

A Trip through the Senses

The Media Theory of Radical Behaviorism

In 1980, B. F. Skinner and his student Robert Epstein shot a baffling video as part of a series of experiments with pigeons titled “The Columban Simulation.” The video’s images provide no contextual information, making it entirely unclear what the audience is meant to learn from the featured experiment. Furthermore, the actions of the onscreen pigeon are patently absurd. It is shown in a small enclosure that contains two miniature props: a toy banana hung from the upper left of the enclosure and a tiny box on the bottom right. We watch the pigeon attempt to peck the toy banana, straining its neck upward but ultimately unable to reach it. After several failed attempts, it seems to suddenly notice the box. Looking back and forth between the box and the banana, the pigeon eventually pushes the box underneath the banana, and stands on it to finally peck the toy fruit. Why a pigeon might do this is unclear. What would a pigeon want with a banana, even a real one? Why would a pigeon not simply fly up to it? What, fundamentally, is motivating this pigeon to behave in such a strange way? Furthermore, what is motivating the scientists who decided to run this experiment? None of the answers to these questions are apparent in the video itself, inviting viewers to speculate. To fully answer them, we must look beyond the video to the disciplinary debates over celluloid specimens that fueled its creation.

This chapter focuses on Skinner’s radical behaviorism and its intervention into the production and circulation of animal research films. In the following pages, I read Skinner’s scientific publications as a form of film theory, arguing that one can identify a conceptualization of spectatorship and media within his treatises on the relationship between an organism and its environment. I reconstruct Skinner’s media analysis, focusing in the first section on his transformative critique of idealism in the life sciences and then turning in the second section to his 1980 videos—including the one described above—which were made as reenactments



VIDEO 11. Video of the “Columban Simulation.” Courtesy of the B. F. Skinner Foundation.
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of iconic research films from the history of the life sciences. We will see Skinner and his followers criticizing the scientific filmmaking practices described in the previous chapters, which had no place in Skinner’s new behaviorist paradigm. My goal here is to demonstrate the sophisticated ways that scientific filmmakers engaged and continue to engage with the legacies of past practices, staking claims not only about the animals we see onscreen but also about the kinds of films that can and should be made to study them. Rather than reading scientific discourse as a monolith, this chapter illustrates how the sciences, like all academic disciplines, are shot through with discord, friction, and antagonism, attributes that often drive research as much as any particular common cause. To understand these divisions is to truly understand the stakes of individual research agendas operating within the broad umbrella of “science,” the political implications of which will be further explored in the next chapter.

Since its inception film has been an essential site for these divisions, where the recording, analyzing, and distributing of scientific “facts” are contested by different parties, a process that involves varying theoretical models for understanding moving images. Scientific discourse surrounding “observation” and “objectivity” is hardly as naively realist as the straw men evoked by some. Lorraine Gaston and Peter Galison demonstrate how the question of how to objectively observe a phenomenon has been hotly debated throughout scientific history and continues to be within many disciplines.¹ These discussions necessarily include film. As Scott Curtis aptly argues, scientific uses of film have never been so simple as pointing

a camera at a subject but always required complex theoretical frameworks for understanding and explaining what film actually captures.² As a medium, film arose largely out of debates over how to create a verifiable and objective observer. Lisa Cartwright argues that film was initially produced to monitor and control living bodies in order to bypass the human observer entirely by directly incorporating the experimental subject's movements into the cinematic apparatus.³ Yet from its earliest days, arguments raged over what the cinematic image actually recorded and what it left out or distorted.⁴ These frameworks and disputes continued to shape subsequent uses of the medium, as well as how it was theorized. Inga Pollmann traces the influence of animal ethologist Jakob von Uexküll's theory of nonhuman *umwelts* on Walter Benjamin's theories of cinematic perception.⁵ Similarly, Hannah Landecker argues that film theory at its inception was drawing directly from conversations held by cellular biologists regarding microcinematography and its revelation of previously invisible worlds of movement.⁶ Landecker claims that the history of film theory and the history of film's scientific use may not be as distinct as they first seem. Behaviorism in particular had a strong influence on early film theorists such as Sergei Eisenstein, who is well known to have taken his ideas about biomechanical acting from Pavlov's research into conditioned reflexes.⁷ The interplay between scientific practice and film theory has historically been a rich one, playing an essential role for both scientists and film theorists. Just as artists produce justifications for their own practice, each instance of scientific filmmaking requires its own theoretical armature, where what we see on the screen is interpreted as valid objective findings by a discursive framework outside the film itself.

