THE SPREAD OF BEHAVIOR ANALYSIS TO THE APPLIED FIELDS¹

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ABSTRACT

This paper reviews the status of applied behavioral science as it exists in the various behavioral fields and considers the role of the Association for Behavior Analysis in serving those fields. The confounding effects of the traditions of psychology are discussed. Relevant issues are exemplified in the fields of law, communications, psychology, and education, but broader generalization is implied.

BEHAVIORAL SCIENCE IN CONTEMPORARY APPLIED FIELDS

When I was a senior in high school I found myself caught in a career choice conflict. I liked the idea of teaching, but even at that early age, my high school peer group attached a stigma to the field of education. The poorest students—some sort of academic residue—as a last resort could drift into education and succeed in that curriculum, not because it was taught well, but because it was weak.

The field of education has traditionally suffered disrespect and, more recently, disregard as well. Professions increasingly tend to establish their own training arrangements. For example, engineering education programs are beginning to emerge as training programs offered exclusively within engineering curricula and to include nothing offered through schools or colleges of education. A recent instance occurred at West Virginia University when the Engineering Education program, housed in Engineering but requiring certain Education courses, switched from granting the Ed.D. degree

to granting the Ph.D. degree (to which no education requirements were attached).

A number of justifications have been given for such actions: Education, as a field, has not operated within the analytical framework of an effective behavioral science and technology—so the field is therefore not prepared to conduct its mission. It has been charged that a weak technology has attracted and prepared a weak faculty, and that these circumstances attract weak students. And there is a widespread assumption that anyone who knows a subject matter can teach it effectively. The result is that subject matter experts are hired to teach, although teaching should be a job for a behavioral engineer. In the absence of practioners whose business is teaching, shaping tends to be replaced by selection, as contingencies of academic survival substitute for technical contingencies of reinforcement, and standards based on task analyses give way to standards based on what the survivors can do. Thus, to teach an undergraduate history course, a college will hire a historian who, by grading on the curve, need not teach effectively since the distribution curve on test scores shows little change in shape whether teaching occurs or not. The “best” students get the top grades regardless of what they can or cannot do according to any external criteria.

What has gone wrong in the evolution of the field of education that has led it to such a state of ill repute and disregard?

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An effective behavioral technology can only be built upon a broad and valid basic science. Unfortunately, the field of education has been characterized more by its ignorance of appropriate scientific foundations of learning than by respect for such principles. Today, in most schools and colleges of education, a person can progress through bachelors, masters, and doctoral programs without ever studying either the relevant science of human behavior or the effective technology for behavior change. (For a more detailed discussion of these issues, see Fraley, 1980.)

During the present semester, I am teaching an extension class relating principles of the basic science of human behavior to teaching. The students are credentialed teachers and administrators working within the state school system. With few exceptions, they are unfamiliar with the technical requirements for the processes of positive and negative reinforcement, punishment, and extinction. Few have been taught to regard teaching as a process for shaping behavior, nor has behavior change been recognized as the prime mission of education. Some of the most significant classes of behaviors, such as perceptions and verbal behavior, have not been recognized as behaviors and thus have not been treated as phenomena responsive under scientific principles describing the control of behavior. A science of human behavior might not be deemed relevant when the phenomena of concern is that seriously misconstrued.

Reactions to these criticisms of contemporary foundations in education suggest that scientific or at least logical foundations *have* existed for education as well as all other applied behavioral fields mentioned in this paper. The problem, according to advocates of this perspective, is that existing foundations are not the principles of behavior analysis, not that there are no foundations—a position bolstered by noting that education has always justified much of its effort by reference to

psychology. It has just not turned to operant psychology. Foundations are thus alleged to exist, and the issue is cast as a disagreement as to what those foundations should be.

