and phylogenetic (natural selection), for selection is a sieve through which marginal cases sometimes fail to pass.

It is a mistake to treat descriptive definitions as if they were prescriptive definitions. Are birds "really" dinosaurs? Such questions are meaningless; there is no "reality" to the matter. Birds may have this or that morphological feature in common with dinosaurs, suggesting that they are close relatives and may have descended from them, but the classification of organisms is a set of generalizations on the part of an observer, not a reflection of the essential properties of the things being classified. A honeybee will classify flowers differently from the gardener.

If two categories are easily discriminated, the fundamental fuzziness of generalization categories is obscured. If a bag has been filled with marbles and frogs, we will have no trouble sorting them into two bins. But the ease of the task does not mean that the categories are rigid. We can imagine a continuum of cases that would

make the point: Is a ceramic frog a marble or a frog? What about an acorn? Such questions cannot be answered without knowing what is the purpose of the classification to begin with. Descriptive definitions are not right or wrong; they serve some purpose and should be evaluated according to whether they have done so.

SKINNER'S DEFINITION OF VERBAL BEHAVIOR

Skinner's definition of verbal behavior is a descriptive definition, not one imposed *a priori*. He attempted to characterize a domain of behavior with distinctive properties. As one might expect, he struggled with his definition and refined it several times. In setting out to define verbal behavior, he might have consulted his own tendency to respond discriminatively to the term, to the typical tendency of his verbal community to respond to the term, or to some characteristic constellation of contingencies of selection. Such definitions would be neither right nor wrong but would have captured different regularities and would have served different purposes. In the end, he settled on features of contingencies of selection, but in any case, his definition would necessarily share the feature of all descriptive definitions, that of embracing a distribution with both central and marginal members.

As a first approximation, Skinner defined verbal behavior as "behavior reinforced through the mediation of other persons" (1957, p. 2). Much of our behavior acts directly on the physical world and produces important consequences directly, but vocal behavior produces only tiny, evanescent physical consequences that are seldom reinforcing or punishing in themselves. An opera diva might shatter a glass with her voice, but this is an exception that proves the rule: One would wish to exclude such examples from the category of verbal behavior. Non-vocal behavior, such as writing, has direct physical effects of a more substantial and enduring sort, but such products are typically reinforcing or punishing insofar as they affect other people. A finely turned italic letter or an illuminated manuscript may be reinforcing but only in the way a painting or sculpture is reinforcing. Behavior reinforced through the mediation of other people does indeed seem to be distinctive.

However, Skinner found it necessary to refine his definition, and his reasons for doing so are revealing: "It will be helpful to restrict our definition by excluding instances of 'speaking' which are reinforced by certain kinds of effects on the listener. The exclusion is arbitrary but it helps to define a field of inquiry having certain unitary properties" (Skinner, 1957, p. 224). Thus the broader definition was rejected because the set of events that it embraced lacked "certain unitary properties" of interest. Mediation of reinforcement by others is a unifying property, but not, apparently, appropriate for his purposes: "To say that we are interested only in behavior which has an effect upon the *behavior* of another individual does not go far enough" (p. 224), for waving a fly off the potato salad would be verbal by this definition. One is easily persuaded that such behavior lacks unity with central instances of verbal behavior, so Skinner refined his definition further: "A preliminary restriction would be to limit the term verbal to instances in which the responses of the 'listener' have been conditioned" (p. 224). However, Skinner rejected a definition that embraced this qualification as well, since

“the artist who paints a realistic mother and child in order to evoke reactions appropriate to such a subject matter is appealing to conditioned behavior on the part of his audience, though his behavior is not usefully described as verbal” (p. 225). In this case, Skinner appealed to the “usefulness” of the definition, but once again, he made no mention of the use to which the definition would be put; rather, he seemed to assume that the reader would not deny that there is an important difference between the evocative work of the artist and the behavior he wished to call verbal.

Finally, Skinner settled on a defining property that suited him: “If we make the further provision that the ‘listener’ must be responding in ways which have been conditioned *precisely in order to reinforce the behavior of the speaker*, we narrow our subject to what is traditionally recognized as the verbal field” (Skinner, 1957, p. 225; emphasis in the original). It is noteworthy that Skinner was attempting not to defy convention but to translate it into behavioral terms: He believed that his definition captured phenomena traditionally recognized as verbal.

To clarify, Skinner offered the following distinction:

A piece of sugar may induce a horse to turn primarily because turning and approaching similar objects has eventually been followed by reinforcing contact with sugar in the mouth. There appears to be no good reason to regard the “use” of such stimuli as verbal, for the controlling relations present no special problems.

