

Introduction

I did my first psychological experiment when I was fourteen years old. There were raccoons living in the walls of our old Maine vacation house, and one day I stuck my hand in the crumbling plaster and pulled out a squalling baby, still milk-smearing, its eyes closed and its tiny paws pedaling in the air. Days later the sealed eye slits opened, and because I'd heard of Konrad Lorenz and his imprinted ducklings, I made sure the mammal saw me first, its streaming field of vision taking in my form—hands and feet and face. It worked. Immediately the raccoon—I called her Amelia Earheart—began to follow me everywhere, wreathing around my ankles, scrambling up my calves when she was afraid. She followed me to the town bookstore, to school, down busy streets, into bed, but in truth, I began to take on more of her behaviors than she mine. Even though I was the imprinter, with Amelia at my side I learned to fish in a pond with my human paws; I learned to latch on to the soft scree at the base of a rotting tree and climb; I learned the pleasures of nocturnity, the silver-wet grass, black rings beneath my tired eyes. The results: "Imprinting," I wrote in my science notebook, "happens to the mother too." Who, I wondered, influenced whom in this symbiotic pairing? Could species shift from their specific shapes and become,

through exposure, something altogether other? Was there really a boy raised by wolves, a chimpanzee who signed with words? The questions fascinated me then, and still do today. More fascinating to me became, over time, as I grew older, the means by which one explored these questions: the hypothesis, the experimental design, the detailed qualitative description, the breathless or boring wait for results. I was first hooked on Amelia and later hooked on the pure plot that structures almost all psychological experiments, intentional or not.

While it would be reductive to say a raccoon rests at the bottom of this book, Amelia is certainly the image that comes to mind when I think of its etiology. Beyond that, I have for a long time felt that psychological experiments are fascinating, because at their best they are compressed experience, life distilled to its potentially elegant essence, the metaphorical test tube parsing the normally blended parts so you might see love, or fear, or conformity, or cowardice play its role in particular circumscribed contexts. Great psychological experiments amplify a domain of behavior or being usually buried in the pell-mell of our fast and frantic lives. Peering through this lens is to see something of ourselves.

When I studied psychology in graduate school, I again had the chance to perform experiments and observations on all sorts of animals. I saw the embryo of an angel fish grow from a few single cells to a fully finned thing in forty-eight hours flat—life putting together its puzzle pieces right before my eyes. I saw stroke victims deny the right sides of their faces and Hindsight patients mysteriously read letters despite their dead eyes. I observed people waiting for elevators and had this as my salient question: Why is it that people continuously press the button when they're waiting in the lobby, even though they know, if interviewed, that it won't make the elevator come any faster? What does "elevator behavior" say about human beings? I also, of course, read the classic psychological experiments where they had been housed—in academic journals, mostly, replete with quantified data and black-bar graphs—and it seemed somewhat sad to me. It seemed sad that these insightful and dramatic stories

were reduced to the flatness that characterizes most scientific reports, and had therefore utterly failed to capture what only real narrative can—theme, desire, plot, history—this is what we are. The experiments described in this book, and many others, deserve to be not only reported on as research, but also celebrated as story, which is what I have here tried to do.

Our lives, after all, are not data points and means and modes; they are stories—absorbed, reconfigured, rewritten. We most fully integrate that which is told as tale. My hope is that some of these experiments will be more fully taken in by readers now that they have been translated into narrative form.

Psychology and its allied professions represent a huge disparate field that funnels down to the single synapse while simultaneously radiating outward to describe whole groups of human beings. This book does not contain, by any means, all the experiments that represent the reach of that arc; it would take volumes to do that. I have chosen ten experiments based on the input of my colleagues and my own narrative tastes, experiments that for me and others seem to raise the boldest questions in some of the boldest ways. Who are we? What makes us human? Are we truly the authors of our own lives? What does it mean to be moral? What does it mean to be free? In telling the stories of these experiments, I revisit them from my contemporary point of view, asking what relevance they have for us now, in this new world. Does Skinner's behaviorism have meaning for current-day neurophysiologists who can probe the neural correlates of his habit-driven rats? Does Rosenhan's horrifying and comedic experiment on mental illness, its perception and diagnoses, still hold true today, when we supposedly abide by more objective diagnostic criteria in the naming of "disease"? Can we even define as disease syndromes that have no clear-cut physiological etiology or pathophysiology? Is psychology, which deals half in metaphor, half in statistics, really a science at all? Isn't science itself a form of metaphor? A long time ago, in the late 1800s, Wilhelm Wundt, long considered psychology's founding father, opened one of the first instrument-

based psychology labs in the world, a lab dedicated to measurement, and so a science of psychology was born. But as these experiments demonstrate, it was born breech, born badly, a chimerical organism with ambiguous limbs. Now, over one hundred years later, the beast has grown up. What is it? This book doesn't answer this question, but it does address it in the context of Stanley Milgram's shock machine, Bruce Alexander's addicted rats, Darley and Latane's smoke-filled rooms, Moniz's lobotomy, and other experiments as well.

