

## DECONSTRUCTING "TECHNOLOGICAL TO A FAULT"

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Is applied behavior analysis "technological to a fault"? This is not the first time the question has been posed, perhaps because we do not agree on (or understand) what it means. Perhaps the question means different things to different people or even to the same person at different times or in different settings. Sometimes the question is about the relationship between the experimental analysis of behavior and applied behavior analysis (e.g., Baer, 1978, 1987; Pierce & Epling, 1980; see also Deitz, 1987), sometimes between science and technology (e.g., Deitz, 1978), sometimes between theory and application (e.g., Azrin, 1977; Hayes, 1978, 1987; Hayes, Rincover, & Solnick, 1980), and sometimes about schisms in all of the above (e.g., Poling, Picker, Grossett, Hall-Johnson, & Holbrook, 1981; Ribes, 1977). Given this range of possibilities, perhaps we should approach the question in terms of what we understand "technological" and "to a fault" to mean—and thereby pursue a deconstruction of "technological to a fault."

### *Dictionaries*

What of the meaning of "to a fault"? The first listing for "fault" in my *American Heritage Dictionary* (1985) is: "1. a. A weakness; defect. b. A mistake; error. c. A minor offense; misdeed" (p. 493). The final listing is idiomatic, where "to a fault" means "excessively." There seems not much to equivocate here about the meaning: some thing or some practice excessive to the point of weakness, defect, mistake, error, or misdeed.

What then of "technological"? Here, my dic-

tionary defines "technological" as "pertaining to or involving technology, esp. scientific technology" (p. 1248), where "technology" means "1. a. The application of science, esp. to industrial or commercial objectives. b. The entire body of methods and materials used to achieve such objectives" (p. 1248). Given these dictionary definitions, what would "technological to a fault" mean? That the science, methods, and materials of behavior analysis are being applied excessively? I think not. By these definitions, technological seems not a fault, but a virtue.

### *The Dimensions of Applied Behavior Analysis*

So much for dictionaries. Perhaps we should turn to Baer, Wolf, and Risley (1968), for it was they who offered "technological" as a defining dimension of applied behavior analysis:

"Technological" here means simply that the techniques making up a particular behavioral application are completely identified and described. . . . The best rule of thumb for evaluating a procedure description as technological is probably to ask whether a typically trained reader could replicate that procedure well enough to produce the same results, given only a reading of the description. (p. 95)

Or, as stated in their conclusion: "an *applied* behavior analysis will make obvious the importance of the behavior changed . . . [and] the technologically exact description of all procedures contributing to the change . . ." (p. 97). I doubt that this meaning of "technological" is what is at fault, unless we make a sin of exactitude in procedural description. We might note in passing, though, that the typically trained reader of 1968 is different from today's. Today's readers may have to be more technically and sensitively trained, at least to be

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effective in some of the broader-scale interventions (e.g., Fawcett, Suarez de Balcazar, & Johnson, 1986; Greenwood, Delquadri, & Hall, 1989).

### *Some Stimulus Controls*

This reductionistic line of etymological inquiry seems not very fruitful, so let me try something more behavior-analytic by asking: What are we *tacting* when speaking of “technological to a fault”? Or, to turn the question around: What are the stimulus controls over saying such a thing (see Day, 1969)? The answer is not to be found in dictionaries.

“Technological to a fault” would seem to have some “family of meanings” (Wittgenstein, 1953; see Deitz & Arrington, 1984) or common stimulus controls across the discipline. Without that, we would be unable to speak intelligibly with one another (or as intelligibly as we do). Still, those stimulus controls are multiple and variable—across and within individuals, as outlined at the start—to such an extent that a complete deconstruction of “technological to a fault” is a larger task than my comments can contend with. Thus, I address only what *one* of those stimulus controls might be. There are no doubt others.

*Faults in context.* To begin with, though, let me note that we should probably not judge applied behavior analysis as technological to a fault outside the context of the field as a whole. Given the definitions above, I think we can agree that being technological is not, in itself, inherently a fault (cf. Baer, 1981). Thus, applied behavior analysis may only be technological to a fault in the context of other applied behavior-analytic practices, or lack thereof. Indeed, we may even want more such technology, in the right context.

Looked at this way, the concern (or question or criticism) about technological to a fault turns into a broader concern about the conduct of applied behavior analysis as a whole. This is, if being technological at all (or at its current level) is not inherently a fault, then the fault (if any) lies in the relationship of the technology to the rest of applied behavior analysis. We must look not for the fault in the technology itself, but at the technology-in-

context. Let me turn to what some of this context might be, and thus to one of the stimulus controls for tacting “technological to a fault.”

