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Some Historical and Conceptual Background to the Development of B.F. Skinner's "Radical Behaviorism" — Part 1

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The present article is the first in a series of three that outlines the historical and conceptual background of B.F. Skinner's radical behaviorism. The series seeks to identify milestones in the development of Skinner's position, as well as assess the impact of particular factors and events on Skinner himself. Of special interest in this article are the biographical details of Skinner's life between June, 1926, when he received his undergraduate degree, and September, 1928, when he entered graduate school. The article also examines the intellectual climate at the start of the second quarter of the twentieth century that led Skinner to become interested in the empirical study of behavior. Overall, Skinner's views during this period were significantly influenced by (a) such literary figures in the modernist tradition as H.G. Wells and Sinclair Lewis; and (b) such scientific/philosophical figures as Francis Bacon, Jacques Loeb, Ivan Pavlov, Bertrand Russell, and John B. Watson.

Keywords: B.F. Skinner, radical behaviorism, history of psychology

Although the methodologies of the surveys often differ and the meaningfulness of their findings is often debated, many surveys have nevertheless reported that the late B.F. Skinner (1904–1990) is the most eminent figure in the history of psychology. For example, Korn, Davis, and Davis (1991) reported that their sample of chairs of graduate psychology departments ranked Skinner as the most eminent psychologist of all-time. More recently, Haggbloom et al. (2002) reported that when they aggregated six qualitative

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and quantitative criteria of eminence, Skinner ranked first among twentieth century psychologists, ahead of both Sigmund Freud and Jean Piaget.

Interestingly, Skinner is also regarded as one of the most controversial psychologists of all-time, in both the society at large and the discipline of psychology. In the society at large he is well-known for his controversial stance on human freedom, for example, in his book *Beyond Freedom and Dignity* (Skinner, 1971; see Dinsmoor, 1992). In the discipline of psychology, he is well-known for his criticisms of traditional research methodologies that advocate theories, hypothesis testing, and group–statistical experimental designs (e.g., Skinner, 1950).

The term "behavior analysis" is increasingly being used to identify the actual work of people inspired by Skinner's ideas. In this regard, Moore and Cooper (2003) recently identified four domains of behavior analysis: (a) the experimental analysis of behavior, a basic research activity concerned with elucidating the fundamental principles of behavior; (b) applied behavior analysis, an applied research activity concerned with developing and evaluating practices that remedy problems associated with socially significant behavior; (c) the delivery of behavior-analytic professional services, a professional activity concerned with providing services that remedy problems associated with socially significant behavior; and finally (d) radical behaviorism, an underlying philosophy of science concerned with the reflective, conceptual analysis of activity in the other three domains. Moore and Cooper focused on the first three domains, and suggested a set of thirteen criteria that could be used to distinguish them.

The present article focuses on the fourth domain: radical behaviorism. According to Schneider and Morris (1987), the term "radical behaviorism" was first used by Calkins (1921), well before any association with Skinner, to signify a strict (or "extreme") concern with publicly observable behavior, as opposed to the structure of consciousness as revealed through introspection. Correctly or not, Watson's (1913) classical behaviorism is often cited to illustrate this sense of radical or extreme. Noteworthy is that although Watson was the first to use the term behaviorism and its cognates, no evidence exists that he ever used the term radical behaviorism.

In Skinner's writings the usage became somewhat broader, with a different shade of meaning:

> I don't believe I coined the term *radical behaviorism*, but when asked what I mean by it, I have always said, "the philosophy of a science of behavior treated as a subject matter in its own right apart from internal explanations, mental or physiological." (Skinner, 1989, pp. 121–122)

To be sure, one important feature of this philosophy of science was how to conceive of the relation in psychology between phenomena that were publicly

observable and those that were not. In this regard, Michael (1985) has made the case for Skinner's sense of radical as "thoroughgoing" or "all-inclusive," rather than the original exclusionary sense of extreme. Radical behaviorism in the sense of thoroughgoing does not hold that the elements of human functioning that are not publicly observable are "out of bounds" for a science of behavior, and that they can only be examined via some other mode of inquiry or analysis. Indeed, Skinner commented extensively on introspection, and how a science of behavior must account for how introspective reports are made (Skinner, 1945, 1953, 1957, 1964, 1974; see also Moore, 1981, 1999, 2001a, 2001b). As Skinner suggested, such a position does not mean that the phenomena that were not publicly observable were necessarily part of a mental dimension, distinct from the behavioral dimension.

Another important feature of Skinner's philosophy of science was its epistemology. As an epistemological stance, radical behaviorism is concerned with such time-honored questions as, (a) "What does knowledge mean?"; (b) "What is known about the causes of behavior?"; and (c) "What causes that which is known to be known?" Radical behaviorism for Skinner is not extreme in the limiting sense because it does not restrict itself to publicly observable variables. In other words, radical behaviorism has a place for both independent and dependent variables that are "within an organism's skin" (Skinner, 1953, p. 257). It does not deny, ignore, or reinterpret these variables, as the conceptual schemes of traditional psychology might do and as might be implied by the sense of radical as extreme. However, when Skinner's form of behaviorism does consider variables not accessible to others, it conceives of their nature and their functional role in behavioral terms, quite differently from the mentalistic doctrines of traditional psychology (e.g., Skinner, 1953, chapter 18). In an important sense, then, radical behaviorism is a comprehensive epistemological stance concerned with how we come to know and explain the causes of behavior, including the causes of our own behavior and including variables that are not publicly observable. Malone, Armento, and Epps (2003) state the matter in straightforward terms: "Radical behaviorism is a philosophy of mind and therefore an epistemology. That simple truth is known by very few psychologists, let alone by the general public or by philosophers and biologists" (p. 47).

The present article is the first in a series of three that outlines the historical and conceptual background of B.F. Skinner's radical behaviorism. We are primarily concerned with identifying milestones in the development of Skinner's position, as well as assessing the impact of particular factors and events on Skinner himself. We are not seeking to systematically analyze the nature of radical behaviorism and the differences between radical and other forms of behaviorism, although of necessity the articles in the present series will refer to such differences. A wealth of information on the nature of radical

behaviorism is available elsewhere (e.g., Catania, 1980; Coleman, 1982, 1984, 1985, 1987, 1996; Day, 1969a, 1969b, 1976, 1980, 1983, 1987; Moore, 1981, 1999, 2001a, 2001b; Moxley, 1997, 1998, 1999a, 1999b, 2001a, 2001b, 2002, 2003; Schneider and Morris, 1987; Smith, 1986, 1995, 1996; Zuriff, 1985).

Of special interest in Part 1, therefore, are events in Skinner's life between 1926, when he received his undergraduate degree, and 1928, when he entered graduate school. Also relevant is the prevailing intellectual climate at the beginning of the second quarter of the twentieth century that led Skinner to become interested in the direct, empirical study of behavior. Part 2 will review milestones and assess the impact of particular factors and events between 1928 and later into the 1930s, with an eye toward understanding how certain important features of Skinner's system developed. Part 3 will critically examine the intellectual context of a paper Skinner published in 1945 in which he used the term "radical behaviorism" for the first time in print. The paper was titled "The operational analysis of psychological terms" (Skinner, 1945), and was part of a symposium published in *Psychological Review* under the auspices of E.G. Boring (1945). The paper is widely regarded as inaugurating the distinctive epistemological or philosophical stance of radical behaviorism. What then were the circumstances that led to the development of the unique position called radical behaviorism?

Skinner's Early Years

From Skinner (1957) we have it that

> The speaker is the organism which engages in or executes verbal behavior. He is also a locus — a place in which a number of variables come together in a unique confluence to yield an equally unique achievement. (p. 313)

To understand radical behaviorism is, in an important sense, to understand how certain variables came together in a unique confluence in the life of B.F. Skinner, to yield the equally unique achievement called radical behaviorism (see also Michael, 1993; Todd and Morris, 1995).

