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NOTE: Prior to Volume 16, Number 1 (Spring 2013) the *Journal of Behaviorology* went by the name of *Behaviorology Today*, which occasionally published fully peer-reviewed articles, explicitly so labeled. Beginning with Volume 15, Number 1, *all* new material receives full peer review. See the "Submission Guidelines" for details.

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* This issue does not contain any TIBI course syllabi. New syllabi, or updates of previous syllabi, may appear in future issues. (See the *Syllabus Directory* for details.)

Editorial

Philip R. Johnson

University of Arizona—Tucson

Beyond the usual information resources and some announcements, this issue of *Journal of Behaviorology* features two articles from the pens of two of behaviorology's founding fathers, Dr. Lawrence Fraley and Dr. Stephen Ledoux. The first article, by Stephen Ledoux and Dale and Thomas Hallat, is entitled *An Interview on Behaviorology Supporting a Sustainable Society*. It records the preparation for a lengthy interview, parts of which appeared in the British documentary film, *Prosocial Progress: A Blueprint for Social Sustainability*. The documentary features parts of interviews with three prominent North American behaviorologists: Julie Vargas, Janet Twyman, and Stephen Ledoux. "The film focuses on the relevance of the natural science of behavior—under old or new labels—to various aspects and areas of prosocial change, particularly some of the contributions of behaviorology to contingency arrangements that could increase the scientifically informed, prosocial activities of citizens, specifically with respect to solving global problems" (The International Behaviorology Institute, 2014). The documentary can be accessed through the Prosocial Progress Foundation website at www.prosocialprogress.org or at the following link: <http://vimeo.com/80155313>.

The second article, by Lawrence Fraley, is entitled *Behaviorological Science and the Complexity of Unfathomable Variation*. This article was initially rather difficult to get a handle on; important points seemed to get lost in the details. Upon analysis, however, several specific characteristics of the larger context of Fraley's paper relate to its value in these pages. When pointing out the complexity of behavior (e.g., Fraley, 2008), and subsequently accounting for such complexity (e.g., Ledoux's Law of Cumulative Complexity; see Ledoux, 2012, p. 10), behaviorologists have stressed (e.g., Ledoux, 2014, p. 19) that thoroughly analyzing all independent variables relating to even simple responses, while costly and nearly impossible, can be valuable and will occur under appropriate contingencies. We cannot, however, readily point to an example where contingencies have compelled such an analysis until now.

Interpretively, in an extension akin to a shaping process, the contingencies affecting Fraley's writing induced the discussion of another step regarding the thorough analysis of a simple response. This paper explicitly provides such an analysis. While the paper might appear to focus on the response example, its value

lies in its ability to illustrate the validity of showing that such examples further clarify the sufficiency of natural science and the lack of place or role for mystical inner self agents.

Fraley places his example in the context of appreciating the scientific management of the complexity that constitutes even single, simple responses. In this paper Fraley demonstrates that the controlling evocative stimuli are inextricably tied to the complex cascades of combined neural responses to the full range of energy streams impacting the nervous system of the speaker in his example. The analytical result demonstrates once again the reasonable completeness and full consistency of naturalistic scientific analysis while leaving no role for mystical, mental, agential entities to play.

Since a wider range of such comprehensive examples would further enhance scientific appreciation, similar submissions from other authors are welcomed. Similarly, letters to the editor, book reviews, and of course more articles that address issues relevant to the principles and practices of the discipline of behaviorology are also welcomed (see the Submission Guidelines on page 19).

In conclusion, remember that the *TIBI 27th Behaviorology Anniversary Convention* will be held in Canton, NY, on 21–23 May 2014. Specific information about the convention is listed on page 20 of this issue. I look forward to publishing many of the papers presented at the convention, and I also hope to be able to meet many of you there.✿

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An Interview on Behaviorology Supporting a Sustainable Society

