

B. F. Skinner and Technology's Nation: Technocracy, Social Engineering, and the Good Life in 20th-Century America

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Psychologist B. F. Skinner developed and promoted a technology of behavior as the basis for widespread social reform over much of his career. In 1948, he published his behaviorally engineered vision of the good life in his utopian novel *Walden Two* (Skinner, 1948). Skinner's efforts were part of a much larger social engineering tradition that received one of its fullest expressions in the Technocracy Movement of the 1930s. Fifteen years before Skinner's *Walden Two*, at the height of the Technocracy Movement's public visibility in the United States, technocrat Harold Loeb (1933/1996) published his utopia, *Life in a Technocracy: What It Might Be Like*. In this article, I place the socially engineered visions of the good life promoted by the Technocracy Movement and by Skinner on an intellectual and ideological continuum to amplify and explore American attitudes toward psychology, technology, and social engineering during the middle decades of the 20th century. I argue that responses to both reveal the possibilities and limits of the social engineering enterprise, and suggest that historians of technology might consider how the history of psychology and other psy-disciplines can deepen conceptualizations of the relationships among the psychological, the social, and the technological in this period.

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In one disguise or another, technology has been a central theme in political thought for the past two hundred years.

—Winner (1977, p. 2)

Almost all our major problems involve human behavior, and they cannot be solved by physical and biological technology alone. What is needed is a technology of behavior.

—Skinner (1971, p. 24)

If operant psychology has emulated physical technology and appealed to its prestige to further its own cause, then it can hardly avoid careful attention to the lessons learned from the fate of physical technology.

—Smith (1992, p. 222)

The American relationship with technology has historically been an intense and ambivalent one. Although characterized as “technology's nation” (Hughes, 1989), and even “the republic of technology” (Boorstin, 1978), Americans have struggled with how to regulate and integrate physical technologies in many areas of life, from the home to the state. Technology has been heralded as both friend and foe, savior and destroyer, liberator and oppressor (see Hughes, 1975, 2004; Mesthene, 1970; Rescher, 1980). It is an integral

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and celebrated aspect of the American identity, embodied by such exalted figures as Thomas Edison and Henry Ford, yet it has also played a central role in some of the most devastating and shameful events in the nation's history, such as the bombing of Hiroshima and Nagasaki, the Tuskegee syphilis study, and the Three Mile Island nuclear accident.

In historical accounts of the relationships between technology and its publics, the role of the human sciences and their corresponding social or psy-technologies has perhaps been less frequently foregrounded.¹ Indeed, as [Derksen, Vikkelsø, and Beaulieu \(2012\)](#) have pointed out, because the field of science and technology studies “has predominantly focused on the natural sciences, the confrontation with psychology may . . . inspire important adjustments to its perspective on technology, which often tends to emphasize palpable artifacts, steely machines, and calculatory devices” (p. 140).

Moving beyond the traditional focus on steely machines, historians of American and European social science have highlighted the social engineering ethos that came to permeate these disciplines throughout the 20th century (see [Brückweh, Schumann, Wetzel, & Ziemann, 2012](#)). More specifically, historians of American psychology have shown how, from its earliest disciplinary days, psychology was permeated with a technoscientific attitude that stressed the twinned goals of knowledge *and* application, of science *and* practice, often employed in the service of increased order, efficiency, rationalization, and control (see [Coon, 1993](#); on efficiency more generally, see [Alexander, 2008](#)). Many have argued that this attitude was, in no small part, a reflection of the Progressivist era values that intimately shaped the emerging discipline in the United States (see [O'Donnell, 1985](#); on Progressivism more generally, see [Hofstadter, 1955](#); [Wiebe, 1967](#)). This technoscientific attitude quickly led to psychology acquiring a social engineering function that continued to increase as psychologists developed ever-closer ties with the state, especially during and after World War II (see [Caphshew, 1999](#); [Herman, 1995](#); [Solovey, 2013](#); [Solovey & Craven, 2012](#)).

As examples of psy-technologies employed in the service of social engineering, the enterprises of intelligence and personality testing and, to some extent, psychotherapy, have received historical treatment (see, e.g., [Buchanan, 1994, 1997](#); [Carson, 2007](#); [Cushman, 1995](#); [Fancher, 1985](#); [Fass, 1980](#); [Kevles, 1968](#); [Rose, 1996](#); [Samelson, 1977](#); [Sokal, 1987](#)). Histories of the application of psychology to business and industry in the United States also abound. Many of these histories foreground the close links between Frederick Taylor's scientific management and the emerging field of industrial/organizational psychology (e.g., [Baker & Benjamin, 2014](#); [Fancher & Rutherford, 2017](#); [Hale, 1980](#); [Koppes, 2007](#); [van Drunen, van Strien, & Haas, 2004](#)).² Some accounts point out that applied psychologists have rarely attempted to imagine how their psy-technologies could be used to subvert or remake existing social practices, working instead within a social management framework that emphasizes adjustment to the status quo (see, e.g., [Baritz, 1960](#); [Gibby & Zickar, 2008](#); [Napoli, 1981](#)). Even the explicitly utopian writings of some early psychologists often placed the social control functions of the discipline at the center of their vision ([Morawski, 1982](#)). These scattered utopian efforts aside, psychologists have largely been silent about how the application of their science could redesign the *entire* social and political order. It is to this more expansive social engineering agenda that I turn here.

¹ An obvious exception is the body of work inspired by Foucault's articulation of “technologies of the self,” which views the psy-disciplines and their products as part of the self-making enterprise ([Foucault, 1988](#); see for example [Rose, 1990, 1996](#)).

² There is, of course, a strong tradition of “psychotechnik,” or psychotechnics, in Europe, that began in the early 1900s and influenced American developments as well (see [van Strien, 1998](#)). For an analysis of psychotechnics in Germany during the Weimar period, see [Killen \(2007\)](#). For a brief overview of psychotechnics with several examples from the Dutch context, see [van Drunen \(1997\)](#).

American psychologist B. F. Skinner (1904–1990), one of the most “visible scientists” of the 20th century (Rutherford, 2004), *did* embrace the project of redesigning the entire social order, and used the utopian genre to express his vision. He was notoriously vocal about his conviction that the findings from his experimental analysis of behavior should be used to radically reform society and redesign culture, outlining what this might look like in his utopian novel *Walden Two* (Skinner, 1948). Skinner was tenaciously committed to the social application of his behavioral principles, extrapolating freely from experiments with pigeons and rats in the precisely controlled spaces of the animal laboratory in order to make his point.³ He intentionally chose the phrase “technology of behavior” to describe his system of behavioral engineering. As Smith (1992, 1996) has shown, Skinner consistently adhered to a technological ideal of science that was rooted in his early exposure to Baconian philosophy and his reading of Bacon’s utopian vision in the *New Atlantis* (Bacon, 1659). And as his biographer Daniel Bjork has discussed, Skinner’s orientation was firmly rooted in the American tradition of scientist as inventor and engineer (Bjork, 1993, 1996). Thus, over the course of the 20th century, Skinner and his ideas were woven into the heated, ongoing, and probably unresolvable debate on the meaning, role, and management of technology in American society and the shaping of American life.

