

Beyond Skinner? A Review of *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition* by Hayes, Barnes-Holmes, and Roche

J. Grayson Osborne, Utah State University

In their book, *Relational Frame Theory: A Post-Skinnerian Account of Human Language and Cognition* (2001), Hayes, Barnes-Holmes and Roche challenge behavior analysts to put aside Skinner and Verbal Behavior in favor of relational frame theory's approach to human language and cognition. However, when viewed from the contexts of behavior analysis, the principles of behavior analysis, and the principles of the founder of behavior analysis, *Relational Frame Theory* fits squarely in the Skinnerian, behavior analytic tradition. As with *Verbal Behavior*, *Relational Frame Theory* and its theses may be thought of as logical and empirical extensions of that which precedes them.

Hayes, Barnes-Holmes, & Roche (2001) present a provocative account of human language and cognition in terms of relational frame theory (RFT).¹ They mean their account to succeed where, they claim, Skinner's book, *Verbal Behavior (VB)*, and its premises failed; failed, that is, as a generally accepted account of the definition, development, and operation of human language and cognition. To some behavior analysts, Skinner's purported failure in this area will come as a surprise. To others, it will not. To still other behavior analysts, *RFT* will be off-putting, less through its theses, than through its tone. The scope of RFT also will be seen as grand. It is, by necessity, as it purports to explain all complex human behavior (see, e.g., Hayes, Strosahl, & Wilson, 1999; Roche, Barnes-Holmes, Barnes-Holmes, Stewart & O'Hara, 2002). However, while the authors attempt to separate themselves from Skinner—but not from behavior analysis—it is the thesis of this review that they do not succeed in the former, and, indeed, appear to be proceeding, in *RFT*, much in the manner of their illustrious predecessor.

¹ Throughout this review, *RFT* is used to refer to the book under review, and RFT, the theory that underpins the book. Sometimes the choice of one over the other seems arbitrary and it probably is.

Address correspondence to J. Grayson Osborne, Department of Psychology, Utah State University, 2810 Old Main Hill, Logan, UT 84322-2810 (email: graysono@coe.usu.edu).

The Off-Putting Parts

Adversarial tone. The authors set an adversarial tone almost immediately in the Preface. They state that, if their account is correct, "... many of the most prominent Skinnerian ideas about human complexity must be put aside or modified virtually beyond recognition (p. xii)," and "... it is now time for behavior analysis to abandon many of the specific theoretical formulations of its historical leader in the domain of complex human behavior ... (p. xii)." These sentences suggest a broad putting aside. If there is such, then the sentences are justified. If not, they would seem to overreach, unnecessarily. This review will attempt to examine just how much putting aside there really is.

Writing style. The authors state their style "... will be a bit loose for scientific writing—some sections will be lightly referenced, some procedures will be vaguely described, and so on (p.1)." Without a formal presentation, scholars from outside behavior analysis will not be convinced in the absence of the details that are loosely omitted, and the presence of the sections that are lightly referenced, and the procedures that are vaguely described; whereas scholars from inside the area may consider the book unhelpful because it should be more formal. The book does read as though it has been loosely edited, e.g., the use of "I" or "My" when the authors are multiple (e.g., pp. 37,123,129, 130) and a later tact of this condition with instructions to the reader to ignore this usage at that place (p. 242). Some of this can be forgiven if it makes a section more understand-

able. However, to approach *RFT* with a reasonably good knowledge of behavior analysis, in general, and some knowledge of RFT, in particular, is, still, to encounter occasions in the book when references to support assertions are desired, if only so that someone from a different perspective would not consider them empty. The same is true for more experimental detail about procedures that have been forgotten or are vaguely recalled by the reader but with which someone from a different perspective might not be familiar at all. There may be no winners here.

If you are reading this review, the book is probably written for you as well as me, that is, persons sufficiently experienced with behavior analysis to understand that, to the arguments, the omitted references and, to the experiments, the omitted details, are basically unimportant. But how many are there of us? The answer is: fewer and fewer.² The way that the book is written suggests it is pointed toward a small, uniformly and familiarly trained, audience (i.e., we happy few).

