

**A World of
Our Own Making
(Expanded)**

To
B. F. Skinner

AKA
T. E. Frazier



The Walden Two Community Water Tower

Michael Shuler

September 2020

**A World of
Our Own Making
(Expanded)**

A Sequel to *Walden Two*

Michael Shuler

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A World of Our Own Making (Expanded) A Sequel to *Walden Two*

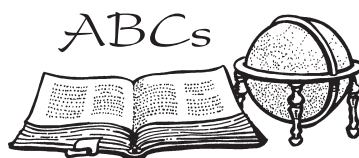
Michael Shuler

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On Typography & Author Contact

This book is set in the Adobe Garamond, Adobe Garamond Expert, and Tekton collections of typefaces. In addition, a valuable basis for the typographic standards of this work deserves acknowledgment. As much as possible, this book follows the practices described in two highly recommended volumes by Ms. Robin Williams (both of which Peachpit Press, in Berkeley, CA, USA, publishes). One is the 1990 edition of *The Mac is Not a Typewriter*. The other is the 1996 edition of *Beyond the Mac is Not a Typewriter*. For example, on page 16 of the 1990 book, Williams specifies practices regarding the placement of punctuation used with quotation marks, an area in which some ambiguity has existed with respect to what is “proper.”

Furthermore, the present book follows the advice in those books about avoiding “widows” (which is the name for leaving fewer than two words on the last line of a paragraph) and “orphans” (which is the name either for leaving the first line of a paragraph alone at the bottom of a page, or for leaving the last line of a paragraph alone at the top of the next page). Also, since some confusing alternatives remain regarding the use of hyphens and dashes, this book would simply limit hyphens to separating the parts of words that break at a line end, although this book never breaks words at line ends, because good software (e.g., Adobe InDesign) makes that old, hard to read practice unnecessary.

Too many publishers think that hyphenless lines, especially with “justified” text, as on this page, is impossible without producing “rivers of white.” Yet the book you hold in your hands, and many other books released by this and other publishers, *prove otherwise!* They are mostly justified, and remain hyphenless throughout. Beyond hyphens, “en dashes” most commonly separate the whole words of compound adjectives, and “em dashes” most commonly set off multiple-word—a compound adjective with an en dash—phrases or clauses (as with these examples).

Those easy-reading characteristics developed across humanity’s centuries of successful moveable-type, printing-press practices. Be aware, however, that ebook formatting, while it has its own benefits, typically ignores most of these easier-reading characteristics in favor of the reasonable convenience of on-the-fly reformatting.

You can address correspondence regarding this book to the author (at shuler@comcast.net) In due time, also try the www.WaldenTwoSequel.com website for more. ☺

Acknowledgments

The changes and extensions in this edition involve many small corrections and improvements to the content and typography of the original edition that Golden Word Books released in 2020. Their feedback prompted valuable improvements in plot development.

More broadly, this book would not have been written without the encouragement and support of many people. *I thank them all*, although first I would like to thank Dr. Stephen Ledoux with whom I first discussed writing a sequel to Skinner's *Walden Two* in 2014. He seemed to have more faith in the project than I had. He encouraged me to continue writing, and when I presented him with a tentative manuscript, he responded quickly with many helpful suggestions. He edited and did the layout for this expanded version of the novel, offering very good advice along the way. The novel would not have been written without his support. The first chapter of the novel is based partly on his book *Running Out of Time*.

Two others who were also deeply involved in improving the novel were Werner Matthijs of Leuven, Belgium, and my daughter, Dr. Dawn Kutza, who read parts of the manuscript and helped me to put the female journalist in a better light. Her advice improved the novel considerably. Werner Matthijs meticulously edited the original version of the novel, correcting typos and other errors, and suggested many invaluable word changes. He suggested a word here or a clause there that vastly improved the point I was trying to make. His notes were so detailed, and had so many helpful comments and suggestions, that I felt that he was here with me as I went through the novel and made changes. While his primary language is Dutch, he helped me immensely with my English. I can't thank him enough for his support and kind words.

I should also thank Werner's group of Belgium Behaviorologists—the "BBS," including Jo, Patrick, and Sven—who read the manuscript and discussed it during their monthly behaviorology meetings, which they describe as their 'happy few' (HF) meetings. Werner also passed the manuscript along to many other interested readers in Belgium, including his wife Cornelia, and Dr. Hubert De Mey in the Netherlands. All were kind enough to take the time to read the novel and contribute comments. Their support is greatly appreciated.