In a range of previous publications, I have demonstrated how several enduring features of the American experience, including attitudes toward technology, influenced popular reaction to Skinner’s work. The American public responded to his inventions, such as the air crib and the teaching machine; his controversial best-selling book *Beyond Freedom and Dignity* (Skinner, 1971); and behavior modification generally from the 1940s to the 1970s, in complex, sometimes contradictory, ways (see Rutherford, 2000, 2003a, 2006, 2009). Technological concerns were prominent throughout these decades, were heightened during the Cold War, and powerfully shaped public response to Skinner, as a man and as a scientist. However, attention to the promise of technology and its attendant dangers has been a prominent theme in American social and political thought at least since the 17th century, when the term “technology” was coined (Cardwell, 1995; Gunnell, 1982).⁴ Reactions to, and writings about, the technological society abound (e.g., Ellul, 1964; Rabinbach, 1992). It is to Skinner’s place in the debates and discourses over the technological society, and even more specifically, to his place in technocratic discourse (e.g., Meynaud, 1964), that I turn here.

To do this, I demonstrate that Skinner’s desire to engineer society with a technology of behavior was a social-scientific expression of a specifically technocratic impulse that was explicitly articulated earlier in the century by members of the Technocracy Movement. The Technocracy Movement gained momentum during the first third of the 20th century in the United States and reached the height of its public prominence in the early 1930s. It was one of the most dramatic (albeit short-lived) movements in recent American history advocating massive social, economic, and political reorganization to bring society in line with the technological ideal. As Segal (1996) has written, “Of the countless panaceas for America’s Great Depression, few enjoyed so spectacular, if so spectacularly brief, a reign as the crusade for technological progress known as Technocracy” (p. ix). By showing how the visions of the Technocrats and Skinner can be placed on a philosophical and cultural continuum, I contribute to the project of situating American psychology as a purveyor of social and behavioral technologies that shaped perceptions of social progress from the interwar years to the early 1970s.

³ Although, as I have documented elsewhere, Skinner’s acolytes also studied human beings in room-sized Skinner boxes (Rutherford, 2003b).

⁴ In his history of semantic changes in the term “technology,” Schatzberg (2006) argued that Thorstein Veblen’s work at the beginning of the 20th century was pivotal in bringing about the shift from its 19th-century meaning as “the science of the industrial arts” to its more contemporary meaning as encompassing practice and application. Veblen was a prominent member of the Technocracy Movement.

The term *technocracy*, in its most general use, has come to refer to the transcendence of politics by technology (Reed, 1975). Technocracy is a system that relies on the scientific and technical analysis of economic and social conditions, which are then applied by scientists and technical experts. However, despite this broad definition, the Technocracy Movement itself was a clearly defined effort by a group of specific individuals who first gathered in the years following World War I. They were united by a desire to reform society with their scientific and technological ideals. The Technocrats were economists, engineers, and other technical experts, among them Thorstein Veblen, Howard Scott, Walter Rautenstrauch, and Harold Loeb, who envisioned a reorganization of society based on the principles of technical efficiency and scientific rationality (for histories or accounts of the Technocracy Movement, see Akin, 1977; Chase, 1933; Elsner, 1967; Raymond, 1933; Scott, 1933a). They advocated the replacement of the price system with a system of production and distribution based on energy units. Their vision for a revised social order was perhaps most comprehensively outlined in Harold Loeb's (1933/1996) utopia *Life in a Technocracy: What it Might Be Like* (for a comprehensive survey of works of American technological utopianism, see Segal, 1985).

In this article, I outline several philosophical and structural similarities between the Technocrats' and Skinner's social visions. I begin by providing an overview of the Technocracy Movement and its major figures; I then provide a schematic overview of Skinner's technology of behavior and his vision for how this technology could be used to reform social practices and design culture. I then reveal some of the common intellectual threads that justify connecting the two, and amplify their structural and philosophical similarities by closely examining Loeb's vision of life in a technocracy and Skinner's vision of life in *Walden Two*.⁵ I then discuss the similarities between reactions to the Technocracy Movement and reactions to Skinner's technology of behavior, which may help explain why these respective proposals for engineering the good life were ultimately unappealing to the majority of the American public. I propose that reaction to the Technocracy Movement foreshadowed many of the themes that subsequently characterized popular response to Skinner's work. These common themes highlight a deeply embedded cultural ambivalence toward a technologically engineered society, an ambivalence that belies a straightforward analysis of the rejection of technocracy and the technology of behavior as widespread social movements, and in fact highlights the limits and possibilities of the social engineering tradition of which each forms a part.

I conclude by exploring what this reconstruction might reveal about the relationships among the psychological, the social, and the technological in American life. I suggest, in line with Derksen et al. (2012), that the history of the human sciences may offer historians of technology some new vantage points for theorizing the science–society interaction.

Howard Scott, Harold Loeb, and the Technocracy Movement

"In the fall of 1932 a new word burst upon the consciousness of the American public – Technocracy" (Raymond, 1933): These words were written by *New York Herald Tribune* reporter Allan Raymond, in his book *What is Technocracy?* In his capacity as a newspaper reporter, Raymond published a series of four newspaper articles in December 1932 about technocracy and its leaders. Although technocracy came to the attention of the American public in the early 1930s through the coverage it received in the popular press, the foundation of the movement had been laid years before.

The movement had its beginnings just after the conclusion of World War I. In 1918, Howard Scott, future leader of the Technocracy Movement and self-proclaimed engineer, arrived in New

⁵ Hereafter, when not italicized, "Walden Two" refers to the place name used in the book.

York City and ensconced himself in Greenwich Village life. According to Allen (1939), Scott was “an eccentric, boastful, haphazard young man who claimed to have had an important career in engineering” (p. 71). In fact, Scott’s early background was relatively unremarkable. He was born in West Virginia in 1890, an only child with an avid interest in mathematics. His father worked in the logging industry. Scott attended West Virginia’s state university, where his athletic ability overshadowed his academic accomplishments. His father’s death cut short his university education, and he began work as a practicing engineer. As Segal (1996) has pointed out, although Scott subsequently exaggerated his credentials to include a first-class engineering education in Europe, “his real background was considerably more modest: foreman of a cement-pouring gang, he had been fired for incompetence and, ironically, inefficiency; he had then become part of a floor-wax manufacturing firm” (p. xvii).

The floor wax manufacturing firm, called the Duron Chemical Products Company, was housed in an abandoned water-pumping station in Pompton Lakes, New York, where Scott sporadically employed three or four youths to mix the ingredients of his floor wax recipe by hand (see “Chief Technocrat,” 1933).⁶ In addition to his stint as a wax-maker, it appears as though Scott did work in some capacity on the Muscle Shoals Power Plant Project, although probably not as an engineer or “technologist” as he claimed.

When Scott moved to Greenwich Village, he became acquainted with economist and social thinker Thorstein Veblen, who was then working at the New School for Social Research in New York. Veblen led an informal discussion group that Scott joined. The group met to discuss their ideas about replacing the price system with a new system based on energy units, a system that would be designed and implemented by engineers and other technical experts (see Veblen, 1921). Although this group disbanded quickly, in part because of Veblen’s ill health, Scott was enthusiastic about these ideas and formed a group called the Technical Alliance in 1919.

The Technical Alliance was an organization of like-minded professionals whose goals were threefold: (a) to conduct a detailed study of industry in order to document the existing waste and to provide data on which to base a new method of production operation; (b) to outline the details of this new method; and (c) to organize a staff of technicians (Akin, 1977).⁷ In 1920, the Technical Alliance occupied a whole floor at 23 West 35th Street in New York City. The group concentrated on the research aspect of its mandate, and embarked on a survey of 3,000 industries to chart changes in employment, productivity per employee, horsepower capacity, and horsepower used in production. By 1921, however, infighting, lack of clear organization and administration, and financial troubles forced the Technical Alliance to disband. Scott continued his work on the survey, and found various odd jobs with which to support himself. As Raymond (1933) noted, “Through the years of the boom he was primarily a student, thinker, conversationalist, and in some degree a radical agitator” (p. 13). Other members returned to private industry and enjoyed the economic privilege of the booming postwar years.