Or, at least that is usually the case. With Skinner, we find a truly remarkable example from this history, in which scientific moving images were produced not to learn anything about the subjects filmed but rather to critique the practice of using cinema as a scientific tool at all. Through a sophisticated deployment of reenactment and parody, Skinner engaged in a highly self-referential style of production, explicitly using the moving image medium to critique itself. As we will see, he hoped to sow fundamental doubts about how film had been and continued to be used as evidence by other animal behavior researchers, especially primatologists. Skinner's videos highlight the essential role that interaction and opposition among research agendas play in the discursive networks that determine the accepted meaning of a scientific film. As different evidentiary frameworks jockey for control over the definition of accurate research, cinematic representations are drawn into the fray, becoming a site where turf wars are waged over the valid interpretation of the image. Scientist filmmakers are therefore tackling not only epistemic problems when they make a film but also strategic and political ones, self-consciously positioning their work within histories of scientific visualization and against differing models of observation and research. For Skinner and his peers, these debates focused on the image of the animal onscreen and how film or video

establishes what they saw as a spurious emotional connection between scientific observers and their animal subjects. Spectators' unyielding desire to identify with characters onscreen is highlighted in the Columban Simulation, where even scientific audiences were prompted to see the pigeon's desire, frustration, and rational thinking, even as such a reading was blatantly absurd. Skinner and his colleagues crafted these moving images as self-negating attempts to rewrite the history of scientific filmmaking as a form of folly rather than as an ever-growing expansion of objective observation and control. This chapter provides a close analysis of this intervention, adding the ideas of one of the most influential scientists of the twentieth century to the history of media studies.

THE SPECTATOR IN THE SKINNER BOX: ORGANISMS AND THEIR ENVIRONMENT

In 1958, the *Bell Science* series (1956–64) released *Gateway to the Mind* (Owen Crump), a televised teaching film dedicated to the five senses. Originally broadcast on NBC, this film had a second life as a classroom tool, where it was used to instruct students about the operations of the human sensorium and to encourage them to pursue careers in science and technology by showing the field's illustrious history.⁸ Produced under the guidance of a team of esteemed scientists, including Princeton psychologist Hadley Cantril, Harvard biologist George Wald, and UCLA zoologist Frederick Crescitelli, *Gateway to the Mind* tells "the story of man's knowledge about his senses and their function as the channels through which all awareness of the external world is passed to the brain."⁹ Drawing from the long-standing visual culture of physiology, the program pays homage to the history of scientific moving images by including prominent examples from this history, such as Etienne Jules Marey's chronophotographs of a cat being dropped on its back, microcinematographic footage of single-celled amoebae, and a series of optical illusions created to test vision, which are reminiscent of Münsterberg's psychotechnology (discussed in chapter 1). Cumulatively, these examples are tied together to create a narrative of expanding scientific vision, stretching all the way back to Aristotle, in which scientific history and the development of the moving image are combined. In the story laid out by the program, the operations of the senses are increasingly equated to the operations of audiovisual and communications technologies, which are made to mirror each other through the show's various illustrations. Each featured scientist describes experience itself as a process of mediation, in which objects "out there" are transformed into images, wavelengths, vibrations, and electronic impulses "in here," inside our minds. Here, the brain is akin to a TV control center, the nervous system works like telephone wires, the eye operates as a camera, and so on. Through reenactment, animation, allusion, and narration, *Gateway to the Mind* tells a story of sense-as-spectacle, imagining a deep metonymy between experience and spectatorship, human senses and audiovisual devices.