In this book we see how psychology is inevitably, ineluctably, moving toward a deeper and deeper mining of biological frontiers. We see how the clumsy cuts of Moniz transformed, or transmogrified, depending on your point of view, into the sterile bloodless surgery called cingulotomy. We hear about the inner workings of a neuron, and how genes encode proteins that build those blue eyes, that memory, right there. And yet, while we can explain something of the process and mechanisms that inform behavior and even thought, we are far from explaining why we have the thoughts, why we gravitate toward this or that, why we hold some memories and discard others, what those memories mean to us, and how they shape a life. Kandel, or Skinner, or Pavlov, or Watson can demonstrate a conditioned response, or operant, and the means by which it gets encoded in the brain, but what we do with that information once it's there depends on circumstances outside the realm of science entirely. In other words, we may be able to define the physiological substrates of memory, but in the end we are still the ones who weave, or not, still the ones who work the raw material into its final form and meaning.

Writing about these experiments has been, therefore, an exercise in writing about both science and art. It has provided me with a chance to learn about outcomes while studying the personalities of the players who chose to investigate, for all sorts of reasons, the set of events that led them to their final data. And then to observe how that data fueled their futures and their pasts, how they used it, or failed to do so. This book, above all, has been a chance for me to go back in

history, and to think forward as well. What comes next, in this twenty-first century? I have an inkling. In the meantime, Pavlov's bell is ringing. Surgeons are, this very moment, mining our crenulated brains. We are conditioned, revealed, freed, and accountable. Someone shouts an order. We do or do not obey. Now, turn the page.

Opening Skinner's Box

B. F. SKINNER'S RAT RACE

B. F. Skinner, America's leading neo-behaviorist, was born in 1904 and died in 1990. He is known in the field of psychology for his famous animal experiments in which he demonstrated the power of rewards and reinforcements to shape behavior. Using food, levers, and other environmental cues, Skinner demonstrated that what appear to be autonomous responses are really cued, and in doing so he threw into question the long-cherished notion of free will. Skinner spent much of his scientific career studying and honing what he came to call operant conditioning, the means by which humans can train humans and other animals to perform a whole range of tasks and skills through positive reinforcement.

Skinner claimed that the mind, or what was then called mentalism, was irrelevant, even nonexistent, and that psychology should only focus on concrete measurable behaviors. His vision was to build a worldwide community where the government would consist of behavioral psychologists who could condition, or train, its citizens into phalanxes of benevolent robots. Of all the twentieth century's psychologists, his experiments and the conclusions he drew about the mechanistic nature of men and women may be the most reviled, yet continuously relevant to our increasingly technological age.

So this, perhaps, is the story. There's a man called Skinner, which is an ugly name by any account, a name with a knife in it, an image of a skinned fish flopping on a hot dock, its heart barely visible in its mantle of muscle, ka-boom. And this man Skinner, this maniacal psychologist with a grizzly head of coarse white hair, he supposedly raised his own baby in a box so as to better train her, like some circus animal, like some seal with a bright ball on its nose. The story goes that B. F. Skinner, who had covert connections to the Nazis, desired nothing more than to shape—and *shape* is the operative word here—the behavior of people subjected to gears and boxes and buttons and strict schedules of reinforcement so that, under his hand, whatever humanity he touched turned to bone.

Say the name "Skinner" to twenty college-educated people, and fifteen of them will respond with an adjective like "evil." This I know to be true, as I have done it as an experiment. Of those fifteen who responded, ten brought up the baby in the box—what was her name they ask, Julia, Kimberly, Annie May?—who was so traumatized by her father's protocols throughout her infancy that she wound up killing herself in a hotel room, with rope and a pistol—the details are unclear. This much we presume we know: Her name was Deborah. He wanted to train her, so he kept her caged for two full years, placing within her cramped square space bells and food trays and all manner of mean punishments and bright rewards, and he tracked her progress on a grid. And then, when she was thirty-one and frankly psychotic, she sued him for abuse in a genuine court of law, lost the case, and shot herself in a bowling alley in Billings, Montana. Boom-boom went the gun. Its resonating sound signaled the end of behaviorism's heyday and the beginning of the dark suspicions that have clouded it ever since.

In the 1960s, Skinner gave an interview to biographer Richard I. Evans in which he openly admitted that his efforts at social engineering had implications for fascism and might be used for totalitarian ends. Such a man it would be better to ignore, but we can't. In 1971,

Time magazine named him the most influential living psychologist. And a 1975 survey identified him as the best-known scientist in the United States. His experiments are still held in the highest esteem by our contemporary Nobel laureates, our neurophysiologists. He discovered something that has stayed. What is it?

Type "B. F. Skinner" into your search engine and you will get thousands of hits, among them the Web site of an outraged father who damned the man for murdering an innocent child; a Web site with a skull, and Ayn Rand writing, "Skinner is so obsessed with a hatred of man's mind and virtue, so intense and consuming a hatred that it consumes itself and in the end what we leave are only gray ashes and a few stinking coals"; a memorial of sorts for Deborah, who had supposedly died in the 1980s: "Deborah, our hearts go out to you." And then a tiny red link that reads, "For Deborah Skinner herself, click here." I did. A picture of a brown-haired middle-aged woman scrolled down. "My name is Deborah Skinner," the caption read, "and my suicide is a myth. I am alive and well. The box is not what it seems. My father is not what he seems. He was a brilliant psychologist, a compassionate parent. I write to dispel the legends."