Skinner as a Youth

Burrhus Frederic Skinner was born on March 20, 1904, in Susquehanna, a modest railroad town in northeast Pennsylvania. His parents were William and Grace Skinner. Skinner's first name was his mother's maiden name, but throughout his life he was known to virtually everyone as Fred. His father had initially trained as a draftsman and had worked in the repair shop of the Erie Railroad. His father then studied law, ultimately passing the bar exam

and opening his own practice. A younger brother, Edward, known to the family as Ebbe, was born when Skinner was 2 1/2 years old.

While growing up in Susquehanna, Skinner had a wide variety of interests, ranging from music to the arts to just plain wondering how things worked. He invented. He tinkered with various toys and devices: whistles, blocks, tops, roller-skate scooters, steerable wagons, sleds, see-saws, slingshots, bows and arrows, blow guns, model airplanes, box kites, Erector sets, a toy steam engine, a battery-driven electric motor, a steam powered cannon that would shoot plugs of potato and carrots over the houses of neighbors, and a stereopticon that projected scenes from postcards that he imaginatively arranged into a travelogue (Vargas, 2004, p. 138; Skinner, 1967, p. 388; 1976, pp. 66–69). He read Charles Darwin. He attended all twelve grades of elementary and high school in the same building, and graduated second in his high school class of eight students.

He was also interested in behavior. He read Ernest Thompson Seton and was interested in folk wisdom about animals. He caught and kept turtles, snakes, toads, lizards, and chipmunks. In a county fair he saw a troupe of performing pigeons act out a "rescue" of an ostensibly stranded pigeon from the upper story of a building that gave the appearance of being on fire. He developed keen powers of observation, including the observation of behavior. He wondered how a performer could write the alphabet forward with his right hand and backward with his left, while simultaneously adding a column of figures and answering questions (Skinner, 1967, pp. 395–396).

In eighth grade he seized upon an idle statement by his father and in his English class challenged his teacher by investigating whether Francis Bacon had actually written the works of William Shakespeare (Skinner, 1967, p. 389). While reading Bacon, he encountered some interesting philosophical ideas about how to inquire scientifically into nature's mysteries, which given his inquisitive nature, were surely provocative to him. Thus, one might speculate that even at this early age at least some of his experiences were concerned with epistemology. According to Vargas (2004),

> Bacon equated with science the kind of tinkering Fred loved to do. Bacon did not believe in following an idea just because it was sanctioned by an established authority. Bacon's distrust of authority as the source of truth must have appealed to a teenager who was challenging his own teacher. In any case, what Skinner read of *Novum Organum* stayed with him. In his experimental research in graduate school, he used procedures consistent with those Bacon recommended — direct observation and a search for functional relations between dependent and independent variables. (p. 138)

Although most of these ideas lay dormant for several years, they clearly served him well in more serious pursuits later in his life.

Skinner's father was appointed as legal counsel for the Hudson Coal Company in 1922, and as a consequence the family moved from Susquehanna to Scranton, Pennsylvania. Pursuant to the recommendation of a family friend, Skinner applied to Hamilton College in Clinton, New York, for his undergraduate training. He was readily accepted, and matriculated in the fall of 1922. During his undergraduate years he continued to indulge his many interests — he said he took "an absurd program of courses" (Skinner, 1967, p. 391). He majored in English language and literature with a minor in Romance languages, but he also took courses in biology and public speaking. His familiarity with Darwin stood him in good stead, and in a biology course he was introduced to the objective approach of Jacques Loeb's *Comparative Physiology of the Brain and Comparative Psychology* (Loeb, 1900) and *The Organism as a Whole* (Loeb, 1916). Again, the exposure to science was to prove fruitful later.

Skinner (1967, p. 392) believed that the most important thing that happened to him at Hamilton was getting to know the Saunders family. Percy Saunders was a Dean and also on the Chemistry faculty at Hamilton. Skinner became acquainted with the family during his sophomore year, when he took Percy Saunders' chemistry course and began to tutor the 12-year old son of the Saunders family in mathematics. Skinner was somewhat self-conscious of his own family background and preparation, but through his frequent contact with the Saunders, he came to admire their culture and appreciation for the finer things in life: music, art, literature, cultivating peonies, astronomy. Consequently, Skinner was impressed with how the Saunders made an art of living, something which he had not known was possible (Skinner, 1967, p. 392).

Tragically, Skinner's younger brother Ebbe died in the spring of 1923, when Skinner was home during his freshman year in college for Easter vacation. An autopsy mysteriously gave the cause of death as acute indigestion. Some years later, when Skinner showed the report to a medical friend, the friend suggested a more likely possibility was a massive cerebral hemorrhage, perhaps due to a congenital weakness in a blood vessel (Skinner, 1976, p. 208). Ebbe's death devastated the Skinner family, especially Skinner's father, but they tried to carry on.

Skinner's "Dark Year"

In the summer of 1925, before he began his senior year at Hamilton, Skinner participated in a writing workshop at Bread Loaf, affiliated with Middlebury College in Vermont. While there, he not only wrote but also talked with others about writing as a craft. On one occasion during the workshop he even had lunch with Robert Frost, and at Frost's request, Skinner

sent him some short pieces of fiction he had composed. In the fall of 1925, when Skinner returned to Hamilton, he began to contemplate his future. A few pieces he had composed for local media and college outlets had attracted some attention, so with nothing else in the offing, Skinner began to entertain the idea of becoming a writer. Then, in April, 1926, shortly before Skinner was to graduate, Frost sent him some encouraging feedback on the work that Skinner had sent him the previous summer. Given this feedback and given that Skinner had been pondering what he was going to do after he graduated, he decided to try his hand at writing something substantial, perhaps even a novel. He proposed a plan to his parents whereby he would be given a year to see what he could come up with. His parents were skeptical of the outcome, but agreed to give him the requested time, if only to let him find himself.

Skinner's first move after graduating from Hamilton in June, 1926 was to build a study in the attic of his parents' three-story frame home in Scranton. There he hopefully sequestered himself during the summer of 1926, writing drafts and reading a wide variety of literature that he hoped would promote his productivity. One of the many publications that captured his interests was a magazine of literary review and criticism called the *Dial*, the significance of which in Skinner's life will be described shortly. Skinner's autobiography (1976, pp. 262–302) provides a first hand account of this period. In addition, Coleman's (1985), Moxley's (1998, 1999a, 1999b, 2001a, 2001b), and Wiklander's (1996) accounts of the period are superb.

As Skinner matured intellectually, he developed an objective, empirical outlook on life, and was particularly interested in applying this outlook in his writing. He believed that "objective, descriptive writing is worth more than ever-changing, faddish interpretation" (Coleman, 1982, p. 61). In a letter to Percy Saunders, Skinner confessed that "The only kind of writing which fits my idea of pure literature . . . is objective writing. I can't honestly or dishonestly do any other kind" (as cited in Coleman, 1985, p. 89). Bjork (1993, pp. 56–57) has described objective writing as writing in which the writer does not appeal to feelings of characters or inject thoughts "into their heads." The writer simply describes events as they happened, without invoking unseen phenomena on the part of the principals. To be sure, the characters surely do have feelings and thoughts, but the job of the writer is to develop the story line in such a way that the writer does not need to invoke the feelings and thoughts of characters for readers to appreciate the work.