VIDEO 12. Clip from *Gateway to the Mind* (Owen Crump, 1958).
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A determined detractor from this approach was B. F. Skinner, who begins a 1963 *Science* retrospective of behaviorism, “Behaviorism at Fifty,” with a systematic critique of *Gateway to the Mind* and its imagery.¹⁰ “Behaviorism at Fifty” was a manifesto of sorts, a re-visioning of Watson’s groundbreaking 1913 article “Psychology as the Behaviorist Views It,” taking into account subsequent developments in the field.¹¹ Skinner warns that “mentalistic” theories, which posit a separate world of the mind distinct from the world of matter, are still running rampant in psychology and physiology, existing as the vestiges of what he calls a “primitive animism” from humanity’s past. According to Skinner, mentalism’s most pernicious influence is to be found in the metaphor of the “little man,” where behaviors are attributed to the decisions of internal agents—our inner selves—existing somewhere within the brain, which evaluate and act on input provided by the senses. *Gateway to the Mind* exemplified this persistent myth for Skinner, updating it to be distributed to a modern audience through the mass medium of television. He argues that the program’s depiction of a literal “little man” inside our heads, watching a show put on by the media of our senses, is ultimately unscientific, relegating the root causes of behavior to a metaphysical internal self whose actions are left unexplained. Such a theory of a nonmaterial mental world was antithetical to Skinner’s developing scientific outlook, which came to be called “radical behaviorism.”

Throughout his career, Skinner developed not only a massive body of experimental research but also an overarching system for describing behavior. Over the

course of several books and innumerable articles, he articulated a vision of psychology based on what he called “operant conditioning.” In these writings, Skinner defines operant conditioning as the accumulation of behavioral reinforcement over time, which he argues leads to an increased probability that certain types of behavior will be repeated by an organism under similar circumstances in the future.¹² In the lab, this could be seen in the activities of animals over time, which were trained to behave in complex, often counterintuitive ways—such as the pigeons guiding a missile discussed in the previous chapter—by being repeatedly rewarded for such behavior. In Skinner’s account, humans are also the product of such conditioning, through systems of rewards and punishments existing in a given environment, culture, or society. Whatever the circumstances, he saw conditioning as a universal property of any organism’s behavior, and he argued that this behavior is simply an expression of the accumulated consequences from past actions, not evidence of decisions made by a singular internal intellect.

The notion that there is a “little man” who is separate from antecedent causes—a “center” from which behavior emanates—is, of course, antithetical to his approach. Skinner believed that this was a vestige of Cartesian dualism that continued to lead many of his peers in experimental psychology astray.¹³ One of his most mocked projects was the creation of an alternative scientific vocabulary that refused any reference to an inner self’s cognition, feelings, or desires, which led one commentator in the *New York Times* to describe his writing as “syntactically glutinous theoretical statements.”¹⁴ This critique of “mentalism” went well beyond questions of scientific practice. For Skinner, the anthropocentric theory of “autonomous man” was everywhere: “an important figure in political science, law, religion, economics, anthropology, sociology, psychotherapy, philosophy, ethics, history, education, child care, linguistics, architecture, city planning, and family life.”¹⁵ Wherever he turned, Skinner found a creeping dualism that mystified behavior rather than explaining it.