Finally, I would like to thank my wife, Cathy, for her patience with me during the writing process. I was often preoccupied with ideas for the novel during our daily walks rather than listening or contributing to our usual conversations. I'm sure she missed my full attention as much as I would miss hers.

An early version of the novel was formally peer reviewed for the *Journal of Behaviorology*. The six reviewers differed as to whether or not such a novel was appropriate subject matter for publication in a scientific journal. However, all reviewers thought it should be published as a novel. Some reviewers offered

very helpful suggestions. One of particular note was Traci Cihon of the University of North Texas. I changed the gender of one of the main characters at her suggestion.

Of course, my indebtedness to B. F. Skinner, whose scientifically grounded ideas permeate the novel, goes without saying. Any remaining errors in the novel are my own. All royalties from this novel will be donated to The International Behaviorology Institute (TIBI, at www.behaviorology.org) to support efforts to solve global problems scientifically. Please consider joining or helping in other ways. *MS* ☪

INTRODUCTION

(Previously called the *Preface*)

This novel is a sequel to *Walden Two*, a novel that B. F. Skinner wrote in the late 1940s. As a sequel, it imagines a network of cooperating Walden Two communities spread around North America and elsewhere. They are all grounded in *behaviorology*, the natural science of behavior. They operate with a worldview that advocates experimentation with cultural practices using scientifically grounded principles of behavior, while reducing or completely eliminating the current ubiquitous use of coercive practices. This experimentation provides the foundation of societal activity in these Walden Two communities. The communities pursue increasing self-sufficiency, and each produces unique art, products, services, and technologies (although some redundancy necessarily exists).

Dr. Fred Burriss narrates the story. Dr. Burriss is a Walden Two-trained behaviorologist and the grandson of the original Burriss from Skinner's novel. Because he grew up in Walden Two, he differs from his grandfather by being a direct product of Walden Two's educational contingencies. Dr. Traci Jensen, who gives the opening remarks to the visitors in Chapter 1, is also one of the community's behaviorologists. Other characters are introduced as the story proceeds. (A "List of Main Characters" appears on the page before Chapter 1 begins. Readers can discover more about behaviorology in the articles and books described on the BOOKS page at www.behaviorology.org or in the Further Readings at the end of this book.)

One of several differences between *Walden Two* and this sequel concerns the writer's viewpoint. Skinner wrote from the viewpoint of a visitor to the community. This is a very effective and common device to help the reader identify with the narrator and see the community from this vantage point. This author instead thought that writing from the viewpoint of one of the community's current behaviorologists might be more interesting, as it allows the reader to see the community from the point of view of a member who grew up and studied behaviorology there, and thereby understand better how they think about behavior.

This sequel features applications of behaviorological science to human affairs. Many readers may have never before heard the word "behaviorology." For example, the author was very interested, and widely read, in the science of behavior for decades but had not heard or read of behaviorology until reading (in 2014) Stephen Ledoux's 2012 *American Scientist* article, "Behaviorism at 100." The point of making this sequel available is to expand the reader's awareness of behaviorology as an immediately and widely applicable area of scientific knowledge of substantial importance to humanity's future. As the cover of Ledoux's 2014 textbook states, "Behaviorology is the natural science of *why* human behavior happens, a natural science to help build a sustainable society in a timely manner."

Hopefully, for humanity's benefit, general audiences will become more familiar with behaviorology and will help generate interest in and support for this field and this discipline. Thus, the point of this novel is: (a) to bring the science of behaviorology, and its possible application to cultural and societal questions, to the attention of readers who might be concerned about humanity's future; (b) to point out the many advantages of a network of self-sufficient, *Walden Two*-like communities; and (c) to enable more people to become familiar with the over 100-year-old natural science of behavior now known as behaviorology.

Ironically, I did not want to write this novel myself; I wanted to *read* it, and, as opportunity arose, to help put some of these ideas into practice. I had watched for a sequel to *Walden Two* ever since reading Skinner's unparalleled vision in 1971. My original hope was to spur other behaviorologists to write a sequel while I offered some ideas. Some of my initial writing on the topic occurred in exchanges of correspondence with my daughter when she was away studying at college and graduate school.

I wanted to see Skinner's original story brought into the twenty-first century, so I imagined a network of such communities as a viable community-based alternative to the current corporate-dominated social structure. These communities would be a feasible way to secede from coercive, corporate-dominated societies, rather than futilely trying to change them through feckless political activities. But in order to secede, communities *must become* self-sufficient, and the people in them must be able to join together in harmonious cooperation—this is where the natural science of behavior comes in.

