The Technology of Behavior and American Culture: Review of Rutherford's

Beyond the Box: B.F. Skinner's Technology of Behavior from Laboratory to Life,

1950s-1970s

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B. F. Skinner's work stands as one of the main contributions to psychology in the twentieth century. During his lifetime, and continuing to the present, Skinner has been either acclaimed or criticized as the creator of the air crib, the teaching machine, the cumulative recorder and, especially, of the operant chamber. The latter, developed in the early 1930's (Skinner, 1956) might be considered one of the main, if not *the* main, behavior-analytic research apparatus. Skinner's experimental analysis of behavior and his radical behaviorist philosophical framework influenced subsequent basic and applied research in academic and non-academic institutions. They also had an impact on how behavior was conceptualized and dealt with in everyday life, beyond the research setting.

These influences can be evaluated in different ways, including the use of an historical perspective. As Morris, Todd, Midgley, Schneider, and Johnson (1990) pointed out, an historiography of behavior analysis could lead to (1) a more critical understanding of the implications of behavior analysis' experimental, applied and conceptual approaches to scientific and non-scientific settings and (2) an increased understanding of the development of the field's main areas and how their histories influenced behavior analysis as a science and as a technology. Thus, Morris et al., (1990) indicated that historical research highlights the maturity and legitimization of Behavior Analysis as a scientific discipline. In addition, these authors argued that an historical analysis allows us to understand more critically both past practices of behavior analysts and the products of those practices. One such product is a technology of behavior which extends from the basic behavioral laboratory to the settings of everyday life.

In *Beyond the Box: B.F. Skinner's technology of behavior from laboratory to life, 1950s-1970s,* Alexandra Rutherford presents a historical analysis of the process by which behavioral principles were extended beyond the laboratory as a technology of behavior that had great impact upon cultural practices in the United States, especially after the 1950s. She stated the subject of the book to be:

> ... a contextual, historical account of the evolution of B.F. Skinner's cautious experimental research' from the confines of the operant chamber to the design of total environments for juvenile delinquents, prisoners, and psychiatric patients, to intentional communities and self-help programs (p.7).

The central focus of the author's analysis, outlined in the introduction and carefully developed throughout the book, is the thesis that B. F. Skinner's most enduring cultural legacy is his technology of behavior and not his experimental analysis of behavior or his philosophy of radical behaviorism. This same legacy seemed to be perfectly in tune with what Woodward called the "American penchant for making and remaking the environment" (Woodward, 1996, p. 8).

Behavior analyst or not, scientist or practitioner, the reader will certainly benefit from reading this book. All will learn about the field from a broad and externalist perspective that takes into account cultural factors that shaped its development. The externalist approach to history is usually conducted by historians who are outside the discipline they study (Morris et al., 1990). Therefore, an externalist historical analysis is considered to be less influenced by the assumptions and principles of the field studied. This perspective begins with the premise that science develops through a combination of the personal characteristics of the members of the scientific community with other characteristics of the context, such as cultural, intellectual, social, political and economic variables (Morris et al.,

1990; Coleman, 1995). According to this perspective, everything that has been touched by humans can teach us about them (Bloch, 1961).

Rutherford's analysis was based on notes, articles and books, the majority of which were primary sources, and also on interviews with Skinner's colleagues and others who made major contributions to behavior analysis (e.g., Julie S. Vargas, Jack Michael, Ogden Lindsley, Theodore Ayllon, Donald Baer, among others). Given this multiplicity of sources, the wide-ranging historiographical work shown in the book embraces not only facts, but especially the context in which they occurred.

Beyond Freedom and Dignity (1971), the title of one of the most famous and controversial of Skinner's books, inspired the author for the playing on words of her own book's title. The expression "beyond the box", as Rutherford stated "is meaningful on several levels [and] I employ it both metaphorically and literally" (p.16). Each chapter of the book goes a little further "outside of the box." At the end, the walls of the chamber that were originally built to study the behavior of pigeons and rats fades. The technology generated in the lab, within the box, seems to impel behavior analysts to go further "to a room, to a building, to a community [and] to a rhetoric for self improvement" (p.18).