The test of a foundation is what it will support. Educators have always spoken of the “foundations” of their field, but the foundations for an applied behavioral technology require more than semantic or grammatical status. To qualify as a scientific foundation, a body of principles must imply practices that produce effective outcomes. In education, that chain runs from a principle (e.g., extinction) to a practice (e.g., teacher deliberately looks away from student seeking unwarranted teacher approval), to an effective outcome (viz., student stops eliciting teacher approval and acts independently). When these chains from principle to effective outcomes cannot be traced, we cannot speak of *scientific* foundations. In early medicine, theory often originated, not from observation, but from metaphor and assumption. Practices such as bloodletting followed, but effective outcomes did not. We call that the pre-science era in medicine. Likewise, it is appropriate to withhold the status of science from the traditional foundations of education. In contrast, behavior analysis is not merely *another* wave of “basics” being swept across education by a transient band of enthusiasts, but is instead the introduction of an effective basic behavioral science to support efficient and effective educational practices. It is profoundly different from anything that has ever happened in the area of educational foundations. The “psychology” that has served in this century as the basic foundation of education has not been an adequate foundation for the applied concerns of psychologists themselves, much less for educators, and as behavior analysts introduce a stronger science to psychology, the practitioners there are beginning to change even the name of their field.

Education and psychology are not the only areas in such a fix. The formal field of "communications" is for the most part based upon structural model building such as the structural formulation of linguistics. The relevant basic science, including such fundamental works as Skinner's *Verbal Behavior*, is seldom if ever a part of the curriculum in such departments; the faculties are, in general, unfamiliar with that literature. I recently examined a 15-volume collection of *Human Communication Research*, a leading conceptual and technical research journal in its field, described as "less humanistically and socially oriented" than some others. Spanning the years 1976 to 1980, the volumes contained 121 articles which were heavily referenced with an average of 35.2 sources per article. Those citations pertained to the behavior of human communication, covering its diverse facets in comprehensive detail. Of the 4,261 references listed in those volumes, not a single one cited B. F. Skinner as a source.

Law, a social agency concerned with the civil conduct of individuals, does not include a formal study of either the science of human behavior or the applicable behavioral technologies in its training programs. As in education and other applied behavioral fields, the practitioners have so little behavioral science underlying their work that they cannot appropriately or adequately conceive of their own field. In an early draft of this article, I noted that much of the curriculum in any school of law consists of elaborate and tortured efforts to extract from ages of literature and experiences various inductions about human behavior. And even then, for lack of skills routinely imparted to first year students in behavior analysis, they often get it wrong. This has been questioned as a possible exaggeration since little of either the formal curriculum in law schools or the literature of law is explicitly described as the study of human behavior.

People often do not notice that law cur-

ricula pertain *in their entirety* to little else than human behavior. If matters pertaining to human behavior were excised from law books, few pages would remain. But if an adequate behavioral science were respected in the discussions within those books, far fewer pages would be required in the first place. The torturous and extended program of studies now required of law students exists not because law is so difficult in principle, but because the traditional analytic framework in which to examine it is inadequate. The difficulty of getting through law school is the price.

A currently used textbook on criminal law (Kadish & Paulsen, 1975) offers some examples. Lengthy sections are devoted to distinctions between voluntary and involuntary behavior, and the authors rely heavily on the authority of Professor J. C. Murphy whose 1971 writings are referenced (p. 80). Law students currently learn from these passages that what amounts to respondent behavior and behaviors resulting from such conditions as epilepsy are not "true acts," but that they are scientifically explicable and are hence involuntary, whereas other behavior with causes seen "in terms of desires, volitions or reasons of the agent are scientifically inexplicable and are hence voluntary." Here is law—a whole field of applied human behavior—remaining largely unaware that operant behavior has been scientifically explicable for nearly 40 years and without resorting to any hypothetically constructed "agent." Kadish and Paulsen quote Blackstone's Commentaries 21 to illustrate how the inaccessible agent, gone bad by succumbing to depravity, can be revealed indirectly by observing its behavioral products:

Indeed, to make a complete crime, cognizable by human laws, there must be both a will and an act. For though, *in foro conscientiae*, a fixed design or will to do an unlawful act is almost as heinous as the commission of it, yet, as no temporal tribunal can search the heart, or fathom the intentions of the mind, otherwise than they are demonstrated by outward actions, it therefore cannot punish for what it

cannot know. For which reason in all temporal jurisdictions an overt act, or some open evidence of an intended crime, is necessary, in order to demonstrate the depravity of the will, before the man is liable to punishment (p. 81).