If the book is noticed by those outside behavior analysis will they respond in the absence of an understanding of what behavior analysis is, as Chomsky responded to Skinner? Will the reasons be the same, that is, the failure of the authors to make the reader familiar enough with behavior analysis that the new constructs of the book logically follow from what is currently known and what has been proposed in the past?³ This may be but one (unfortunate) characteristic *RFT* shares with *VB*, about which, perhaps, little could have been done and about which there is more to say below.

Following in the Footsteps: Parallels with Verbal Behavior and Skinner

As much as the authors of *RFT* appear to want to separate themselves from Skinner—

² Here I speak not of the growth of the Association for Behavior Analysis but of the seemingly dwindling number of persons being trained in the experimental analysis of behavior as may be inferred from the lack of subscription growth of the *Journal of the Experimental Analysis of Behavior*.

³ I grant that providing sufficient background evidence of the vitality and validity of behavior analysis may be nearly impossible to accomplish in a single book that does not have that goal as its principal focus.

witness their subtitle—there are interesting parallels that they cannot avoid. First, they propose a theory which is less than formal, much as most of behavior analytic theory, that the members of the Society for the Quantitative Analysis of Behavior (SQAB) have not attended to, is less than formal. Second, essentially, they propose an extension of what is known in behavior analysis at this time, much as Skinner proposed *VB* as an extension of what was known in behavior analysis in his time. Third, as *RFT* is an extension of behavior analysis, it honors the philosophical foundations thereof—as did *VB*. Among other descriptors, behavior analysis is contextualistic, relational (non-mechanistic), non-reductionistic, post hoc, and inductive. Ditto *RFT*. Fourth, *VB* provided an alternative way of thinking about a larger area of human behavior than that provided either within the broader extent of experimental psychology at the time or outside psychology. Ditto *RFT*, and the proposed *RFT* alternative to *VB* is one that will be considered and researched ultimately within the context of behavior analysis, as was—to the extent that it has been—*VB*. Fifth, as with *VB*, in *RFT* much of the authors' exposition is conjectural—as it must be—in the absence of supportive research. *RFT*, too, is an extension from what is known to that which isn't. Sixth, dealing as they do with human language and its appurtenances necessitates almost complete overlap with the subject matter of *VB*, except, as mentioned above, that applications to education, social processes, psychotherapy, and religion are primarily covered not in *VB* but elsewhere (e.g., Skinner, 1953; 1968), while most of these subjects are covered in *RFT*. Seventh, the tone of the authors of *RFT* is assured. They exude the same zeal that Skinner—who, to his critics, also sounded assured—did. The authors of *RFT* feel they are theoretically correct, occasional caveats to the contrary notwithstanding. Their early data suggest the validity of the extensions they propose—as the early data in behavior analysis did for Skinner. The authors of *RFT* exhibit the same confidence that a young generation of behavior modifiers did some 40 years ago. Since many of us were historically guilty of this same confidence, we should be understanding. Finally, the authors of *RFT* attempt from a few basic principles to explain much about complex human behavior. This is squarely in—not separate from—the broad be-

havior analytic tradition (e.g., Staats & Staats, 1963; Staats, 1968). As Sidman (1994) has written in reference to RFT, “[There is] ... much that is congenial in this attempt to formulate a general theory ... (p. 556).”

What Prominent Ideas Are Put Aside?

Let us divide Skinner’s ideas grossly into two categories: those generated by and from the findings of behavior analysis and its attendant philosophy and those that comprise behavior analysis itself. An incomplete list of Skinner’s ideas that comprise behavior analysis itself—there is neither an attempt nor a need to be exhaustive here—could begin arbitrarily by paraphrasing some of the chapter titles of *Behavior of Organisms* (Skinner, 1938): (operant) conditioning and extinction; reinforcement; periodic reconditioning, i.e., schedules of reinforcement; the discrimination of a stimulus, i.e., the development of stimulus control; the differentiation of a response, i.e., shaping; and drive, i.e., establishing operations. Among others, these foundational constructs of behavior analysis have been fleshed, tweaked, honed, and modified over the years (e.g., establishing operation for drive) by several generations of behavior analytic researchers and theorists. Except in the details and the size of the picture they paint—micro or macro—there is little that remains controversial about them except among those same researchers and theorists. By themselves, our perspectives on these ideas, most of which are also foundational to experimental psychology in general, are not prevalent. Witness the fact that we can’t even make ourselves, as behavior analysts, effectively heard on the rewards versus reinforcement issue. Indeed, a book to promote this outcome has been written (Cameron & Pierce, 2002), yet there are no guarantees it will be read and acted upon by the psychology community beyond behavior analysis. Presumably, there is no one in behavior analysis interested in putting these foundational ideas aside. They have carried us far and they will carry us farther.