Skinner originally wrote his *Walden Two* in part as an effort to bring his natural science of behavior to a wider audience and, certainly, to get people thinking about the possibilities and benefits that such a science could bring to society. He established the way of life in his *Walden Two* community as experimental; there is no predetermined best way to do anything. The members were encouraged to try new and creative ways of doing things, and these novel practices would then be available for selection by consequences. Many professional readers have seen this as the most important message of Skinner's *Walden Two* community. Skinner also implied that, as a community, *Walden Two* would divide and eventually subdivide into many communities.

In an updated version of the original *Walden Two* concept, we can imagine many such cooperating communities the products of which are intellectual or perhaps clinical, as well as physical. For example, different communities could specialize in different disciplines and fields (e.g., behavioral medicine, education, genetic research, behavioral safety, diplomacy, applied behavior analysis, neuroscience, interventions for autism or other disabilities, and so on). They would openly share their results with others in the network as well as with the scientific community at large.

Skinner once wrote that if he were to rewrite *Walden Two*, he would make it more heterogeneous. So, for example, a sequel today might deal, at least briefly, with elderly members, autistic members, ethnically diverse members, handicapped members, and so on, while depicting various prosthetic environments designed to circumvent difficulties and enhance lives. And while

Skinner used a Dewey-type teaching method, up-to-date communities could feature more recent, experimentally validated processes and procedures such as programmed and computer-assisted instruction, along with precision teaching methods such as those outlined by Skinner's daughter, Julie Vargas, in her 2013 book, *Behavior Analysis for Effective Teaching*.

With our current corporate-dominated consumer society, often dysfunctional government, and growing disparity in wealth, a perfect time may have come to try to generate new interest in Skinner's vision, the vision that a natural science of behavior can contribute to the planning and activation of non-punitive, non-aggressive, self-sustaining communities that try to consume no more than they need, pollute as little as possible, and take the future of the human species, as well as the rest of life on the planet, into account. The members of these communities can be happy and productive and even "self-actualized" although a better term, perhaps, would be "Walden Two actualized" or even, as Stephen Ledoux suggested (in a personal communication) "contingency actualized." Such a reinforcing culture could bring people to their full potential. In these ways, a *Walden Two* sequel should generate greater interest and discussion about both behaviorology and its actual and potential engineering applications, especially with respect to culture and solving global problems.☺

Author's Note: The information in the above *Introduction* helps readers follow developments by setting the stage with some backstory. Thus, while it is not a part of the story, I wrote the *Introduction* to make the story easier to follow, and so more fun for you, and hope you take the opportunity to read it. MS. ❀

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Cast of Main Characters

Walden Two Members

- ✂ *Fred Burris* is the grandson of the original Burris who visited Walden Two in 1945; raised in the community, he is a behaviorologist and one of the Planners in the community (age 58).
- ✂ *Traci Jensen* is a behaviorologist raised in the community and is one of the Planners (aged 34),
- ✂ *Fredrika Johansson* is a culturologist raised in the community (aged 48).

Visiting Journalists

- ✂ *Martha Thompson* is a visiting science journalist on assignment for *Discover* magazine (age 38).
- ✂ *Paul Johnston* is a visiting science journalist on assignment for *American Scientist* (age 39).
- ✂ *Clifford Douglas* is a visiting journalist on assignment for a magazine called *Newstime* (age 36).
- ✂ *Jeffery Simmons* is a visiting free-lance science journalist (age 37).

[The story uses real names for real people who have done real things... (See “Further Reading” at the end.)]

Chapter 1

“... *We* are all controlled by the world in which we live, and part of that world has been and will be constructed by men. The question is this: Are we to be controlled by accident, by tyrants, or by ourselves through effective cultural design?

“The danger of the misuse of power is possibly greater than ever. It is not allayed by disguising the facts. We cannot make wise decisions if we continue to pretend that human behavior is not controlled, or if we refuse to engage in control when valuable results might be forthcoming. Such measures weaken only ourselves, leaving the strength of science to others...

“It is no time for self–deception, emotional indulgence, or the assumption of attitudes which are no longer useful. Man is facing a difficult test. He must keep his head now, or he must start again—a long way back...

“Those who reject the scientific conception of man must, to be logical, oppose the methods of science as well...”