The insistence on behavioral evidence is fortunate, and Blackstone's intuitive appreciation of such fragments of behavioral reality have apparently contributed significantly to his status in law. But he obviously deemed outward behavior useful only as an indicator of an inner "depravity" of greater importance. The search for non-existent traits of flawed character distracts from the search for the functionally related environmental variables, and to that extent effective behavioral technologies are precluded. The nature of any hypothetical damages to the depraved "will" (presumably resulting from the punishment) goes unexplained as do the reasons why the hypothetical agent should alter its conduct when aggressive acts are targeted against the body in which it is presumed to reside.

In a 1980 circuit court case in West Virginia, the following instruction was prepared for a judge to deliver to a jury retiring to consider the innocence or guilt of a defendant. This typical jury instruction is based strictly upon the state code.

The law recognizes that a person of good character is not as likely to commit offenses as a person of bad character. Evidence of [John Doe's] good character is, therefore, admissible as tending to show that it is impossible that [John Doe] committed the offense charged. Considered and weighed alone, or in connection with the presumption of innocence and all other evidence in this case, this evidence of [John Doe's] good character may be sufficient to cause a reasonable doubt to exist as to his guilt, thereby warranting an acquittal.

Superficially, this might seem a reasonable way to take into account a person's history, but the jury is not told that "good character" is only another way of saying "good prior contingencies." Nor is the jury asked to take into account that the occasion of criminal behavior signals a change in the controlling contingencies from good ones to bad ones. Instead of

being asked to look for possible changes in the nature of the contingencies controlling the defendant's behavior, the jury is instructed to ponder the good results of past controls no longer necessarily relevant or in question.

Reliance on hypothetical constructs and ignorance of the sources of controlling variables has a substantial impact on the technologies that evolve. Kadish and Paulsen (1975) address the question of why criminals might be punished:

Generally speaking, there have been advanced four theories as the basis upon which society should act in imposing penalties upon those who violate its laws. These are: (1) to bring about the reformation of the evil-doer; (2) to effect retribution or revenge upon him; (3) to restrain him physically, so as to make it impossible for him to commit further crimes; (4) and to deter others from similarly violating the law (pp. 1-2).

Discussing the applicability of each theory, the authors defended the fourth, deterrence, as effective in preventing others from committing similar crimes, although there was no analysis of deterrence in terms of the conditioning by which this approach might be successful. They advocated the third—removal of the criminal from society to physically prevent further harm to others (hiding the behavioral problem rather than solving it). The second, revenge, was disdained, although Kadish and Paulsen noted that

it is this idea of punishment that generally prevails, even though those who entertain it may not be fully aware of their so doing.

Finally, they perfunctorily dismissed the reformation of the evil-doer with this statement pertinent to persons incarcerated for life:

Whichever be the penalty here inflicted, the defendant will not again be in contact with society, and since secular law is concerned with one's relation to the community and not primarily with his inward moral development, the spiritual regeneration of a defendant is not, in such a case as this, a dominant factor . . . (p. 2)

Thus, there is no concern with, or search for, the controlling variables of the criminal behavior because it is mistakenly believed that they exist inaccessibly within

the person instead of in the person's environment. Because the controlling variables presumably cannot be reached, they cannot be altered, and reshaping criminal behavior is therefore not seen as feasible. The result is a criminal justice system that wastefully stores away the bodies of persons whose behavior is misshaped without serious attempts to reclaim them as useful social resources, while the contingencies of revenge have their obscured play behind a screen of rationale about deterrence. The corresponding practices in education involve labeling some persons as inherently poor students and withdrawing serious attempts to teach them on the assumption that they are intrinsically flawed in character and that the responsible variables are unreachable.

