

THE OVERSHADOWING OF A HISTORICAL FIGURE: WILLIAM NATHAN SCHOENFELD (1915-1996)

**EL ENSOMBRECIMIENTO DE UNA FIGURA HISTÓRICA:
WILLIAM NATHAN SCHOENFELD (1915-1996)**

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ABSTRACT

W. N. Schoenfeld played a very important role in the early development of the experimental analysis of behavior as a scientific discipline. He has received less credit than was his due, however, because of the overshadowing produced by repeated pairings of his name with that of a better known colleague at Columbia, F. S. Keller.

Key words: W. N. Schoenfeld, experimental analysis of behavior, overshadowing.

RESUMEN

W. N. Schoenfeld jugó un papel muy importante en el desarrollo inicial del análisis experimental de la conducta como disciplina científica. Schoenfeld ha recibido menos crédito del que merecía, debido al ensombrecimiento producido por los apareamientos repetitivos de su nombre con el de un colega de Columbia mejor conocido, F. S. Keller.

Palabras clave: W. N. Schoenfeld, análisis experimental de la conducta, ensombrecimiento.

In his work on the conditioning of the salivary reflex, Pavlov (1927/1960) made an interesting discovery: When two conditional stimuli were presented together, just before each delivery of the acid or the food, the less intense of the two stimuli typically gained little or no control over the salivary response. That is, acquisition of control by the more intense stimulus reduced

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response. That is, acquisition of control by the more intense stimulus reduced or often precluded the acquisition of control by the less intense stimulus. Pavlov described the process in terms of an "overshadowing" of the less effective by the more effective stimulus. The same relation holds for two pairs of discriminative stimuli in operant conditioning (e.g., Miles & Jenkins, 1973). Furthermore, the same outcome can also be produced when prior training is given with just one of the stimuli to make it more effective. In this form, the process is known as "blocking" (Kamin, 1968).

As to the cause of blocking or overshadowing, theories differ. Some writers have suggested that there is an upper limit to the amount of conditioning that can take place under a given set of circumstances, and that if most of the organism's response is conditioned to the first or more prominent stimulus, less will be left to be conditioned to the second or less prominent stimulus (Rescorla & Wagner, 1972). Or perhaps it is a matter of attention (Mackintosh, 1974).

Nat Schoenfeld and Fred Keller

But in any case, the concept of overshadowing seems to have widespread application to everyday life. One illustration of this, I believe, is the way in which the professional reputation of a leading figure in the early history of the experimental analysis of behavior has been overshadowed by that of another with whose name, especially in the early years, his name has been closely and repeatedly paired. During the period when Skinner's ideas were first attracting a national following among psychologists residing in the United States, W. N. ("Nat") Schoenfeld worked closely with Fred S. Keller at Columbia University. As Eliot Hearst put it, in a highly authoritative and relatively detailed account of Nat's personality and achievements, "Fred Keller and Nat Schoenfeld were men whose names are strongly linked in the history of the scientific movement that eventually led to the creation of [the *Journal of the Experimental Analysis of Behavior*]" (Hearst, 1997).

Nat was a junior member of the faculty, 27 years of age and just a year beyond his doctorate, when I met him for the first time as a student in his graduate course in Intermediate Experimental Psychology at Columbia University (Dinsmoor, 1990). He had already published in the *Psychological Review* (Schoenfeld, 1941). But Fred was almost 17 years his senior, and it was probable that, as a former student in the same department, still holding only the lowly rank of "lecturer", Nat subordinated himself in many ways to his older and more distinguished colleague.

The Undergraduate Laboratory

The historical origins of the famous laboratory course that was established in 1946 to serve as the undergraduate student's first contact with the science of psychology (Keller & Schoenfeld, 1949) remain somewhat murky. Fred and Nat had been collaborators on a Morse code project and apparently were in frequent contact during the years immediately preceding the launching of the course. Nat had taken laboratory courses in other sciences as an undergraduate at the College of the City of New York. He has recalled proceeding with Fred to seek the approval of Harry J. Carman, then Dean of the undergraduate division for males (Columbia College), for the new course. According to a personal communication from Nat dated 9/23/95, it was Fred's charm that initially obtained the interview, but it was Nat's fervor and refusal to compromise that finally broke down Carman's resistance to their plan.