In fairness, the authors of *RFT* don’t appear to suggest putting any of these foundational ideas aside. If that is the case, how much separation is there from Skinner? Insofar as it is possible to infer from *RFT*, it would appear that the authors retain all the basic principles of behavior analysis. While their writings are tem-

porally post-Skinner, this retention renders separation from Skinnerian ideas—which are inextricably bound together with behavior analysis’ foundations—moot. While not specifically rejected in *RFT*, and presumably, until shown otherwise, these principles are also of continuing importance to the explanation of human behavior.

Skinner’s ideas that became prominent did so outside the field of psychology and had most to do with the core idea that simple extension to human behavior of the aforementioned foundational principles was possible. The ideas and their underlying philosophy (radical behaviorism) became prominent because of their implications with respect to human nature in Western society and culture. Skinner formally put some of those ideas on human cultural behavior in *Science and Human Behavior* (Skinner, 1953)—behavior in groups, education, economics, and religion that are pretty straightforward examples of these conceptual extensions—as a context for *VB*, which he had already largely written (Skinner, 1957). At the level they were presented, the cultural extensions were simple. In fact, it was their simplicity that was a focus of attention of the critics. There is no question these extended ideas were and are prominent, if only in the reaction they provoked when the non-psychological world became aware of them and their implications for human nature. Take for example, the furor that followed the publication of *Beyond Freedom and Dignity* (Skinner, 1971), Skinner’s treatise on agency (e.g., Wheeler, 1973). Arguably, *Beyond Freedom and Dignity* was Skinner’s most controversial book outside of psychology. The current generation has probably never heard of it. Indeed it would be surprising if current behavior analyst graduate students read it. It is certainly not on one proposed, essential reading list (Saville, Beal, & Buskist, 2002). Again, the authors of *RFT* suggest putting aside neither the application of these foundational ideas to human behavior nor any of the philosophical tenets that comprise radical behaviorism. Thus, in terms of the foundational principles of behavior analysis, their extended application to human behavior, and the tenets of radical behaviorism, the authors of *RFT* remain squarely Skinnerian.

Are the ideas in VB prominent? By prominent ideas to be put aside, the authors of *RFT* mean only those of Skinner that pertain to hu-

man language and cognition. First, are Skinner's ideas in *VB* actually prominent? Have they, for example, led to research? About 20 years ago, "Not much," was the answer to the latter (Knapp, 1980; McPherson, Bonem, Green, & Osborne, 1984). The authors of *RFT* currently assert, not much, also. However, it was additionally pointed out by MacPherson et al., at that time, that *VB* was a highly cited book. Unfortunately, most of the citations were by its critics, most of whom were not behavior analysts and most of whom were not even psychologists (McPherson et al., 1984). *VB* was notorious outside behavior analysis, but its ideas were then and are now anything but prominent. Speculatively, if we gave a quiz today to the members of the International Association of Behavior Analysis that asked those members to identify (not define, mind you) Skinner's six basic verbal operants described in *VB* more than half would not be able to provide a complete list. (Don't peek; take the challenge before looking at the footnote.)⁴ Indeed, in how many graduate behavior analysis programs is *VB* even read, notwithstanding its high placement on the essential reading list (Saville et al., 2002)? Whither prominence of its ideas?

Second, does the prominence of the ideas to which the authors refer lie with the critics of *VB*? I have not looked at what has happened to *VB* since 1984, the publication date of our graduate students' brief foray into citation analysis, but it is hard to believe that, having pretty much uniformly rejected *VB* and its ideas many years ago, the critics would consider these rejected ideas prominent now. These critics would also do considerably worse on the six-verbal-operant quiz than our own colleagues and students most of whom have at least heard of mands and tacts, if not echoics, textuials, autoclitics, and intraverbals. Even Chomsky's review wasn't directed at the contents of *VB* as much as it was directed at what *VB* stood for—an empirical approach to language development with its implied behaviorism underlying (he erroneously assumed) an S-R psychology.