Stephen F. Ledoux¹

Dale Hallatt² & Thomas Hallatt²

These questions and answers relate the preparations behind an October 2013 interview of the first author by the second author for an environmentally supportive documentary film project. The Prosocial Progress Foundation, in the United Kingdom, organized this project and titled it *Prosocial Progress: A Blueprint for Social Sustainability*. The project involved eight interviewees. As you can see by selecting this project under *Films* at www.prosocialprogress.org, this group also featured others familiar to behaviorologists including Julie Vargas, Zuilma Gabriela Sigurdardóttir, and Janet Twyman. In general, the range of questions for each interviewee centered on the relevance of the natural science of behavior—under old or new labels—to various aspects and areas of prosocial change. The questions that the interviewer asked this interviewee, in advance as well as at the interview, focused on the nature of behaviorology and its contributions to contingency arrangements that could increase the scientifically informed, prosocial activities of citizens, particularly with respect to solving global problems. The questions and answers here report the material that the first author prepared (with feedback from the other authors) for the interview which, of course, varied from this preparation.✧

Question 1 of 22. One of your recent articles appeared in the journal *American Scientist* in 2012. Entitled “Behaviorism at 100,” the article addressed the extent and status of the natural science of behaviour after its first 100 years. What circumstances led to this article?

Answer 1 of 22. At least four factors came together over several years to produce that article:

✧ The major factor is that traditional natural scientists, like physicists, chemists, and biologists, have been working for decades on improving solutions to some serious and growing global problems. They have also pointed out that since both the problems and the solutions involve a large component of human behavior, they really could use a natural science of human behavior to help with this component. But most of them have not been in circumstances which could clarify for them that such a science already exists.

✧ In addition, 2012 marked the 100th year both of the natural science of behavior, and of *American Scientist*, which is the journal of Sigma Xi, the scientific research society.

✧ Also, back in 1963, B. F. Skinner published his paper, “Behaviorism at Fifty,” which addressed the extent and status of the natural science of behavior after its *first* 50 years. The time had come for a look at the *second* fifty years.

✧ And one of the most significant developments in this natural science occurred in the second fifty years, which is that this natural science became an *independent* natural science under the label, *Behaviorology*, which was adopted officially only in 1987.

All of those factors came together to make the “Behaviorism at 100” paper appropriate for the first issue of the 100th volume of *American Scientist* in January 2012. There it could reach many concerned natural scientists and engineers, and inform them that a natural behavior science, one that can help solve global problems, already exists. Also, a couple of months later, the journal *Behaviorology Today*—which is now called the *Journal of Behaviorology*—featured the longer, peer-reviewed version of the article; it is available on both the americanscientist.org website and on the behaviorology.org website.

¹ Stephen Ledoux is Professor of Behaviorology at SUNY–Canton and, after the Hallatt brothers gave him the questions, he authored these answers to them; address correspondence to ledoux@canton.edu.

² While Dale Hallatt asked the questions at the interview, both he and Thomas Hallatt wrote the questions, which arose from their work at the Prosocial Progress Foundation.

Key words: behaviorology, behaviorism, behavior, global warming, natural science, prosocial progress, sustainability.

Question 2. Could you define what is meant by the term *natural science of behaviour*, otherwise known by the term *behaviourology*?

Answer 2. Behaviorology, and the term “natural science of behavior,” refer to the basic science concerned with behavior. This science works on two fronts. The primary, experimental side of the science works to discover, understand, predict, control, and interpret the independent variables—especially the accessible environmental independent variables—that are responsible for behavior, both the behavior of humans and the behavior of other animals; in this way it reveals the nature of human nature. At the same time, the engineering side of the science works to develop and test effective applications and interventions that can change these variables in ways that lead to improved behavior. Some professional applications of this science help people and society become better at changing these variables in ways that bring about improvements in behavior, improvements that benefit individuals as well as humanity. Currently the most common name for such professional applications is *ABA*, which stands for Applied Behavior Analysis.

Question 3. Why is the behaviourology discipline classified as a natural science just like the disciplines of physics and biology? Is it because behaviourology utilizes methods that are as empirically based, as are those used by other natural sciences?

Answer 3. Empirically based methods are only part of what qualifies a discipline as a natural science. The other necessary part involves adherence to the general philosophy of science, sometimes called naturalism, to which all natural sciences adhere. Perhaps the most fundamental component of naturalism respects dealing only with real events, natural events, as independent and dependent variables. This lays the foundation for the work to explain such events in terms of functional relations with other real events. Of course this approach sets aside any need for recourse to events that we must describe as unreal or non-natural or mystical or superstitious. Your examples, behaviorology and biology and physics, all qualify as natural science, because they not only use empirical methods but they also adhere to the tenets of naturalism.