At the heart of his critique of mentalism was a theory of media. In “Behaviorism at Fifty,” Skinner argued that mentalism is propped up by what he calls “an unfortunate metaphor”:

The Greeks could not explain how a man could have knowledge of something with which he was not in immediate contact. How could he know an object on the other side of the room, for example? Did he reach out and touch it with some sort of invisible probe? Or did he never actually come into contact with the object at all but only with a copy of it inside his body? Plato supported the copy theory with his metaphor of the cave. Perhaps a man never sees the real world at all but only shadows of it on the wall of the cave in which he is imprisoned. (The “shadows” may well have been the much more accurate copies of the outside world in a camera obscura. Did Plato know of a cave at the entrance of which a happy superposition of objects admitted only the thin pencils of light needed for a camera obscura?) Copies of the real world projected into the body could compose the experience which a man directly knows.

A similar theory could also explain how one can see objects which are “not really there,” as in hallucinations, after-images, and memories. Neither explanation is, of course, satisfactory.¹⁶

In this paragraph, Skinner places the theories of the body-as-camera-obscura, which Jonathan Crary so clearly outlines, as part of an ongoing fallacy of mediation stretching back to the Greeks and persisting into his own televisual age.¹⁷ Writing in 1963, well before film theorists would make this connection, Skinner was already drawing comparisons between Plato’s cave, the camera obscura, optical illusions, and even cinema (through his reference to “after-images”). Yet he also describes these connections as fundamental to a misguided Western ideology of the autonomous self and therefore worth directly repudiating through his own experimental research. For Skinner, Cartesian dualism, mentalism, and so forth require the metaphorical comparisons of the self-as-spectator and the body-as-media. One can therefore read his own scientific research as an alternative theory of mediation and subjectivity.

Skinner’s radical behaviorism offers a completely different approach to understanding the relationship between an organism (human or otherwise) and its environment, one that suggests a different reading of media spectatorship. He does not deny the *existence* of what might be called “internal conditions” such as feelings, thoughts, memories, and the like. Rather, what he objects to is the idea that these mental states are the root causes of behavior—that is, that we act because we decide to do so, either through rational cognition or particularly evocative desires. According to Skinner, mental states are better defined as “way stations” amid the ongoing interaction between an environment and an organism, stretching back to its birth. He argues that when psychologists consider a mental state or reasoning process as an internal cause for a particular behavior, they are ignoring how that mental state was produced by the organism’s interactions with its surroundings in the past. Rather than the property of a free-floating intellect, Skinner thus posits internal experience as simply one complex behavior among many, which can be explained with the same principles that guide the others and which is developed through many successive events. As he repeatedly argues, subjectivity is simply the experience of watching oneself behave from the inside—not a cause of a behavior but its effect.

Skinner’s scientific practice implies a theory of film spectatorship as well. Similar to the apparatus theory of Jean-Louis Baudry or the semiotic film theory of Christian Metz, Skinner’s operant conditioning emphasizes circumstances and behavior over the internal experiences of an organism.¹⁸ Like the approaches of Baudry and Metz, this approach indicates that the crucial aspect of film is its capacity to condition viewers as receivers of material, which will affect their behavior in the future.¹⁹ Indeed, just as his radical behaviorism rejects a vision of the senses as media for an ephemeral internal self, it also rejects the framework of cinematic

spectatorship as an act of immersion in the realities of a profilmic world. Rather, Skinnerian spectatorship would be the product of environmental control and not as an expansion of the human sensorium. Like apparatus film theory, here the key to understanding spectatorship lies in the environment of the screening space and how its architecture elicits a behavior from human observers. In the eyes of the radical behaviorist, the arrangement of the literal screening space—such as a classroom—determines the film’s effect on an audience, as well as its broader role within a discursive symbolic realm of signs, customs, and language.