A man engages in behavior requiring a further analysis when he turns a horse by letting the reins touch the skin lightly on the neck. The touch of the reins, unlike the waving of a frightening object, does not originally cause the horse to turn in a given direction, and there has been no *incidental* conditioning as in the case of the lump of sugar. The horse has been conditioned with respect to the touch of the reins *especially to create a means of control*. More particularly, it has been submitted to certain contingencies involving a touch on the neck and escape from, or avoidance of, aversive stimuli produced by whip or heel. This special conditioning eventually imparts to the behavior of the rider properties of special interest, as similar circumstances in the history of the listener give rise to important characteristics of the behavior of the speaker.

The special conditioning of the listener is the crux of the problem. Verbal behavior is shaped and sustained by a verbal environment -by people who respond to behavior in certain ways because of the practices of the group of which they are members. These practices and the resulting interaction of speaker and listener yield the phenomena which are considered here under the rubric of verbal behavior. (Skinner, 1957, pp. 225-226; emphasis in the original)

Skinner’s definition requires a bit of interpretation. First it has a teleological flavor that calls for translation. We say that we do something “in order to” bring about some consequence when our behavior has been reinforced by that consequence in the past under conditions like those that prevail in the present. (Sometimes we can articulate as much, and under those conditions we label the comment as an ‘intention.’) Second, Skinner obviously didn’t mean that the conditioned behavior of the listener is acquired in every instance “in order to” reinforce (or punish) the behavior of the speaker. The listener’s behavior may have that effect incidentally, but it may be controlled by other more powerful variables in comparison to which, the effect on the speaker is trivial.

Suppose I hear someone shout, "Watch out for the *Agkistrodon piscivorous*!" then turn and find that I am staring at a poisonous viper; I will perhaps have learned a response, or a set of responses, to a new herpetological term, but the reinforcement of the speaker will have been an inconspicuous variable in the episode. Listeners learn to respond to verbal behavior under a wide variety of conditions, and only some of those responses may be characterized as having been acquired in order to reinforce the behavior of the speaker, or, alternatively, because of a history of having reinforced the behavior of similar speakers in the past. There is only one reason to teach a horse to turn to a tap of the reins, but the behavior of speakers and listeners is shaped under a wide variety of motivational conditions, and much of it is acquired incidentally.

Nevertheless, a more generous reading of Skinner's definition suggests that it is valid: Verbal behavior emerges in a community that maintains contingencies of reinforcement for behavior that reflects conventional but arbitrary relationships between stimuli and responses. Verbal behavior quickly loses its effectiveness if it violates these conventions, and the verbal community punishes such violations and shapes up adherence to them. Boys who cry "wolf" are scolded or ignored; boys who learn to call a spade a spade are praised. Once verbal behavior has been acquired and sharpened, it is emitted under many conditions and is followed by a great assortment of consequences. However, these consequences are mediated by other people whose responses have been shaped up by the same arbitrary conventions of the verbal community. It is clear from Skinner's discussion of his definition that this is his central point. Thus, Skinner was not prescribing a definition; he was trying to characterize a coherent class of behavior that called for a special analysis. Like all descriptive definitions, Skinner's captures the center of a distribution of behavior, but there are marginal cases that are ambiguous.

OBJECTIONS TO SKINNER'S DEFINITION

Skinner's definition sounds odd to most ears: He carefully avoided all mention of words, sentences, symbols, or grammar, vernacular terms that have no obvious translations in a behavioral analysis, but his definition is internally consistent; it falls squarely within the science of behavior as it stood in 1957. It appears to me that his definition was crafted as an explicit attempt to operationalize the term "symbolic," for what is a symbol but a stimulus that evokes arbitrary but conventional conditioned responses? But not all behavior analysts are happy with Skinner's definition. A distinctive feature of his analysis of verbal behavior is that it is interpreted in the light of established principles of behavior that had been formulated in the study of nonverbal organisms. In the opening pages of *Verbal Behavior* he remarked, "No assumption is made of any uniquely verbal characteristic, and the principles and methods employed are adapted to the study of human behavior as a whole. An extensive treatment of human behavior in general from the same point of view may be found [in *Science and Human Behavior* (Skinner, 1953)]" (Skinner, 1957, p. 11). This approach has the virtue of parsimony, but might it be too narrow or too broad?