Another letter Skinner wrote to Percy Saunders, dated August 16, 1926, illustrates his outlook. The letter was occasioned by the death of Skinner's 77 year-old maternal grandfather the month before, after surgery for an enlarged prostate. As noted earlier in the present article, Skinner's younger brother Ebbe had died tragically in the spring of 1923, and the loss of someone so

young had a profound impact on the family (Skinner, 1976, p. 208). Now, just three years later, a patriarch had died. Skinner had attended his grandfather during the last week of his life, and had his arm around his grandfather's shoulders, holding him up, when he died. As recounted in Catania (1992, p. 1528), Skinner began the letter by describing the problem of writing "objectively," but then moved to "the bigger question of life itself." Skinner described the death of his grandfather in the following way:

> Then all night long this organism — worn out, beyond repair lay there. Certain muscles of his diaphragm went on functioning — a little air was pulled spasmodically into the remaining lung space. An overtaxed heart — sustained on strychnine — pumped impure blood — and gave out under the strain. His pulse weakened — he coughed and lay still. I listened to his heart — it was still . . . .
>
> I watched this human organism wear out — watched it as unemotionally as possible — and tried to understand it. What had happened. The active *idea* which I had known as my grandfather was gone simply because certain physical properties of his body had given out. Was there anything more of him beside that, something spiritual? If so, when did it leave him? At the last moment? — except for certain reflex muscular activities the minute before and the minute after were alike.
>
> I am very sure that my grandfather — all of him — all that I knew of him and felt — his character, personality, emotions, will, desires, — all — everything went as soon as the physical condition of his body became unfit for certain nervous coordinations. Just as the dreary character of the clock I now hear will vanish when the parts which give forth its ticking shall stop. (Catania, 1992, pp. 1528–1529)

Clearly, then, Skinner had developed a particular outlook to the meaning of life that he wanted to explore (see also Bjork, 1993, pp. 57–59 for additional discussion of this same event).

What then became of Skinner's efforts at writing during this period? Unfortunately for him (and his parents) in the short term, but perhaps more fortunately for him and for humankind in the long term, nothing happened. Despite his desire to write objectively, he found he "had nothing to say, and nothing about my life was making any change in that condition. By the end of the summer [of 1926] it was clear I had made a terrible mistake" (Skinner, 1976, p. 264).

He was floundering in a stormy sea, perilously close to drowning (Skinner, 1976, p. 298). He was early in what he would describe as his "Dark Year." It is important to establish some perspective about the magnitude of this unhappy experience in Skinner's life. When Skinner enrolled at Hamilton in 1922, he had wanted to spend four years of earnest study in the subjects he enjoyed, to break free from the confines of his own upbringing and expand his "mental powers" (Skinner, 1967, pp. 392 ff.; 1976, p. 211). However, he was obliged to do a great many things he didn't want to do, such as attend daily chapel and take physical education courses. In addition he soon realized that most of the other students showed little or no interest in intellectual

matters, preferring the athletic field to the library. Thus, his college years proved a huge disappointment to him. By the time he was a senior, he had lapsed into moderate forms of undergraduate mischief — in one autobiographical statement he described his behavior as "open revolt" (Skinner, 1976, p. 392). One escapade was distributing a phony notice that Charlie Chaplin would give a lecture on the Hamilton campus on the subject of "Moving Pictures as a Career" (Skinner, 1976, p. 236). Another was conspiring with a few of his friends to turn a prestigious oratorical event into a travesty by making utterly bombastic presentations (Skinner, 1976, p. 255). He also became cynical about the value of many well-established social conventions. Somewhat later he was to say, "When I passed a church I often speculated on how it could be converted into a behavioral laboratory" (Skinner, 1979, pp. 113–114). Overall, he believed his college years had put pressure on him to surrender his individuality, and he yearned to be free to begin making his own independent contributions, exhibiting due reverence for artistic freedom and other attributes of the romantic tradition he had acquired from the study of literature.

Now he had graduated. He should have been making his own contributions, but clearly he was not. He chafed at the conformist lifestyle of his parents, although there wasn't a great deal he could do about it, other than try to pursue his own interests. He had been brought up "to fear God, the police, and what people will think" (Skinner, 1984, p. 403). What was he to do? Was he going to accept the conventionalism of his parents' life in Scranton, replete with Republican Party orthodoxy, Presbyterian church services, and Kiwanis meetings, or a life in which he was honest with himself and in which he could realize his own aspirations? He began to look at himself as a person, noting that what he had achieved he despised: he saw his election as an undergraduate to "Phi Beta Kappa as a sort of reward for unimaginative plugging and large sacrifices on the side of freedom of mind" (Skinner, 1976, p. 282). How was he going to make his own independent contributions? How was he ever going to understand "the bigger question of life itself"?

The Influence of Modernism

The intellectual climate during the 1920s was one of "modernism." Although it is clearly possible to define modernism in many ways, for present purposes suffice it to say that modernism is the view that traditional ideas for society and its institutions are outmoded, and that one needs to critically analyze all aspects of life, from art to literature to architecture, and replace them with "better" modes of reaching desired ends. The sciences, including the social sciences, played an important role in this process, as they were the principal vehicles for improving society and solving social problems. Of course,

not only were cultural artifacts to be re-examined, but so also were behavioral practices and institutions: education, political/social structures, and sexual mores. Maintaining individual freedom of expression was an important feature of whatever revolutionary changes were to come about. Although not explicitly expressed, Skinner's original interests in objective writing at the beginning of his Dark Year may be taken as reasonably consistent with these modernist themes (e.g., Moxley, 1999b; Wiklander, 1996, p. 87).

Skinner's own background in Susquehanna and Scranton did not particularly place him on the cutting edge of cultural change in the United States during the 1920s, and even though Hamilton provided Skinner with a traditional liberal arts education that valued established knowledge, he developed his own brand of iconoclasm consistent with modernism (see discussion in Moxley, 1999b). As his autobiography attests, he was clearly given to certain sexual adventures during the decade of the 1920s. He fancied himself as a restless soul, yearning to stretch his boundaries and fit in with the romantic traditions of artistic expression in literature. As Coleman (1985) documents, he read a variety of social commentary and criticism during his Dark Year as well as more conventional forms of literature, from H.L. Mencken, Ezra Pound, and Max Stirner, to Sinclair Lewis and H.G. Wells. He read Bergson, Proust, Dostoevsky, and Joyce. He aligned himself with progressive thinking and came to appreciate the commitment to science as the means according to which society might be restructured. He was particularly concerned that there be appropriate recognition for intelligence, such that the humdrum of quotidian life wouldn't overwhelm one's artistic sensibilities.

Nevertheless, it was an inescapable conclusion that despite the intensity of his desires, he had failed. No doubt the Skinner family environment coupled with the limiting intellectual atmosphere of Scranton contributed to his situation. He was living in his parents' home, as the sole surviving child. He was playing the role of dutiful, obedient son, "a position I had never wanted" (Skinner, 1976, p. 210). As he attempted to pursue his literary interests during the Dark Year, he began to come in contact with more and more of the modernist movement. He believed he belonged to that movement, but he was falling short. Elms (1981) talks in terms of Skinner's "identity crisis," much as a psychodynamic personality theorist might conceive of it.

The Seeds are Sown

Relatively early in the Dark Year, in August, 1926, as Skinner was becoming painfully aware that he had nothing to say, the *Dial* published a review by Bertrand Russell of Ogden and Richards' (1923) *The Meaning of Meaning.* This review piqued Skinner's interests, for it contained some interesting points about verbal behavior and a footnote lauding John B. Watson's

Behaviorism, one edition of which had been published in 1924 and another in 1925, which Russell had found "massively impressive." In particular, Russell argued that (a) words are social products; (b) words are bodily movements; (c) words are means of producing effects on others; (d) words, like other bodily movements, are caused by stimuli; (e) heard words are stimuli; (f) the essence of words is not to express "ideas"; (g) the distinction between the emotional and logical use of words is illusory; and (h) in the individual, language is heard before it is spoken. Calling on one of his own prior books, Russell pointed out that "we may say a person understands a word when (a) suitable circumstances make him use it; (b) the hearing of it causes suitable behavior in him" (Russell, 1926b, pp. 115–117). Russell especially supported the "causal" analysis of language. Informed readers may recognize many of these same points appeared thirty years later in Skinner (1957). In any case, given Skinner's ongoing struggle, he was much intrigued by Russell's empirical, objective approach to language, meaning, and even epistemology as he tried desperately to keep afloat and live up to his own expectations of himself.