Legends. Stories. True tales. Tall tales. Perhaps the challenge of understanding Skinner's experiments will be primarily discriminatory, separating content from controversy, a sifting through. Writes psychologist and historian John A. Mills, "[Skinner] was a mystery wrapped in a riddle wrapped in an enigma."

I decided to wade in, slowly.

HE WAS BORN in 1904. This much is for sure. Beyond that, though, what I find is a tangle of contradictions. He was one of America's premier behaviorists, a man of real rigidity who slept in a bright yellow cubicle from Japan called a *beddoe*, but at the same time he could not work unless his desk was cluttered, and he said of his own course, "It is amazing the number of trivial accidents which have made a differ-

ence.... I don't believe my life was planned at any point." But then he often wrote he felt like god and "a sort of savior to humanity."

When Skinner was a fellow at Harvard, he met and fell in love with a woman named Yvonne, who would later become his wife. I see them on Friday nights, driving to Monhegan's Gull Pond with the black convertible top folded back and some kind of moody jazz playing on the radio. Once at the pond, they take off their clothes and skinny-dip, the brackish waters on their bodies, the cool night air, the moon a snipped hole in the sky. I read in a dusty text in the basement of a library that after training sessions, he used to take his caged pigeons out and hold them in his huge hand, stroking their downy heads with his first finger.

I was very surprised to learn that before he went to Harvard to study psychology in 1928, Skinner's aspiration was to be a novelist, and he had spent eighteen prior months holed up in his mother's attic writing lyric prose. How he went from lyric prose to timed rates of reinforcement is not all clear to me—how a man can make such a sharp swerve. He writes that when he was around twenty-three, he came across an article by H. G. Wells in the *New York Times Magazine* in which Wells stated that given the chance between saving the life of Ivan Pavlov or George Bernard Shaw, Wells would choose Pavlov, because science is more redemptive than art.

And indeed, the world needed redemption. The Great War had ended one decade ago. Shell-shocked soldiers suffered from flashbacks and depressions; asylums were packed; there was an urgent need for some kind of treatment scheme. When Skinner went to Harvard, in 1928, as a graduate student, the scheme was largely psychoanalytic. Everyone everywhere was lying down on leather couches and fishing ephemeral tidbits from their pasts. Freud ruled, along with the venerable William James, who had written *The Varieties of Religious Experience*, a text about introspective soul states, with not one equation in it. That, in fact, was the state of psychology when Skinner entered; it was a numberless field sharing more with

Kagan's office building, William James Hall, is under construction when I arrive, so I have to dodge and wend my way through a concrete maze, above me banners flapping, "Warning. Hard Hat Area." I ride the elevator up. The entire building is in a reverential hush. Deep, deep beneath me, in the bowels of the basement where artifacts are stored, where supposedly some of Skinner's black boxes are encased, jackhammers gnaw through old concrete and I can hear a tiny voice yelling, "Presto."

I get off on floor fifteen. The elevator doors part and before me, as though in a dream, sits a tiny black dog, a toy breed, its mouth a red rent in its otherwise dark fur face. The dog stares and stares at me, some sort of sentry—I don't know. I love dogs, although toys are not my preference. I wonder why they're not my preference. As a child I had a toy dog and it bit me, so perhaps I've been conditioned against them, and I could be reconditioned with rewards so I come to champion the shitzu over the shepherd. In any case, I bend down to pat the little dog, and as though it senses my dislike, it flies into a frenzy, baring a set of impressive and very un-toy-like teeth and snarling as it leaps up to grab my exposed wrist.

"Gambit!" a woman shouts, running out from one of the offices. "Gambit stop that! Oh my god, did he hurt you?"

"I'm fine," I say, but I'm not fine. I'm shaking. I have been negatively reinforced—no, I have been punished. I will never trust a toy again, and I don't WANT that to change. Skinner would say he could change it, but how changeable am I, are we?

PROFESSOR KACAN SMOKES a pipe. His office smells like pipe, that semisweet rancid odor of burnt embers. He says with the kind of total assurance I associate with the Ivy League cast, "Let me tell you, your first chapter should not be Skinner. It was Pavlov in the early twentieth century and then Thorndike a decade later who did the first experiments showing the power of conditioning. Skinner elabo-

rated on this work. But his findings can't explain thought, language, reasoning, metaphor, original ideas, or other cognitive phenomena. Nor will they explain guilt or shame."

"What about," I say, "Skinner's extrapolations from his experiments? That we have no free will. That we are ruled only by reinforcers. Do you believe that?"

"Do *you* believe that?" Kagan asks.

"Well," I say, "I don't absolutely rule out the possibility that we are always either controlled or controlling, that our free will is really just a response to some cues that—"

Before I can finish my sentence, Kagan dives under his desk. I mean that literally. He springs from his seat and goes head forward into nether regions beneath his desk so I cannot see him anymore.