—**B. F. Skinner** (AKA T. E. Frazier)

[These quotes are from Skinner’s article, “Freedom and the Control of Men,” that first appeared in the special, Winter 1955–56 issue of *The American Scholar*, an issue devoted to “The Human Situation Today.” (Note that the accepted grammar practices of the time, 65 years ago, were less sensitive than the present regarding gender phrasing and pronouns.) These quotes can be found on page 11 in the reprint of the article on pages 3–18 of Skinner’s *Cumulative Record Definitive Edition*, published by the B. F. Skinner Foundation (at www.bfskinner.org) in 1999.] ❀

When Frazier died in 1990, an obituary in the *New York Times* read in part:

T. E. Frazier, the Champion Of Behaviorism, Is Dead at 86

Thomas Eliot Frazier, 86, died peacefully on August 18, 1990 from complications arising from leukemia. He was credited with founding the first Walden Two community near Canton and published widely in the natural science discipline now called behaviorology.

In his research and his voluminous writings, Dr. Frazier advanced the belief that individuals could better understand themselves and build a better world by systematically modifying human environments in accordance with behavioral principles he discovered in his research. By becoming a behaviorist in the late 1920s, when the discipline was in its infancy, Dr. Frazier helped to shape behaviorology as both a laboratory science and a cogent philosophy.

Over the course of his long career, he worked on projects as diverse as machines that teach, utopian communities, missiles guided by pigeons, temperature-controlled environments for infants, and the education of the severely retarded. Some of these contributions earned him the reputation of a profound thinker while others caused him to be seen as a cold manipulator of humanity whose ideas could have disastrous consequences if they fell into the wrong hands.

“All human beings are controlled,” he once told an interviewer, “but the ideal of behaviorology is to eliminate coercion, and for people to apply controls by changing the environment in such a way as to reinforce the kind of behavior that benefits everyone. Fascism and other authoritarian political systems are capable of applying the new technologies emanating from behaviorology,” he added, “and the challenge to democratic society is to develop it first. The society that adopts the technology first will have the competitive edge, and if ours is not the first, we shall be in danger.”

Personally, I knew little about Frazier. Much of what I do know about him came from Grandfather Burris, who first visited Walden Two in the mid 1940s. But I did meet Frazier on several occasions when I was quite young and found him to be very charming. He always made people feel that he was genuinely interested in them, and I truly believe he was. I remember him talking with me and giving me the same respect that he would give to my father, or any other adult for that matter.

My grandfather once told me that Frazier always listened intently to people, as if he were trying to glean what “contingencies of reinforcement” had produced their repertoires. This was part of the technical terminology that

Frazier developed. He read widely in history, philosophy, science, and literature, and always kept up with events happening around the world. He was educated at Harvard but left academia to pursue his interest in planned, sustainable, prosocial communities that would maximize the behavioral repertoires of their members. He was not only interested in all aspects of Walden Two, but also culture in general.

My grandfather wrote about his first encounters with Frazier and Walden Two in his book, *Walden Two*. Over time, he and Frazier became very close friends—at least to the extent that one can become the close friend of a genius. While Frazier always made people in his company feel that they were on equal ground with him, you somehow knew this was not the case. It did not take long to realize that his intelligence was on the extreme end of the bell curve, yet he politely remained in your intellectual comfort zone while probing you as if you were the most interesting person around. It was only when you heard him conversing in depth with others on so many diverse topics that you understood the extent of his intellectual breadth. While he was clearly a polymath, he spoke with people about topics and on a level to which they were accustomed, and he had a knack for finding this level quickly. He seemed especially to take delight in understanding the common person; perhaps because he was so far removed from them.

My father once told me that he overheard Frazier telling Grandfather Burriss that, once you condition prosocial behavior in common people, they can be “quite delightful.” We both found that amusing. I suppose Frazier enjoyed other people the way many of us enjoy our animal companions, keeping in mind that we can truly love our animal companions, even though we do not consider them to be our intellectual equals. Frazier was not a product of Walden Two, so perhaps we can excuse his idiosyncrasies.

I do not wish to write here extensively nor expansively about Frazier. Even Frazier considered himself simply the locus where unique variables came together to produce the person we call “Frazier.” He did not put himself in any special class of scholars or intellectuals. He believed, as his science would dictate, that he was just the product of a unique genetic and environmental history, as we all are. So I have come to this point to bury Frazier, not to praise him. I believe this is what he would have wanted. For far too long we have been giving people credit or blame for what we now know is the result of mostly environmental variables. This was Frazier’s main point. This is why he began Walden Two: to demonstrate the possibility of arranging environments that will produce the kind of behavior most favorable not only to the survival of our species, but also to the happiness of our species.

Grandfather Burriss died several years after Frazier, in 1996. But perhaps I should wait until later to tell his story, since I will devote part of a chapter to dignified dying. My purpose herein is to inform the reader about the science behind the model community that led to the proliferation of Walden Two–like communities that now pepper North America and elsewhere.