The Dark Year Continues

Skinner's parents, ever concerned about their son's future as well as what others would think, were at a loss when it came to understanding their son's behavior during the summer of 1926. Coleman (1985, p. 83) reports that in September, 1926, Skinner's father offered to set him up in a real job with a respectable salary. Although tempted, Skinner eventually declined, expressing his modernist doubts in a letter to Saunders: "[H]ow long I could stay in Scranton and stay emotionally alive . . . . Wouldn't I surrender? . . . How do I know that my finer emotions won't sublimate themselves to the thrill of a Kiwanis three cheer?" (as cited in Coleman, 1985, p. 83).

The year 1926 ended and young Skinner drifted into 1927, but his Dark Year remained as dark as ever. He tried to write, and he tried to write about writing, but neither worked for him. He began to withdraw from his efforts at creative writing. In the winter of 1927, he built model ships as a diversion. In April, 1927 he began to work as a day laborer for a local gardener. He enjoyed the vitality of the work, but unfortunately had to give up the gardening job just a few months later when he suffered an allergic reaction after being pricked by the thorns of some barberry bushes he was transplanting (Bjork, 1993, p. 71). In the summer of 1927, his father invited him, perhaps in another paternal effort to relieve his son's melancholy, to help write a manual of workmen's compensation decisions in the coal mining industry. The manual was finished in the fall of 1927 and subsequently published in February, 1928 under the title of *A Digest of Decisions of the Anthracite Board of Conciliation* (Skinner and Skinner, 1928). Skinner (1976) described his work as follows:

> I read 1148 grievances and summarized the umpire's decision in each in a short paragraph. About 700 were classified according to the eleven awards and agreements of the original commission, but I had to work out a system of classification for the rest in terms of grievance committees, rates, relations between employer and employee, and a number of miscellaneous topics. It was not far from a Baconian classification of scientific facts. (pp. 286–287)

Although the book made some money that would provide a means of support a few years later, and although working on the book did help Skinner's organizational skills, he still needed to deal with the longer term problem of what to do with his life, given that he had failed to write the kind of imaginative but nevertheless objective literature that he admired.

The Turn to the Objective, Empirical Study of Behavior

In the numerous and deeply introspective moments of his Dark Year, Skinner recognized he was principally interested in the human condition. That was why he wanted to write in the first place. He was particularly interested in Proust's writing, and in analyzing a few instances of Proustian recall in his own experience, presumably because of its "psychological" implications (Skinner, 1967, p. 397). He was interested in how people perceived the passage of time. Given the deaths of his younger brother in 1923 and his grandfather in 1926, he was interested in such things as the meaning of human existence. He had sought to delve into such matters through the behavior of characters in his written work, but clearly he wasn't getting anywhere.

As 1927 wore on into its second half, he began to wonder whether he was pursuing his interests in the wrong way. He had wanted to use the literary method to make his own statement about the meaning of the life and the human condition. His reading suggested that many critics in the modernist tradition were rendering questions about meaning as questions about behavior. Indeed, Russell's (1926b) philosophical treatments had approached questions about epistemology and verbal behavior as fundamentally questions about the behavior of speakers and listeners. Skinner's life seemed to be at a standstill — could he make some progress by taking his cue from the modernist tradition, from Russell, or even from Bacon, and more directly embracing a scientific approach to his interests? Given that he had always been interested in behavior generally, and that he had developed an interest in questions of epistemology in terms of behavior, shouldn't he just directly investigate behavior? Finally, in mid-October, 1927 he decided that the answer was yes: science not literature was going to provide him with the means to move forward in his life and thereby free him from the congestion of ideas that had plagued him during the Dark Year. Consequently, he took a major step: he decided to abandon literature and turn to the direct, empirical,

scientific study of behavior, which he somewhat ingenuously believed he could do by studying in a psychology program (Bjork, 1993, p. 71; Coleman, 1985, pp. 85–87; Skinner, 1976, p. 291).

In late October, 1927 Skinner traveled to Hamilton to sound out his former professors on his plan to abandon literature in favor of going to graduate school in psychology, and if so, where (Skinner, 1976, p. 301). During the visit, a former biology professor called his attention to Pavlov's (1927) newly published *Conditioned Reflexes*. Although Pavlov was as much physiologist as psychologist, Pavlov's approach was enough concerned with the empirical study of behavior to make it newsworthy and attractive. The biology professor and others suggested that Harvard would be a suitable place to pursue an interest in psychology. After Skinner returned to Scranton, the Skinner family doctor also gave Harvard a favorable recommendation.

Then, in the November 13, 1927 issue of the *New York Times Sunday Magazine*, H.G. Wells (1927) published a short article in which Wells asked the readers to imagine that Ivan Pavlov was drowning on one side of a pier while George Bernard Shaw was drowning on the other, and readers had only one life-belt to throw. To whom should the life-belt be thrown? Wells compared the value of Pavlov's life, concerned with the scientific study of behavior, with that of Shaw's life, concerned with literature (perhaps not coincidentally for Wells, Shaw embraced traditional doctrines of "free will" and rejected deterministic approaches to human behavior). Although Wells did not explicitly refer to Watson, behaviorism, or psychology, Wells nevertheless concluded that Pavlov was a star that lit the world, shining down on an unexplored vista of human behavior. Skinner (1976) reported that Wells's [1927] article with its implied endorsement of determinism and a scientific approach to human behavior "confirmed my decision to abandon literature and turn to psychology" (p. 300). No doubt having had Pavlov's book so recently recommended to him while he had been at Hamilton was also relevant. Bjork (1993) describes these events in the following way:

> Around the time he finished the project [the *Digest*, in the fall of 1927], he made a decision to enter graduate school in psychology. He had been especially influenced by an article by H.G. Wells in the *New York Times Magazine* in which Wells chose to save the man of science, Ivan Pavlov, over the man of literature, George Bernard Shaw, if he had but one life preserver. Skinner probably made his decision about two weeks before he read the article, but it acted as strong reinforcement. (p. 71)

The passage above in Bjork (1993) also includes a footnote referring to a letter from Skinner to Percy Saunders dated November 2, 1927. A reasonable inference is that the letter was a follow-up to the October visit to Hamilton. Finally, we note that Skinner (e.g., 1976, p. 300) stated the Wells article "confirmed" his decision to turn to psychology. Taken together, these several pieces

of information, along with an assumption that Skinner's use of the word "confirmed" in his autobiography is not arbitrary, imply that Skinner's decision to abandon literature and study psychology had already been made by the time he went to Hamilton and by the time the Wells article was published.

In the first volume of his autobiography, Skinner (1976) suggested he turned to psychology because "literature had failed me as a method" (p. 291). Despite his critical comments about literature, the historical record does seem to indicate that Skinner was nevertheless influenced significantly by literature of the time that related to the themes he was interested in pursuing. For example, during his Dark Year, Skinner read other pieces by Wells, such as the fictional sociological novel *The World of William Clissold* (Wells, 1926). In this novel, Wells called for a more scientific footing for society, a familiar modernist theme. Coleman (1985, p. 79) suggests Skinner read *Clissold* in the early fall of 1926. In any event, in one representative passage, Wells (1926) had Clissold speaking of another character in the following way:

> He is one of a number of men of science whom I know to be men serene in their souls and happy in the essence of their lives. But scientific work is a world apart, a magic island cut off from futility. Music, too, may be another magic island, cut off not only from futility but from reality. There is a protective isolation about most of the arts. But Science has most of this precious detachment. And is yet profoundly real. Scientific workers work to the end, thought at last they may go gently like a boat coming home as the wind fills in the evening. I was once upon that island of enduring work. Had I kept upon it I should not have been writing this book now and making these half-envious, half-admiring reflections. (p. 341)

How resonant such passages must have been for the disaffected Skinner, who, as he was failing in literature, began to search for something concrete and meaningful in which to anchor his life. Wells' endorsement of science would have its full effect on Skinner a year later.