Hayes (1994) and Hayes, Blackledge, & Barnes-Holmes (2001), observed that Skinner's interpretation of verbal behavior, although parsimonious and elegant, yielded

only a modest harvest of research, and they suggested that his definition of verbal behavior was at fault (but see Leigland, 1997, for a contrary point of view). Specifically, they argued that it is too broad and that it is not a functional definition. To illustrate the latter point, they offered a clever hypothetical counter-example: Imagine looking into two identical experimental chambers; in each chamber, a rat is pressing a lever, and, on average, every fifth lever-press produces a pellet of food. Clearly, one could switch the rats, and after a short period of adjustment, they would carry on as before, for as far as the rats are concerned, nothing of importance has changed. Now suppose that we look outside the chambers and we notice that in one case the pellets are being delivered by an experimenter on a variable-ratio-5 schedule, but in the other, the back side of the lever is agitating an open bag of pellets so that it jars loose a pellet at the same rate, and it falls into food hopper. By Skinner's definition, the behavior of one rat would be considered verbal, but the behavior of the other would not. This is no legalistic distortion of Skinner's position: Recall that he viewed a tap of reins on a horse's neck as a verbal response, and he did not balk at including other animals in the embrace of his definition:

"Our definition of verbal behavior, incidentally, includes the behavior of experimental animals where reinforcements are supplied by an experimenter or by an apparatus designed to establish contingencies which resemble those maintained by the normal listener. The animal and the experimenter comprise a small but genuine verbal community. This may offend our sense of the proprieties, but there is consolation in the fact that such a relation as that represented by the abstract tact is susceptible to laboratory study" (Skinner, 1957, footnote 11, p. 108).

As Hayes and his colleagues noted, the environments are identical, the patterns of behavior are identical, and the behavioral processes must be identical in our two rats. To call one "verbal" and the other "nonverbal," if not patently absurd, is certainly incompatible with the behavioral tradition of defining behavior functionally. This is a forceful objection, ingeniously argued, and they use it as a foundation for an alternative, functional definition arising from relational frame theory. What might Skinner say in reply? I believe that he would have been untroubled.

Skinner's avowed purpose was to interpret verbal behavior as if it were any other behavior of the organism. His book *Verbal Behavior* was the product of 23 years of work, but it was initiated as a response to a challenge by Alfred North Whitehead, who argued that verbal behavior could not be explained so (Skinner, 1957, pp. 456-460). Thus, it is clear that Skinner did not think that verbal behavior was fundamentally different from other behavior. Nevertheless, he evidently believed that mediation of reinforcement by a verbal community was a sufficient reason to treat verbal behavior as a distinct subject matter. In *Verbal Behavior*, he barely bothered to make this case. Perhaps he thought that the case was self-evident and did not want to devote precious space to the topic. However, there are two Skinner manuscripts on verbal behavior that preceded the published book, the Hefferline Notes (HN) and the William James Lectures (WJL). A review of these manuscripts makes it clear that Skinner's definition was no thoughtless or hurried proposal; he had been wrestling with the problem of definition

for years. In the manuscripts he discussed the implications of his definition at much greater length than in the book, and by consulting them we can see more clearly why he settled on a definition that even other behavior analysts have subsequently found so puzzling.

THE HEFFERLINE NOTES (1947)

The earlier manuscript is a set of notes taken by Ralph Hefferline of a series of lectures on verbal behavior that Skinner delivered at Columbia University in the summer of 1947. The manuscript comprises 77 typewritten pages that were mimeographed and distributed privately in the years before *Verbal Behavior* was published.¹ Hefferline was a master of shorthand, and it is evident from internal coherence and supported by oral tradition that his notes closely followed Skinner's lectures. That is to say, although there are obvious gaps in the notes, Hefferline himself seems to have modified Skinner's lectures, as delivered, only slightly in the process of transcribing them. This can be inferred by comparing the Hefferline manuscript with the William James Lectures from Skinner's own pen. Any modifications are almost certainly hasty abbreviations rather than additions to the content of Skinner's lectures. For example, compare "There is no energy relationship between the response and the effect" (HN, p. 57) with "There is no relation between the energy level of the response and the magnitude of the effect" (WJL, p. 21). Thus, it is reasonable to use HN as a source for Skinner's views without worrying that it has been modified or filtered by the views of his amanuensis.

The William James Lectures (1948).