Dr. Traci Jensen stood at the podium in the conference room shuffling her notes, and when the polite applause subsided, she began:

“Good evening ladies and gentlemen. Welcome to Walden Two. My name is Traci Jensen. I am one of many board–certified behaviorologists here. I have my doctorate in behaviorology and teach graduate level courses in this subject to students both inside and outside of our community.”

Dr. Jensen looked over the top of her reading glasses at the small audience of visiting science journalists. “May I have a show of hands, how many of you were familiar with our communities before being assigned to come here?”

All hands went up, as expected.

“Now, how many of you are familiar with behaviorology—one of the main sciences behind our communities—or believe you know something about it?”

Only two hands went up.

“Very well,” Traci said with a smile. “I hope to change that today.”

She continued, “I also currently serve on the board of planners here. We hope to make your visit here pleasant as well as informative. I know some of you will be staying with us for a few days, so please feel free to make yourselves completely at home. We will do all we can to make you comfortable, but please let us know if we can assist you in any way. I would like to make a few remarks before you begin exploring our community tomorrow. I think this will help you to better assess it, and I promise to keep the technical jargon to a minimum. We may have to introduce some technical terms later when you actually visit the community, and then only if needed to elucidate an important concept. My talk should take no more than thirty minutes. Incidentally, this talk is very informal, so please feel free to ask questions during my talk. If you raise your hand, I will take your question, but I may continue to complete the point I am making before calling on you.

“As you know, Walden Two was the first of many such communities, all of which are based upon very similar principles, and all of which are networked together via a heavily encrypted intranet connection. Note that I did say *intranet*. We are relatively self sufficient and each of our communities provides its own unique products and services, with some redundancy of course. For instance, several of our communities specialize in veterinary science training, the training of companion animals, and also in the education and training of companion animal trainers. I know many of you are already aware of some of the other products and services we offer, so I won’t go into them here tonight. Since you are science journalists, I would like to begin by addressing one of the main sciences that underpins Walden Two and all of our sister communities as well. I don’t believe you can fully understand these communities without some appreciation of the primary science upon which they are based, namely behaviorology. I imagine most of you are at least slightly familiar with some of the technologies produced by this science since they have been applied piecemeal in many societies. It has improved everything from the treatment of animals to human working conditions and education and, as you will soon see, it has also been used to produce viable non–punitive communities.

“Several of our communities offer graduate level courses in behaviorology to people outside of them; it is just one of the courses we offer and it provides

a part of our income. We would like to see *everyone* benefit from this science and we believe it is a win–win relationship. Therefore, tonight I will give you a brief overview of behaviorology. I certainly can't give you a crash course in the science in a thirty–minute talk of course—if I could do that we could shorten our graduate programs considerably—but I would like you to leave here with a better understanding of the main science upon which our communities are based, and possibly allay any preconceived fears that you may have about that science.

“So first, let's consider the name of this science. Though the *name* ‘behaviorology’ was initially rejected due to euphonic concerns—some simply did not like the sound of this name—it was eventually accepted and adopted as a perfectly suitable name for this discipline. ‘Ology’ translates to ‘the scientific study of.’ Biology studies life forms and processes, geology studies the elements and properties of the earth, and behaviorology is the scientific study of behavior. Therefore, ‘behaviorology’ is the proper and accurate name for this science, since our subject matter is *behavior*.

“You see, behaviorologists study behavior *in its own right* and infer nothing inside the organism other than a nervous system and any biochemical processes and anatomical structures needed to support that behavior. Since the subject matter of behaviorology is behavior, it is important for us to define it. For our purposes, we can begin by saying that behavior is anything that an organism does: it is running, crying, building nests, flying, pinching claws together, playing the violin, speaking, swallowing, eating, spouting water from blowholes, and so on. All of these behavior–environment relations are *mediated* by the nervous systems of various organisms. By “mediate” I mean the nervous system is the structure that comes *between* the environmental stimuli and the behavioral responses. Rocks and plants do not behave simply because they lack nervous systems and the other requisite structures needed to do so. Behavior also includes anything that happens inside the organism; for example, the firing of neurons is also behavior. Our job, as behaviorologists, is to try to determine what causes behavior to occur.