By 1929, however, the global economic situation had changed dramatically, and as the Great Depression unfolded, the time was ripe for the Technocrats to present their critique of the existing social and economic order. As Allen (1939) noted, this period was marked by an

⁶ About a year and a half later, another article in the *New York Times* recounted how the plant’s equipment was auctioned off to the tune of \$133, to offset \$2,637 in back rent that had gone unpaid by Scott over the previous four and a half years: “The shrine sacred to philosophic mechanists, physicists and chemists, the powerhouse that radiated doctrines of ergs and joules . . . into the stature of early 1933’s most popular intellectual fad, was under the hammer” (“Debts Strip Home,” 1934, p. 19).

⁷ The original members of the temporary organizing committee of the Technical Alliance were as follows: Howard Scott, chief engineer; Sullivan W. Jones, secretary; Frederick L. Ackerman, architect and city planner; Charles Steinmetz, electrical engineer and head of General Electric’s research lab; Carl Alsberg, chemist; Richard Tolman, physicist; Allen Carpenter, physician; Bassett Jones, electrical engineer; Alice Burrows Fernandez, deputy director of the U.S. Department of Education; Benton Mackaye, forester; Leland Olds, statistician; John Carol Vaughan, physician; Thorstein Veblen, economist and social thinker; Stuart Chase, economist and administrator; and Charles H. Whitaker, housing expert and editor of the *Journal of American Institute of Architects* (Scott, 1965).

unprecedented openness to new and radical ideas: "When the Depression routed economic orthodoxy, heterodox notions began to look less crazy" (p. 71). Around this time, Scott found an ally in Walter Rautenstrauch, chairman of Columbia University's Department of Industrial Engineering (Bassett Jones, friends of both Scott and Rautenstrauch and a former member of the Technical Alliance, probably introduced them).⁸ In 1932, with the backing of Rautenstrauch and Columbia University, the Committee on Technocracy was formed. Other members included M. King Hubbert, a professor of geophysics at Columbia, Dal Hitchcock, described as a "man of some engineering experience" (Raymond, 1933, p. 13), and Harold Loeb, a writer who had begun his discussions with Scott some years earlier in 1919, when they lived in the same apartment building in Greenwich Village.

Over the next year, the Committee on Technocracy completed the industrial survey begun by the Technical Alliance (now called the Energy Survey of North America), and began to disseminate its findings, gaining increasing public recognition largely through the efforts of Scott (Akin, 1977). Public response to the Technocrats' findings focused largely on their promise that, through their alternative system, a drastically reduced work week and a life of material abundance for all could be achieved. There was mounting pressure for the Technocrats to outline more specifically how this kind of society could be created and maintained. Members of the Committee on Technocracy struggled with what they would present to the American public.

On January 13, 1933, Scott gave a radio address that was broadcast nationwide from the Hotel Pierre in New York City. This address proved to be an abrupt death sentence for the public appeal of the Technocracy Movement. Scott's presentation was rambling and fragmented, and did little to buoy the confidence of supporters or attract new interest in the movement.⁹ This presentation, coupled with journalistic coverage in the *New York Herald Tribune* and the *New York Times* that discredited Scott's engineering background and his professional and personal integrity, was enough to quell the public's hopes for, and interest in, the Technocracy Movement.

At this time, a number of members of the Committee on Technocracy fled Scott's dubious leadership and formed their own group, which they christened the Continental Committee on Technocracy. It was led by Harold Loeb, himself not an engineer but a well-to-do expatriate writer who saw in technocracy not only economic, but social, political, and cultural ramifications. Unlike Scott, Loeb was born into considerable affluence in New York City in 1891. He graduated from Princeton in 1913, but rejected family banking and investment careers, choosing instead a bohemian lifestyle in Greenwich Village, where he took up residence in the same apartment building as Scott. He made Scott's acquaintance and began discussions with him in 1919, but then moved to Paris to pursue a writing career (Loeb, 1959). While in Paris, Loeb's circle included Ernest Hemingway, who portrayed him (somewhat unflatteringly) as the character Robert Cohn in his 1926 novel *The Sun Also Rises*. Between 1921 and 1924, Loeb provided the financial support for the avant-garde literary magazine *Broom* (Segal, 1996).¹⁰ Loeb returned to the United States in 1928 and resumed his acquaintance with Scott and his involvement in the Technocracy Movement. In 1930, he wrote a utopian novel, *Life in a Technocracy*, but it was not published until 3 years later (Segal, 1996).¹¹

⁸ Walter Rautenstrauch was both a prominent academic and a businessman. In addition to his university appointment, he was also president of the Splitdorf-Bethlehem Electric Company, the American Electric Motor Company, the Perfection Appliance Company, and Metalastic, Inc. (Raymond, 1933).

⁹ Scott's Hotel Pierre address was subsequently printed in many sources. See the April 1954 issue of *The Northwest Technocrat* and the February 1970 issue of *Technocracy Digest*.

¹⁰ Skinner has reported in his autobiography that he read *Broom* as an undergraduate at Hamilton College. He also reported that on his postundergraduate trip through Europe, he became acquainted with some of the members of the avant-garde literary scene. Whether he ever ran across Harold Loeb will have to remain unknown.

¹¹ Interestingly, in Scott's 1964 correspondence with Professor J. K. Faulkner of Western Washington State College (see Scott, 1965), he disavowed any formal association with Loeb, proclaiming, "Harold Loeb was never a member of Technocracy." He probably meant that Loeb was never a member of Technocracy Inc., having split from Scott and formed the Continental Committee on Technocracy in 1933.

After Loeb's split with the Committee on Technocracy, the remaining members, led by Scott, banded together to form Technocracy Inc., and continued to pursue their scientific activities away from the public eye. Loeb's group folded soon after its inception, and Loeb himself went on to work for the War Production Board during World War II. He died in Morocco at the age of 82 in 1974 (Segal, 1996).

Technocracy Inc. was directed by Scott until his death in 1970 at Age 79. For many years, it also published a quarterly journal called *Technocracy Digest*. *Technocracy Digest* began its publication in May 1935 and was published until July 1940, resuming again in May 1944. For many years it was published out of Vancouver, British Columbia, and was subtitled "The Only Magazine in Canada That Is Preparing the People of This Country for Social Change." Fifty years after the Technocrats delivered their original message, the *Digest* continued to promote technocratic dogma:

This is a time when man's ability to survive seems to be in doubt. In many cases science is accused as the culprit – the means of eliminating us from this planet. Technocracy says that man must control science if he is to survive, and Technocracy provides the scientific design for survival. YOU can play a vital part in the coming battle for survival. (McBurnie, 1983)

As an organization, it continues to sustain a membership and publishes a blog and newsletter (see www.technocracyinc.org). The group also published *The North American Technocrat* through the early 2000s. The majority of active interest in technocracy appears to have relocated to the West Coast, where the Continental Headquarters was, for many years, located in Ferndale, Washington.

In summary, the Technocracy Movement was a research and social movement that advocated the replacement of the price system by a system of production and distribution based on energy units. It advocated the technological application of the physical sciences to problems of social organization and control. It presented a scientific analysis of the process that had brought the country to the Great Depression, and highlighted the paradox of a country that, because of unprecedented technological innovation and abundant natural resources, could provide a life of plenty for all, and yet was suffering from the greatest economic depression of all time.¹²

The Technocrats argued that the main reason for this paradox was that the social order had not made the appropriate adjustments to modern technology—creating waste, debt, and technological unemployment. The price-wage system, they argued, was obsolete, and capitalism in the hands of profit-minded businessmen would no longer work as an economic or social system. They thus advocated a system of government in which an apolitical organization of technical experts (called a "technate") would solve the problems of government in the same way that they would solve any problem—scientifically. Akin (1977) wrote, "The technocrats boldly claimed the absolute authority of physical science as the basis for their critical analysis" (p. 67). Allen (1939) remarked, "It seemed to be scientific, and thus commended itself to a people who venerated science as the source of progress" (p. 72).