This manuscript is the set of notes from which Skinner delivered the William James Lectures at Harvard University in 1948. The manuscript comprises 176 typewritten pages and is therefore more than twice as long as HN. Only part of the difference in length can be attributed to the ellipses that are inevitable when one attempts to transcribe the speech of another. Parallel passages with HN indicate that Skinner had some common notes upon which both the Columbia and Harvard lectures were drawn, but there are substantial differences between the manuscripts as well, indicating that Skinner had continued to work on them from 1947 to 1948. In any case, WJL represents another source for inferences about Skinner's view of the definition of verbal behavior. As it is longer, more recent, and written by Skinner himself, it must be preferred to HN when the texts disagree, but differences between the documents indicate that Skinner was continually revising his definition and the rationale for his definition, as well as his analysis of verbal behavior in general.

What the Manuscripts Say about the Implications of Skinner's Definition

In the Harvard lectures, Skinner presented an inchoate form of the definition as it appeared in his book a decade later:

“Verbal behavior is not distinguished by any property of the behavior itself but by the way in which it achieves its effects. In the non-verbal field there is a mechanical, geometrical, and temporal connection between the properties of a response and the properties of its immediate consequences... Verbal behavior is different... Verbal behavior is impotent in the physical world alone. When we behave verbally someone must intervene if we are to achieve an effect. This simple fact, as obvious as any fact can well be, provides a useful preliminary definition... We shall see that the field thus defined is surprisingly close to the traditional field... As it stands, a little too much ground is covered and further qualification will be needed... We are interested only in behavior which is reinforced through the *behavior* of another organism.” (WJL, p. 20; *passim*; emphasis in original)

We saw previously that by 1957 Skinner no longer felt that reinforcement by the behavior of other organisms was a sufficient criterion to define verbal behavior; rather the behavior had to be acquired under special contingencies arranged by a verbal community. Although Skinner did not include this condition in his 1948 definition, he already realized that some such condition was necessary, as we will see shortly.

In HN, Skinner listed 13 distinctive features of verbal behavior that follow from the mediation of its effects by other people. He listed a further eight features that follow from the freedom of verbal behavior from environmental support, i.e., freedom from special equipment, machinery, or apparatus. In WJL, he condensed them into a single list of 14 features, all of which, he claimed, followed from a loose definition of verbal behavior, but only seven of which followed from his revised definition. What follows is excerpted from the latter list, along with some comments of my own:

- 1) “There is no relation between the energy level of the response and the magnitude of the effect” (WJL, p. 21).

It was Agamemnon’s command, not Helen of Troy’s face, that launched a thousand ships, and from his point of view it was a great economy over launching them himself. Verbal behavior provides extraordinary leverage in moving the world. Moreover, the advantage need not be at the expense of the listener. Agamemnon’s myrmidons may have been unhappy about launching all those ships, but in contexts in which there is no imbalance of power, any advantage to the speaker is likely to accrue indirectly to the listener as well.

The Hayes counter-example achieves its force by choosing the special case in which both rats are expending the same effort and getting the same outcome. But the possibilities for the verbal rat are endless, since for him the relationship between response and consequence is arbitrary. If the conventions of the “verbal community” were to change, each lever-press could produce, say, one pellet, or 20 pellets. The non-verbal rat is trapped in a world in which each response produces, on average, one-fifth of a pellet, and even so the yield is only temporary; if Hayes were to continue to watch his hypothetical rat until the bag of pellets was empty, he would see the significance of Skinner’s emphasis on reinforcement mediated by another organism. The “verbal” rat, of course, plays no role in decisions about the schedule of reinforcement, but in symmetrical verbal communities in which every member is

both a speaker and a listener interchangeably, verbal contingencies can be changed by consensus in a moment, and in practice they often are.

Incidentally, Skinner remarked that this feature of verbal behavior is perhaps not as important as it once was because modern cultures exploit systems of stored energy, like heavy machinery and electrical appliances. In the computer age, a mouse click or the touch of a keypad can have substantial effects that bear no relationship to the magnitude of response. Perhaps the strength of the analogy explains why we personify our cars and our computers. We are apt to say, "I told it to sort the files by date, but now it won't let me go back to the way it was."

- 2) "Thousands of different responses having very different consequences are executed with the same musculature. No field of non-verbal behavior can show a comparable 'vocabulary'. This is partly due to the small scope and low energy requirements of verbal behavior. It is partly due to the fact that time can be used as a significant dimension in differentiating forms of response... The potentialities of the temporal dimension are seen in the behavior of the skilled telegraphist who might transmit all the works of Shakespeare merely by varying the temporal properties of a small movement of the wrist" (WJL, p. 21).