In a second passage, Wells (1926) had Clissold contemplating his own mortality:

> When the curtain of death comes down, is the revue over? So far as William Clissold goes, I think it is . . . . I think there may be something immortal in me, and what it is I will do my best to explain in subsequent sections, but I do not think that immortal part contains any of the distinctive factors that individualise me. The sound of my voice, the oddities of my mind, my likes and dislikes, and the great volume of my personal memories will, I think, end when my heart ceases to beat. (p. 45)

In a third passage, Wells (1926) had Clissold describing the death of one of the female characters in the novel:

> She hoped and longed for the south seas to the very day of her death. She hoped to the end. On the morning of the day when she died, she explained how favourable a thing haemoptysis was.

> "I believe that was the last of the stuff," she whispered. "One coughs away . . . all the diseased tissue . . . all the tainted blood . . . and then, of course, one heals . . . heals."
> She was very tired that afternoon. She had had a spell of coughing so violent that it had alarmed me; she had nearly choked with blood. The flow ceased at last; the doctor gave her a sedative and she went to sleep in my arms. "Stay with her," said the doctor. "You had better stay with her. If she wakes she may cough again. She is very weak now."
> But she did not cough again. A tired, flimsy, pitiful frame she had become, something that one just took care of and treated very gently; her motionless eyelashes touched my cheek, and she passed away so softly that until, with a start, I noticed her coldness, I did not suspect she was dead. (pp. 485–486)

Coleman (1985, p. 79) suggests Skinner was reading this novel in October, 1926, after his grandfather died the preceding July. Perhaps Skinner had started to read it a bit earlier. In any case, the stylistic and thematic similarity between these last two passages and Skinner's recounting of his grandfather's death in the August 16, 1926 letter to Percy Saunders is provocative.

In addition, Coleman (1985, p. 79) suggests Skinner read *Arrowsmith* by Sinclair Lewis (1925) during the fall of 1926. In this novel, the central character, Martin Arrowsmith, struggles heroically with the choice between a life of comfort, represented by a career practicing medicine, or a life of integrity, represented by a career pursuing truth through scientific research. The latter course of action is represented by a character named Max Gottlieb, patterned by Lewis after the biologist Jacques Loeb. Readers may recall that Skinner was familiar with Loeb from his biology courses at Hamilton. By the end of the novel, Arrowsmith opts for scientific research as the most noble pursuit, in the tradition of Gottlieb. Skinner's turn to science in the fall of 1927 may therefore be seen as entirely consistent with modernist trends and his emerging interest in a objective, empirical approach to understanding meaning in the context of a scientific treatment of human behavior, spurred on by such authors as Wells and Lewis.

Then, in December, 1927, shortly after Wells' article appeared, Russell (1927) published his book *Philosophy*. Skinner secured his own copy in early 1928. In this book, Russell devoted a great deal of time to Watson's behaviorism and its epistemological implications. Skinner was already familiar with Russell through his review in *Dial* of Ogden and Richards (1923) the year before. Overall, Skinner said he was impressed by how quickly Russell got around to facts. Importantly, Russell's approach was entirely consistent with Skinner's earlier desires to write objectively of the richness of human behavior, including epistemology. In short, Russell's book did two things. First, it expanded on Watson's thesis that behavior was a subject matter that could be studied scientifically in its own right. Second, it challenged the prevailing sentiment that phenomena in another dimension, such as consciousness in a mental world, should be regarded as the real concern. Given Skinner's extant

empirical and objective orientation, this whole line of reasoning further strengthened his nascent thinking that questions about epistemology could be regarded as fundamentally questions about behavior. During this same time frame, Skinner said he began to think of himself as a behaviorist, and even composed a review criticizing a recent book that was itself critical of behaviorism (Bjork, 1993, p. 61). The book was Berman's (1927) *The Religion Called Behaviorism*, and although it had been reviewed in both *Dial* and the *Saturday Review of Literature*, Skinner was apparently thinking more in terms of publishing his comments in the latter outlet. Coleman (1985, pp. 86, 91) reported that no record or copy of Skinner's review apparently exists.

On learning that their son had decided to pursue graduate study in psychology, Skinner's parents were much relieved that his life would finally assume some direction after so long a period of seemingly aimless wandering (Skinner, 1976, p. 302). His father proposed that the family tour Europe in the upcoming summer, perhaps to celebrate their collective relief. Skinner agreed on the condition that he could leave early and travel by himself for a time, before meeting up with his parents. His parents acquiesced, and having some months before he would actually leave for Europe, Skinner moved to New York City, where he worked in a variety of odd jobs, and lived a Bohemian life during the late winter and early spring of 1928. While there, Skinner enthusiastically continued to read behaviorally oriented literature, such as Watson's (1928) *Psychological Care of Infant and Child* and Pavlov's (1927) *Conditioned Reflexes*. He applied to Harvard on May 21, 1928 and was accepted on May 24, 1928 (Coleman, 1985, p. 79). Skinner (1976, p. 302) later said he could possibly have entered graduate school as early as February, 1928, if he had known enough to apply for admission then, but it is not clear whether this statement means he could have entered Harvard or another school. Coleman (1985, p. 91) reported that in response to a direct question, Skinner was unable to recall any reason why there was a half-year gap between (a) his decision to pursue psychology instead of literature in October, 1927 and (b) his actual application for graduate study at Harvard in May, 1928.

Interestingly, Skinner's only undergraduate experience with anything remotely close to psychology was a 10-minute demonstration of a two-point limen in an course titled "Philosophy, Psychology, and Logic," taught by a former student of Wilhelm Wundt's (Skinner, 1967, p. 397; 1976, p. 292). In light of Skinner's relatively unformed ideas about what psychology actually was and what specifically he was going to study, any rational basis for his choosing to study psychology in the Harvard Department appears uncertain. Coleman (1996, p. 110) labeled it as "largely circumstantial" and "accidental." Then as now, Harvard certainly had a well-deserved academic reputation, but not because its Department of Psychology offered a strong program in which psychology was conceived as the study of behavior, as a scientific subject matter

in its own right. As Skinner (1979, p. 37) himself put it, despite his emerging attraction to Russell and a behavioristic epistemology, and perhaps despite his unpublished response to Berman (1927), he came to psychology at Harvard less because he was a committed behaviorist, and more because he was escaping from an intolerable alternative in Scranton. In this regard, Coleman (1985, p. 87) suggested it is implausible *not* to regard Skinner's choice of psychology as serving in large measure an escape/avoidance function.

Skinner left for the solo phase of his European adventure on July 2, 1928, sailing on the S.S. Colombo of the Italian line. In keeping with his self-reflective tendencies, he was acutely aware of being an American tourist, and wondered what such literary heroes as Sinclair Lewis, H.L. Mencken, or Ezra Pound would have said about him (Skinner, 1976, p. 313). After a period of touring independently, he met his parents in Paris, finished touring with them, and in late August returned with them to the United States aboard the S.S. President Harding. In September, 1928 he arrived at Cambridge, copies of Russell, Watson, and Pavlov in hand. By the end of the first semester, he had met another Fred, whose last name was Keller and who was destined to become a lifelong friend and colleague in behavior analysis.

Skinner's Choice of Psychology

A number of rhetorical questions now come to mind about the circumstances that led Skinner to abandon literature and choose psychology. We will examine them in order, to help focus the review of this important period in Skinner's life.

How Did Skinner Describe His Choice of Psychology?