“People in the past have looked for what they considered to be the ‘purpose’ of a bit of behavior. Ethologists, for instance, may study certain behaviors of a species in their natural environment and—after carefully describing them—try to determine the survival value of that behavior. They may say this survival value is the *purpose* of eating, fighting, or nest–building, say. Behaviorologists, on the other hand, study the behavior in context and attempt to determine all of the controlling variables responsible for it. The contexts of behavior are the stimuli that precede and follow the behavior. Of course, much of our behavior actually does have survival value, but this is not the ‘purpose’ of behavior. ‘Purpose’ implies a *future* cause of behavior and has the etiology of behavior exactly backwards—as I hope you will come to understand over the next few days. Simply put, the dynamic interactions between behavior and environment, and the effects these interactions have on behavior, is what behaviorologists investigate.

“Now,” Traci said, looking around the small audience, “psychology, on the other hand, literally translates to the study of the, well, ‘psyche.’ ‘Psyche’

is an old word originally meaning the human ‘mind,’ ‘spirit,’ or ‘soul.’ But here is the problem with that: For a discipline to be called a natural science, it must first subscribe to naturalism, a philosophical viewpoint according to which everything arises from *natural* properties and causes; all spiritual, supernatural and non-natural explanations are excluded. Yet psychology still adheres to internal and fundamentally metaphysical explanations of behavior; and I’m not speaking here of physiological causes, but rather of ‘minds,’ ‘selves,’ ‘personalities,’ and so on. As one of our professors of the history of our science has pointed out, psychology broke from philosophy by adopting empirical methods, but it fell short of becoming a natural science by not fully adopting naturalism. Although it carefully avoided *theologically* mystical causal agents, it nevertheless maintained or introduced mystical *secular* indwelling agents—such as a ‘mind’—as causes of behavior. Many, to this day, blame Descartes for this mind-body dualism.

“Here is an important point I would like to make concerning the utilization of behaviorology in our communities,” Dr. Jensen said, looking out over the audience, “Without the experimental approach of this science, we believe our communities would founder, like all non-experimental communities before us, and like, in our opinion, *most* societies outside of Walden Two today. While many societies have achieved greatness, there always seems to be a compensatory downside. As T. E. Frazier, the man credited with starting this very first community based on behaviorology noted: ‘Science has been successful wherever it has been applied, let us apply it to human affairs.’

“He argued that the natural sciences have increased our understanding of other parts of nature to the point where we understand them far better than we understand ourselves. As a result, we find ourselves in possession of great scientific achievements, artifacts, and technologies, which we are using with stone-age brains and ancient outdated conceptions of humankind. And while we steadily gain control over nature and understand it better through our sciences of physics, chemistry, biology, astronomy and others, too many of us still see humankind as distinct from nature, as if we were somehow observing nature from outside of it, rather than being immanent with nature.

“Even some otherwise intelligent people, who accept the reality of human evolution, still believe that humans are somehow qualitatively separate from the other animals in some fundamental way—by suggesting that we have ‘free will,’ for example. But at what point in our evolutionary history did this non-natural ‘free will’ enter into the natural nervous system? At what point did a non-natural ‘mind’ or ‘self’ enter into the natural nervous system? Just when in the history of life was the chain of natural causation supposedly broken? Are these supposed to be emergent properties emanating from the Law of Cumulative Complexity, which I will touch on later? Behaviorologists, on the other hand, do not believe that the chain of natural causation was ever broken; we believe that we humans are continuous with nature, an intrinsic part of nature.”

Traci paused briefly at this point to allow all of this to register with her listeners before continuing. Then she glanced at her notes and continued.

“Because many purely neural behaviors, the kind we call ‘thoughts,’ often precede our motor behavior, we mistakenly feel that an inner version of ourselves is causing this behavior. Behaviorologists call this ‘agentialism,’ which is putting an agent inside the body to explain the external behavior. By ‘external behavior’ I’m talking about the behavior that others can easily observe. This is in contrast to the private behavior that only the person herself or himself can observe. Examples of private behavior would include thinking, feelings, and emotions, along with all other private sensations. What is curious is that people don’t feel it necessary to explain the inner self, and instead think of it as an *initiating* cause—some kind of autonomous agent that causes our behavior to happen.

“But an inner *agent* is not causing our behavior; if anything, it is inner *behavior* that is causing *more* behavior in a chain-like fashion. Therefore, we behaviorologists call it ‘chained’ behavior, since one behavior—in this case, *private* behavior—can elicit or evoke the next behavior in the chain. But this inner behavior also needs to be explained. And like emotions and feelings, thoughts happen at just the right time to appear to be an *initiating* cause of the motor behavior that follows it. However, if we trace any, even inner, behavior’s causes back far enough, we find that all behavior is caused eventually by external variables, including, of course, those external environmental variables that selected our bodies through evolutionary processes.