How Skinner might see the operations of spectatorship can be gleaned from his writing on dreams. Contrary to Freud, Skinner claims that dreams are not produced by recalling past images that are stored in the body but rather a repetition of past behaviors—movements of the iris, microphysiological muscle contractions, and so forth—which produce hallucinatory visions.²⁰ In his account, dreaming is an activity that organisms engage in under certain circumstances, not the presentation of inexplicable desires produced by a hidden unconscious subject. Skinner argues that these dynamics apply generally to all sensory experiences, including visual imagery, language, and symbols. Describing a human’s response to verbal and visual symbols, Skinner writes: “The individual acquires language from society, but the reinforcing action of the verbal community continues to play an important role in maintaining the specific relations between responses and stimuli which are essential to the proper functioning of verbal behavior.”²¹ In this iteration of the organism, the images and sounds of a dream, like those of language or film, do not function primarily as references to a lived or profilmic past but rather are the means of prompting and influencing the behavior of the dreamer/spectator in the present. To understand the experience of spectatorship, one must understand the circumstances that produce this behavior rather than the referents of a film or language.

The practical implications of this theory of spectatorship are more fully articulated in his engagement with film as an educational technology. As we saw in chapter 7, midcentury behaviorists were extensively involved in producing, researching, and implementing audiovisual material in the classroom. But in his writing, Skinner habitually objects to using teaching films, criticizing the pedagogical model of spectatorship proposed by the likes of Mark A. May, Neal E. Miller, and C. R. Carpenter. He argues that valuable interactions between teachers and students would be erased from the classroom if films became the primary means of instruction. As he wrote on the topic: “There is a real danger that [teacher-student interactions] will be wholly obscured if use of equipment designed simply to *present* material becomes wide spread.”²² Here, the key for understanding the effects of films on audiences is not in the *content* of the film itself, as it was for Miller and his collaborators—such as in the choice of certain types of narration, the use of point-of-view shots, and so forth—but rather in the behavior of the spectators while watching the film: their stillness, their passivity, and their lack of

control. Importantly, Skinner's critique was not primarily directed against mechanizing the classroom—indeed, one of his most famous inventions was the “teaching machine,” which quizzed students on a variety of topics and automatically gave them feedback in real time—but instead was an objection to the material design of the cinematic apparatus, whose very arrangement was meant to enthrall viewers but not actively engage them. In his eyes, film creates spectators, producing the behaviors of immobility, receptivity, and silence rather than communicating information or knowledge through what it presents onscreen.

Skinner's preferred method of intervention into behavior was through his modular experimental apparatus, popularly referred to as the “Skinner box,” the design of which illustrates his ambivalence to cinematic and photographic evidence. Simply put, the Skinner box is an enclosure that includes one or more apparatuses, such as wheels, levers, or buttons, that automatically provide a reward when operated in a particular way. Given enough time in a Skinner box, test animals dramatically changed their behavior to adapt to these surroundings.²³ This piece of equipment set the standard for experiments with animals and continues to do so. In its earliest iteration, the Skinner box was created to solve “a difficulty in measurement” surrounding behavior.²⁴ At the time, Skinner was attempting to identify and isolate the variables determining how a rodent eats its food from a mass of possible details, each of which could be a factor. His solution was to strip away or control for as many of these variables as possible. By reducing the environment of the animal down to a defined number of apparatuses that would reward (or “reinforce”) only specified types of behavior, Skinner believed that experimentalists could set parameters and thereby isolate the particular behavior they hoped to study. Pursuantly, he connected his Skinner boxes to a kymograph, which draws a line charting the test animal's behavior over time, such as the frequency at which a rat pulls a lever for food.²⁵ Like the Skinner box itself, the kymograph stripped away distracting variables, operating in “complete independence of experimental conditions” to provide a “description of a process.”²⁶ For him, the Skinner box was a crucial tool because it isolated the important quantitative components of a single behavior, which were thus separated from the influence of factors other than those chosen by the experimenter.