Question 4. Would you say that psychology is a non-natural science?

Answer 4. Actually I would say that psychology is a non-natural *discipline*. The term *science* seems

inappropriate, because when most people hear this term, they think *natural science*; they think about disciplines like physics or chemistry or biology or astronomy or geology, all *natural sciences*. While psychology uses scientific methods, natural scientists consider good methodology alone as inadequate for applying the *science* label to a discipline. Natural sciences require sound methods *that only involve real variables*, which necessarily excludes psychology, because its most basic categories are not real. In oversimplified terms here is how that works. Psychology separated from philosophy by adopting some empirical methods. However, it retained many of philosophy’s mystical categories. Indeed psychology converted some theological mystical categories into secular mystical categories, which seemed to make them more acceptable. For example it converted the theological mystical category of the soul into the secular mystical category of the mind; but essentially nothing else changed. Such categories, including mind, psyche, self, and so on, constitute psychology’s very core of causality, a core in which the spontaneous activities of such supposed, mystical, inner, body-directing agents make behavior happen; we call the appeal to such mystical inner agents *agentialism*. Psychology’s adamant, by-definition retention, to this day, of these and similar mystical, even if secular, categories excludes it from natural-science status. Of course, not all psychologists agree with their discipline over its mystical status but, by remaining in and supporting psychology, they continue to accept and encourage this mystical status. Nevertheless, the whole psychology discipline suffers from the doubts that the general public, as well as the natural sciences, must entertain over psychology’s offer of efforts that are grounded in mystically, rather than scientifically, based accounts.

Question 5. How can behaviourology improve society? In what kinds of areas of society can it be applied?

Answer 5. Behaviorology is a rather young science. Still, under various names over the past decades, it has developed successful interventions in a range of areas that society deems important. In sampling a small cross section of current application areas, we could mention successful services to those special populations of adults and children dealing with developmental disabilities, autism, depression, phobias, and so on. We should also mention successful services to the larger populations of citizens regarding such common areas as industrial safety, many aspects of education including instruction and classroom management, performance management in business and industry, companion-animal and service-animal behavior training, dignified dying, penal rehabilitation, and other areas too numerous to mention.

Question 6. Can behaviourology help improve society in the broader context of global problems?

Answer 6. Behaviorological scientists are turning more and more attention to interventions supportive of generating and maintaining sustainable lifestyles. For starters, some of these interventions may even relate to helping *humanely* reduce humanity's survival-endangering overpopulation level. With population currently running at 150% of the planet's carrying capacity, and still increasing, overpopulation underlies virtually every global problem that people want to address. Some of the most obvious examples include air pollution, water pollution, soil runoff and depletion, habitat depletion, resource depletion, and global warming with all its long-term negative effects; in every case, behind the particular problem is the reality of too many people crowding the planet. Apparently, procreative sex, which produces the population, fails today to provide the species survival benefit that it previously provided throughout history, up until about a century ago. Instead *procreative sex now threatens our survival* by continuing to increase our already excessive population level. We must ask ourselves: Can contingencies change us to appreciate non-procreative sex around the world? Can we encourage any non-procreative—and non-exploitative—sex involving one or more consenting adults, regardless of gender, as a way of reducing procreation? Can we allow, without religious persecution or secular prosecution, sex between loving couples of the same gender, which cannot produce babies? And can we allow, and even find ways to encourage, without religious or secular retribution, sex between loving couples of the opposite gender with the assistance of available conception preventatives or treatments so as to reduce the production of babies? While humanity will always produce enough babies for species survival, family planning is a widely established and respected practice with a very long history!

So, yes, behaviorology can assist the natural-science team efforts in the broad context of solving global problems, including by explaining the contingencies behind a “yes” answer to those questions about ways to reduce overpopulation. These efforts currently promote species survival by helping humanity humanely reduce population levels. Of course I can see a range of complex problems arising from such efforts—for example, fewer children in schools—but I also see that people can solve such problems far more easily than the problems that arise if we fail to reduce overpopulation humanely. In that case the inevitable worst effects of global warming will reduce overpopulation in disastrously inhumane ways. Helping avoid that is but one way that behaviorology contributes to the team efforts to solve global problems and build sustainable lifestyles.