“Behaviorology is still a relatively young science with a very complex subject matter. It was less than fifty years old when Frazier began *Walden Two*, but it has steadily grown. It is now over a hundred years old, and shall undoubtedly continue to develop and add to our understanding of human behavior and human affairs. It is by no means complete. No science is. But like all *natural* sciences—and therefore unlike psychology—behaviorology brooks *no* metaphysical explanations. It deals exclusively with real, natural events. These events can be observed and detected by the methods used in all of the other natural sciences.

“Psychology may finally be beginning to doubt some of these fictitious, inner agential causes of behavior. And, as new information comes in from physiology, they are trying to redefine some of these inner agents in physiological terms and asserting that this is what they meant all along. But remember, behaviorologists have *never* accepted these kinds of hypothetical internal constructs—we have always insisted that behavior should be studied *in its own right*, and this has given us a great advantage in our search for the actual causes of behavior. The discovery of the natural causes of behavior greatly facilitated the treatment of behavioral disorders and helped to improve educational practices and human relations in general.

“Now, granted, psychology has adopted some of the *methods* of the natural sciences, but it did not adopt the insistence of the natural sciences on dealing only with natural events. This insistence is what makes the natural sciences so successful. Let me give you a possible explanation as to why psychology did not adopt naturalism. Since the behavior of other humans and animals has always been a part of the human environment from our beginning—that is, we have

always had other behaving humans and animals as part of our environment—behavior has undoubtedly always been a paramount concern.

“It was, and is, important to be able to predict, to some degree, the behavior of other people and animals with which we interact. Therefore, much of our early language must have been about behavior and its causes. But we have been talking about behavior and its causes since long before we developed methods to understand it in a scientific way. And our ancestors came up with numerous creative but spurious explanations for it, including stellar and planetary influences—which, fortunately, very few educated people consider as causes today. Nevertheless, many of these prescientific conceptions have permeated most, if not all, human languages, and still remain a part of them to this day. Once these concepts were inculcated into our language they continued to influence how we think about human behavior, and some investigators have tried to study these prescientific concepts using scientific methods.”

Traci looked out over the small audience while she spoke and only occasionally glanced at her notes—other than this, her talk appeared to be completely extemporaneous. She is a very articulate speaker, lacking the superfluous “um’s” and “ah’s” of many poor speakers. Her voice is very clear and she presents confidently with nearly perfect diction, making excellent eye contact with her listeners. This is no accident. Special audiences here at Walden Two have carefully shaped her elocution by providing the all-important differential feedback during her early education. She has also learned to discern the interest level of her audiences with great accuracy and can quickly adapt her speech to recapture waning attention. She was being careful not to lose her audience at this point in her talk, because she knew the importance of explaining the main science behind all of our communities—a science that is still little understood even by many natural scientists in other fields. She was hoping to help change this. It was especially important to explain this science to *this* audience. She knew this audience would disseminate the concepts she was explaining on this day to many others. She took a sip of water from a cup beside her and continued.

“Science is a set of methods that have developed over time for teasing out the causes of natural phenomena. It is important to note that science is also *behavior*. Think about this for a moment. We have generated rules over many centuries to govern our ‘scientific’ behavior—rules that increase our chances of successful investigation. An important tenant of science is that researchers must begin with natural phenomena, *real* phenomena that exist in nature. And a scientific discipline must adopt this tenant, along with other scientific methods, before it can be called a natural science.

“But, as I’ve suggested, prescientific thinking about human and non-human behavior admitted mystical entities and explanations early on in the investigation of the causes of behavior, and names for these putative entities have entered into the vernacular of many cultures. They have been with us for so long, and are so familiar to us, that most people accept them without question even to this day. Since prescientific thinking posited internal explanations for behavior, these faulty concepts entered and remain in our language as ‘spirits,’

‘psyches,’ ‘minds,’ ‘selves,’ ‘souls,’ and so on, and psychology became the ‘study of the psyche or mind.’

“Early thinkers could not break out of this zeitgeist, and some contemporary thinkers are not doing much better. Although psychologists have been using empirical methods and advanced statistical analyses that give psychology the appearance of being scientific, they continue to allow prescientific, reified internal entities to remain in their discipline. These metaphysical entities have been their problem for well over a hundred and fifty years and have hampered their progress. Surprisingly, it is only recently that neuroscientists—who were not immune from these prescientific concepts—have begun to discount many of these fictitious inner agents. And as they step away from the explanatory fictions of psychology and begin to adopt behaviorology, they find themselves advancing much more rapidly.