B. F. Skinner and the Technology of Behavior

A child is born into a culture as an organism is placed in an experimental space. Designing a culture is like designing an experiment; contingencies are arranged and effects noted. In an experiment we are interested in what happens, in designing a culture with whether it will work. This is the difference between science and technology.

—Skinner (1971, p. 153)

¹² For the relationship between technology and government policies in the Great Depression, see Pursell (1979).

In this passage from his polemical work *Beyond Freedom and Dignity*, Skinner made an important and revealing analogy: Designing a culture is like designing an experiment. Indeed, culture is itself analogous to an experimental space. As Frazier, Skinner's alter ego in his utopian novel *Walden Two*, proclaimed, "A constantly experimental attitude toward everything – that's all we need" (Skinner, 1948, p. 30). Throughout both his personal life and his work, Skinner adopted a highly experimental attitude (Bjork, 1993). Ultimately, he synthesized the results from his laboratory experiments to formulate a technology of human behavior, which he then promoted for more than half of his career. Historian of psychology Laurence Smith (1992, 1996) has noted that this technological viewpoint—that knowledge gained from science and the experimental method can (and should) be used to shape and reshape nature—was inherent in Skinner's work through the early influence of Francis Bacon. He has remarked, "Skinner has been characterized as a 'psychologist with the soul of an engineer,' a designation that aptly captures his thoroughgoing allegiance to the technological ideal of science" (Smith, 1996, p. 63). How and when did this technological viewpoint arise in Skinner's work? When did Skinner the psychologist become Skinner the engineer?

Skinner's first major publication, *The Behavior of Organisms: An Experimental Analysis*, appeared in 1938 (Skinner, 1938). In it, he summarized his findings from the experimental analysis of behavior, which included his laboratory work on operant conditioning and schedules of reinforcement. He also presented his program for establishing psychology as a natural science. On the heels of this experimental treatise, Skinner was already considering the technological potential of his findings. As early as 1940, Skinner's thoughts turned to the possibility of training pigeons as missile guidance devices (see Skinner, 1960), and the technology of behavior was born (Capshew, 1996).¹³

Skinner's next technological innovation was the air crib. The air crib was Skinner's attempt to design a device that would minimize the drudgery associated with child rearing (see Benjamin & Nielsen-Gammon, 1999). He extrapolated from his experimental work, which focused on the impact of environmental contingencies on behavior, to design a device that would shape the behavior of both baby and caregiver. Babies could be induced to sleep longer and cry less with small temperature adjustments in the box ("Heir Conditioner," 1946; Skinner, 1945), allowing parents more control over both the baby's schedule and their own:

In one instance when the Skinner baby was changed from four to three meals a day, she began to wake up an hour before breakfast time. By raising the temperature in the crib . . . her waking was postponed for the necessary hour. ("Heir Conditioner," 1946)

The air crib offered parents not only freedom from the punitive control of diaper-washing but also prevented disruptive early morning awakenings!

The next major addition to Skinner's list of inventions was the teaching machine.¹⁴ He was convinced that operant principles offered the key to academic success. By bringing students' learning behaviors under more direct control through positive reinforcement, and by breaking down material into manageable and interlocking steps, Skinner hoped to revolutionize teaching practices (Skinner, 1954, 1961a, 1961b, 1968). Through the promotion and manufacturing of teaching machines and programmed instruction, he hoped to reform the inefficiency of the practices that pervaded American education.

¹³ Bjork (1993), Skinner's biographer, might argue that the technology of behavior was actually born a couple of decades earlier, when the 10-year-old Skinner designed a gadget that reinforced pajama-hanging behavior. It worked by removing a reminder sign from the door of the closet when the pajamas were appropriately hanging in their place.

¹⁴ For historical overviews of the development of teaching machines and programmed instruction, see Benjamin (1988) and Vargas and Vargas (1996).

These inventions represented in miniature the applications of the principles that Skinner hoped would drive the design of an entire culture. This culture was given its most direct and elaborate expression in *Walden Two* (Skinner, 1948). Written during the summer of 1945, Skinner reported that in it, he applied operant principles to the problems of human behavior for the first time (King, 1979).¹⁵

Walden Two is a utopian novel in which Skinner outlined how the careful application of positive reinforcement could produce a society in which inhabitants would behave in ways consistent with the survival and sustainability of the culture (e.g., lower birth rates, lower energy consumption). An environment engineered to reinforce prosocial behavior provided the means of maintaining social order and creating the good life.¹⁶

Skinner's conviction that all behavior is controlled by the environment, and by genetic codes comprised of genes for behaviors that were also at one time selected by the environment, led him to advocate the need to acknowledge this control and to manipulate the environment to affect behavior in specific ways. To fail to acknowledge the importance of environmental contingencies, and thus to leave the control of behavior to the capricious whims of an unengineered environment, was, for Skinner, the recipe for self-destruction. This was the conviction that led Skinner to pursue a technology of behavior, to outline a society based on these principles, and to attempt to persuade the public of his views in his 1971 book *Beyond Freedom and Dignity* (Skinner, 1971).

In many of his writings, Skinner highlighted the contributions made by physical and biological technologies, while noting that despite them, humankind was still moving toward "catastrophe" in the form of environmental degradation, overpopulation, and even nuclear annihilation (Skinner, 1953, 1971, 1987). The solution, he maintained, lay in adopting a technology of behavior that would reinforce people for acting in ways that were congruent with the survival of the culture. The obstacles barring the way to the widespread implementation of this technology, Skinner argued, were the outmoded concepts of self-determination and free will. Skinner's was an objective, deterministic, and materialistic worldview—a view that placed all emphasis on observables, and the locus of control within the environment, not within the putative "mind" of a person. The person's inner life, rather than directing or controlling outward behavior, was simply the physiological experience of the world within the skin (Skinner, 1974; on the philosophy of radical behaviorism, see Rutherford, 2005, 2010).

In Skinner's view, the technology of behavior worked on human behavior like physical technology worked on a technical problem. Society and culture, as macrocosms of human behavior, were also technical problems: "A given culture is, in short, an experiment in behavior. It is a particular set of conditions under which a large number of people grow and live" (Skinner, 1953, p. 430). Skinner concentrated on how a functional social order could be achieved by engineering these conditions with a technology of behavior. The Technocrats focused primarily on the industrial and economic order—on how the system of production and distribution could be reorganized to adapt to the technological changes that had occurred over the previous decades. However, as part of their reorganization, they also committed to a theory of human behavior, and even human nature, that foreshadowed Skinner's work and followed the thinking of Russian physiologist Ivan Pavlov explicitly, and American behaviorist John B. Watson implicitly. At approximately the same time that

¹⁵ Elms (1981) has argued that Skinner wrote *Walden Two* as a way to work through some of his existential and developmental crises.

¹⁶ Altus and Morris (2004) point out that the most important aspect of Skinner's utopian vision was not his specific blueprint for the good life, but his emphasis on an empirical, experimenting approach. They wrote, "Skinner utopian vision was not the practices he described in *Walden Two*, but how the community arrived at them—empirically" (p. 271). I agree with Altus and Morris, and would further suggest that this experimenting approach is consistent with the technocratic ethos that informed Skinner's writings about the good life as much as it did his approach to science.