All of this is sad, since it seems as though the authors of *RFT* have erected a strawman (one of several, e.g., Willard Day, philosopher

qua researcher). To whom, then, are the ideas in *VB* prominent? If you are reading this, it is probably, but not necessarily, you. It certainly is me, but it is me only in the sense that nothing has come along to supplant the ideas in *VB*. Hayes et al. would like to change that and they could have done so without setting up *VB* and its author first in order to then knock them down.

What, then, is actually put aside in VB? The actual putting aside is neither methodological, nor philosophical, nor analytic. Indeed, in *RFT*, behavior analysis per se remains untouched in large measure. What is put aside is Skinner's definition of verbal behavior. In one sense this is a rather fundamental putting aside: it relegates most of what has been examined in behavior analysis, both experimental and applied, to the realm of non-verbal behavior, where most of us would agree that non-human animal experimental analysis already was anyway. The exceptions—large ones—are in human experimental analysis (other than those dealing with relational responding of a particular kind) and in applied behavior analysis.

But what does this change of definition really change? As with the progress of any science, the data already validly gathered and analyzed do not all of a sudden become invalid. They are, however, subject to reinterpretation, but that process occurs on a continuing basis as a part of normal science, no matter the advent of new theory. Further, it is not clear that the extant technology of non-human animal experimental analysis or applied behavior analysis will change with *RFT/RFT*. It will still be necessary to construct and apply differential reinforcement contingencies to get one class of behavior to increase and another class of behavior to decrease, regardless of whether one redefines the behavior being changed as nonverbal or not. In other words, no paradigm shift lurks in *RFT*.

Why redefine verbal behavior? The redefinition of verbal behavior is a necessary first step according to the authors of *RFT* because Skinner's definition of verbal behavior is essentially all encompassing, and, as such, may account in some measure for the lack of progress in the study of verbal behavior. The Skinnerian definition of verbal behavior is so broad that all non-human animals are said to be emitting verbal behavior if they behave with respect to contingencies arranged by humans

⁴Mands, echoics, textuials, intraverbals, tacts, and autoclitics.

(Skinner, 1957; p. 108). A literal interpretation of Skinner's definition makes most of the experimental literature of behavior analysis to this point the study of verbal behavior, a position that would not be defended by any contemporary behavior analyst. Acceptance of a redefinition of verbal behavior further implies the necessary re-interpretation of the data of human experimental analysis, which is not much of either a putting aside or a step since that endeavor has been going on since Harold Weiner showed that nurses didn't behave exactly as pigeons and rats did on schedules of reinforcement. The redefinition of verbal behavior in *RFT* makes verbal behavior relational behavior (specifically, arbitrarily applicable, relational behavior) and that act has some large implications.

It's the species, stupid. The attempted separation of RFT from Skinner is a species thing. The redefinition of verbal behavior in *RFT* makes such behavior uniquely human—for the time being. On the other hand, as discussed above, while not formally stated in *RFT*, all of the known principles of behavior appear to still apply to human and non-human animals with respect to nonverbal behavior and, maybe with respect to human verbal behavior, too. The latter appears to depend on what one concludes it is that verbal humans do. According to *RFT*, verbal behavior, qua arbitrarily applicable, relational responding, is *all* that humans do.

It is at this level, that of continuity or discontinuity between *Homo sapiens* and all other animals, that *RFT* wishes to divide from Skinner, and this is potentially a huge divide. On one half of the divide the standard definition of behavior is good for pigeons, rats, and sundry other species (but not necessarily, on occasion, for sea lions and an African grey parrot), while on the other half a modified definition of behavior is good only (at this time) for *Homo sapiens*.

But, to reiterate, on both sides of this divide the foundational principles of behavior analysis are unmodified; there is only a change in a definition. This modified definition of verbal behavior owes much to behavior analysis including the context(s) that produced it and the training of most who redefined it. Yet, more than occasionally it feels as though *RFT*'s purveyors think that the definition as modified and its ramifications have been spun from whole cloth. Arguably, the redefinition is spun from

behavior analytic cloth but results in a somewhat different weave.

All of the foregoing is not to say that new principles of behavior are not presented in *RFT* on the human side of this divide. They are. But they, too, are a result of behavior analytic research all-be-the-y of the last, temporally, post-Skinner years.

What Is Changed by What Is Put Aside?