Question 7. In an accessible manner, could you define the term *operant conditioning*?

Answer 7. In possibly oversimplified terms, *operant conditioning* occurs when a stimulus evokes a response that produces a consequence that alters the rate at which that kind of response occurs. Perhaps that was too brief. Let's consider the term *operant conditioning* as referring to a three-step process. We see the first step when the energy from an environmental stimulus effects our nervous-system receptors in a way that evokes a response. We see the second step when the occurrence of that response produces some stimulus change in the environment. And we see the third step when, as a result of that stimulus change affecting our nervous system, a change occurs in the subsequent rate of that kind of behavior. We use the term *operant conditioning* to describe this sequence of steps. Now, note that the term *operant* comes from behavior that *operates* on, and changes, the environment. Of course, behavior, an instance of which we call a *response*, does not occur spontaneously—it does not pop out of nothing—but rather it is the product of environmental stimuli. We should make a couple of other points. We use the word *conditioning*, because the occurrence of the consequential stimulus, which the evoked response produces, then *conditions*, as in produces, the change in the nervous system responsible for the change in the rate of that kind of behavior; this shows the interrelation of the three steps of the operant-conditioning process. Also, and perhaps most importantly, this process already begins affecting each of us while we are still in the womb, and it continues to affect each of us on a moment by moment basis throughout life, building and changing the differing behavior repertoire that makes each of us the “person” that we are. For example, neither you nor I are the same person we were at the start of this interview; the ever-ongoing and subtle but real operant-conditioning process has changed us in small but cumulative ways, and will continue to do so, hopefully for the better...

Question 8. Could you explain what is meant by the term *contingencies of reinforcement*?

Answer 8. Behaviorologists actually use that term *contingencies of reinforcement* generically, to refer to the full range of possible contingency relations among stimuli and responses. Let me explain. Many types of stimuli, occurring either before or after a response, affect behavior, and each has a name. For antecedent stimuli we use terms like *function-altering stimulus* or *evocative stimulus*, depending of the role of the stimulus. We use the term *reinforcer* for a consequential stimulus that has

produced an increase in the rate of a behavior, and we use the term *punisher* for a consequential stimulus that has produced a decrease in the rate of a behavior. When combinations of these or other types of stimuli form functional relationships with responses, in which each part sequentially depends upon the others, we say that each part is *contingent* upon—as in “is dependent upon”—another part. For example the occurrence of a response is contingent upon the occurrence of an evocative stimulus. Similarly, the occurrence of a consequence is contingent upon the occurrence of a response. And the occurrence of a subsequent change in the rate of that kind of response is contingent upon the occurrence of the consequence. Each of these constitutes a contingent relation, and together they constitute a contingency. Now, one type of contingency involves reinforcers, so we could say that it constitutes a contingency of reinforcement. However, the tradition has developed instead to use the term *contingencies of reinforcement* to encompass, generically, *all* types of environment–behavior contingent relations, not just those containing reinforcers.

Question 9. Could you describe what is meant by the term *schedules of reinforcement*?

Answer 9. That term, *schedules of reinforcement*, refers to the various patterns regarding how reinforcers follow responses. Sometimes reinforcers occur after every response, a schedule that we call *continuous reinforcement*. At other times reinforcers occur intermittently, that is, after only some responses rather than after every response. This intermittent occurrence of reinforcers can depend on the occurrence of a fixed, or a varying, number of responses, and we label these as *fixed–ratio* or *variable–ratio* reinforcement schedules. Alternatively, the intermittent occurrence of reinforcers can depend on the occurrence of a single response after a fixed, or a varying, amount of time has elapsed, and we label these as *fixed–interval* or *variable–interval* reinforcement schedules. We consider these four schedules as the basic schedules of reinforcement, although they are not the only types of reinforcement schedules, and each of these basic schedules produces a different but characteristic pattern of responding.