In many ways, a cinematic recording is the antithesis of the clean, simple line of the kymograph. Skinner acknowledged film's impressive capacity to represent animal behavior in detail, contrasting this with the scientific measurements provided by his Skinner box. According to him, film and photography, which he describes as “representations,” could reproduce the details of a behavior but could not properly explain it. He writes: “No matter how complete, a representation is only the beginning of science.” According to him, representations convey details that are “unnecessary and even inconvenient” and cannot establish a relationship between the organism and the environment it depicts.²⁷ As in his writing on educational media, he consistently expresses a wariness of the medium's ability to

reveal scientific truths, instead emphasizing its capacity to mislead. Film provides too much information, failing to isolate the relevant variables in the ways that the Skinner box does. It was therefore of very little use in his lab.

At the same time, Skinner also criticizes film for providing too *little* information, focusing on the limits of the frame and film's running time, which encourage the spectator to adopt a "mentalist" reading of events onscreen. In his writing on radical behaviorism, Skinner describes mentalist approaches to behavior as the product of an insufficient temporal scope, focusing too heavily on an organism's motivations while the behavior is occurring and not enough on how those motivations were implanted in the organism earlier in its life. He preferred to emphasize the life history of the individual organism, as well as the evolutionary development of the species to which the organism belongs. Recounting his own intellectual genealogy, Skinner positions Charles Darwin as the earliest example of behaviorist thinking. Darwin's theory of evolution introduces the concept of *selection*, whereby anatomy and behavior are explained as the products of ongoing interactions with a broader environment. In Skinner's account, the selective process described by Darwin is then expanded by Freud's theory of the unconscious, in which an individual's past experiences determine present behavior.²⁸ Setting himself up as the heir of these insights, Skinner repeatedly emphasizes the need for larger frames of reference than those of the "mentalists," who look for root causes of behavior in the event itself. Even Pavlov, to whom Skinner acknowledges his work is greatly indebted, was too restricted in his focus on the conditioned reflex, where a simple stimulus causes a singular response.²⁹ From radical behaviorism's perspective, the complex behaviors of human and nonhuman animals are the product of lifelong chains of conditioning and not just the result of a physiological effect caused by a single experiment. As Skinner wrote: "The environment not only triggered behavior, it selected it."³⁰

Skinner did not believe that the process of selection over the life of an organism, not to mention the evolution of a species, could be translated onto film. Film primarily presents individual events, segments of time, which can easily be used to demonstrate a single experiment or series of experiments—such as the conditioned reflexes demonstrated in *Mechanics of the Brain*—but is less capable of depicting the cumulative effects of selected behavior over a day or a week, let alone a lifetime. Even within the expanded timeline of a feature film, there is rarely time enough to depict the extensive selection process for the kinds of complex behaviors and relationships that Skinner hoped to analyze and explain. Indeed, film, as it was being used in animal research, invited precisely the wrong approaches of isolation and projection, which Skinner was determinedly against. For Skinner, filmed experiments produce behavior as a cutout of the broader processes of operant conditioning, seeming to encapsulate this behavior in full detail even as it leaves out essential components. When presented in a screening, disconnected from the broader context, film represents the experiment as an isolated event,

inherently asking viewers to search for the causes of behavior within the wealth of detail provided by the footage and the frame. Even without the explicit commands to empathize with onscreen animals that we have already seen in the work of Yerkes, or the categorizing of certain shots as representing internal “drives” as we have seen with Miller, scientific uses of film for the purposes of documentation fundamentally miss many of the key factors to operant conditioning that radical behaviorism emphasizes. As Skinner wrote in a 1972 letter to the BBC responding to a request for films of his research: “An operant laboratory is not very photogenic.”³¹

OWNING THE EVIDENCE: SKINNER’S REENACTMENT OF SCIENTIFIC FILM HISTORY

Skinner never wrote a treatise directly connecting his theory of radical behaviorism to a critique of the scientific uses of media, but the videos that he and his students produced of their pigeon experiments in 1980 *do perform* this critique. In the lab, he rarely used film or video because it was not standard practice to regularly record their experiments. But, in a remarkable set of videos made to illustrate their work, Skinner and his student Robert Epstein reenacted famous experiments from the history of animal research, particularly primatology, in order to disassemble their findings. As a form of scientific media criticism through practice, these videos deconstruct the very medium of the moving image itself as it had been and continued to be deployed in animal studies. As such, they created a unique onscreen animal image, whose ironic presence was meant to highlight the contradictions in the medium rather than reveal anything in particular about the animal in question.