Skinner began his career in psychology through the combined influence of Pavlov and Watson, the Technocrats were organizing a social and political movement based on the same underlying theoretical model of human nature.

From Technocracy to the Technology of Behavior

Why draw a connection between the Technocracy Movement and Skinner's technology of behavior, between this particular group of scientists, engineers, and other technical experts and psychologist B. F. Skinner? Skinner and the Technocrats were connected by several common intellectual and ideological threads. Pavlov's work on conditioned reflexes influenced both Skinner's and the Technocrats' ontological positions (see [Skinner, 1938](#); [Technocracy Inc., 1934](#)). Both incorporated the idea of conditioned reflexes and the importance of the environment into their emerging materialistic view of human behavior. In their 1934 book, *Technocracy Study Course*,¹⁷ the Technocrats included a chapter entitled "The Human Animal" ([Technocracy Inc., 1934](#)), in which they outlined the philosophy of human nature that guided their position and provided the framework for their engineered society. It is worthwhile to examine this philosophy in more detail to appreciate the common ground shared by the Technocracy Movement and Skinner's technology of behavior:

It might be remarked that the most minute anatomical dissection had never revealed anything that corresponded to a "mind" or a "conscience" or a "will" . . . real scientific progress is at all times based upon the correlation of objectively observable phenomena. When we subject such concepts as the human "mind" to this sort of test they rapidly fade out of existence. When we observe a human being we merely perceive an object which makes a certain variety of motions and noises. ([Technocracy Inc., 1934](#), p. 186)

Although hauntingly Skinnerian in tone, this passage appeared in 1934, a few years before Skinner's first major published work and a decade before he began thinking about *Walden Two*. The Technocrats' formulation was developed after Watson's behavioristic revision of psychology (e.g., [Watson, 1913, 1924](#)), but before the appearance of Skinner's work. It is clear from this and other writings that the Technocrats were, philosophically, behaviorists, but it is unclear how familiar they were with the behaviorist movement in psychology. They did not refer to Watson directly in their original writings, and they did not use the term behaviorism to describe their philosophy. That they were materialists and mechanists, however, is clear from the following passage:

The human being is an engine taking potential energy in the form of chemical combinations contained in food, and converting this potential energy into heat, work and body tissue. The thermodynamic processes involved, while more complicated in detail, are in exact accordance with the laws of thermodynamics and are in no essential particular different from the corresponding processes in man-made engines. ([Technocracy Inc., 1934](#), p. 210)

Although it is unclear how explicitly the Technocrats were influenced by Watson and other American behaviorists, they were familiar with and heavily influenced by Pavlov's work on conditioned reflexes ([Technocracy Inc., 1934](#)). Pavlov's demonstration that, in dogs at least, specific reflexive responses could be conditioned to various stimuli, and that these responses consisted of nervous and muscular reactions, accorded well with their evolving materialist and mechanist philosophy. They wrote,

We have already remarked that the series of nervous and muscular twitchings involving the secretion of saliva, which takes place at the sound of a bell or other conditioned stimuli in the absence of beefsteak,

¹⁷ The majority of the writing of this book has been attributed to M. King Hubbert, who was an instructor at Columbia University ([Elsner, 1967](#)).

is of what “thinking of beefsteak” consists. It is now incontrovertibly demonstrated that all thinking is of this sort. (*Technocracy Inc.*, 1934, p. 189)

Through their awareness of the work of Pavlov, the Technocrats were thus persuaded of the importance of the environment in conditioning behavior. They saw the implications for their engineered society, and expressed them in a manner of which Skinner would have approved:

When any large number of individual human beings under the same set of environmental circumstances tend to behave in a certain specific manner, it is safe to say that any other similar cross section of human beings under the same circumstances would respond in a like manner. This basic fact shows the futility of all moralistic approaches to the solution of social problems. (*Technocracy Inc.*, 1934, p. 203)

This passage clearly expresses the same position outlined by Skinner 37 years later in *Beyond Freedom and Dignity* (Skinner, 1971). Of note is the extent to which the Technocrats drew out the implications of their environmentalism in the same way that Skinner did, coming to the conclusion that an appeal to internal states of values, morals, and will was a misguided method of changing individual behavior and, ultimately, social practices. They foreshadowed Skinner’s pessimism about the consequences of ignoring the power of environmental contingencies: “Leave the physical environment unaltered, or the industrial rates of operation unchanged, and any effort to alter the fundamental modes of behavior of human beings is doomed largely to failure” (*Technocracy Inc.*, 1934, p. 243).

Adding to the Technocrats’ foreshadowing of Skinner’s work was their position on human liberty. Although they did not write as extensively as Skinner about the incongruity between environmental determinism and free will, the Technocrats did allude to this tension:

It appears to be little realized by those who prate about human liberty that social freedom of action is to a much greater extent determined by the industrial system in which the individual finds himself than by all the legalistic restrictions combined. (*Technocracy Inc.*, 1934, p. 242)

In summary, the following similarities between the philosophical position of the Technocrats and the position underlying Skinner’s technology of behavior are apparent: (a) both technocracy and the technology of behavior rejected the concept of “autonomous man” and placed the locus of control of human behavior in the environment; (b) both held an ontological position that was essentially materialistic; (c) both disavowed the practical utility of the humanistic values of freedom, dignity, and the right to self-determination in favor of a deterministic view of the individual and society; (d) both viewed the design of culture as an engineering problem to be solved rationally, scientifically, and with the help of technology; and (e) both upheld the technological ideal of science and believed that the problems created by technology could be solved by new technology. But what did Skinner know about the Technocracy Movement?

There are a few, albeit indirect, connections between Skinner and members of the Technocracy Movement that I have been able to piece together. Richard C. Tolman, the brother of prominent psychologist and purposive behaviorist E. C. Tolman, was heavily involved in Movement. He was a founding member, in 1919, of Howard Scott’s Technical Alliance, one of the first organized groups dedicated to studying technocracy.¹⁸ Whether Skinner was ever introduced to Richard through Edward, with whom he was acquainted

¹⁸ R. C. Tolman (1881–1948) was E. C. Tolman’s older brother. Both Tolman sons were encouraged (unsuccessfully) by their father to join his manufacturing company, and both sons inherited a concern for social reform through their father and through their mother, who had been raised in the Quaker tradition. Hilgard (1987) has noted that Richard “escaped the pressure to enter business” (p. 207) by becoming a distinguished physicist. Richard was professor of physics at the University of Illinois, and was subsequently director of the Fixed Nitrogen Laboratory in Washington, D.C. He later accepted a position as dean at the California Institute of Technology, and was made Atomic and Scientific representative of the United States on the combined Chiefs of Staff of the United States and Great Britain during World War II.

(see Skinner, 1983a), is unlikely, but Richard, a prominent physicist, may have been influenced by his brother's behavioristic outlook. Stuart Chase, who occupied several governmental positions in trade and economics, and published extensively in many areas, was also a member of the first organizing committee of the Technical Alliance, and later published a book called *Technocracy: An Interpretation* (Chase, 1933). In the late 1940s, Skinner reviewed a subsequent book of Chase's, *The Proper Study of Mankind*, for the *New York Times*, and found the philosophical basis of Chase's argument to be consistent with his own emerging views (see Rutherford, 2000).