In the first chapter, Rutherford presents Skinner's ideas as they were incorporated by the American culture (see also Rutherford, 2003). The author indicates how and in which contexts extensions of Skinner's theory beyond the basic laboratory work occurred. Rutherford analyzes how the general public received and reacted to, for example, the invention of the air crib and the teaching machine. Cartoons and notes taken from the popular press of the time illustrate the many negative reactions to Skinner's theory and to Skinner himself, which commonly took the form of direct personal attacks. These negative reactions of the non-scientific community often led Skinner to stress the general misunderstanding of his radical behaviorist position (Bjork, 1997).

Rutherford uses the humor of a particular cartoon by Joseph Farris (p. 85), an acclaimed American cartoonist, which appeared in the July 11th, 1964, issue of *Saturday Review,* to show the appropriation of a behavioral technology in American culture. In this cartoon, one boy tells another of his love for his teaching machine, instead of referring to the same feeling for his real teacher. In another cartoon, Joseph Farris shows a classroom of students sitting in front of their teaching machines when one of them exclaims *"You mene I've bin spending   this   whol   term   with   a   defektiv   redding   machin?"* (retrieved   in   12/22/2009   from http://www.cartoonstock.com/cartoonview.asp?catref=shr1112). The student's misspelling might be understood as part of the risk involved in using a technology of behavior. At the same time, it indicates a misunderstanding of the use of teaching machines. As Skinner stated, it was not designed to replace the teacher (Skinner, 1961). Interestingly, in both cases, the cartoons about teaching machines only make sense if nonacademic audiences, such as newspaper readers, know something about the machines themselves. In other words, the humor and criticism in the cartoons illustrate the cultural appropriation of a technological product of behavior analysis.

The instruments and equipment developed by Skinner and other behavior analysts and used in socially relevant contexts are the subject matter of Chapters 2, 3 and 4. In these chapters, Rutherford describes the use of the operant chamber in different settings and with different species. For example, the author traces the use of operant chambers from pharmacological studies with monkeys and dogs to their use in the analysis of human behavior. In

these new laboratories, the main participants were typically institutionalized patients diagnosed with developmental disabilities or other psychiatric disorders. It is interesting to note that although the biological/structural differences among species varied greatly, the basic structure of the box remained almost unchanged.

At the axis of this discussion, the author shows the tension between basic behavioral researchers, who worked in laboratories with non-human animals, and the then incipient applied side of the field, which used operant techniques in human settings. A good example of this polarization was the launch of the *Journal of Applied Behavior Analysis* (JABA) in 1968. The first edition was advertised in the *Journal of Experimental Analysis of Behavior* (JEAB), and this advertisement clearly demonstrates a movement that began in the 1960s to apply the principles and especially the behavioral technology to human socially relevant issues. However, the creation of a movement of applied behavior analysts who had a proper vehicle for research publication also shows the differences among experimental and applied analysts.

In the first three chapters of the book, issues related to ethical concerns about research practices in human operant laboratories are made apparent to the reader (e.g., the laboratory founded by Ogden Lindsley). The logic of conducting direct replications of procedures previously tested with non-human animals is considered from a different perspective: that of using behavioral principles as a technology to treat behavioral disorders and of viewing research participants as clients.

It is interesting to see in Chapter 2 historical evidence that the development of behavior analysis as a field and its later journey "beyond the box" depended on specific laboratories or, as the author states, on a specific "physical location" (p. 49). Gieryn (2002) refers to the laboratory as a "truth spot". This concept refers to a place, materially and geographically located where facts/truths are built. Considering truths as universal and transcendent, their place of production loses its attributes and becomes invisible. Additionally, this place (spot) is exempted from other elements that may, and certainly do, interfere with the construction of facts/truths. However, in this spot there is a set of interactions between human and non-human agents. Therefore the spot might become a centralizer of actions and discourse. In Rutherford's book, the physical location of the behavior analysis laboratory seems to be a good example of a truth spot.

In Chapter 3, the author describes the proliferation of token economies as a form of intervention in psychiatric institutions and educational settings in general. The author also shows that token economies crossed the boundary of the United States. Citing Hall (1973), she stated that "A 1973 review of behavior modification in the United Kingdom revealed 16 token economy programs in psychiatric hospitals …" and citing Winkler (1970), it was "… implemented [in Australia] a token economy at Gladesville Psychiatric Hospital, a large facility in Sydney." (p. 73).