Skinner described his choice of psychology in several of his autobiographical statements. Here are four representative passages:

> The first thing I can remember happened when I was only twenty-two years old. Shortly after I was graduated from college Bertrand Russell published a series of articles in the old *Dial* magazine on the epistemology of John B. Watson's *Behaviorism*. I had had no psychology as an undergraduate but I had had a lot of biology, and two of the books which my biology professor had put into my hands were Loeb's *Physiology of the Brain* and the newly published Oxford edition of Pavlov's *Conditioned Reflexes*. And now here was Russell extrapolating the principles of an objective formulation of behavior to the problem of knowledge! (Skinner, 1972, p. 103)

> I was drawn to psychology and particularly to behaviorism by some papers which Bertrand Russell published in the *Dial* in the 1920's and which led me to his book *Philosophy* (called in England *An Outline of Philosophy*), the first section of which contains a much more sophisticated discussion of several epistemological issues raised by behaviorism than anything of John B. Watson's. (Skinner, 1978, p. 113)

> I came to behaviorism, as I have said, because of its bearing on epistemology, and I have not been disappointed. (Skinner, 1978, p. 124)

> First, however, a word about sources. The commitment to behaviorism that sent me from college to graduate study in psychology was at the time no better supported than my commitment in high school to the theory that Francis Bacon wrote the works of Shakespeare. I had taken my college degree in English Language and Literature with a minor in Romance Languages and was hoping to be a writer. An important book for writers at that time was *The Meaning of Meaning* by C.K. Ogden and I.A. Richards (1923). Bertrand Russell reviewed it for a literary magazine called the *Dial*, to which I subscribed, and in a footnote he acknowledged his indebtedness to "Dr. Watson," whose recent book *Behaviorism* (1925) he found "massively impressive." I bought Watson's book and liked its campaigning style. Later I bought Russell's *Philosophy* (1927), in which he treated a few mentalistic terms in a behavioristic way. Although I had never had a course in psychology, I became an instant behaviorist . . . . (Skinner, 1989, pp. 121–122)

In such passages as those above (and elsewhere: "After reading the review [by Russell of Ogden and Richards' book], I bought *Behaviorism* and, a year or so later, Russell's *Philosophy*," Skinner, 1979, p. 10), Skinner cited Russell's (1926b) review as greatly influencing his choice of psychology. He implied that shortly after reading the review he read Watson's (1925) *Behaviorism*, and in any case well before he read Russell's book, which was published in late 1927.

However, a somewhat different sequence of events appears in other places. For example, Bjork (1993, p. 60) reports that Skinner first read *about* Watson in Russell's (1926b) review. Bjork then reports the following:

> Skinner did not remember reading Watson firsthand until the spring of 1928, after abandoning writing as a career. He emphasized that he did not read Russell's [1927] sustained analysis of Watson's *Behaviorism* (1925) until early in 1928. Later Skinner wrote in a short essay, "Books that have influenced me," that even though he had read Watson's *Behaviorism* (but exactly when he did not say), he was not sure he had ever read Watson's *Psychology from the Standpoint of a Behaviorist* (1919). Indeed, it was the writing of his critical review of Lewis Berman's *The Religion called Behaviorism* (1927) for the *Saturday Review of Literature* in early 1928 that Fred recalled as the time when he first defined himself as a behaviorist — admittedly without knowing very much about the subject . . . . (Bjork, 1993, p. 61)

In keeping with the report in Bjork (1993) above, Skinner (1976, pp. 298–299) in another place describes how he bought Watson's *Behaviorism* after he had read and was inspired by Russell's (1927) book, not the review. These sources suggest the sequence was Russell's book, then Watson's book, which is just the reverse of other reports.

Pinning down the chronology is relevant because doing so clarifies the factors of which Skinner's choice of psychology was a function. Skinner had clearly developed his own objective, empirical perspective independently of any exposure to Russell or Watson by the time he had graduated from Hamilton in 1926. Perhaps Bacon and Loeb played some role in the develop-

ment of this perspective, but beyond a miscellaneous set of experiences, one is hard pressed to identify specific influences. Readers will recall that Skinner went to Hamilton in late October, 1927 to sound out his former professors on the idea of graduate studies in psychology. According to some of Skinner's own accounts (1976, pp. 299–301; 1979, p. 10), one interpretation of how Skinner came to behavioral psychology is that he first read Russell's (1926b) review, then Watson's (1925) book shortly thereafter. If this sequence is correct, it follows that Skinner must have then reflected on Watson's ideas between August, 1926 and October, 1927. Moreover, a series of articles by Russell during the 1920s would have pretty firmly led Skinner to the empirical study of behavior as an alternative to literature. According to this interpretation, Skinner would have then gone to Hamilton to talk with his former professors, in an effort to validate his decision.

An alternative interpretation acknowledges that Skinner was interested in epistemology at a relatively early point in his career, in conjunction with his interest in literature and the modernist inquiries into the meaning of life. Skinner became even more strongly attracted to epistemology after he came in contact with Russell's (1927) book in early 1928. At issue is the nature of Russell's influence on Skinner before 1928. We previously noted that Skinner (1972, p. 103) said Russell published a "series of articles" on the epistemology of Watson's behaviorism in *Dial* during the 1920s. An examination of the contents of the *Dial* during this period indicates that Russell was in fact a frequent contributor to the magazine, publishing over twenty book reviews, analyses, and comments. Russell commented favorably on science — including psychology — in several articles, suggesting that the development of sensible modern political institutions depended on advances in psychology and that many contemporary problems arose because traditional society was built on a mistaken psychology (see Coleman, 1985, p. 88). However, Russell specifically mentioned Watson and behaviorism in only two of them. These two articles were published in August and September, 1926, which would put them shortly after Skinner graduated from Hamilton. One was the aforementioned review of Ogden and Richards, in which Watson is mentioned in a footnote. The other, Russell (1926a), was commentary on Burtt's (1925) *The Metaphysical Foundations of Modern Physical Science* and Whitehead's (1926) *Science and the Modern World.* In this commentary, Russell's (1926a) reference to Watson, while complimentary, was not especially lengthy:

> Also, in another sphere, physiology and bio-chemistry are making inroads on psychology which threaten philosophy in a vital spot; Dr. Watson's *Behaviorism* is the spearhead of this attack, which, while it involves the opposite of respect for philosophic tradition, nevertheless necessarily rests upon a new philosophy of its own. (p. 184)

Skinner (1976, p. 280) also identified Burtt (1925) as a source of intellectual stimulation during his Dark Year (see also Coleman, 1985, p. 81), and presumably Skinner would have read Russell (1926a) in *Dial*, since Skinner subscribed to *Dial*. Although Russell's (1926b) review and Russell's (1926a) comments on Burtt (1925) are clearly relevant, the present conclusion is that Russell's influence was probably not decisive in any choice of *behavioral* psychology in October, 1927. Rather, Russell is more appropriately included at this date among the writers who influenced Skinner because the writers looked to critical inquiry for intellectual advancement and to science for social melioration. Russell strengthened Skinner's objective, empirical viewpoint and general modernist inclinations, and given Skinner's modernist inclinations Russell also strengthened Skinner's interests in science and perhaps even some sort of psychology. However, it is questionable that during this time Russell led Skinner to choose *behavioral* psychology specifically because Russell dealt so sparingly with behavioral psychology. Coleman (1985, p. 88) states that a few of the articles in *Dial* after July, 1926 do mention behaviorism, although there certainly were no formal analyses commensurate with its discussions of other topics in literature and the arts. Moreover, if Skinner's statement that he didn't actually read Watson until early 1928 is correct (Bjork, 1993, p. 61), it follows that Watson actually played little role in the development of Skinner's ideas prior to October, 1927 because Skinner hadn't yet read Watson first hand. Therefore, the most reasonable conclusion is that Skinner's choice of psychology was motivated to a great extent by his failure at writing, and his resulting, intense desire to move beyond the Scranton lifestyle of his parents and contribute something of intellectual significance. Given this motivating circumstance, it appears that Skinner chose psychology in October, 1927 because of the general modernist trends in the literature of the 1920s, and a vague conception that graduate study in psychology — which Skinner construed as a discipline in which he might study behavior directly — might be a way to move forward in his life, rather than because he had immediately grasped the full significance of anything that Russell or even Watson had said.