Some such fallacious analyses rest on economic foundations. It is not a matter of insufficient behavioral technology to deal effectively with these problems. Although there is widespread ignorance of that technology, much of what is required has been developed. The real issue is whether the social community will commit the resources for its application. We can resocialize criminals and we can teach effectively in schools, but the cost might exceed what we now spend on the alternatives. As an aspect of the humanistic tradition in our culture, we punish any overt reluctance to incur the costs of shaping or redeeming individual human resources. We avoid this punishment by extending the longevity of archaic philosophies about human behavior that excuse such neglect by viewing more effective actions as impractical or unfeasible. [For technical descriptions of this effect, see Skinner: 1953, p. 189 and 1974, p. 155.] Thus, there is a subtle social contingency with an economic essence that mitigates adoption of an effective behavioral science. In the familiar terms of everyday discourse, we don't want to know how to do a job that we don't want to pay for, and we don't have to face the

difficult economic issue as long as we can persuade ourselves that there really is no way to do the job.

THE REALITY OF ENTRENCHED SOCIAL AGENCIES

Agencies, like education and law, are vast and entrenched, supported by complex contingencies many of which are unrelated to the scientific aspects of their putative missions. Neither the schools nor the judicial agencies are going to go away, nor are the practitioners going to declare their vast experiments failures and abandon their fields. Education, to focus on one area, has the political foundation to survive even though its weak technical foundation would leave it in disarray.

When we talk of various professional "fields," we tacitly adopt a common set of contingencies under which groups of practitioners work. Only some of the contingencies are scientific and technical. Others are political, social, legal, and economic. The integrity of a particular field is defined by all of the diverse contingencies controlling the practitioners within it. Each field has its own kind of technical problems, its own kind of political structure, its own kind of working relationships, and its own economic realities. Every applied behavioral field—education, law, behavioral medicine, advertising, entertainment, marketing, political science, etc., is therefore substantially different from every other one. Practitioners are seen as being *in* a field to the extent that they work under the unified network of special contingencies that define it.

Behavior analysis, founded on a unique body of literature, has emerged as a new basic science of behavior, and a philosophy of that science has also evolved. Behavior analysis is not a field in the same sense as are the areas for which it serves as a foundation. Rather, behavior analysis is a science applicable in many fields. As with any new basic science, there is an urgency to develop applica-

tions on all cultural fronts so that diverse social activities might become more effective. But those activities tend to occur within the domains of various fields already organized within the culture. None of these fields—each with its own integrity, literature, training programs, credentialing, and politics—will bow out of the culture simply because a new science has emerged that is applicable to its problems. Behavior analytic practices can be followed in any existing field, but behavior analysis is not going to set up across the street and run existing fields out of business.

To bring about changes in existing fields, practitioners already in those fields might study behavior analysis and adopt its ideas and practices; they might hire behaviorally trained persons who have also prepared for work in their respective fields; and they might add behaviorally trained faculty members to the training programs within their fields. If behavior analysis is to have any significant impact on a field such as law, it is most likely to come about through the activities of persons credentialled and working *in* that field. If behavior analysis is to make a difference in the practices of psychology, that will probably occur through the activities of persons working as *psychologists*. Major changes in the field of education resulting from behavior analysis will occur most readily through the work of behavioral *educators*.

SCIENCE, FIELD, AND PROFESSION

Each behavioral practitioner is entitled to two labels, one pertaining to the basic scientific or philosophical foundation that constitutes the person's conceptual and analytical framework and one pertaining to the applied area in which the person works. While "behavior analysis" is a basic science, its applied areas include, among others, education, law, entertainment, advertising, management, therapy, communications, and political science.

Thus, a practitioner teaching school might rightfully refer to himself as a behavioral teacher or a behavioral educator—or possibly as a "behavior analyst in the field of education." The term "profession," refers to the domain of environmental variables with which the person works. That is the person's applied area. When asked to state one's profession, it is inappropriate to give only the name of one's basic scientific framework. To reply that one is a "behavior analyst" implies nothing about what one does for a living (although it does imply something about one's analytical practices). To specify the profession, one might say, "I am an educator," "I am a lawyer," or "I am an independent consultant on self-management." As the science of behavior analysis matures and alternative scientific foundations are eliminated under the contingencies of professional survival, reference to the science should become unnecessary. It would become understood that all educators respect the same basic science just as today the label "geologist" does not ordinarily have to be accompanied by an additional term to indicate that the practitioner respects a basic science built on the principles of modern physics and mathematics. Such an additional label was at one time necessary when the field of geology was confounded by the serious presence of water dowsers, flat-earthers, and others whose foundations were of mystical origins.