These connections indicate that although Skinner may not have been *directly* influenced by members of the Technocracy Movement,¹⁹ his behaviorism and that of the Technocrats were nonetheless closely aligned. In fact, Skinner was probably aware of the movement, for it received extensive coverage in the popular press in its heyday from 1932 to 1934, a time in which Skinner was working as a postgraduate fellow at Harvard University (see, e.g., Hazlitt, 1933; "Industrial Growth," 1932; Scott, 1932, 1933b; "Sees Price System," 1932; Soule, 1932; Strunsky, 1933; "Technocracy," 1932; Ward, 1933). According to Raymond (1933), a reporter for the *New York Herald Tribune* who penned four articles about the Technocracy Movement for the paper in December 1932, after the first magazine article about technocracy appeared in *New Outlook* in November of 1932, "the wire associations grabbed liberal portions of this exposition and flung them around the globe, and they were front-paged from Vancouver to Miami . . . this was apparently, if true, the biggest news story in years" (p. 25). Prominent social historian Frederick Lewis Allen, in reflecting on the 1930s, wrote, "Then, abruptly—in December, 1932—the thing [technocracy] was everywhere: in the newspapers, in the magazines, in sermons, in radio-actors' gags, in street-corner conversation" (Allen, 1939, p. 71).

The widespread public attention to the movement and its close ideological relationship to, and recurrence in, Skinner's own thinking indicate the cultural importance (and prominence) of the idea of a scientific, engineering approach to the organization of the social and political order. Fifteen years after Loeb's (1933/1996) *Life in a Technocracy*, Skinner published his own utopian novel, *Walden Two* (Skinner, 1948). The shared themes in the two novels make a comparison of Skinner's and Loeb's visions for the ideal society historically interesting and culturally informative. The two visions—Skinner's behaviorally engineered society and Loeb's technically engineered society—provide convenient foci with which to assess reactions, not only to technology but also to the technological *society* in mid-20th-century America, and to bring greater attention to the larger technocratic, social engineering tradition of which Skinner's work, I argue, can justifiably be considered a part.

Life in a Technocracy and Walden Two: Engineering the Good Life

I have already outlined the major technical and ideological aspects of Skinner's technology of behavior and the Technocracy Movement and outlined some of their similarities. Loeb's (1933/1996) *Life in a Technocracy* preceded the writing of Skinner's (1948) *Walden Two* by 12 years, but there are remarkable structural parallels between the two utopias that illustrate how the technocratic philosophy guided cultural design. Here, I outline some of these parallels as a route to understanding subsequent responses to both social visions.

Central to the Technocrats' position was the replacement of the functions of government by an appointed board of executive technical experts, who would treat problems of government as technical problems to be solved rationally and scientifically (Loeb, 1933/

¹⁹ Although, in the third chapter of *Walden Two*, Skinner (through Frazier) alludes to Veblen's work, *Theory of the Leisure Class*, indicating that he was at least aware of Veblen and some of his ideas.

1996; Scott, 1933a; *Technocracy Inc.*, 1934). They had little patience for the passions of politics, and popular voting was deemed unnecessary because matters of government were regarded not as matters of public opinion or preference, but as technical problems for which technological solutions could be found. Loeb (1933/1996) wrote, "Administration, in a technocracy, has to do with material factors, which are subject to measurement. Therefore, popular voting can be largely dispensed with. It is stupid deciding an issue by vote or opinion when a yardstick can be used" (p. 75).

Thus, members of the technate, or administrative body, would be chosen on ability alone and appointed to their positions. It was argued that much of the corruption inherent in present government would dissipate because of the disappearance of the monetary system: "A most undemocratic system! True, but with money abolished and every material want satisfied, these men who must have undergone considerable discipline to reach their high position would have no temptation not to serve the state" (Loeb, 1933/1996, p. 79). Fifteen years later, Skinner wrote in *Walden Two* (Skinner, 1948), "And there's little real wealth to tempt anyone. It isn't true that our Planners could abscond with the funds. Our wealth is our happiness" (p. 271).

As in a technocracy, Skinner advocated the dismantling of a democratic system of government. It would be replaced with an apolitical, appointed Board of Planners and Managers. These planners and managers—"carefully trained and tested specialists" (Skinner, 1948, p. 55)—would take over the administrative and managerial aspects of the community, and would be appointed based on ability and expertise:

"What are managers?" I said hastily. "What the name implies: Specialists in charge of the divisions and services of Walden Two . . . It's a special person who finds a place as a Manager. He must have ability and a real concern for the welfare of the community." (p. 55)

Traditional systems of democratic government and political representation were completely eschewed in favor of a scientific system. For example, as *Walden Two* protagonist Frazier explained, "You can't make progress toward the Good Life by political action!" (Skinner, 1948, p. 193).

As such, the Board of Planners and Managers was Skinner's version of a technate, a body of appointed technical specialists who solved administrative problems apolitically, through scientific investigation and technological application. In *Walden Two*, as in a technocracy, problems of government were viewed as technical problems. Frazier explained how grievances might be handled by the Board should they arise: "A grievance is a wheel to be oiled, or a broken pipe line to be repaired" (Skinner, 1948, p. 269). In *Walden Two*, the absence of a price system and the abolition of money were also seen as antidotes to possible political corruption. The appointed experts were, in both systems, assumed to possess little vice and to hold the welfare of society close to heart.

As an alternative to the price-wage system, the Technocrats proposed a system based on energy units or ergs. The cost of any product would be based on the number of units of energy needed to produce it, which would include both natural energy and manpower. The sum total of all energy required to produce all goods would then be divided by the population, and each citizen would receive an equal number of energy certificates with which to purchase goods each year. The system would provide a life of material plenty for all, without excessive over- or underproduction.

In *Walden Two*, the price-wage system was replaced by a labor credit system, wherein each citizen was required to work for a certain number of labor credits each week in exchange for the satisfaction of all basic needs. Tasks requiring more energy (psychological or physical) were assigned higher credit. In both systems, work was to be shared equally by all able-bodied citizens, and the amount of work effort expended was tied directly to the amount of goods required by society. Thus, production was tied more directly to consumption, and work tasks were made more technically efficient, with the result that Skinner projected the necessity of only a 20-hr work week, and Loeb, a mere 16.

In both societies, there would be no middlemen or retailers earning their living from the distribution of goods. The Technocrats argued that production would not be influenced by the necessity for a gap between supply and demand to ensure profit. In *Walden Two*, the need for middlemen was also significantly reduced. Frazier stated,

Let me point out a few businesses which we haven't eliminated, but certainly streamlined with respect to manpower . . . The big department stores, the meat markets, the corner drug stores, the groceries, the automobile display rooms . . . all staffed with unnecessary people doing unnecessary things. (Skinner, 1948, p. 62)

Other similarities in the utopian societies of Skinner and Loeb included increased gender equality, as the economic pressures associated with marriage would be eliminated. Loeb (1933/1996) wrote, "Every man and woman would possess equal and absolute economic security" (p. 174). Because material plenty was guaranteed, women were freed from the necessity of marriage to secure their financial futures. In *Walden Two*, Frazier explained, "Here, there is no reason to feel that anyone is necessary to anyone else" (Skinner, 1948, p. 147). Women would be free to develop their abilities and interests and choose mates based on personal preference instead of social and economic standing.

Finally, both Skinner and Loeb emphasized an experimental and technological attitude toward all aspects of product development and domestic engineering. Frazier demonstrated this attitude when he described how *Walden Two's* domestic engineers solved the problem of tea spillage with traditional cups and saucers by developing an alternative vessel, and then proceeded to examine its efficacy: "I can't give you the actual figures, but some experiments proved that the jackets were worthwhile. They were omitted on alternate days for a month or so and members of the class stood about and counted spillings" (Skinner, 1948, p. 31). Loeb (1933/1996) expressed his scientific and technological enthusiasm this way: "A stocking is needed. It must look well, feel well, wear well, and adequately cover certain sized limbs. Scientific tests would decide which article best fulfilled these requirements" (p. 85).