We previously noted that Skinner tried to write objectively during the Dark Year. Objective writing was a literary stance that Skinner admired and that he noted some authors had used to good advantage. For instance, Skinner thought Dostoevsky was better at it than Chekhov (Skinner, 1976, p. 266), though he wondered whether Dostoevsky really understood human behavior (p. 291). Even so, Bjork (1993, p. 57) concludes that Skinner's literary ideas during his Dark Year were probably not all that well developed. What Skinner did have, though, was a fairly well-established descriptive and analytic repertoire that translated rather comfortably to science. His efficient

writing of the *Digest* (Skinner and Skinner, 1928) seems appropriate evidence of his analytic skills.

In regard to Skinner's objective and empirical inclinations that he initially tried to express through literature, Bjork (1993) comments in the following terms:

> But his letters to Saunders show that his shift to the behaviorist standpoint occurred very early in his Dark Year — in the summer and autumn of 1926. The experiences he had undergone, as well as his reading and failed efforts at writing, all contributed to his adoption of behaviorism as a philosophy of science . . . . Skinner's objectivist/behaviorist perspective did not appear suddenly in 1926 as if by magic. He worked toward it by recognizing that he could not be the kind of writer he admired, by closely observing the physical actions of living things, by reading Russell on Watson, and by using Saunders as a sounding board — by making do. He judged literature and philosophy; he incorporated and discarded; he observed and recorded; but he never followed an intellectual approach or school. He found some important allies during the Dark Year, but they were never more essential than his own efforts to reach an objective interpretation of reality. (pp. 61–62)

In this passage, Bjork interprets Skinner's letters to Saunders as showing that Skinner went beyond being objective and empirical and embraced a reasonably mature behaviorist standpoint during the first four of the fifteen months between August, 1926, when Skinner read Russell's (1926b) review, and October, 1927, when he chose psychology. The present interpretation is more guarded. For example, if Skinner's behaviorist standpoint actually was reasonably well established by the autumn of 1926, three questions arise. The first is why did Skinner contemplate chicken farming and landscape architecture as careers in the late spring of 1927 (Skinner, 1976, pp. 283, 285)? The second is why did Skinner wait over a year more — until the autumn of 1927 — before deciding on graduate school in psychology? The third is why did Skinner say that it was only after he composed the review of Berman (1927) that he identified himself for the first time as a behaviorist? Perhaps it is appropriate to conclude that Skinner's extant objective and empirical orientation was simply strengthened during 1926 and the first half of 1927, and that it had not yet evolved into a robust form of behaviorism.

The Contribution of Events Between October, 1927 and May, 1928

Skinner chose psychology at the end of October, 1927, but events during the next six months continued to shape his intellectual development. Several figures played major roles here.

One was Pavlov. Readers will recall that during Skinner's visit to Hamilton in October, 1927, one of his biology professors showed him a copy of Pavlov's (1927) *Conditioned Reflexes*. This professor had previously introduced him to

the work of Jacques Loeb. On the heels of his visit to Hamilton was the previously mentioned Wells (1927) article lauding Pavlov in November, 1927. As noted earlier, Skinner eventually bought and read Pavlov's book while living a Bohemian life in Greenwich Village in the winter and spring of 1928 (e.g., Skinner, 1967, p. 397).

A second was H.G. Wells. The previously mentioned Wells (1927) article on Pavlov and Shaw was part of a series of articles by Wells that appeared every other week during 1927. Wells's articles are reprinted in a volume titled *The Way the World is Going* (Wells, 1929). When Skinner said he was influenced by a series of articles by Russell, one wonders whether it was actually the series of articles by Wells that he was remembering. Moxley (1999a) points out a number of conceptual similarities that made Wells attractive to Skinner, beyond an affinity for Pavlov. As noted earlier, Wells also published fiction, such as *The World of William Clissold* (Wells, 1926), that was of some interest to Skinner (Moxley, 1999a, p. 131).

A third was Bertrand Russell, and in particular Russell's (1927) *Philosophy*. Russell stated in the opening chapter of the book that he wanted to "examine the relation of man to his environment with a view to arriving at a scientific view as to what constitutes knowledge" (p. 15). A clear understanding of epistemological issues and their contribution to a scientific approach to human affairs was tremendously important to Skinner at the time he read the book, in light of his ongoing concern with understanding the relation between behavior and the human condition. Given his acquaintance with Russell through the articles in *Dial*, and especially the review of Ogden and Richards (Russell, 1926b), it seems likely that Skinner was immediately attracted to the book.

The book is clearly oriented toward empiricism, rather than say Cartesian introspective rationalism, and a general theme of the book is to recognize and give some credit to the epistemological issues raised by Watson and behaviorism. Actually, *Philosophy* was not one of Russell's better known books, in that it was written more for popular consumption in the United States market than as a scholarly treatise, and written hurriedly at that (Skinner, 1979, p. 10). The book is divided into four parts. Part 1 is titled "Man from Without." The chapters in this part deal with man and his environment, the process of learning, language, perception objectively regarded, memory objectively regarded, inference as a habit, and knowledge behaviouristically considered. Here are three relevant passages from Part 1:

> In ordinary life, knowledge is something which can be tested by examinations, that is to say, it consists in a certain kind of response to a certain kind of stimulus. This objective way of viewing knowledge is, to my mind, much more fruitful than the way which has been customary in philosophy. I mean that, if we wish to give a definition of "knowing," we ought to define it as a manner of reacting to the environment, not as

> involving something (a "state of mind") which only the person who has the knowledge can observe. (Russell, 1927, p. 17).

> *When the body of an animal or human being has been exposed sufficiently often to two roughly simultaneous stimuli, the earlier of them alone tends to call out the response previously called out by the other.*
> Although I do not agree with Dr. Watson in thinking this principle alone sufficient, I do agree that it is a principle of very great importance. (Russell, 1927, p. 33, italics in original)

> This philosophy, of which the chief protagonist is Dr. John B. Watson, holds that everything that can be known about man is discoverable by the method of external observation, *i.e.* that none of our knowledge depends, essentially and necessarily, upon data in which the observer and the observed are the same person. I do not fundamentally agree with this view, but I think it contains much more truth than most people suppose, and I regard it as desirable to develop the behaviourist method to the fullest possible extent. (Russell, 1927, p. 70)

Part 2 is less relevant to Skinner's interest in behavioral science, focusing on "The Physical World." Part 3 is titled "Man from Within." Here, Russell reviews self-observation, images, imagination and memory, the introspective analysis of perception, consciousness, emotion/desire/will, and ethics. Part 4 is titled "The Universe." In these chapters Russell discusses great philosophies of the past, truth and falsehood, validity of inference, events–matter–mind, and man's place in the universe.

In one of Skinner's descriptions of how he was influenced by Russell generally and the book especially, Skinner credited Russell with converting him to the behavioristic position. However, Skinner then indicated he never read the book in its entirety, stopping when he reached Part 2 on Russell's treatment of the physical world (Skinner, 1979, pp. 10–11; see also Moxley, 2003, pp. 112–113). As suggested by the passages cited above from Part 1, the topics in Part 1 were clearly of interest to Skinner, and the continuing discussion of related topics in the later parts would presumably have also been consistent with Skinner's expressed interests in epistemology. For example, although Russell referred to Watson eighteen times in the chapters in the first half of the book, Russell also referred to Watson nine more times in the chapters in the last half, scattered through the topics of self-observation, images, imagination and memory, and consciousness. However, in these later but unread parts of the book, Russell was less supportive of behaviorism, and as years progressed Russell eventually abandoned his support for behaviorism. One wonders what would have happened to Skinner's perspective had he read these later parts. On balance, Russell concluded that just as Watson and behaviorism should not be dismissed as all bad, neither should they be embraced as the final word. In particular, Russell finds some value in points that Watson and behaviorism explicitly reject, such as those having to do with introspection.