The nature of behavior analysis as an independent *field* is constrained, but not eliminated, by the limited professional opportunities for employment as a basic scientist. The role of the field of physics provides a parallel example in the physical sciences. Training programs in the basic science provide a supply of practitioners who, with additional specialized training, can move into various applied fields and begin to practice within those fields. There they work as members of the professions connoted by the labels attached to those areas. But those who remain

within a *basic* field, whether physics or behavior analysis, can conduct demonstration projects to prove the efficacy of approaches to problems normally encountered in fields not yet effectively utilizing the basic science. The basic science, as an integral field, can also accommodate some applied work in areas not yet represented by well organized applied specialties within the culture and thereby play a critical role in spawning new fields. While universities have long had physics departments, they do not yet have many departments of behavior analysis to function as centers for such work. Difficulties now arise because behavior analytic centers tend to be attached to units having somewhat different missions, e.g., psychology departments, education departments, etc. As more centers of basic behavior analysis gain autonomy within universities, many of these difficulties will be alleviated.

In the long run, any field that concerns human behavior should develop a behavior analytic foundation in its own training program. As this occurs, it would appear likely that there will be basic behavior analysis programs, perhaps with strong experimental and philosophical emphases, existing concurrently with the programs of various applied behavioral fields, each with its own strong behavior analytic core.

THE PREDICAMENT OF PSYCHOLOGY

The management of behavior analysis as a new basic science is confounded by the traditions of psychology and by the predominance of psychologists among those who consider themselves behavior analysts. We study behavior, and most of us do not care to remain attached to a field named for, and largely characterized by, study of the "psyche." Insofar as behavior analysis and behaviorism disavow the existence of a controlling psychological agent for behavior, it is a contradiction in terms to describe oneself

as a "behavior psychologist." When the Midwestern Association for Behavior Analysis (now A.B.A.) was formed, mainly by psychologists from the American Psychological Association, the phrase "Association for Behavior Analysis" (rather than "Association for Behavioral Psychology") was used in the name. New degree programs, as they appear, tend to emphasize titles using "behavior" and "analysis," even when located in departments still called "psychology." Agencies increasingly appeal to job seekers with descriptions explicitly calling for "behavior analytic" skills. Typical is the following item from a current job announcement posted on the bulletin board outside my office door. St. Cloud University, seeking a new faculty member, has specified "Qualifications: Ph.D. in educational psychology/behavior analysis."

Psychology has served two roles: It has served as keeper of the basic science—a locus of the scientific foundations for the applied behavioral fields much as physics has served the applied physical sciences. In addition, psychology has cornered certain limited applied markets, mainly in the clinical area. Exclusive rights to both roles are threatened. As the transition to the new basic science of behavior analysis progresses, there is no reason to retain scholarly and academic loci of the new basic science exclusively in departments of psychology. Centers of study and training in behavior analytic foundations already exist in other places within the academic superstructure.² Nor as clinical and other applied job descriptions are written to call for "behavior analysts" instead of "psychologists," is there a guarantee that eclectic psychology departments, producing people holding degrees in "psychology," are going to maintain a

²An example is the doctoral program in Behavior Analysis in Human Resources in the College of Human Resources and Education at West Virginia University.

monopoly on even their long held applied training missions. The applied behavior analytic training programs of psychology departments are going to be shared with, and in some cases lost to, new professional schools of behavior analysis and to applied programs developing *within* the various applied fields.