### *Two Correct Meanings of “Analysis”*

One answer to the question of “technological to a fault” depends, I think, on what we take the “analysis” in applied behavior analysis to mean (see Morris & Midgley, 1990; Pennypacker, 1981). Does analysis refer to the experimental *demonstration* of the effectiveness of a behavioral application, procedure, or technique for modifying socially important behavior (e.g., overcorrection, differential reinforcement of alternative behavior)? Or does analysis refer to the experimental *discovery* of the functions (or of some of the causes) of socially important behavior, followed by changing the variables of which it is a function so as to change the behavior?

Put another way: Are the independent variables in applied behavior analysis (a) our applied behavioral applications (i.e., techniques) or (b) the controlling variables over socially important behavior—or both, whenever they can be? The former yields an “analysis of behavioral applications.” The latter yields an “analysis of behavior, applied.” The former demonstrates the effects of behavioral applications (and nonbehaviorally based applications too, I am afraid). The latter discovers the functions (or some of the causes) of the behavior of concern.

Which of these two meanings is the correct one, if such a question can be asked? I once again invoke authority, and turn to Baer et al. (1968) because “analysis” is another of their defining dimensions. In some places, Baer et al. appear to embrace “analysis” in the sense of discovery:

Both endeavors [applied and basic research] ask what controls the behavior under study. . . . Thus it is . . . a matter of research to discover that the behaviors typical of [people with developmental disabilities] can be related to oddities of their chromosomal structure and to oddities of their reinforcement history. (pp. 91–92)

In other places, they seem more equivocal, describ-

ing "analysis" in a manner that could fit either discovery or demonstration:

The analysis of a behavior, as the term is used here, requires a believable demonstration of the events that can be responsible for the occurrence or non-occurrence of that behavior. An experimenter has achieved an analysis of a behavior when he can exercise control over it. (pp. 93–94)

Likewise, in summing up, they state:

an *applied* behavior analysis will make obvious the importance of the behavior changed . . . [and] the experimental manipulations which analyze with clarity what was responsible for the change. (p. 97)

Two decades later, they offered that "*analytic* meant a convincing experimental design" (Baer, Wolf, & Risley, 1987, p. 318) but, I ask, in the service of what—discovery or demonstration? In sum, Baer et al. (1968, 1987) allow both meanings of (or stimulus controls over) "analysis"—demonstration and discovery. More than merely "allow" both meanings, though, we should probably embrace them both as equally correct (Baer, 1981; Deitz, 1983; Morris & Braukmann, 1987). In so doing, however, we should more clearly distinguish between them—applied research and technological application—so as to avoid confusion and clarify their interrelationship (see Birnbrauer, 1979; Deitz, 1982; Johnston, in press).

If both meanings are correct, then they should be equally accommodated and invited as applied behavior analyses, but they have not been, which is perhaps a stimulus control over "technological to a fault": The "analysis" in applied behavior analysis is much more a matter of demonstration than discovery. That is, the "demonstration" meaning is seemingly more equal than the "discovery" meaning. If this inequality is the stimulus control over "to a fault," then the problem is one of balance or, more behaviorally, a matter of consequences. It is this matter of consequences that must be addressed, for the consequences are the arbiter of the truth of "to a fault."

### *A Matter of Consequences*

The matter of consequences may be parsed two ways: (a) the consequences in any individual instance and (b) the consequences for applied behavior analysis as a whole. In individual instances, applied behavior analysis may be technological to a fault when it is more concerned with demonstrating the effects of specific behavioral interventions than with discovering the functions of (i.e., performing a functional analysis of) the important social behaviors at hand (and then ameliorating them). By emphasizing demonstration only, few new or useful facts may be discovered about the behavior of the individual (e.g., Carr & Durand, 1985; Touchette, MacDonald, & Langers, 1985), about reasons for the behavior (e.g., Iwata, Dorsey, Slifer, Bauman, & Richman, 1982; Lovaas, Freitag, Gold, & Kassorla, 1965), or about how behavior change might best generalize and be maintained (e.g., Horner, Dunlap, & Koegel, 1988). Demonstrated solutions to individual problems may, of course, be necessary and desirable in many instances, especially in the short run when discovery wastes valuable time that harms our clients or when discovery seems impossible (see Baer, 1970; Horner et al., 1990).