Smith (1986, pp. 262 ff.) has provided an excellent overview of the impact of Russell's (1927) book on Skinner's intellectual development. Smith noted that Russell led Skinner to seriously consider behaviorism at a time when his own psychological alliances had not yet crystallized. Readers will recall that in several of the autobiographical pieces cited earlier in the present article, Skinner credited his interest in behavior to a "series of articles" by Russell in *Dial* on Watson, behaviorism, and epistemology. Given that there doesn't seem to be such a series, it seems likely that Skinner was thinking about the chapters in Part 1 of Russell's (1927) book when he gave credit to Russell. In another autobiographical piece, Skinner recounted a meeting with Russell in which Skinner told Russell that his writing was responsible for Skinner's interest in behavior. Skinner reported that Russell expressed surprise, exclaiming "Good Heavens! I had always supposed that those articles [sic] had demolished Behaviorism!" (Skinner, 1972, p. 103). Russell was likely commenting in such a conversation about the later parts of the book, which were somewhat more critical of Watson and behaviorism than the earlier parts that Skinner had read. Nevertheless, as Skinner put it, Russell had at least "taken Watson seriously, and so did I" (Skinner, 1972, p. 103).

Moxley (1998, 2003) has also critically reviewed the role that Russell's writing played in the development of some basic behavioral concepts for Skinner after October, 1927. For example, Moxley (2003) analyzed the way Skinner characterized Russell's (1927) influence regarding the formulation of the law of effect. In regard to the law of effect, Skinner (1976) stated, "Russell, again following Watson, was trying to interpret the Law of Effect as an example of the substitution of stimuli . . . . It would be a long time before I saw the mistake which Russell and Watson were making and in which I concurred . . ." (p. 299). Skinner seems to imply that he took an initial false step when he accepted Watson's S–R model and Russell's subsequent endorsement of that model in conjunction with statements about Thorndike's work. Skinner also seems to imply that he developed his own unique concept of the three-term contingency of reinforcement a few years later, and this concept allowed him to straighten things out.

Actually, as Moxley (1998, pp. 74–77; 2003, pp. 126–127) points out, Skinner is in error about the relation between Russell and Watson. Russell did not in any meaningful sense interpret Thorndike according to Watson's S–R model. In fact Russell went to great lengths to distinguish Thorndike's formulation of the Law of Effect from Watson's S–R approach. At issue was Thorndike's appeal to the satisfying consequence in subjective terms, as opposed to the identification of stimulus and response in objective terms:

> Thorndike, in his first law, speaks of satisfaction and discomfort, which are terms belonging to subjective psychology. We cannot observe whether an animal feels satis-

> faction or feels discomfort; we can only observe that it behaves in ways that we have become accustomed to interpret as signs of these feelings. Thorndike's law, as it stands, does not belong to objective psychology, and is not capable of being experimentally tested. This, however, is not so serious an objection as it looks. Instead of speaking of a result that brings satisfaction, we can merely enumerate the results which, in fact, have the character which Thorndike mentions, namely, that the animal tends to behave so as to make them recur. The rat in the maze behaves so as to get the cheese, and when an act has led him to get the cheese once, he tends to repeat it. We may say that this is what we mean when we say that the cheese "gives satisfaction." . . . The law should then say: there are situations such that animals tend to repeat acts which have led to them. (Russell, 1927, pp. 32–33)

Noteworthy for both Russell and Skinner, of course, is Thorndike's (1913) further statement on satisfiers and annoyers/discomforters: "By a satisfying state of affairs is meant roughly one which the animal does nothing to avoid, often doing such things as attain and preserve it. By an annoying state of affairs is meant roughly one which the animal avoids or changes" (p. 2). Thorndike attributed the change in behavior to the subjective feeling produced by the consequence, and then in a kind of psychophysiological parallelism pointed out that the way an observer could tell the consequence had the essential subjective effect was in terms of the overt behavior of the subject. For his part, Russell was concerned with the evidential basis for and logical validity of language concerned with this effect. In contrast, after only belatedly acknowledging Thorndike's influence (Moxley, 1998, pp. 76–77; Skinner, 1979, p. 233), Skinner eventually pointed out that the feelings produced by a reinforcer have no essential causal or even mediating connection to resulting changes in behavior (e.g., Skinner, 1953, p. 82). Indeed, Skinner's point is the feeling produced by a reinforcer is simply a collateral effect or by-product of contact with the reinforcer. It is more appropriate to say that the reinforcer causes both the feeling and the change in behavior, than to attribute the cause of the change in behavior to the feeling.

A fourth figure who influenced Skinner is John B. Watson. If we assume the report in Bjork (1993, p. 61) and the alternative interpretation above are reasonably accurate, we can fix Skinner's reading of Watson's *Behaviorism* to the first portion of 1928, rather than sometime prior to October, 1927. Skinner then read *Psychological Care of Infant and Child* (Watson, 1928) while in New York City, in the late winter or early spring of 1928. What is important is that when Skinner finally did read Watson's work, he found concrete discussion by a psychologist about the empirical study of behavior, treated as a subject matter in its own right, apart from any reference to mental life. Perhaps Watson's discussion wasn't as sophisticated philosophically as Russell's analysis, but it was nevertheless energetic and provocative. Given Skinner's turn to psychology, Watson helped Skinner clarify the focal concern with behavior, rather than such other features of the field as introspectively recalled events, perception of time, after-images, and synaesthesia

in which Skinner was also interested and which might have diverted him (Skinner, 1976, pp. 296–297). Perhaps it is the fortuitous string of experiences between October, 1927 and May, 1928 that Skinner (1967) had in mind when he stated that "I suppose it was only my extraordinary luck which kept me from becoming a Gestalt or (so help me) a cognitive psychologist" (p. 397). Nevertheless, it appears that the influence of Russell and Watson, although clearly significant, came after Skinner had already chosen psychology, rather than before.

Recapitulation

To recapitulate, a reasonable conclusion is that as Skinner failed at literature between the summer of 1926 and the fall of 1927, he turned to psychology because of the influence of several factors, including (a) a self-reflective interest in objectively working through the meaning of life, (b) progressive social commentary and modernist criticism endorsing scientific principles, and (c) a generally objective orientation he believed he could pursue by studying behavior in a graduate psychology program. Skinner's reading of Wells, Russell, and Watson between October, 1927 and January, 1928 served to confirm and further strengthen Skinner's choice of psychology, and orient him toward the scientific study of behavior in an academic program. To be sure, these three writers contributed significantly to the development of Skinner's thought, albeit in different ways, and Moxley (2003) further reviews ways that Skinner later departed from Russell. Thus, it seems reasonable to conclude that in September, 1928 Skinner had some idea of the direction he wanted to go and a few names associated with that direction, but because of his lack of knowledge of the discipline he presumably did not have a clear conception of what lay in that direction. Indeed, Coleman (1985, p. 90) concluded that neither in October, 1927, when Skinner chose psychology, nor in September, 1928, when he arrived at Harvard, was he whole-heartedly either a psychologist or a behaviorist. Finally, it appears that certain details of the eighteen month period between June, 1926 and January, 1928, a period that is central to an understanding of how Skinner came to psychology, seem to differ from the ways that Skinner reported them.

In any event, once at Harvard his academic and research experiences as a graduate student and post-doctoral fellow continued to provide the foundation for the later form of behaviorism for which he is known: radical behaviorism. Those experiences are the subject of Part 2 of this series.

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