At the time, however, the responsibility for teaching the introductory course lay with Fred Keller and John Volkmann, and Nat was substituted only at the last minute, after Volkmann had accepted an offer to teach at Mount Holyoke. (John Volkmann and Thomas Reese organized a similar course on that campus). Nevertheless, Schoenfeld and Keller were collaborators from the opening session. It was Fred who delivered most of the lectures, but according to Nat's recollection, he too played a very active role: It was he who hired and trained a supervisor for the animal quarters, contacted the firm that made the cages in which the rats were housed and trained, located a pill manufacturer to produce the pellets eventually used as the reinforcers, briefed the graduate assistants in preparation for each of the laboratory sessions, and drafted the description of the course that appeared in the *American Psychologist* (Keller & Schoenfeld, 1949). Certainly those of us who were graduate students at the time looked upon Nat as an equal participant in the enterprise. Keller himself has acknowledged Nat's contributions in the following words: "My debt to Nat in the years that followed cannot be exaggerated. He supplied the skills and knowledge that I lacked, as he had done in our Morse-code collaborations; and the course for which I usually get the credit owed more to him than it did to me" (Keller, 1982, p. 76). "Most of the success of our Columbia College introductory laboratory course must be attributed to him." (Keller, 1977, p. 84).

The Textbook

The launching of the undergraduate laboratory in 1946 -the prototype for a number of similar courses at other schools- was followed by a textbook that appeared in mimeographed installments in 1947 and 1948 and in its final printed form in 1950 (Keller & Schoenfeld, 1950/1995; see Dinsmoor, 1989).

At this late date, it is difficult to determine what portion each of the authors contributed to this classic of the behavioral literature. Although Nat accepted second authorship (and thus diminished credit), the general understanding among their students at the time was that both authors had contributed in more or less equal measure. It is even possible that Nat contributed more than his share but, as a relatively new PhD, deferred in the order of names to his senior colleague.

Before the laboratory was added to the introductory course, Fred had already gained considerable experience in translating mentalistic terms into behavioral equivalents (Keller, 1977, pp. 10-11) and he had based a large part of his introductory lectures on concepts derived from Skinner's research (Dinsmoor, 1990). In his teaching and in his writing (Keller, 1937), he had analyzed and compared the classic schools of psychology, and he was well practiced in extricating data collected within one theoretical framework for interpretation within another. K&S, as it was colloquially known, also contains passages that unmistakably reflect Fred's simple but highly euphonious style of writing.

But I also think that Nat's familiarity with a variety of research areas (ranging from social psychology to "psychophysics") contributed to a significant degree to the book's coverage. Furthermore, his critical acumen, his tough-minded ability to avoid entrapment by an author's verbiage and to focus on the logical implications of the empirical findings (e.g., see Schoenfeld, 1941, 1950, 1974, 1976; Schoenfeld & Mueller, 1954) also facilitated the integration of data from other sources into the theoretical framework provided by Skinner. I know that in later years Nat felt he had received less credit than he deserved (personal communication, 9/23/95) for his contribution to the book.

The Graduate Program

During the time when I was at Columbia, at least, the graduate students viewed Fred and Nat -with an occasional assist from Ralph Hefferline- as leaders in a common enterprise. Our dissertations were officially co-sponsored by both men. Some of us were more influenced by Fred, of course, and others by Nat, but I suspect the differences in choice were based mainly on personal style, or even on historical accident. In my own case, for example, I was introduced to the systematic implications of Skinner's research while constructing examination items for Fred Keller's introductory course, a year before the laboratory was added. Also, it was Fred who showed me how to train my first rat (Dinsmoor, 1990). In other words, it was Fred who kindled my initial interest in the experimental analysis of behavior. As time went on, I continued to be closer personally to him than to Nat, and in an article

published elsewhere (Dinsmoor, 1996) I have expressed my gratitude for his personal qualities and my appreciation of the innovative nature of his professional contributions. Nothing said in the present article should be construed as detracting in any way from that account.

Nevertheless, when it became time to collect data for a dissertation, Fred was out of town on a sabbatical leave and it was Nat who came up with an interesting suggestion for assaying the quantitative equivalence between a discriminative stimulus and a conditioned reinforcer (for context, see Keller & Schoenfeld, 1950/1995). In this sense, I was Nat's student. I did not hesitate to accept him as the primary, day-to-day director of my research efforts and the preparation of my manuscript. I was happy with the results. Later, when I launched a research program at Indiana, however, it was based on Keller's work on escape training. (Similarly, although Murray Sidman's dissertation was inspired in the most immediate sense by Schoenfeld's theorizing on avoidance, he too has credited Keller with a formative influence [Sidman, 1996]).

Students from the program led by these two charismatic teachers provided a major share of the participants in the early Conferences on the Experimental Analysis of Behavior and of the authors and editors of early volumes of the *Journal of the Experimental Analysis of Behavior*.

