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Rules as Environmental Events

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Behavior analysts have recently begun to use Skinner's (1957) conceptual framework in the experimental analysis of the behavior of speakers (e.g., Chase, Johnson & Sulzer-Azaroff, 1985; Lamarre & Holland, 1985). A correlated interest in the behavior of listeners is also evident (e.g., Hayes, Brownstein, Zettle, Rosenfarb & Korn, 1986; Vaughan, 1985), especially that behavior designated by Skinner as "rule governed" (1966/69). Skinner (1986) has suggested that behavior analysts should be cautious in using the term "rule-governed behavior" and that we would be better off with another term for "behavior of which the topography and probability are controlled by verbal stimuli" (p. 1). The reason he gives for urging caution is that the term "rule-governed behavior" is tautological since "rule means govern." Thus, he continues, we need another term but may be stuck with "rule" because it is "probably established" (p. 1). Another way of formulating the problem that Skinner cautions us about is that the term "rule-governed behavior" implies that the independent variable is inferred from the behavior to be explained by it, whereas good scientific practice requires that independent variables be independently identifiable (and manipulable in an experimental study).

A way of avoiding the danger of tautology might be to clarify our definition of "rule" to ensure that the experimental analysis of rule-governed behavior proceeds by identifying events called "rules" without respect to the responses that may or may not be controlled by them (functionally related). Since the behavioristic formulation of rule-governed behavior was initiated by Skinner (1966/69), I shall begin with his suggestions regarding the definition of "rules." He pointed out that a rule is "an object in the environment" (1969, p. 148), "a special kind of verbal stimlus" (Place, 1987, p. 9) and a "contingency-specifying" stimulus (1969, p. 148).

RULES—OBJECTS IN THE ENVIRONMENT

An object in the environment may enter into many different behavioral relations, but before the relations can be examined the object must be identified. ("No need to discuss relation until you locate two parties" [Baer, 1978].) Since science deals with systematic relations, the object must also be *reliably* identifiable. Thus, whatever we call a rule must be reliably identifiable as such without respect to any behavior it governs. Just as we call some objects "red lights" whether or not they are on the wall of an operant chamber, and whether or not a pigeon pecks in their presence, we need to be able to call some objects "rules," wherever they occur and whether or not any behavior is governed by them. As an independent variable in an experimental analysis of behavior the term "rule" is in a class with the term "red light." The verbal responses "red light" and "rule" are not in a class with the responses "discriminative stimulus," "conditioned stimulus" or "reinforcer." The latter terms, like "species" and "population," are highly useful terms but do not tact instances of observable objects (or events) in the environment.[2]

Thus, red lights and rules are empirical events, each occurrence constituting an

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observable instance in and of itself. Discriminative stimuli, on the other hand, are classes of empirical events that can be tacted only in terms of their specific relations to other classes of empirical events (responses). The term "discriminative stimulus" necessarily implies a specific kind of functional relationship while the terms "rule" and "red light" do not. To say that rules and red lights can enter into functional relations with behavioral events, and do when they function as discriminative stimuli in tacts (or for nonverbal behavior), is not to say that the controlling variables for the terms "rule" and "red light" are relationships among events.

The above comments suggest the importance to our science of Skinner's assertion that rules are objective events in the environment. As objective environmental events, rules must be specifiable without reference to the events that enter into functional relations with them. If rules, once they exist as objects in the environment, are said to enter into functional relations with behavior, then good scientific practice requires that the events entering into the functional relations be independently specified, both independent variables (red lights and rules) and dependent variables (response events). A corollary of the last sentence is that the events that may enter into functional relations with behavior may enter into many different kinds of relations. For example, a given instance of a red light (or a rule) may enter into any number of behavioral relations, functioning as a discriminative stimulus, a reinforcer, a conditioned stimulus, etc. (cf. Michael 1983, 1985)[3].

RULES—VERBAL STIMULI

The position that rules must be identifiable independent of the behavior which they control requires that they be identifiable as rules before their function in given behavioral relations is ascertainable. Thus, the characteristics of objects in the environment that we are going to call "rules" must be spelled out. The specification of a rule as "a special kind of verbal stimulus" (Skinner in Place, 1987, p. 9) restricts the range of objects that might be termed "rules." In specifying the relevant and irrelevant dimensions of events to be called "verbal stimuli," Peterson (1978) pointed out that a verbal stimulus "has a specific form or pattern which as a unit has controlling effectiveness" and "it is the result of verbal behavior." Thus, a verbal stimulus might have the form, for example, of a grapheme, phoneme, word, or sentence; and those names tact units of certain forms that may enter into various functional relations with response events. To be useful scientifically, the unit must be replicable and identifiable in terms of its dimensions so that it can be examined for its effects on behavior.