“So let me be clear about this. Psychology is not, *by definition*, a natural science, and this is why it has often been called a ‘soft science.’ What it needed to do in order to become a natural science was to complete its break with theology and philosophy and abandon any of their prescientific, metaphysical entities. Instead, psychology only renounced the theological, mystical, ‘spirit’ or ‘soul’ cause of behavior—often believed to be influenced by the gods—and adopted the secular mystical ‘mind’ cause of behavior, which was believed to be more autonomous—at least with respect to the gods; but this ‘mind’ is, nonetheless, a mystical entity. Contemporary psychologists now use the term ‘cognition’ for the putative internal processes resulting from these reified mystical entities. And, once again, they are not talking about neural processes, but rather, so-called, ‘mental’ processes that a dualistic view of human nature entails.”

At this point a man seated near me in the back row raised his hand, catching Traci’s attention.

“Yes,” she said, pointing to him.

“Why, then, do you suppose contemporary psychologists still entertain these internal explanations?” he asked, as he stood up. “What can they accomplish by believing that these—‘mystical entities,’ as you call them—have real existence if in fact they don’t? It seems to me that they would have abandoned these concepts long ago if they were not somehow useful in explaining behavior.”

“That is a very good question,” Traci said. “We can surmise that the break from these prescientific assumptions was prevented by some early successes brought about by statistical predictions. These successful predictions may have strengthened their ‘belief’ in these hypothesized internal agents. But if one studies *any* lawful phenomenon long enough, one can usually make accurate predictions in spite of any fictitious causes one may invent to explain it. For instance, our ancestors could predict the regular movement of the sun quite accurately yet they attributed its movement to a spurious chariot that pulled it across the sky. And like the chariot, a fictitious inner agent inside an organism is an explanatory fiction—an unparsimonious and unnecessary hypothesis that future scientific researchers will one day only find amusing, as behaviorologists now do. The sun will continue to rise, and people and animals will continue to behave, with or without our theories about them. But if we want to influence

natural phenomena, we must first determine the ‘causes’—what scientists refer to as the ‘independent variables’—that actually influence them.

“But to your point, sir, behaviorologists would argue that it would only take a few successful yet coincidental predictions to maintain psychologists’ behavior of talking about these adventitious inner agents. But, like the chariots, they are completely unnecessary and add nothing to our understanding of this natural phenomenon. Many of the predictions of psychologists involve what we would call behavior–behavior predictions; that is, predicting one behavior from another. For example, two of the most touted successes in psychology are prediction of academic success based on the outcome scores on I.Q. tests, and predictions of future behavior based on personality tests, both designed by so–called psychometricians. Note again the ‘psychic’ root of this word that literally translates to ‘measuring the psyche.’ The successes of these statistical behavior–behavior predictions reinforce ‘belief’ in the reified concepts of intelligence and personality, although these successes clearly exemplify behavior–behavior correlations.”

The man stood up again. “But isn’t that useful information?” he asked.

“Yes, of course,” Traci answered. “But behavior is the *dependent* variable in the natural science of behavior. We must always account for *both* of the behaviors involved in these correlations. While behavior can be predicted to some extent from previous behavior, this is clearly a case of correlation without causation. No science–oriented investigator would say that a high score on an intelligence test *caused* future academic success; only that some as not yet mentioned independent variables caused both the high score *and* later success; intelligence per se cannot be manipulated as an independent variable. Intelligent behavior, as a dependent variable, must be accounted for in other ways. I hope this answers your question?”

“Yes, well enough,” said the questioner before sitting back down.

Traci paused briefly again after making this last point to again allow her remarks to sink in. “I apologize for the density of this talk,” she said, “and I hope you will bear with me just a while longer. And please don’t feel bad if you are not catching everything at this time; I can assure you that I do not give this talk to all of our visitors—just to the science journalists.” There was a small chuckle from the audience. She spotted me sitting at the back of the room and I gave her a small nod of approval. She continued.

“Certainly some people—and other animals as well—inherit genes that produce nervous systems that form synapses more rapidly, or arborize additional dendrites, thereby forming more connections, or produce additional receptors, perhaps even some with greater affinity for their neurotransmitters, or have larger structures such as the hippocampus, or form thicker myelin sheaths, or have many more supporting glial cells, or are superior at neurogenesis. All or some of these may result in faster or longer lasting behavior change that can superficially be described as ‘intelligence.’ But this is not some non–natural inner trait called ‘intelligence.’ These are all very natural structures and processes that have resulted from one of the three biologically relevant selection processes, in this case, natural selection.