This feature is relevant to his definition of verbal behavior in that listeners can discriminate the finely graded stimulus products of such behavior. However, this advantage of verbal behavior is less conspicuous for forms of verbal behavior that are not vocal. Like the previous feature, this one is not the exclusive province of verbal behavior. Biofeedback devices, sphygmomanometers, and other devices are also sensitive to small amplitude responses and temporally patterned responses, but the number of forms of the corresponding behavior is usually modest.

- 3) "Verbal behavior is normally very fast, greatly exceeding the speed of any non-verbal behavior with the same variety of forms and consequences... In part, the speed is due to very rapid serial chaining, which is possible because the stimulus for each succeeding response appears promptly" (WJL, p. 21).

This is indeed an important feature, but again, it applies mainly to vocal behavior. Moreover, however important the feature may be, it doesn't follow from Skinner's definition.

- 4) "The consequences of verbal behavior are not inevitable or even nearly so." (WJL, p. 22).

This feature of verbal behavior affects much social behavior; an effective speaker is attentive to the listener and responds to any sign of boredom, confusion, enthusiasm, and so on.

- 5) "The effect of verbal behavior is delayed. The responding organism needs time. Even the quickest mediation will produce a delay in reinforcement which can be shown to have an observable effect upon behavior under laboratory conditions... The reinforcement of written behavior is especially slow... The resultant low strength is familiar enough" (WJL, p. 22).

- 6) "The effect of a verbal response can be multiplied by exposing many ears to the same sound waves or many eyes to the same page. Even without modern scientific aid, verbal behavior could reach over centuries and to thousands of listeners or

readers at the same time” (WJL, p. 22).

One could say the same thing for art, sculpture, and pyramid-building, among many other things, but this feature is especially characteristic of verbal behavior, perhaps because it is so easily reproduced.

- 7) “In a given verbal community an individual becomes not only a speaker but a listener... The speaker can, and almost certainly will, hear himself” (WJL, pp. 22-23). “This raises the “possibility that the self can reinforce. The self reinforces when you scratch yourself, but that is a trivial case in comparison with the enormous proliferation of behavior in the verbal field. When the verbal community sets up in you both a speaker and a listener, this is new and novel. It is the mediation of a second organism which allows you to step in as the second organism” (HN, p. 58). In my opinion, this is an exceptionally important feature, for it ensures that discriminating listeners can acquire new verbal behavior without deliberate instruction. But this feature too is shared by some examples of nonverbal behavior, such as learning to pick out a tune on a piano, or learning to whistle, or even learning to juggle oranges. At this point in his exposition, Skinner paused to differentiate the previous seven features from the following seven on just those grounds, namely, that the former are shared to some extent by behavior that he wished to exclude. However, his transitional comments are more consistent with his 1957 definition than his 1948 definition, and they therefore help us interpret the former. In 1948, he was beginning to recognize that verbal behavior requires a special repertoire in the listener. He noted that the behavior of the artist shares most of the previous features, but whereas the art patron can respond to a painting without a special, conventional history, the listener does require special training.

“[This special training] is the crux of the verbal problem. Verbal behavior arises in, and is shaped by, a verbal environment—an environment in which responses are characteristically reinforced in certain ways... A verbal environment is the product of a long interchange between speakers and listeners, each changing the behavior of the other in some degree... As a verbal environment grows, it provides for the reinforcement of more and more advantageous forms of response.” (WJL, p. 23)

Perhaps because the term “verbal environment” introduces circularity, Skinner replaced it with the provision that “the listener must be responding in ways which have been conditioned precisely in order to reinforce the behavior of the speaker.” The passage above clarifies what he meant by that provision.

The following seven features are those that Skinner believed were implied by his narrower definition of verbal behavior:

- 8) “*Different* verbal responses may lead to the *same* effect... As a result groups of responses acquire similar functional properties, as in synonymy or polylingualism.
- 9) The *same* verbal response may be reinforced in different ways—by different listeners or by the same listener under different circumstances. A single response then acquires a complex functional control as in homonymy and irony. As a much more significant result of this characteristic verbal behavior may be freed from the special interests of the speaker, to acquire what we call objectivity.