Between 1913 and 1917 the German psychologist Wolfgang Köhler shot six reels of film depicting his experiments into ape cognition at his Anthropoid Station in Tenerife, Spain. In his 1925 book, *The Mentality of Apes*, Köhler argues that his films demonstrate apes’ capacity for insight and intelligence, hitherto considered unique to humans.³² Köhler was a contemporary of Robert Yerkes, and their work has been broadly compared, both confirming the “ideational” capacity of the higher apes.³³ As such, much of Skinner’s critique of Köhler and his films can be extended as a critique of the Yerkes films discussed in part 1 of this book. Indeed, Köhler’s films were very similar to Yerkes’s, consisting of several uninterrupted shots in which primates seem to demonstrate a variety of behaviors connoting complex cognition: using and building tools, problem solving, and appearing to be suddenly inspired. A particularly well-remembered scene features apes stacking boxes and then using a stick to knock down a banana hung from the top of their cage (fig. 15). The significance of these scenes was argued over by psychologists well into the 1980s.

The shifting terms of the debate over the meaning of these films throughout the decades demonstrate a major change in the use of animal research films in



FIGURE 15. Frame from Köhler's film on primate behavior that was reproduced in his book *The Mentality of Apes*.

psychology, a change initiated in large part by Skinner's radical behaviorism. Köhler, like Yerkes, had viewed his films as irrefutable proof of primate ideational capacity—clearly demonstrating their intelligence by documenting their gestures and expressions. An intelligent spectator could thereby intuit the invisible mind behind the animal, reconstructing affective or cognitive states through a close observation facilitated by the film. But, as theories of behavior changed, so, too, did the films' meanings. Skinner and Robert Epstein, among others, questioned the lack of context in Köhler's account, which isolated the behavior of the apes from their life before being recorded.³⁴ By replacing apes with pigeons in "Columban Simulation," they attempted to demonstrate how such isolation might lead to consistent misapprehension of animal behavior.

I began this chapter with the description of one of these reenactments of Köhler's films, where a pigeon, like the apes in the original, seems to rationally choose to push a box underneath a toy banana, jump onto the box, and peck the banana. Despite the absurdity of the video and the bird's actions in it, the pigeon's performance of the behavior of rational problem-solving is accurate down to the smallest detail, first reaching for the banana without the box, then looking back and forth between the box and the banana, and finally pushing the box under the banana so that it can clamber on top of it and finally reach its target. Presented on

its own, the video functions as a kind of hoax or parody, representing a scene of animal behavior that has been staged to *look like* rational thinking but is also clearly irrational. This contradiction was precisely the point for Skinner and Epstein. In doing so, the video was meant to point to all the preparation and training outside the frame of the video image itself—all the elements of operant conditioning that eluded the moving image—thereby showing the misleading ways that film and video isolate observations of animals. In his written account of these experiments for *Nature Magazine*, Epstein highlights the videos' ability to invite projection: "people viewing the tapes have liberally attributed a wide range of human emotions and thoughts to the pigeons. A surprisingly common comment was, 'Did the pigeon really do that?'"³⁵ This statement makes clear that the true test subjects of the Columban Simulation videos are not the pigeons but the viewers. The screening room doubles as a Skinner box, testing the behavior of its human inhabitants as they watch the video.