"I'm under my desk," he shouts. "I've NEVER gotten under my desk before. Is this not an act of free will?"

I blink. Where Kagan was sitting is just space. Beneath his desk, I hear a rustle. I'm a little worried about him. I think he said to me, over the phone when I asked for the interview, that he had a bad back.

"Well," I say, and suddenly my hands feel cold with fear, "I guess it could be an act of free will or it could be that you've—"

Again, Kagan won't let me finish. He's still under the desk, he won't come up, he's conducting the interview in a duck-and-cover crouch. I can't even see him. His voice rises, disembodied.

"Lauren," he says, "Lauren, there is no way you can explain my being under this desk right now as anything but an act of free will. It's not a response to a reinforcer or a cue. I've NEVER gotten under my desk before."

"Okay," I say.

We sit there for a minute, he down there, I up here. I think I hear that damn dog in the hall, scratching. I'm afraid to go back out there, but I no longer want to be in here. I am caged by contingencies, and so I sit very still.

KACAN, IT APPEARS to me, is somewhat dismissive of Skinner's contributions. But certainly there *are* ways in which Skinner's experiments—even if they are derivative—are both currently relevant and helpful in the construction of a better world. In the 1950s and 1960s Skinner's behavioral methods were taken to state asylums and applied to the severely psychotic. Using his principles of operant conditioning, hopelessly schizophrenic patients were able to learn to dress themselves, to feed themselves, each rise of the spoon rewarded with a coveted cigarette. Later in the century, clinicians began using techniques like systematic desensitization and flooding, drawn directly from Skinner's operant repertoire, to treat phobias and panic disorders, and these behavioral treatments are still widely employed and obviously efficacious today. Says Stephen Kosslyn, professor of psychology at Harvard, "Skinner will make a comeback, I predict it. I myself am a real Skinner fan. Scientists are just now making exciting new discoveries that point to the neural substrates of Skinner's findings." Kosslyn explains the evidence that there are two major learning systems in the brain: the basal ganglia, a collection of spidery synapses located deep in the paste of the ancient brain, where habits are grooved, and the frontal cortex, that big rumpled bulge that rose in tandem with our reason and ambition. The frontal cortex, neuroscientists hypothesize, is where we learn how to think independently, to visualize the future and plan based on the past. It is where creativity and all its surprising swerves originate, but, says Kosslyn, "Only a portion of our cognitions are mediated by this cortex." The rest of learning, says Kosslyn, "a significant amount, is habit driven, and Skinner's experiments have led us to search for the neural substrates of these habits." In essence, Kosslyn is saying, Skinner led scientists to the basal ganglia, he led them down, down into the basement of the brain, where they sifted through neural tangles to find the chemistry behind the pecks and presses and all those conditioned cartwheels we do on the green grass, in the summer.

Says Bryan Porter, an experimental psychologist who applies Skinnerian-based behaviorism to address traffic safety problems, "Of

course behaviorism is neither bad nor dead. Skinner's behaviorism is responsible for so many beneficial social interventions. Using behavioral techniques we have been able to reduce dangerous driving, in terms of the number of red lights run, by ten to twelve percent. Also because of Skinner, we know that people respond better to rewards than punishment. Skinner's techniques have been instrumental in helping the huge population of anxiety-disordered people overcome, or extinguish, their phobias. Thanks to Skinner, backward autistics now know how to put on clean shirts and feed themselves. Thanks to Skinner, you know how to give your kid positive reinforcement. You know that rewards work far better in the establishment of behavior than punishment, because Skinner so stressed the power of positive reinforcement. This has huge implications politically, if our government could just absorb that. In fact," says Porter, "in a weird circuitous way, we have Skinner to thank for the very popular belief that it's best to be kind to people, to give them A's when maybe they deserve B's, to keep saying, 'Oh what a good job you're doing' even if they're not. Skinner," says Porter laughing, "although he might not have liked it, is practically new age."

I ask Porter about the daughter. Was she raised in a box? Is she dead?

Porter sighs. "Okay," he says. "He raised her in a box, but it's not what you think, really."

"Is she dead?" I ask.

Porter misses just the slightest beat, or do I imagine it?

"No," he finally says. He clears his throat. "Deborah Skinner is alive." His voice drops. "And she's doing fine, really."

But there is something in the way he delivers this pronouncement that makes me doubt him. There is a suspicious sympathy in his voice, as though she's just survived some horrid sort of surgery.

MY CHILD CRIES in the night. She wakes soaked in sweat, eyeballs bulging, dreams melting as she comes to consciousness. "Shhhh.

Shhhh." I hold her body against mine. Her bedclothes are soaked, her hair a dark mat of pressed curls. I stroke her head, where the fontanels have long since sealed. I stroke the slope of her forehead, where the frontal cortex daily sprouts its exuberant rootwork, and then move my hand down to her taut neck, where I imagine I feel the basal ganglia, its seaweed-like snarls. I hold my child in the night, and outside her bedroom window a dog howls, and when I look, the animal is soap-white in the moonlight.