Technology's Nation? Reactions to Skinner and the Technocrats

Having now examined some of the philosophical and structural similarities between the ideal society envisioned by the Technocrats, and the society based on Skinner's technology of behavior, I examine reactions to both. Reconstructing this set of shared responses can help reveal recurring patterns in the American relationship to technology. Like the ideas put forth in *Beyond Freedom and Dignity* in 1971 (Skinner, 1971), at the height of the counterculture movement, the ideas put forth by the Technocrats in the early 1930s came at a time (the height of the Great Depression) when the American public was actively searching for radical alternatives to the existing social and economic order. As Allen (1939) observed,

But the Technocratic idea fitted precisely the American mood of the moment. . . . Its vogue came at the moment when millions of Americans had decided that they were sick of the old order and were ready for a new one—they didn't know what. (p. 72)

In a chapter on the rejection of technocracy, Akin (1977) wrote, "The technocrats made a believable case for a kind of technological utopia, but their asking price was too high. The idea of political democracy still represented a stronger ideal than technical elitism" (p. 150). His argument was that although the Technocrats' message about the capacity of technology to provide a life of plenty appealed to the American "technological imperative," most Americans believed that the promises of an engineered society could be realized without overhauling the existing political and economic system. One prominent critic of technocracy, J. H. Van Deventer (editor of *Iron Age*, a trade journal distributed

in business circles), focused his critique on this aspect of the Technocrats' agenda. He viewed technocracy as an anticapitalist revolution, and felt it would abolish representative government and private property (Akin, 1977).

The democratic bedrock upon which American society was based, which encompassed an adherence to individualism and capitalism, was a solid one. In 1933, during the heyday of the movement's public recognition, Raymond (1933) wrote,

It takes more than the continual reviling of politicians by business pirates to make the average man lose hope for the ultimate success of the great experiment to which this country is dedicated—that of guaranteeing everyone equally the right to life, liberty, and the pursuit of happiness. Democracy is a quest. Democracy is an adventure. . . . If all that Technocracy . . . can offer is government by a Soviet of engineers—away with it! (p. 180)

Insofar as Skinner's vision shared with technocracy the proposed dismantling of the democratic, capitalist system, it too was rejected. One article in the *New York Times* described *Beyond Freedom and Dignity* (Skinner, 1971) as “an uninhibited assault on some of the Western world's most prized ideals” (Stevens, 1971, p. 29). *Time* magazine described Skinner's social vision (especially its antifreedom message) as a “path to hell” (“Skinner's Utopia,” 1971, p. 47). In 1972, Congressman Cornelius Gallagher stated that Skinner was “advancing ideas which threaten the future of our system of government by denigrating the American traditions of individualism, human dignity, and self-reliance” (“Misplaced Zeal,” 1972, p. 14). Bjork (1993) wrote, “The book challenged what most Americans believed it meant to be American” (p. 193). In a review of *Beyond Freedom and Dignity* by Richard Rubenstein (1971), a professor of religion at Florida State University, Skinner was referred to as a “behavioral technocrat.” It is clear from the tone of the review that this was not a complimentary designation. Both the engineering technocrats and the behavioral technocrats presented the American public with a dilemma. They forced Americans to choose between democracy—government by the people—and technocracy—government by science—and, in doing so, challenged one of the foundational precepts of American social and political organization. Readers perceived alarming overtones of communism, fascism, and totalitarianism in both systems.

Americans were pulled in two directions by the message that both the Technocrats and Skinner delivered. Although hostile toward the subversion of democracy and capitalism by totalitarianism and socialism, many Americans were sympathetic to the technological ideal that both Skinner and the Technocrats espoused. The pairing of technology with social progress had been an integral part of the American creed since its earliest days as a republic. Akin (1977) has argued that, in the case of response to the Technocrats, the strength of the democratic ideal outweighed that of the technocratic ideal. Many Americans also believed that, under Franklin Delano Roosevelt's leadership, the problems identified by the Technocrats could be remedied without a dramatic overhaul of the existing governmental structure. As Allen (1939) observed, “By the time the New Deal arrived, it [technocracy] was already vieux jeu to most Americans—like a memory of a half-forgotten folly” (p. 73).

It can be argued that the same public evaluation occurred in response to Skinner's work (see Rutherford, 2000, 2003a). In fact, Smith (1992) has noted that the historical juncture in which Skinner presented his ideas in *Beyond Freedom and Dignity* (Skinner, 1971) was characterized by an unprecedented decline in technological enthusiasm. The twinning of technology with unending progress had, at least temporarily, become less tenable. This may have further weakened support for the idea of a society engineered with a technology of behavior, and strengthened the negative response to Skinner's work.²⁰ When both the Technocrats and

²⁰ Perhaps, ironically, given this assessment, the problems that were perceived to be caused by unbridled technological enthusiasm—such as environmental degradation and threat of nuclear war—were the very problems that Skinner felt were most imperative to address through his technology of behavior.

Skinner asked the American public to choose between democracy and technocracy, they chose democracy. Or, in the words of Castle in *Walden Two*, "With all her faults I love her still . . . I'll take democracy. . . . We may seem laughable to your streamlined planners. But we have one thing on our side – freedom" (Skinner, 1948, p. 267).

A second shared theme in the reactions to both technocracy and Skinner's technology of behavior was the considerable skepticism with which scientists and technicians were regarded as potential political leaders and decision makers. Akin (1977) has argued that part of the public's ambivalence toward technocracy was the lack of faith in scientists' abilities to govern: "Regardless of the American faith in technology, few people were willing to bestow power directly on the technicians" (p. 165). Fueling this lack of confidence was the stereotype of scientists as eccentric, isolated, antisocial beings who immersed themselves in the affairs of the ivory tower, not the state. Scientists and engineers were not popularly regarded as socially or politically expert. For example, Raymond (1933) noted in reference to the Technocrats: "The management of machine processes and the management of human beings are two very different fields of work, and it would appear to the average man that they require two very different types of mind" (p. 174). Allen (1939) noted that the idea of government by scientists invoked skepticism:

Practical men . . . smiled at putting the vital decisions in a society in the hands of scientific specialists. They remembered that politicians are always needed in the making of social decisions because they know how to take account of human nature. (p. 72)

Adding to the existing skepticism were articles pointing out weaknesses and inaccuracies in the Technocrats' scientific analysis (e.g., Hazlitt, 1933; Soule, 1932; Strunsky, 1933). If the public believed that the Technocrats' scientific competence was questionable, it was unlikely that their administrative abilities inspired confidence. If they were inexpert in their own specialized field, then how could they be trusted to administer the entire socioeconomic order, a task that was regarded by many as more an art than a science?

In the case of Skinner and the technology of behavior, Skinner's scientific "eccentricities" were highlighted extensively in the popular press, especially early in his career. Early press coverage of his work including such parlor tricks as getting rats to play slot machines ("University of Minnesota Rat," 1937) and pigeons to play ping pong and piano (e.g., "Pigeons Play Ping Pong," 1950; "Pigeons Play Piano," 1950). As Skinner himself wryly noted in an interview for the *Baton Rouge Morning Advocate*, "If I could do it all over again, I'd never teach those pigeons to play ping-pong" ("Professor Describes," 1960, p. 71). Nonetheless, however strong this "eccentric" portrayal of Skinner may have been, it was clear that the public took his social message very seriously and viewed him as a credible, and indeed influential, scientist. What they objected to most strenuously, and felt that Skinner had not addressed, was the question of how those in control of the technology of behavior would be chosen, and how the controllers would remain accountable to the people in an undemocratic system. Even though psychologists might be able to provide the "account of human nature" that seemed to be lacking in the technocratic proposal of government by science, the public was threatened by Skinner's view of human nature and the unchecked power that governing bodies in his system would seem to acquire. The totalitarianism inherent in both Skinner's and the Technocrats' proposals was a serious concern.