Already, a degree in "psychology," if offered as a credential promising effectiveness in an applied field, must be supplemented by qualifying explanations as to the kind of psychology implied. For example, although the psychology department at my university is known to offer behavior analytic training, the undergraduate catalog course listings currently include references to "memory," "conceptual processes," "cognitive development," "intelligence testing," "motivation," "growth models," and "cognition," in addition to implications that behavior analysis is simply one "theory" along with various others to be comparatively examined. A graduate of that program applying for a practitioner's job in an applied field could not be *assumed* to be a competent specialist in the relevant basic science of behavior analysis. Nor is the prognosis for professional development attractive for behavioral persons employed in eclectic psychology departments, encumbered by association with cognitivists, structuralists, and developmentalists.

Behavioral psychologists are in the applied field of psychology to the extent that they work under the unified network of contingencies that define it. Applied psychologists, and those contemporary behavior analysts who function professionally like their psychologist counterparts, have and maintain outside status with respect to all other applied behavioral fields. They tend to associate with those fields in the role of consultants. They cannot, in general, claim status *in* any applied field outside of psychology because those fields maintain exclusive credentialing arrangements

based on training and experience within their own particular milieu of contingencies.

Behavioral psychologists, as psychologists instead of educators, are accustomed to serving as consultants who, in the case of education, attempt to bring about changes by working with teachers and school administrators to improve educational practices. Given the size of the educational agency, and the scope of its problems, all of this adds up to a minor impact. Behavioral engineering is the very business of teaching and administrating. That's what the job is. You don't create a job, fill it with people untrained to perform it, and then hire consultants to make occasional visits to try to tell the would-be practitioners how to conduct their business. You train the practitioners to do their jobs properly in the first place. You give them the technology they need before you put them in those positions. And that's a job that can only be done by educators working *within* the field of education. They are the only ones who can establish the basic core programs of training for future teachers and administrators. This is something that, given the politics and structure of the field of education, cannot be done by psychologists. It must be done by behavior analysts, but it is politically feasible only for behavior analysts who are educators and who operate as such within the field of education. The doors are not open to those psychologists who, because of a current interest in educational problems, call themselves "educators." In higher education, educators are employed in schools and colleges of education; they teach education courses—not psychology courses—and their students are future teachers and education administrators. There will probably always be a place for some of those helpers who operate with outside autonomy to assist in education. But important as their contribution may be, they cannot carry the revolution that

must occur in the field of education—and in law, administration, marketing, entertainment, or any of the other applied behavioral fields.

MOVING BEHAVIOR ANALYSIS INTO APPLIED FIELDS

Behavior analysis is not a new field; it's a new science. And because it is applicable to the problems in all fields of behavior, it belongs in those fields as their foundation. The role of behavior analysis, cast as a parallel service field existing to aid practitioners in the applied behavioral fields, is limited by inadequacy. Consultants are sustained by the ignorance of those whom they are summoned to assist. The applied behavioral fields cannot be left in such a deficient condition that their practitioners must call for consultants each time the relevant basic science would seem applicable. Within education, for example, courses must be offered in the basic behavioral science upon which the technologies of teaching and administering can be built. The surveys of false starts that now constitute the curricula in departments of education foundations should be replaced by behavioral history, science, and philosophy. The courses that teach techniques and practices must offer the behavioral technology of teaching and administering. The person produced and credentialed as a teacher or administrator must *be* a behavioral technologist. Similar arguments pertain to the other applied behavioral fields.

The promise of the new science of

behavior analysis transcends the role of the consulting specialist who comes in to reverse impending disasters and, having set things right for awhile, rides off into the sunset. The potential of behavior analysis lies in moving it into those fields where it belongs. Its absence costs society in many ways. The culture suffers when a new lawyer goes untrained in behavior analysis. Our institutions in all fields are degraded under administrators unable to analyze the behavior of themselves and others. Behavior analysis must become the basic science of, and be taught within, the applied areas. Its practitioners must be educators, cultural anthropologists, managers, political analysts, or whatever, and must work within those fields as members of those professions to change them. The practitioners in applied fields can be trained properly in the first place, and to that end the professional organizations of behavior analysis should be dedicated. More behavior analysts need to address that mission, and to do so from *inside* the applied fields as credentialed practitioners.

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