The verbal operant and relational frame as equivalent. Before reading *RFT*, I believed that I understood what constituted a relational frame. Reading the book changed that, so the book was very instructional. Prior to reading it, a relational frame appeared to be the context within which an operant occurred. That context, broadly construed, was set by the fifth term in a five-term contingency (Sidman, 1986). The frame was the contextual stimulus that implied, "In my presence, responses that relate stimuli in a particular way (e.g., greater than, equivalence, etc.) will be reinforced."⁵ I learned from *RFT* that a relational frame as noun (p. 34)—my incomplete understanding of it—is no different than relational frame as verb. As verb? As action? Yes, and definitionally as operant. Indeed, the only kind of operant that sentient, normal, verbal human beings emit. What the authors of *RFT* propose is that humans, when they behave, are *relating* stimuli and that is all (!) they do. Humans are predisposed to acquire this ability to *relate* stimuli through experience from birth with language. No language, no *relating*. Behavior analysts have probably used the phrase *relational responding* to denote the act of *relating* but didn't realize at the same time that they were speaking of *relational framing*.

This is a huge conceptual leap, but it follows generally from what is known about the field's failed (or controversial) attempts to produce relational responding at least where equivalence is the relation and nonhuman animals or pre-verbal and nonverbal retarded children are the subjects. It is a bold induction from extant data, including the exceptional schedule of reinforcement performances of humans.

⁵ In fact, some of the authors themselves are still using phrases such as "... the response participate(s) in a relational frame ... (Barnes-Holmes, Barnes-Holmes, & Cullinan, 2000; p. 76)."

While it is a bold induction for our field, it has already been made by others in related fields, e.g., when children move out of the sensory-motor stage (Piaget & Inhelder, 1964) and when they evidence a cognitive processing shift (Nelson, 1977). In this sense, with *RFT*, maybe behavior analysis is just catching up with developmental and cognitive psychology.

However, this induction may reach too far. It seems to ignore that verbal humans, under circumstances where rules appear to be non-functional, behave under the actual consequences of an actual schedule of reinforcement (e.g., Subject H in Mathews, Catania, & Shimoff, 1985). Consider also instances where a verbal human is conditioned without awareness (e.g., Rosenthal & Baer, 1969; 1970). The authors of *RFT* are aware of the need to examine behavior that is and isn't affected by self-talk and self-rules and propose methods for its determination, but suggest that such study will uncover "... self-rules that are not expressed (p. 136)," not that it will uncover cases in which human behavior might occur in the absence of rules. A question: If human behavior absent rules can be found, is it no longer relational behavior? That is, from the perspective of *RFT* can and do sentient, verbally behaving human beings respond non relationally? Skinner seemed to imply this distinction in his definitions of contingency-shaped and rule-governed behavior in which he proposed that, culturally and historically, contingency-shaped behavior preceded rule-governed behavior (Skinner, 1969), but the distinction may not be a part of *RFT*. If it is not, this is not a terminal problem. Continued exploration of when (and if) non-relational reinforcement contingencies apply to human behavior can now be re-contextualized in terms of *RFT* and would seem worth reinvigorated exploration.

Changes in the definition of the verbal operant. The change in the definition of verbal behavior, in turn, necessitates a change in the definition of the verbal operant. While the definitional nature of the operant in *RFT* is changed for humans, none of its other (Skinnerian, behavioral analytic) characteristics appear to be. The operant is still an empirical construct, an abstraction once removed from observable data. It is still inferred post hoc as a class of responses all of which correlate with the same consequence.

For relational responding qua operant, an

additional inference on the part of experimenters seems to be required over that of non-relational responding qua operant. An observer can see or have equipment record the (relational) response of a human just as s/he can observe or have equipment record (non-relational) lever pressing by the rat. With evidence of a sufficient number of instances in either case it is inferred that the individual responses comprise an operant related to a particular consequence. But with humans the authors of *RFT* propose that each response relates at least two stimuli (more when the construct, *stimulus network*, is included). That is, the operant is inferred but, in addition, the stimuli to which the human operant relates must also be inferred because the actual relating of the stimuli is no more directly observable than the operant is. Inferences relating the stimuli to the human operant also result post hoc from the observation of multiple instances, all correlated with a particular consequence. Conceptually, this seems little different than inferring an operant without its purportedly related stimuli. Both are difficult philosophically and theoretically, but, perhaps, less so empirically. Moreover, inferring controlling stimuli has been the business of behavior analysis since the time of Watson.