At first my child cries because she's scared, a series of bad dreams I'm guessing. She's two and her world is expanding with fearful speed. But then, as the nights go by, she cries simply because she longs to be held. She has become habituated to these predawn embraces, to the rocking chair's rhythm while the sky outside is so generously salted with stars. My husband and I are exhausted.

"Maybe we should Skinnerize her," I say.

"We should what?" he says.

"Maybe we should employ Skinnerian principles to break her of her habit. Every time we go to her and pick her up, we're giving her what Skinner would call positive reinforcement. We have to extinguish the behavior by reducing and then eliminating our responses."

My husband and I are having this conversation in bed. I'm surprised by how nimbly my tongue takes in and swirls out the language of B. E. I practically sound like an expert. Speaking Skinnerian is almost fun. Chaos confined. Rest returned.

"So you're suggesting," he says, "that we just let her cry it out." He sounds weary. All parents know this debate.

"No," I say. "Listen. Not cry it out. Put her on a strict rate of reduced reinforcement. The first time she cries, we pick her up for only three minutes. The next time she cries, we only pick her up for two minutes. We could even use a stopwatch." My voice grows excited, or is it anxious? "Then we gradually lengthen the amount of time we allow her to cry. Just very very gradually," I say. "Slowly, we'll extinguish the behavior if we extinguish our responses . . . the contingencies," I say, tracing

my hand along the sheet's pattern, a series of green grids, what once looked like country checkerboard but now looks like lab paper.

My husband eyes me, warily I might add. He is not a psychologist, but if he were, he would be of the Carl Rogers school. He has a soft voice, a still softer touch.

"I don't know," he says. "What exactly do you think we'll teach her by doing this?"

"To sleep through the night alone," I say.

"Or," he says, "to realize that when she needs help, we won't respond, that when there's danger real or imagined, we're not there. That's not the worldview I wish to impart."

Nevertheless, I win the debate. We decide to Skinnerize our girl, if only because we need rest. It's brutal in the beginning, having to hear her scream, "Mama mama, papa!," having to put her down as she stretches out her scrumptious arms in the dark, but we do it, and here's what happens: It works like magic, or science. Within five days the child acts like a trained narcoleptic; as soon as she feels the crib's sheet on her cheek, she drops into a dead ten-hour stretch of sleep, and all our nights are quiet.

Here's the thing. And all our nights are quiet. But sometimes now, we cannot sleep, my husband and I. Have we remembered to turn the monitor on? Is the dial up high enough? Did the pacifier break off in her mouth, so she will smother as she is soothed? We stay up, and through the monitor we can sometimes hear the sound of her breathing, like a staticky wind, but not once does her voice break through—not a yelp, a giggle, a sweet sleep-talk. She has been eerily gagged.

She sleeps so still, in her white baby box.

SOME OF THE actual boxes that Skinner used have been archived at Harvard. I go to view them. They are in the basement of William James Hall, still under construction. I have to wear a hard hat, a heavy yellow shell on my head. I go down, down the stairs. There is a moist

stink in the air, and black flies buzz like neurons, each one plump with purpose. The walls themselves are porous, and when you press them, a fine white powder comes off in your hands. I pass a worker in hip-high boots, smoking a cigarette, the bright tip sizzling like a cold sore at the corner of his lip. I imagine this cellar is full of rats; they careen around the boxes, their glass-pink eyes, their scaly tails flicking: what freedom!

Up ahead, I see a huge dark stain—or is it a shadow?—on a brick wall. "There they are," my guide, a buildings and grounds person, says and points.

I go forward. Ahead of me in the cellar's dimness, I can make out large glass display cases, and within them some sort of skeleton. Closer up, I see it is the preserved remains of a bird, its hollow, flight-friendly bones arranged to give it the appearance of mid-soar, its skull full of tiny pinprick holes. One of Skinner's pigeons, perhaps, the eye sockets deep, within them a tiny living gleam, and then it goes.

I move my gaze from bones to boxes. It is at this point that I feel surprised by what I see. The bones are in line with this man's ominous mystery, but the boxes, the famous boxes—*these* are the famous black boxes? They are, for starters, not black. They are an innocuous gray. Did I read the boxes were black, or did I just concoct that, in the intersection where fact and myth meet to make all manner of odd objects? No, these boxes are not black, and they are rather rickety looking, with an external spindle graphing device and tiny levers for training. The push pedals are so small, almost cute, but the feeding dishes are a cold institutional chrome. This is what I do: I put my head in. I lift the lid and put my head deep inside a Skinner box, where the smell is of scat, fear, food, feathers, things soft and hard, good and bad; how swiftly an object switches from benign to ominous. How difficult it is to box even a box.