The characteristic of a verbal stimulus that may be most critical for the present discussion is that it must be the result of verbal behavior. Such a characterization rules out events that are similar in form to verbal stimuli but are not produced by a speaker whose responses are the result of the verbal community's reinforcement practices. For example, if the wind blew leaves around to form a pattern on the grass like the word "Stop," a traveller who stopped would not be responding to a verbal stimulus. In a similar vein, the sounds produced by a verbal summator are not verbal stimuli, even though they may evoke responses in a listener. Since neither the leaves nor the sounds produced by the verbal summator are verbal stimuli, any behavior they evoked would not be rule governed. The stimuli do not meet all the criteria for the term "rule."

The stipulation that a rule must be a verbal stimulus poses a problem similar to that of identifying artifacts as such. There may be cases where an object looks like an artifact but, in fact, is an accident of nature. The analogous situation is less likely in the case of rules, however, because few stimuli that are not the products of verbal behavior seem likely to be *reliably* mistaken for the products of verbal behavior. The additional stipulation that the verbal stimulus be a "contingency-specifying stimulus" is likely to reduce even

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[2]Of course, observable environmental events enter into control of verbal responses like "discriminative stimulus" but the response is not under control of an instance. Responses like "discriminative stimulus" must be controlled by *more* than an object or event. They are (when emitted properly as a tact) controlled by evidence of a specific and repeated kind of relation between environmental events and response events.

[3]The discussion and experimental work of behavior analysts regarding the way or ways rules function in governing behavior is not an issue in this paper because this paper is about the ways behavior analysts talk, or perhaps should talk, about rules and is based on metatheoretical issues.

further the liklihood of mistaking nonverbal stimuli for rules. The specification that rules are contingency-specifying stimuli further limits the events that qualify as "rules," and further delimits the possible instances of rule-governed behavior. Rules are, then, a subset of verbal stimuli that have something in common.

RULES—CONTINGENCY-SPECIFYING STIMULI

What rules have in common is that they specify contingent relations among events. As used by behavior analysts, "contingent relations" is the same as "functional relations," both terms referring to relations where one class of events depends on or varies with another class. Rules, then, are verbal stimuli that specify mathematical or empirical covariations.

Perhaps it is important to note that specifications of covariations may be more or less universal (as in the case of scientific laws), highly idiosyncratic (as in the case of predictable responses of a particular autistic child), or "culture bound" (as in the case of the relations observable in the social practices of a given society). Also worth noting is that the specifications may be accurately and fully stated, sketchily stated, or wholly mis-stated. Thus, whether the rule is a good one (well specified) or a bad one (poorly specified), and whether it specifies universal, culture-specific, or organism-specific relations, the object in the environment that we call a rule is still a rule. Perhaps it goes without saying that well specified universal rules, e.g., "scientific laws," are the most powerful rules because behavior governed by such rules has enormous potential for being effective.

Although Skinner allows that simple mands such as "Come here" are rules, such a verbal stimulus does not appear to *specify* a contingency. It may *imply* a contingency but none is specified. I believe it worth exploring the value of taking Skinner at his word(s) (i.e., his specification) and requiring that if a verbal stimulus is to qualify as a rule, it must *specify* at least two events (more usually, classes of events) and a relation between them (a contingency). The two events between which contingent relations are specified may be any two events. In other words, rules are descriptions of functional relations—universal, idiosyncratic, or culture-specific. Since no rule can be formulated without behavior—the verbal behavior of formulating and usually other verbal and nonverbal interactions with the environment—behavior is always implied by rules if not specified. The events *specified*, however, may not involve response events. For example, the scientific law (rule) $E=mc^2$ specifies apparently universal relations among energy, mass, and the speed of light. No behavioral events are specified by the law even though behavioral events of many kinds were involved in formulating the law—up to and including the first statement of the law (i.e., the first specification of those relations among energy, mass, and light).

While many rules (particularly the laws made by governments, religious agencies and others interested in limiting or furthering social relations of particular kinds) *specify* relations among responses and environmental events (contingencies of reinforcement), other rules specify relations among events that presumably are independent of human behavior (even though the behavior of specifying is, of course, not independent of those events).

SUMMARY

The concept of rules as delineated above is uniquely behavioristic. By stipulating that rules are empirical events—objects in the environment—behavior analysts are constrained to identify some event as a rule before they can invoke the rule as entering into rule-governed behavior. The further stipulation that the object called a rule be a verbal, contingency-specifying stimulus sets the parameters for emission of the verbal response "rule" and limits the instances of behavior we might call "rule governed" to those instances where a functional relationship between a rule and a response can at least be reasonably hypothesized.

The behavioristic approach to rules and their relation to behavior may be especially valuable to the current efforts of behavior analysts to explore relations between behavior analysis and certain theoretical approaches in the social sciences (e.g., Harris, 1979). The suggestion that behavior analysis and cultural materialism stand in a relation similar to that between genetics and evolutionary systematics (cf. Glenn, 1986) can only be fully explored if behavior that is involved in cultural practices is understood

both in terms of the behavioral processes giving rise to it as well as in terms of its role in cultural phenomena. The demystification of the concept of "rules" may provide the bridge that is needed.

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