Presumably, then, until it is otherwise discovered, everything that is currently known about the operant for non-human animals also applies to this modified version of the operant for humans. For instance, we need now to think that reinforcement increases the likelihood of a particular kind of relational responding in humans, and extinction presumably makes the particular kind of relational responding that was being reinforced less likely to occur. Also, functional stimuli make a certain type of relational responding more or less likely to occur (e.g., Osborne & Koppel, 2001), and establishing operations may enable some (relational) operants and disable others. This seems a lot less difficult to incorporate in one's thinking than, for example, the shifts in thinking that were necessary many years ago to understand the autoshaping process and how it was superimposed on and occasionally conflicted with discriminative operant conditioning. Behavior analysis incorporated the autoshaping phenomenon then and eventually, if the data bear fruit, should incorporate this new definition of the operant for humans. Indeed, most behavior analysts who are working with relational op-

erants probably wouldn't give the foregoing esoteric matters much thought since they don't seem a part of the normal proceedings in behavior analysis. Indeed, it does not seem likely that general experimental practices in behavior analysis will change as a result of the redefinition of the verbal operant for humans.

Responses as stimuli. What seems not worked out very well yet in RFT and what has always been troublesome for behavior analysis in general is the notion that behavior also has stimulus properties so that responses can also be stimuli. This is difficult to talk about because it seems when we do as though we are cake having and cake eating concurrently. When is a response a stimulus? When we say it is. When isn't it a stimulus? You know the answer. It is fairly easy to conceptualize responses as stimuli when the behavior of another organism is what one is responding to and Skinner did so in *VB* in his definition of verbal behavior as the consequential result of the interaction between speaker and listener. It is less easy when it is your own behavior that, it is said, you are (almost always, *conceptually*) responding to. In these cases the inferred stimuli and responses always seem to be covert and, thus, can seem to be convenient fictions. They assist our behavior analytic explanations of perception, and remembering, and awareness, and consciousness (Skinner, 1974). In fact, they help wherever a verbal report is required to conceptually complete an act in which the *Rs* follow the *Ss* in an orderly fashion. In other words we most often propose *Ss* to follow *Rs* and *Rs* to precede subsequent *Ss* to maintain the integrity of an *S-R* logic that, at one level—the mechanistic—Skinner decried, for example, for its implications of man as automaton, but at another level—the conceptual—he embraced, for examples, the *S-R* chain and the discrimination of a discrimination (Skinner, 1974). Perhaps we can continue to do this with impunity because the external validity of these two constructs, where the parts of a chain and a double discrimination are clearly overt, permits us to generalize the process of creating intervening *Ss* and *Rs* where the same parts are covert (see also Zuriff, 1985; pp. 78–80). The authors of *RFT* lean hard on this logic to construct their extensions of RFT to psychotherapy and to the construct of self. But what else would we have them do since the precedent exists with Skinner and other

behaviorists and this is but another example of their following in his footsteps?

The combination of the two properties—response and stimulus—in the relational frame (verb) and the relational frame (noun) brings the same kind of confusion with it. It seems too convenient. It feels simultaneous, with both context (noun) and behavior (verb) occurring at the same time, rather than linearly as in our more usual logic. One wants to ask, “When is it context?” “When is it behavior?” “When we say it is?” For many behavior analysts, in this decision between response and stimulus, the role of the organism will loom large, which it usually does when we lack the data to show that it doesn't. Typically where we lack the data, we can and do resort to reinforcement history as context to conceptually resolve this difficulty. RFT seems little different in this.

Skinner and relational responding. There is also the implication in *RFT* that Skinner didn't really understand relational responding. This owes to the gift of hindsight. The phrase, relational responding, now rolls off our tongues so easily it almost seems as though it has been a part of our lexicon and our thinking forever. But it hasn't. Before it became comfortable to use this phrase, we had difficulty saying what was meant when we attempted to talk of relational responding. We worried about what the relations were we were referring to (Sidman, 1994).