Perhaps, I think, the most accurate way of understanding Skinner the man is to hold him as two, not one. There is Skinner the ideologue, the ghoulish man who dreamt of establishing communities of people trained like pets, and then there is Skinner the scientist, who

made discrete discoveries that have forever changed how we view behavior. There is Skinner's data, irrefutable and brilliant, the power of intermittent reinforcement, the sheer range of behaviors that can be molded, enhanced, or extinguished, and then there is Skinner's philosophy, where, I imagine, he earned his dark reputation. These two things perhaps have been mixed up in the public's mind, in my mind certainly, as science and the ideas it spawned melded into a mythical mess. But then again, can you really separate the significance of data from its proposed social uses? Can we consider *just* splitting the atom, and not the bomb and the bones that followed? Is not science indelibly rooted in the soil of social construction, so that the value of what we discover is inextricably tied to the value of the uses we discover for the discovery? Round and round we go. It's a lexical, syntactical puzzle, not to mention a moral one, not to mention an intellectual one of grave import—the idea that science and its data are best evaluated in a box, apart from the human hands that will inevitably give it its shape.

Questions of application as a means of measuring data's worth aside, what are all the mechanisms, so to speak, that contributed to Skinner's infamy? How and why did the bizarre myth of the dead daughter (who is supposedly quite alive), the black boxes, and the robotic scientist take precedence over what I am coming to see should maybe be a more nuanced view of a man who hovered between lyric prose and number crunching, a man who skinny-dipped just after he ran his rats and birds, a man who hummed Wagner, that composer of pure sentiment, while he studied the single reflex of a green frog? How did all this complexity get lost? Surely Skinner himself is partly to blame. "He was greedy," says a source who wishes to remain anonymous. "He made one discovery and he tried to apply it to the whole world, and so he fell over a ledge."

And yet, there's much much more than greed that turns us off. Skinner, in developing new devices, raised questions that were an affront to the Western imagination, which prides itself on liberty while at the same time harboring huge doubts as to how solid our

supposed freedoms really are. Our fears of reductionism, our suspicions that we really may be no more than a series of automated responses, did not, as so many of us like to think, come to prominence in the industrial age. They are way, way older than that. Ever since Oedipus raged at his carefully calibrated fate, or Gilgamesh struggled to set himself free from his god's predestined plans, humans have wondered and deeply worried about the degree to which we orchestrate our own agentic actions. Skinner's work was, among other things, the square container into which those worries, forever resurrected, were poured in the shadow of the twentieth century's new gleaming machines.

BEFORE I LEAVE the Skinner archives for good, I make one more stop, and that's to view the famous baby box in which Skinner raised his dead or living Debbie. The box itself, I learn, has been dismantled, but I see a picture of it, from *Ladies' Home Journal*, which ran an article about the invention in 1945. If you wish to raise your reputation as a scientist, *Ladies' Home Journal* is probably not the best choice of outlets. The fact that Skinner chose to publish his supposed scientific inventions in a second-tier women's magazine speaks of his very poor "PR" skills.

"BABY IN A BOX"

the heading to the article reads, and beneath that there is, indeed, a picture of a baby in a box, a cherubic-looking Deborah grinning, hands plastered on Plexiglas sides. But read further. The baby box, it turns out, was really no more than an upgraded playpen in which young Deborah spent a few hours a day. With a thermostatically controlled environment, it guaranteed against diaper rash and kept nasal passages clear. Because the temperature was so fine-tuned, there was no need for blankets, and so the danger of suffocation, every mother's nightmare, was eliminated. Skinner outfitted his baby box with padding made of special material that absorbed odors and wetness so a woman's washing time was reduced by half, and she was free to use

her hands for other pursuits—this in an era before disposable diapers. It all seems humane, if not downright feminist. And then, read still further. By giving the child a truly benevolent environment, an environment with no punishing dangers (if the baby fell down, it wouldn't hurt because the corners were padded to eliminate hard knocks), an environment, in other words, that conditioned by providing pure reward, Skinner hoped to raise a confident swashbuckler who believed she could master her surroundings and so would approach the world that way.

It all seems, without a doubt, good intentioned, if not downright noble, and sets Skinner firmly in humane waters. But then (and there is always a *but then* in this tale), I read Skinner's proposed name for his invention: Heir Conditioner. This is either frightening or just plain foolish.

THERE ARE THOUSANDS upon thousands of "Deborah Skinners" listed on-line, but none of them pan out. I'd like to find her, confirm her status as living. I telephone a Deborah Skinner, author of a cookbook titled *Crab Cakes and Fireflies*, and a four-year-old Deborah, and several disconnected numbers. I call Deborahs in flower shops, Deborahs on treadmills, Deborahs selling real estate and hawking credit cards, but none can claim they know a B. F. Skinner.

No, I don't find Deborah Skinner anywhere in America, nor do I find records of a death in Billings, Montana. But what I do find, in the circuitous, associative way that the Internet works, is her sister, Julie Vargas, a professor of education at the University of West Virginia. I dial.

"I'm writing about your father," I say after I establish that she is an actual offspring. In the background, pots and pans clang. I hear what sounds like a knife—chop chop—and I imagine her, Skinner's other girl, the one who missed the myth, boiling the plainest of potatoes, slicing bright chips of carrots on an old cutting board somewhere where no one can see her.

"Oh," she says, "and what about him are you writing?" There is no doubt I hear suspicion in her voice, an obvious edge of defensiveness.

"I am writing," I say, "about great psychological experiments, and I want to include your father in the book."