- 10) The two preceding consequences of the restricted definition are altogether responsible for the *multiple causation* which is characteristic of verbal behavior, and which is responsible for some of its most interesting features.
- 11) A verbal response may come under the control of a special aspect of the occasion upon which it is emitted. When that aspect is a single property or dimension of a stimulus, the behavior is said to be abstract—an exclusively verbal accomplishment.
- 12) [The behavior] of the listener which arises from his participation in a verbal environment leads to a special sort of self-knowledge. Its application to the problem of awareness is of [great importance].
- 13) Responses of novel form may be effective. The processes which produce the novelty in the behavior of the speaker are matched by other processes in the behavior of the hearer. A single neologism may have an appropriate effect. The many-worded novel forms which, as we say, express new ideas may also be effective. The idea itself, when redefined in terms of behavior, may be peculiar to the verbal field in this sense.
- 14) A special kind of verbal response may arise in the behavior of the speaker which alters the behavior of the listener with respect to other responses. [Skinner is speaking here of verbal operants he dubbed “autoclitics,” or verbal responses that are about other verbal responses of the speaker.] These responses are of extraordinary importance and are peculiar to the verbal field.” (WJL, pp. 23-24, *passim*; emphasis in the original)

Only a few of this last set of features seem to be exclusively verbal, even by Skinner's revised definition, but that is of no importance, as I will point out below. At the very least, Skinner's list of distinctive features of verbal behavior reveals that his definition was not the careless proposal of a man facing a deadline but was the product of several successive attempts, continually refined over many years. It reveals the constellation of properties that he believed covary in verbal behavior, and as a consequence we can more clearly see what is at stake in accepting or rejecting his definition or in comparing it to other definitions.

CONCLUSION

In the process of formulating his definition, Skinner indirectly identified three criteria for evaluating it, namely, that the phenomena it embraces overlap considerably with those embraced by a traditional conception of the field, that it identify behavior with certain unitary properties, and that it be useful. As for the first criterion, Skinner himself was satisfied that the domain of his definition was “surprisingly close” to the traditional domain. If one excludes the examples of interspecies behavior embraced by Skinner's definition, I see no reason to dispute that conclusion, and such marginal cases do not loom large in Skinner's analysis.

Skinner's search for “certain unitary properties” seems to be satisfied by his list of distinctive features. Descriptive definitions attempt to characterize classes of natural phenomena that hang together according to some contingency or set of contingencies. Few if any features of such categories will be unique. Most features of kangaroos are

shared by other mammals, most features of orchids by other flowers. What emerges from Skinner's definition of verbal behavior is a fuzzy class of behaviors that share a constellation of properties to a greater or lesser extent. Ambiguous cases are inevitable. We can agree that a lever-pressing rat is one such boundary case. The case of a driver tapping the reins on a horse's back is a bit closer to the center of the distribution, and most vocal behavior is squarely in the middle. However, a rigid reading of Skinner's definition omits behavior of considerable importance, namely, behavior that is emitted when there is no listener present other than the speaker himself. Covert speech, self-directed speech, and most writing is emitted under such conditions. Skinner was aware of this difficulty and resolved it this way: An individual with an appropriate history (a typical history), has both a speaking repertoire and a listening repertoire. A single person can play both roles in succession. One hears oneself speak, and the stimulus properties of one's speech can have important effects on one's subsequent behavior. (Much of what we call problem solving exploits this fact.) It is true that some of the distinctive features of verbal behavior identified by Skinner do not apply to self-directed speech, but that merely reveals a fact about the subject matter. In some respects, the subject matter is indeed heterogeneous, and the heterogeneity cannot be washed away by a definition. Many facts about dachshunds do not apply to Saint Bernards. As I mentioned previously, if a definition does not respect a regularity in nature, it is the definition that must yield, not the subject matter. Skinner was comfortable in salvaging his definition by alluding to different repertoires in a single person, and that may be the best we can do.

Is Skinner's definition useful? It is useful at least to this extent: It identifies the subject matter clearly as behavior; the behavior of the speaker is interlocked with the conditioned behavior of a listener; and the listener's behavior was shaped up by a verbal community according to arbitrary but conventional standards. Although little of this seems remarkable to a behavior analyst today, it is fundamentally incompatible with structuralist and formalist approaches to language, those that view languages as a system of symbols that can be abstracted from the messy world of stimulus and response classes. For many years such approaches were ascendant in linguistics and were highly influential among psychologists and philosophers as well. In my opinion, they have led science down a blind alley. It is not my purpose to argue that Skinner's definition is better or worse than other behavioral definitions, but if it helps reorient scholars toward a conception of language as behavior, it will be doing a useful service.

NOTES

1. The Hefferline Notes have been converted into electronic form and can be found at <http://www.lcb-online.org> under the *Verbal Behavior* tab

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