Consider the longer view. As reported in *RFT*, Skinner was aware of relational responding in the sense of the operant being evidenced by responses that were controlled by relations between stimuli (p. 24). However, these relations were formal in the sense of physics (e.g., larger than, or intermediate, in terms of size). And both *RFT* theorists and Skinner accept that animals, as well as humans, are capable of this kind of relational responding. For RFT theorists, this type of relational responding is non-verbal as it would be for most behavior analysts, but possibly not for Skinner given the liberal interpretation of his definition of verbal behavior. In retrospect this is the leading edge of the change in the definition of the operant. But since it includes non-human animals, there must be another change by RFT implicit in the redefinition of the verbal operant that keeps the animal-human divide open.

What the RFT redefined verbal operant really is. The final step in the redefinition of the

verbal operant is to understand that stimuli that are not formally related by physics can still be formally related in terms of their control of an operant. In essence, stimuli that aren't dimensionally alike can function similarly, that is, they can constitute a functional stimulus class. The same response may be produced by the written phrase, "Take out the garbage," the spoken phrase, "Take out the garbage," or a video clip of someone taking out the garbage. Such a stimulus class fits well within the Skinnerian idea of the generic stimulus class (Skinner, 1935). The difference for RFT lies in the fact that verbal responding relates these non-formally related stimuli. When it does, it is said in RFT-speak to be "arbitrarily applicable" responding. It is this "arbitrary applicable" responding that is uniquely human, and, by definition, verbal—the second step in the redefinition process. It is in this sense, and only in this sense, that *RFT* is post-Skinnerian in a way that is more than temporally *post*. Nevertheless, in defining verbal behavior this way, *RFT* continues to utilize the concept of the stimulus class and the response class and both of those constructs, at their origin, are Skinnerian.⁶ In this last sense, even the redefinition of the verbal operant by RFT is clearly a Skinnerian extension, and, clearly, Skinner lives on in RFT and *RFT*.

VB Constructs Retained

Coming full circle, some of *RFT*'s authors seem to suggest that *VB*'s basic constructs can be retained too, but only as they constitute non-verbal operants (Barnes-Holmes et al., 2000). While this certainly isn't a synthesis in any sense of that word of the constructs of *VB* with those of *RFT*, it suggests theoretically that RFT is broadly inclusive even of the constructs of *VB* at one level (non-verbal) if not at another

⁶ I desperately want to stay away from the brouhaha over whether equivalence can be defined independently of the notion of stimulus class and the related and seemingly unresolved issues of whether stimulus class and stimulus relations can co-exist, since I am not sure that I can contribute much to those discussions at this time. All I am arguing here is that RFT includes the foundational behavior analytic construct, stimulus class. It does (see Barnes, Healy, & Hayes, 2000; p. 162) and, in so doing, is both Skinnerian and behavior analytic.

(verbal). Major portions of *VB* itself, therefore, would seem to be not put aside very far. Further, Barnes-Holmes et al.'s analysis of Skinner's constructs in *VB* implies an RFT answer for a question raised above as to whether there may be some human behavior that is non-relational.

The Other Constructs of RFT

In the present review there is neither the space nor the inclination to deal specifically with the other constructs of RFT such as derived relational responding, the entailments, and function transformation. All have empirical roots in behavior analysis. Some have been dealt with elsewhere (Sidman, 1994). They are post-Skinnerian in the sense that they were being researched when Skinner was no longer active in the laboratory. As far as this reviewer knows, Skinner had little to say about them. RFT's conceptual expansion of these constructs from their narrowly focused beginnings in equivalence class research is very useful. The theoretical development of these constructs within RFT exemplifies the orderly development of the experimental analysis of behavior, more specifically the orderly development of human experimental analysis, rather than any paradigmatic shift. The implied scope of the RFT-proposed changes is assuredly not that of Newton to Einstein.

SUMMARY

In essence, in this reviewer's opinion, there's a new *VB* on the block, one largely grown out of the old. Little of behavior analysis and of Skinner's contributions to behavior analysis is changed thereby. Further, while much of RFT/*RFT* is post-Skinnerian temporally, little of it is, in any sense, beyond Skinner. To the contrary, RFT/*RFT* flows from the inextricable contexts of Skinner and behavior analysis. There is simply no escaping that.

REFERENCES

- Barnes-Holmes, D., Barnes-Holmes, Y., & Cullinan, V. (2000). Relational frame theory and Skinner's *Verbal Behavior: A possible synthesis*. *The Behavior Analyst*, 23, 69–84.