The banana experiment is just one of many recorded pigeon experiments made by Skinner and Epstein, which reenact a wide array of research coming out of primatology that claim to demonstrate, among other things, self-awareness, the use of memoranda, and symbolic communication. The other videos show pigeons relaying signals to one another by controlling lights in each other's Skinner box, as well as seeming to identify themselves in a mirror. In the published account of this work, Epstein states that these simulations were made as a brand of critical commentary on their original source material, describing the Columban Simulation as a means of questioning the primatologists' "interpretation of their results in theoretical papers, but we spare ourselves the thousand words with one picture."³⁶ This imagery was meant to broadly, quickly, and dramatically illustrate the anthropomorphic projection of nonbehaviorist approaches to studying animals, by short-circuiting the experience of spectatorship that the moving image normally creates in scientific films.

Importantly, for their overall project, Skinner and Epstein's purpose in creating these cinematic simulations went beyond highlighting the moving image's ability to mislead, intending instead to also demonstrate how intuiting internal states under *any* circumstance, whether with a human or an animal subject, might be equally suspect. Here, the choice of the word *simulation* in the title "Columban Simulation," is an important one. As Epstein was careful to point out: "our simulations are models of human behavior; we are not simply mimicking it."³⁷ Indeed, the pigeons had never been trained to do exactly what we see them do onscreen. They were trained to stand on boxes, to move and push boxes, and to peck bananas but never together in a single sequence. As such, one could arguably still call the pigeon's performance "inspiration" or "creativity," yet few scientists or other spectators were willing to go this far. The point was not that the pigeon had faked the behavior of a human or a chimpanzee but rather that it has been led to behave as they do and that in order to understand this behavior, one must know

the full story leading up to the creation of the video itself. Environment, circumstance, and history could create “inventive,” “self-aware” pigeons, if viewers were willing to call them such. Consequently, the Columban Simulation was not exactly a critique of anthropomorphism in the sense we normally think of it. For Epstein and Skinner, the behavior of the pigeon *is* fundamentally similar to that of humans or chimpanzees, and the error made by spectators is not that they falsely intuit motives to pigeons but that they do so for humans and chimpanzees as well. These “simulations” therefore use the pigeon to estrange viewers from acts that might otherwise seem recognizable and natural in chimps and humans, while the video’s runtime and frame reenacts the limits of the mentalist approach to behavior. Ultimately, just as radical behaviorism searches for causes beyond the timeframe of the individual experiment and beyond the borders of the individual subject, the Columban Simulation pushes spectators to find meaning beyond the video frame and the actions of the onscreen animal actor.

As long as the body is conceived of as a media device, there has been the possibility of some form of playback, in which one spectator can view the experiences of another through the spectator’s own senses. This form of “body snatching”—that is, of inhabiting the subject position of another through an imaginative or technological leap—had long been the theoretical framework through which comparative psychology understood its use of the moving image.³⁸ Films such as those made by Yerkes and Köhler were meant to capture and preserve the mental states of their primate subjects for future scientific audiences to experience, a concrete and objective means of facilitating empathy. The visage of animals in movement was thought to contain a hidden truth that the film could capture and reveal, placing the human observer face-to-face with experiences of nonhuman life. But for Skinner, these conceptions relied on fundamental myths about the existence of an internal, transcendent self, whose contours were supposedly revealed in the choices and actions of an organism onscreen. For him, the arrangement of the cinematic apparatus, with its tendency to obfuscate any context beyond what it pictures, falsely located meaning within the content of the frame and within the bodies featured there. Against the interpretation presented by these films, Skinner argues that meaning was the product of operations offscreen: the hidden labor that produces the image, the lasting effects of events from the past, and the forgotten context of the screening itself. Throughout his career, he approached film not as a primary act of sympathy, a form of mental contact between a human mind in the present and an animal mind in the past, but rather as another instance of conditioning. What Skinner saw when he went to the movies was not a world represented onscreen but a room full of human organisms that had been trained by past experience to sit silently and watch flickering lights projected in front of them. Out of this critique sprang his worldview, one that implied its own philosophy of life, its own political project, and its own visions of the future, as we will see in the next chapter.