"Oh," she says, and won't go further.

"So, I was wondering if you could tell me what he was like."

Chop chop. I hear, on her side, a screen door slam shut.

"I was wondering," I say, trying again, "if you could tell me what you think of—"

"My sister is alive and well," she says. I have not, of course, even asked her this, but it's clear many others have; it's clear the question tires her; it's clear she knows that every query about her family begins and ends in the sordid spots, bypassing entirely the work itself.

"I saw her picture on the Web," I say.

"She's an artist," Julie says. "She lives in England."

"Was she close to your father?" I say.

"Oh, we both were," Julie says, and then she pauses, and I can practically feel things pushing against the pause—memories, feelings, her father's hands on her head—"I miss him terribly," she says.

The knife is silent now; the screen door no longer slams, and in the space where those sounds were comes Julie Skinner Vargas's voice, a voice loaded with memory, a kind of nostalgic incontinence, it pours through; she cannot help herself. "He had a way with children," she says. "He loved them. Our mother, well, our mother was—" and she won't finish that sentence. "But our father," she says, "Dad used to make us kites, box kites which we flew on Monhegan, and he took us to the circus every year and our dog, Hunter, he was a beagle and Dad taught him to play hide and seek. He could teach anything anything, so our dog played hide and seek and we also had a cat that played the piano, it was a world," she says, ". . . those kites," she says, "we made them with string and sticks and flew them in the sky."

"So to you," I say, "he was a really great guy."

"Yes," she says. "He knew exactly what a child needed."

"What about," I ask, "How do you feel about all the criticism his work has engendered?"

Julie laughs. The laugh is more like a bark. "I compare it to Darwin," she says. "People denied Darwin's ideas because they were threatening. My father's ideas are threatening, but they are as great as Darwin's."

"Do you agree with all your father's ideas?" I say. "Do you agree with him that we are just automatons, that we have no free will, or do you think he took his experimental data too far?"

Julie sighs. "You know," she says, "if my father made one mistake, it was in the words he chose. People hear the word *control* and they think fascist. If my father had said people were *informed* by their environments, or *inspired* by their environments, no one would've had a problem. The truth about my father," she says, "is that he was a pacifist. He was also a child advocate. He did not believe in ANY punishment because he saw firsthand with the animals how it didn't work. My father," she said, "is responsible for the repeal of the corporal punishment ruling in California, but no one remembers him for that.

"No one remembers," she says, her voice rising—she's angry now—"how he always answered EVERY letter he got while those *humanists*," and she practically spits the word out, "those *supposed humanists*, the I'm okay you're okay school, they didn't even bother to answer their fan mail. They were too busy. My father was never too busy for people," she says.

"No, no, he wasn't," I say, and suddenly I'm a little frightened. She seems a little edgy, this Julie, a little too passionate about dear old dad.

"Let me ask you something," Julie says. I can tell from the tone of her voice that this question is going to be big, pointed; it's going to put me on the spot.

"Can I ask you something?" she says. "Tell me honestly."

"Yeah," I say.

"Have you actually even READ his works like *Beyond Freedom and Dignity*, or are you just another scholar of secondary sources?"

"Well," I say, stumbling, "I've read A LOT of your dad's work, believe me—"

"I believe you," she says, "but have you read *Freedom and Dignity*?"

"Well no," I say "I was sticking to the purely scientific texts, not the philosophical treatises."

"You can't separate science from philosophy," she says, answering my earlier question. "So do your homework," and now she sounds like any old mother, or aunt, her voice calm, creased with warmth, chop chop, she is back to the carrots, the plain old potatoes. "Do your homework," she says, "and then we'll talk."

THAT NIGHT, I put the baby to bed. I take down the worn, dog-eared copy of *Beyond Freedom and Dignity*, the treatise I have associated with other totalitarian texts, the treatise that, like *Mein Kampf*, I have long owned but never really read, and now I begin.

"Things grow steadily worse and it is disheartening to find that technology itself is increasingly at fault. Sanitation and medicine have made the problems of population control more acute. War has acquired a new horror with the invention of nuclear weapons, and the affluent pursuit of happiness is largely responsible for pollution."

Although this was written in 1971, I might as well be reading a speech by Al Gore, or a Green Party mission statement from 2003. It is true that further into the text Skinner says some troubling things like, "By questioning the control exercised by autonomous man and demonstrating the control exercised by the environment, a science of behavior questions the concepts of dignity and worth." But these sorts of statements are buried in a text immensely pragmatic. Skinner is clearly proposing a humane social policy rooted in his experimental findings. He is proposing that we appreciate the immense control (or influence) our surroundings have on us, and so sculpt those surroundings in such a way that they "reinforce positively," or in other words, engender adaptive and creative behavior in all citizens. Skinner is asking society to fashion cues that are most

likely to draw on our best selves, as opposed to cues that clearly confound us, cues such as those that exist in prisons, in places of poverty. In other words, stop punishing. Stop humiliating. Who could argue with that? Set the rhetoric aside. Do not confuse content with controversy.