Following the author's perspective, one could wonder if and how such a technology was incorporated in other non-Anglophone countries (like France, Japan, Spain, Brazil, Mexico) where professionals that then called themselves "behavior modifiers" or "operant psychologists" worked in both academic and non-academic settings. In Brazil, for example, the institutionalization of behavior analysis at the university level was done by the introduction of laboratories with operant conditioning chambers in the early 1960's (Cirino, Lattal, Miranda and Cruz, 2009). In little more than a decade, a radical behaviorist perspective in Brazil was no longer confined to university

laboratories; it had been expanded to typical human environments, with great emphasis in the field of education. As an example, six of the 11 articles published in the Brazilian psychology journal *Modificação do Comportamento* (Behavior Modification) between 1976 and 1977 refer to applications of behavior analysis in educational settings.

In a very elegant way, in Chapter 4 the author gives numerous examples of a mix of cleverness and naïveté that was common in the field in the 1970's. Cleverness because, indeed, the main ideas and principles behind the procedures used in application were proven accurate and reliable in various laboratories and attested to by the articles published in important psychology journals at that time. Their naïveté was due to a sort of "infectious blindness" among researchers and practitioners that would allow them to only see the good outcomes of their principles and procedures, but not the complexities and problems of implementing them in real social contexts. As an illustration of this mix, Rutherford discusses the difficulties in implementing behavioral principles in correctional systems. She states that, "Although some argued that rehabilitation as a social experiment had failed, behavior modifiers argued that they had not been given sufficient opportunity, under adequate conditions, to prove the worth of their techniques" (p.100). As behavior analysts would come to realize (e.g., Wolf, 1978), training in an evidence-based practice would have to consider the characteristics of a given context (and directly address such characteristics) where the application of basic behavioral principles was being conducted. A more humble attitude and a re-evaluation of common practices would have been helpful and necessary. Readers interested in the points raised in Chapter 4 might benefit from reading Allen Nueringer's paper, "Humble behaviorism" (1991).

In Chapters 5 and 6, the book's central idea of going "beyond the box" is taken a step further. The author continuously emphasizes that the operant chamber made more evident the possibility of prediction and control of behavior in applied settings. In addition, she analyzes the extensions of the operant chamber not only to particular socially relevant settings (e.g., education, developmental disabilities, and prisons) but to the design of cultures. In Chapter 5, the author examines how behavior-analytic techniques developed in controlled laboratory conditions were presented to the lay public, the ultimate consumers of this technology. She states that, "in part, behavior analysts negotiated this balance by using the cultural authority and practical tools of science, and by capitalizing on the voracious American appetite for self-help recipes formulated by scientific experts" (p.103).

In Chapter 6, the author describes cultural changes and the establishment of whole communities based on behavior-analytic principles, specifically the communities of Twin Oaks (United States) and Los Horcones (Mexico). Both were heavily influenced by Skinner's ideas (especially Los Horcones; see also Twin Oaks`s advertisement in the *Journal of the Experimental Analysis of Behavior, volume 14,* number 3) and, in a sense, remind us of the possibilities and limits which, as behavior analysts, we face in dealing with cultural design and management.

Rutherford's work is a scholarly and very well conducted historical contribution to behavior analysis, especially as it presents aspects involved in the development of a technology of behavior. It is a work to be much valued, given the relatively few publications that deal directly with the field's history. Focusing on the history of behavior analysis is fundamental to an understanding of the reasons why behavior analysts currently occupy the places they do as professionals and scientists. In addition, it is helpful because it is by current scientists and practitioners that the futures of the discipline will be guaranteed. Rutherford's book gives us the opportunity to

revisit the relation between behavior analysts and non-academic audiences. It also points out some reactions of the behavior-analytic community in the face of criticism based on other psychological theories, as well as from the general public. Finally, it highlights the basic behavioral laboratory and its instruments as central aspects in understanding the development of the field of behavior analysis. Historiographical works such as Rutherford's also help the community of behavior analysts to observe the social impact of their theories and technologies beyond scientific practices. The reader will certainly understand that misunderstandings of Skinner's theory and the negative reactions to his proposal of a technology of behavior are, as any other behavior, a function of historical environmental factors.

In sum, the book is a very interesting account of the establishment, and the appropriation by the American culture of the research instruments, findings, language and ultimately of a technology of behavior generated within behavior analysis. As usually happens with good scientific work, it stimulates additional questions regarding the development and appropriation of Skinner's ideas by the scientific and non-scientific communities in different cultures. Such analyses should be welcomed and encouraged within the behavior-analytic community and would certainly add to Rutherford's account in clarifying historical factors that influenced the development and current state of behavior analysis in different parts of the world.

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