- Barnes, D., Healy, O., & Hayes, S. C. (2000). Relational frame theory and the relational evaluation procedure: Approaching human language as derived relational responding. In J. C. Leslie & D. Blackman (Eds.), *Experimental and applied analysis of human behavior* (pp. 149–180). Reno, NV: Context Press.
- Cameron, J., & Pierce, W. D. (2002). *Rewards and intrinsic motivation*. Westport CT: Bergin & Garvey.
- Hayes, S. C., Barnes-Holmes, D., & Roche, B. (2001). *Relational frame theory: A post-Skinnerian account of human language and cognition*. New York: Kluwer, Academic/Plenum Publishers.
- Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance and commitment therapy*. New York: Guilford.
- Knapp, T. (1980). Beyond *Verbal Behavior*. *Behaviorism*, 8, 187–194.
- Mathews, B. A., Catania, A. C., & Shimoff, E. (1985). Effects of uninstructed verbal behavior on nonverbal responding: contingency descriptions versus performance descriptions. *Journal of the Experimental Analysis of Behavior*, 43, 155–164.
- McPherson, A., Bonem, M., Green, G., & Osborne, J. G. (1984). A citation analysis of the impact on research of Skinner's *Verbal Behavior*. *The Behavior Analyst*, 7, 157–167.
- Nelson, K. (1977). The syntagmatic-paradigmatic shift revisited: A review of research and theory. *Psychological Bulletin*, 84, 93–116.
- Osborne, J. G., & Koppel, L. (2001). Acquisition, generalization, and contextual control of taxonomic and thematic relational responding. *The Psychological Record*, 51, 185–205.
- Piaget, J. & Inhelder, B. (1964). *The early growth of logic in the child*. London: Rutledge & Kegan Paul.
- Roche, B., Barnes-Holmes, Y., Barnes-Holmes, D., Stewart, I., & O'Hara, D. (2002). Relational frame theory: A new paradigm for the analysis of social behavior. *The Behavior Analyst*, 25, 75–91.
- Rosenfeld, H. M., & Baer, D. M. (1969). Unnoticed verbal conditioning of an aware experimenter by a more aware subject: the double agent effect. *Psychological Review*, 76, 425–432.
- Rosenfeld, H. M., & Baer, D. M. (1970). Unbiased and unnoticed verbal conditioning: The double agent robot procedure. *Journal of the Experimental Analysis of Behavior*, 14, 99–105.
- Saville, B. K., Beal, S. A., & Buskist, W. (2002). Essential readings for graduate students in behavior analysis: A survey of the *JEAB* and *JABA* Boards of Editors. *The Behavior Analyst*, 25, 29–35.
- Sidman, M. (1986). Functional analysis of emergent verbal classes. In T. Thompson & M. D. Zeiler (Eds.), *Analysis and integration of behavioral units*. Hillsdale, NJ: Earlbaum.
- Sidman, M. (1994). *Equivalence relations and behavior: A research story*. Boston: Authors' Cooperative.
- Skinner, B. F. (1935). The generic nature of the concepts of stimulus and response. *Journal of General Psychology*, 12, 40–65.
- Skinner, B. F. (1938). *Behavior of organisms*. New York: Appleton-Century-Crofts.
- Skinner, B. F. (1953). *Science and human behavior*. Toronto: Collier-MacMillan.
- Skinner, B. F. (1957). *Verbal behavior*. New York: Appleton-Century-Crofts.
- Skinner, B. F. (1968). *The technology of teaching*. New York: Meredith.
- Skinner, B. F. (1969). *Contingencies of reinforcement: A theoretical analysis*. New York: Appleton-Century-Crofts.
- Skinner, B. F. (1971). *Beyond freedom and dignity*. New York: Knopf.
- Skinner, B. F. (1974). *About behaviorism*. New York: Random House.
- Staats, A. W. (1968). *Learning, language, and cognition*. New York: Holt, Rinehart, & Winston.
- Staats, A. W., & Staats, C. K. (1963). *Complex human behavior: A systematic extension of learning principles*. New York: Holt, Rinehart, & Winston.
- Wheeler, H. (Ed.) (1973). *Beyond the punitive society*. San Francisco: Freeman.
- Zuriff, G. E. (1985). *Behaviorism: A conceptual reconstruction*. New York: Columbia University Press.