The content says, "Our age is not suffering from anxiety but from wars, crimes, and other dangerous things. The feelings are the byproducts of behavior." This statement is the sum total of Skinner's reviled antimentalism, his insistence that we focus not on mind but on behavior. Really it's no different than your mother's favorite saying: actions speak louder than words. According to Skinner—and New Age author Norman Cousins—when we act meanly, we feel meanly, and not vice versa. Whether you agree with this or not, it's hardly antihumanitarian. And later on in the book, when Skinner writes that man exists irrefutably in relationship to his environment and can never be free of it, is he talking about confining chains, as most have interpreted it, or simply the silvery web work that connects us to this and this and that? I saw Jerome Kagan jump under his desk, assuring me he had free will and could exist independently of his environment. Maybe he is acting out of a more problematic tradition, patriarchal and alone. In Skinner's view, we appear to be entwined and must take responsibility for the strings that bind us. Compare this to the current-day feminist Carol Gilligan, who writes that we live in an interdependent net and women realize and honor this. Gilligan, and all of the feminist psychotherapists who followed, claim we are relational as opposed to strictly separate, and that until we see our world that way, and build a morality predicated on this irrefutable fact, we will continue to crumble. From where did Gilligan and Jean Baker Miller and other feminist theorists draw their theories? Skinner's spirit hovers in their words; maybe he was the first feminist psychologist, or maybe feminist psychologists are secret Skinnerians. Either way, we have viewed the man too simply. It seems we boxed him before he could quite box us.

IULIE, WHO IS coming to Boston for business, invites me to visit B. F. Skinner's old house, at 11 Old Dee Road in Cambridge. It is a beautiful day when I drive there, gardens growing tall spires of purple. Julie is old, much older than I expected, her skin translucent and delicate, her eyes green. She lets me in. This is B. F. Skinner's house, where he lived and died, where he went home after long lab days during which he discovered this incredibly pliant nature of mammalian life, our ties to our communities and all their various contingencies. *Operant conditioning*—a cold phrase for a concept that might really mean we are sculptors and sculpted, artists and artwork, responsible for the prompts we fashion.

The house has stayed in the family. Speaking of fashion, its current occupant is Skinner's granddaughter, Kristina, who, Julie informs me, is a buyer for Filene's. The kitchen table is covered with Victoria's Secret catalogues, pictures of black lace panties set side by side with old photos of Pavlov and his drooling dog.

Julie leads me downstairs, to the study Skinner was sitting in when, nearly one decade ago, he dropped into a coma and died. She opens the door. "I have preserved everything exactly as it was when he was taken away," Julie says, and I think I hear tears in her voice. The study is musty. There is against one wall that huge yellow box where he napped and listened to music. On the walls are pictures of Deborah, of Julie as a child, of Hunter the dog. A huge book is open to the precise page it was so many years ago. His glasses are folded on the desk. His vitamins are lined up, several bullet-shaped capsules he never got to swallow on that dim day when he was carted away, and not much later buried in his final box, the real black box, bones now. I touch the vitamins. I lift a glass with some blue evaporated elixir in a residue around the rim. I think I smell him, B. F. Skinner, the smell of old age and oddity, stale sweat, dog drool, bird scat, sweetness. His files are open and I read the labels: "Pigeons Playing Ping Pong," "Air Crib Experiment," and then on a file in the very back, "Am I a Humanist?" There is something quite vulnerable about having a file that so openly asks such a question, perhaps the central question.

"Can I read it?" I ask, and Julie says, "Sure." We are both whispering now, hushed in the past preserved. She pulls it out. His handwriting is cramped and messy, and only very little of it is legible. I read, "for the good of man" and then, several sentences later, "to preserve and survive we must," and toward the end of the old decaying page, what looks like, "I wonder if I am worthwhile."

I look at Julie. "Are you going to formally archive this material?" I ask, "Or are you just going to keep it here?" Her eyes are brilliant in the study's dimness, and that, along with the way she has obsessively enshrined her father's world, leads me to think that, for her, he is the one contingency she will never question, the one environmental cue she is truly enslaved to. Would B. F. Skinner have wanted such slavish devotion or would he have encouraged her to go forth, go wider in search of new reinforcers that would generate new responses that would give rise to new data and ideas while the pigeons peck and the rats keep running and running.

"You see this," says Julie, and she points to a small end table next to a reclining chair. "Here is the piece of chocolate my father was eating just before the coma came," and when I look down, it is there, a piece of dark chocolate on a china plate with a real B. F. bite mark fossilized in the chunk. "I want to save this chocolate forever," she says. I ask, "How old is it?" and she says, "It's over a decade old and still in good shape." I stare at her. A little later, after she leaves the room, I lift the gnawed square and study it closely. I see precisely where his mouth met the candy's edge, and then, pulled by some string I cannot see, a cue I never knew was coming, or perhaps a streak of utter freedom (for I do not know the answer after all this, I do not know the answer), I raise my arm—or my arm is raised—and I put the chocolate in my mouth. Old chocolate, dusty chocolate, I take a tiny bite, leave my mark right next to his, and on my teeth the taste of something very strange and slightly sweet.