Launching a Journal

Nat also played a leading role in launching the first, and for ten years the only, journal based on behavior-analytic methodology. His personal reminiscences of the founding of the *Journal of the Experimental Analysis of Behavior* in 1957-58 may be found in a special anniversary section of that journal (Schoenfeld, 1987). Charles Ferster assumed the role of Editor and Marilyn Ferster (now Gilbert) corrected the copy for grammar and style and typed it up in a form suitable for reproduction. At the time, Nat's then-wife, Serena, happened to be a high-level professional with Science Press. She provided the technical expertise for photo-offset reproduction, which was in those days in its infancy but was especially well-suited to a journal that contained a great many cumulative records. It was she who chose the paper stock, placed the printing, and oversaw the finished product. But Nat himself decided many of the details. He also commissioned the distinctive green on gray title design that still appears on the front cover, and he wrote the mission statement that still appears on the masthead inside: "The Journal of the Experimental Analysis of Behavior (JEAB) is primarily for the original publication of experiments relevant to the behavior of individual organisms. Review articles and theoretical papers are also considered for publication." All of this, of course, was behind the scenes.

On His Own

About the time the journal began to appear, a change occurred in the situation at Columbia. Keller was approaching retirement age. He had long been concerned with effective teaching, and now his interests shifted from basic behavioral research to an emphasis on programmed instruction. Also, he assumed for a time the duties of departmental chair. In 1961 he made the first of his trips to Brazil.

Nat's program of research was still going full tilt, and he was now the primary sponsor for those students who were conducting research in the basic processes of operant and respondent conditioning (W. J. McGill, personal communication, 12 July, 1996). In 1966, fed up with academic politics at Columbia, he moved to a nearby campus at Queens College of the City University of New York, where he continued to train many outstanding students. A few years ago, while administering the program for selecting Fellows for Division 25 of the American Psychological Association, I was struck by the large number of nominees who had obtained their doctorates from that institution.

Major honors followed. He was appointed to chair the National Institute of Health's Study Section in Experimental Psychology, a committee that evaluated applications for federal research grants. In rapid order, he was elected President of the Pavlovian Society of North America (1971-72), President of the Eastern Psychological Association (1972-73), and President of Division 25 (Experimental Analysis of Behavior) of the American Psychological Association (1973-1976). (Interested readers may find his presidential address in Volume 2 of the *Mexican Journal of Behavior Analysis* [Schoenfeld, Cole, & Sussman, 1976]).

This was the period of Nat's greatest prominence within the profession. But with the exception of Division 25, and perhaps EPA, these honors were not necessarily known to other behavior analysts across the country. There were also additional factors that served to reduce Nat's visibility within our ranks. In the late sixties or early seventies, when we were in Washington for an administrative meeting, I remember his complaining about the editorial policies of JEAB, which he regarded as increasingly arbitrary and increasingly restrictive (see also Schoenfeld, 1987). I did not take him very seriously at the time, as we all suffered from and complained about misguided reviewers, but with the exception of an invited reminiscence (Schoenfeld, 1987), which he stipulated be printed exactly as written, he never again published in the journal he had helped to found. From that time on, his empirical research was published in the *Pavlovian Journal of Biological Science* (originally known as *Conditional Reflex: A Pavlovian Journal of Research*) and various other journals outside of the usual

reading habits of mainstream behavior analysts. Much of this research dealt with the Pavlovian conditioning of the cardiac response, which, although equally behavioral and perhaps equally significant, had been downplayed by Skinner and was of less interest to most behavior analysts than studies based on the rate of pressing a lever or the rate of pecking a key. The heart-rate research was not widely cited in JEAB. Chapters appeared in a number of books, reviews and theoretical papers were scattered among a number of journals, and in one case an entire program of research that was operant in nature was published as a separate volume (Schoenfeld & Cole, 1972).

Later Years

In his later years, Nat became extremely religious, an attitude that seemed to me at odds with the skepticism with which he had greeted all issues during his years at Columbia. In 1983 he retired from his position at Queens and emigrated to Israel. However, he did appear in Milwaukee in 1989 at a meeting of the Association for Behavior Analysis celebrating a variety of anniversaries in the field, including Fred Keller's ninetieth birthday, and at the Universidad de Guadalajara in 1992 at an international symposium on Pavlov.

In the meantime, Fred Keller remained highly visible. His Personalized System of Instruction received a great deal of attention among applied behavior analysts, whom Nat rarely addressed and who were not familiar with his career. Also, Fred published books of reminiscences in 1977 and 1982, appeared regularly at the meetings of the Association for Behavior Analysis and the Southeastern Association of Behavior Analysis, and received a number of awards from these and other professional organizations. Until Skinner's last years, the two Freds regularly appeared together as entertainers at ABA's annual banquet. By now, Fred had become a living icon of the behaviorist movement, and his continued prominence further contributed to the overshadowing of his former partner at Columbia.

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