As for applied behavior analysis as a whole, it may be technological to a fault when it demonstrates the effects of behavioral interventions at the expense of discovering (and then demonstrating) actual controlling relationships, as well as new facts about behavior and reasons for the social problems to begin with. Discovered (and then demonstrated) solutions seem necessary for the discipline as a whole—necessary for its continued development, as opposed to growth. But let me be clear again: My argument is not against the *growth* of effective technology through demonstration; rather, it is for the further *development* of applied behavior analysis through discovery. Growth and development are not the same thing.

This stimulus control over "technological to a fault" may seem overly abstract and relational, but abstract and relational may be exactly what it is, for no particular instance of applied behavior anal-

ysis identifies the stimulus control of the relationship between demonstration and discovery. An exemplar, though, might be useful—an exemplar of the stimulus control over tacting “to a fault.” One of the best of these is probably the problem of generalization and maintenance (Marholin, Siegel, & Phillips, 1976; Stokes & Baer, 1977). “Technological to a fault” may be under the control of the imbalance between demonstration and discovery on (or across) those occasions when, lacking a functional analysis that discovers controlling variables, generalization and maintenance fail. To demonstrate change in problem behavior by applying a technology is not necessarily to discover the contingencies responsible for the problem in the first place, much less to discover the metacontingencies that control those contingencies—an even larger problem (see Glenn, 1988). With the contingencies left unchanged, they will likely reassert their influence when the demonstration is withdrawn. It is in this sense that we sometimes treat symptoms, not causes. (Freud was right for the wrong reasons.)

### *Rule-Governed and Contingency-Shaped Applied Behavior Analysis*

Interestingly, the question of (and answer to) whether applied behavior analysis is technological to a fault has the same form and sense of: Is behavior rule governed to a fault? My answer is rhetorical: Is it inherently a fault that behavior be rule governed at all? No, the problem is again one of degree, balance, and context with respect to an individual's overall repertoire. More to the present point, however, perhaps we can analyze the emphasis on demonstration over discovery in applied behavior analysis in terms of the rule-governed and contingency-shaped behavior of applied behavior analysts. Here, I offer not a cause of tacting “technological to a fault,” but a cause of those causes.

The contingencies that shape and maintain analysis-as-discovery are subtle, difficult to discern, and not well codified. Hence, analysis-as-discovery is difficult to teach and to learn (just as is shaping; Johnston & Pennypacker, 1980; Sidman, 1960).

In contrast, the rules that govern analysis-as-demonstration are clearer, more obvious, and well codified. Hence, analysis-as-demonstration is easier to teach and learn, for instance, via established single-subject research designs (Michael, 1980, pp. 8–9; see, e.g., Barlow & Hersen, 1984). Even when both are well learned and practiced, the differential effort of demonstrating versus discovering may also produce “technological to a fault”—demonstrating is often easier than discovering (Hayes et al., 1980). (We should not overlook external control over the behavior of behavior analysts. Public and private funding sources and social agencies will often differentially prompt and reinforce demonstration over discovery.)

All of this relates to a larger issue in the philosophy of science: The distinction between the “context of discovery” and the “context of justification” (Reichenbach, 1938/1961; see Smith, 1986, pp. 44–46), the latter being “demonstration” in our present case. The context of discovery is the relationship between scientist and subject matter, and the contingencies that shape and maintain scientific discovery (e.g., effective action through prediction and control; see Skinner, 1956). The context of justification is the relationship between scientist and scientist, and the rules that govern justifications for their claims of discovery (e.g., truth-by-agreement). The former is poorly understood, and difficult to teach and learn; the latter is easy grist for instruction and application. It is no secret which of the two, discovery versus justification, most philosophers of science teach as *the* scientific method—justification.

In making justification the sine qua non of the scientific method, we are not made much more effective as scientists in coming to understand behavior via discovery; we become better at justifying what we have come to know. Moreover, predicting and controlling behavior on the basis of what we can demonstrate alone is weak ground for saying we “understand” behavior, especially when compared to predicting and controlling behavior on the basis of what we have discovered about it and then demonstrated. We should beware when applied

behavior analysis is disproportionately concerned with demonstration as opposed to discovery.

### Summing Up

I began with what was to be a definition of "technological to a fault," but had to turn to its stimulus controls, in particular, the imbalance between analysis as demonstration and analysis as discovery. For this, I offered a consequence (i.e., difficulties with generalization and maintenance) and a cause (i.e., the rule-governed nature of demonstration). I have now seemingly concluded with a brief discourse on the relationship of discovery and demonstration to behavior-analytic epistemology. Such are the consequences of deconstruction. There is not just one truth, but many. They are all variations on a theme—circumstances under which applied behavior analysis may be "technological to a fault."

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