Skinner chose to address these questions and concerns by making a somewhat ineffective appeal to evolutionary theory, explaining that it was not a matter of choosing someone to push the control buttons, but of the gradual improvement of the practices controlling the survival of the culture (Skinner, 1971). To address the issue of accountability, he used the concept of reciprocal control, explaining that the only incentive for controllers to behave in certain ways would be that they were positively reinforced for their behavior. Those being controlled (the polity) would hold this power, for only they could decide which behaviors to reinforce (Skinner, 1948, 1971).

These explanations seemed less than compelling to the American public, who quickly seized on the potential for despotism and tyranny in a government that was not “by the people.” Akin (1977) noted that the Technocrats, too, failed to address these questions adequately: “Who was going to bestow power on the engineers or how this would be accomplished were questions never answered satisfactorily by the technocrats” (pp. 164–165).

Thus, a combination of concern about who would govern and how accountable they would be, and a mistrust in the general governing ability of scientists and technicians, contributed to the rejection of both the Technocrats’ and Skinner’s utopian—and totalitarian—visions. The public was unwilling to accept that scientists, engineers, or even psychologists would be any less corrupt than run-of-the-mill politicians, or that their governing ideals would be any more lofty. As Raymond (1933) remarked,

What is it actually that Technocracy is trying to tell the public? One thing, apparently, is that constitutional political government is . . . no longer competent to direct. . . . Therefore, the engineers must take over the management of the country and carry it on for the common good. But who knows whether or not they would manage it for the common good? (p. 174)

A final common theme uniting responses to the Technocracy Movement and Skinner’s technology of behavior was the American public’s aversion to the materialistic vision of society that each system seemed to espouse. Many envisioned life in a technocracy as mechanical, sterile, and impersonal. The man-as-machine, or human-being-as-engine, metaphor that the Technocrats employed was not an inherently appealing one. In the definitive statement of their scientific and social outlook, *Technocracy Study Course* (Technocracy Inc., 1934), the Technocrats used machine analogies to describe their ontological position. For example, in the section entitled “The Human Animal,” it was remarked, “In an earlier lesson, while discussing the ‘human engine,’ we pointed out that the human body obeys the same basic laws of energy transformation as the steam engine” (p. 185).

As Elsner (1967) noted, “Man and machine are analytically one for the purposes of the *Technocracy Study Course*” (p. 134). For some, this produced images of Huxley’s *Brave New World*: “The future of man in the society that the technocrats described appeared too mechanical. Man stood the chance of being reduced to a mere thing, living a sterile and insensitive life” (Akin, 1977, p. 166).

Comparisons with Huxley’s *Brave New World* continued with *Walden Two* (Jessup, 1948), as I have outlined. Again, there was certainly some justification for these comparisons: Skinner did hold a materialistic view of the individual (see Bjork, 1993, pp. 58–59; Skinner, 1931, 1974). He viewed the individual as a repertoire of behavior arising in response to a particular set of contingencies, and culture as a set of contingencies under which a large number of people function (Skinner, 1971). That this would lead to some dismay in the public mind about the room for individuality, creativity, and self-actualization in this system is understandable.

Indeed, in the view of many critics, Skinner himself became the embodiment of mechanism, “a cold-blooded would-be creator of human robots” (“Famous Psychologist,” 1972, p. 4). He was widely regarded as cool, aloof, and inhuman. He did little to diffuse this image when he entitled a 1969 article in *Psychology Today*, “The Machine That Is Man” (Skinner, 1969), and when he remarked in a 1983 article, “If I am right about human behavior I have written the autobiography of a nonperson” (Skinner, 1983b, p. 32). That the public then viewed him as a nonperson, and the society that he envisioned as coldly mechanical, was perhaps not surprising. In both Skinner’s and the Technocrats’ socially engineered utopian visions, many saw only dystopia.

Conclusion

Although predating *Walden Two* by about 15 years, and predating the majority of critical response to Skinner's social vision by about 40 years, reactions to the Technocracy Movement foreshadowed many of the criticisms of Skinner's work. I have suggested that this foreshadowing can be understood with reference to the intellectual traditions of Pavlov and Watson that influenced both systems, their shared application of the technological ideal to the design of culture, the materialistic and deterministic elements inherent in both the Technocrats' and Skinner's work, their perceived espousal of totalitarianism, and intense skepticism about conflating technoscientific with political expertise.

I have uncovered no evidence in primary, secondary, or archival sources of a directly shared dialogue between Skinner and any documented members of the Technocracy Movement. Nor do I suggest that, even if Skinner had been aware of the movement and popular reactions to it (which he may very well have been), he would have changed any aspect of his vision to make it more palatable to the American public. However, the recurrence in his work and that of the Technocrats of the utopian theme that science and technology can provide a life of plenty for all and remedy serious social problems, paired with the overwhelmingly critical evaluation of their attempts to socially engineer the good life, reveal something important about the American predicament: an intense and widespread ambivalence toward a technocratic *philosophy* as a guide for the conduct and organization of our political, social, and personal lives. In highlighting these recurrent themes, both the ultimate fascination with—and rejection of—both technocracy and the implementation of the technology of behavior à la *Walden Two*, can perhaps be better understood.

The American public chose neither life in a technocracy, nor *Walden Two*. After a brief burst of popularity, or at least public visibility, the Technocracy Movement faded from view in the 1930s as the New Deal moved in to assuage economic anxieties and begin to restore public confidence. *Walden Two* (Skinner, 1948) experienced its own surge of popularity in the late 1960s, when a number of aspiring communitarians and counterculture enthusiasts seized on the reformist elements of Skinner's vision and took up the novel's blueprint, in some cases creating real-life *Walden Two*-inspired communities. Most of these communities quickly moved away from a Skinnerian social philosophy while retaining some vestiges of the material arrangements that organized life in *Walden Two* (see Altus, Kuhlmann, & Welsh, 1999; Rutherford, 2009; Swirski, 2011).

What my account of the shared features of Loeb's and Skinner's visions reveals is an approach to social engineering that binds technoscientific expertise, political values, and a particular ontological vision into a complex psycho-social-political-technical assemblage. Their projects require the deep entanglements of the psychological, the social, and the technological, such that the technological not only shapes the social (and vice versa), but actually *is* the social (Latour, 2005; see also Derksen et al., 2012). Responses to the social engineering efforts of the Technocracy Movement and Skinner reflect concerns about the wholesale adoption of a technoscientific ontology and ethic—not, perhaps, about the embrace of technology itself. Inasmuch as Skinner, the psychologist, embraced this technoscientific ontology and ethic as the basis for his social engineering project, the history of the human sciences may offer historians of technology some new vantage points for further theorizing the science-society relationship, and the role of technology—broadly defined—in this relationship. Whether the technoscientific ideal will ever influence *social* organization to the extent that Skinner, Scott, and Loeb envisioned, and whether America will ever become thoroughly, deeply, and unambivalently “technology's nation” is unlikely, as the historical account presented here suggests. Regardless, it is clear that both Skinner and the Technocrats challenged the American public to examine the intersection of multiple, powerful, and often-contradictory aspects of the American ethos,

thus engendering considerable reflection on the imagined, if not fully enacted, possibilities of social engineering in American life.

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