For a commonplace example, let’s consider the variable–ratio schedule. This is the schedule on which reinforcers occur in numerous circumstances, including during games of chance and gambling, and the characteristic response pattern that this schedule produces—a pattern of relatively rapid and steady responding—unsurprisingly evokes images of the behavior of players on traditional casino “one–armed bandit” slot machines, often working on into the night, often until the player runs out of funds. Now,

contingencies, like those in variable–ratio schedules, produced gambling centuries before science discovered and analyzed this schedule. Back then, as now, the laws of nature, including the laws of behavior, affected people in ways that compelled purveyors of games of chance intuitively to arrange variable–ratio schedules to produce large and lucrative amounts of player behavior. And today, as back then, the effects of variable–ratio schedules—not the “gambling habits” of fictitious inner agents—are responsible for the behavior that often reduces the wealth of many individuals, while swelling government coffers from lotteries and gambling taxes.

Overall, schedule research leads to some important conclusions. Let’s list three. For starters, many features of behavior emerge as the effects of particular schedules of reinforcement. Also, schedules with only subtle contingency differences often produce distinctly different response patterns. And the direct effects of reinforcement schedules reveal a wide range of putative inner–agent emotional and “motivational” causes of behavior to be misleading and unnecessary accounts.

Question 10. Is there any overlap that you see between behaviourology and the brain sciences? If so, could you point to a particular overlap, perhaps the effect of reinforcement on neural structures? Could you also touch on what kinds of overlap exist between behaviourology and physiology, and provide an example?

Answer 10. That is a complicated set of questions. Brain scientists and behaviorologists are all natural scientists. As such, brain scientists remain uninterested in either interpreting their physiological data in support of mystical notions, or in applying their science in the address of mystically grounded questions, such as where to find the mind inside the brain. Instead the coordination of behavior and brain sciences leads productively to the address of questions such as what happens at the physiological level when reinforcing stimuli feed energy traces back into the nervous system.

But before going there, your question about disciplinary overlaps is particularly important because, with many natural scientists lacking adequate access to behaviorological science, a trend has arisen that attempts to shoehorn “causes” of behavior simply into physiology, genes, or evolution. We recognize these attempts as unnecessary because, while the closest of these, physiology, explains *how* a behavior occurs (as in the process of the nervous system mediating behavior) behaviorology explains *why* a behavior occurs (as in dealing with the independent variables of which behavior is a function). That is, physiology details the working of the *physically stimulated* nervous and muscular systems that makes a response occur, which we call the bodily

mediation of the response. Meanwhile, behaviorology details the functional relations—what people often simply call “causes”—that physically stimulate the nervous system in the first place, making the muscles contract. This contraction, then, *is* the occurrence of the response. For example behaviorology addresses the functional relations between independent variables, such as a boulder blocking a forest path, and the dependent variables of body-mediated behavior, such as the nervous-system-induced muscle contractions, that the boulder evokes, that take the body around the boulder.

Now let’s return to your question about the effect of reinforcement on neural structures, a question about what happens at the physiological level when reinforcing stimuli feed energy traces back into the nervous system. To begin, the description of a simple contingency—strictly on the analytical level of behaviorology—involves a stimulus evoking a response that produces a consequence that increases the rate of that kind of response (which, by the way, makes us call that consequence a reinforcer). Let’s elaborate this contingency while considering the analytical levels of *both* physiology and behaviorology. An environmental stimulus provides a physical energy trace into a body’s nervous system that, as part of evoking a response, produces temporary changes in neural structure, changes that we describe as the firing of some neurons or bundles of neurons which, for this description, induces the muscular activity that we call a response. Of course our physiology colleagues can give you a richer, more detailed account. Anyway, that response then produces some stimulus change in the environment which feeds an energy trace back into the nervous system. There, this energy trace produces neural structural changes of a more permanent kind, such that the mediation of that kind of response will now occur more readily or more easily when the evocative stimulus occurs again. We witness this as an increase in the subsequent rate of that kind of response. For example, when a request for a drawn cartoon evokes a cartoon-drawing response, and the resulting, finished cartoon produces a compliment, the compliment feeds an energy trace back into the nervous system through the ears that alters neural structures such that later requests for a drawn cartoon more readily evoke cartoon-drawing responses, which we observe as an increase in the subsequent rate of cartoon drawing.

Question 11. Behaviorology talks about the “environment.” Is this merely everything around us?

Answer 11. Our talk of the environment, and environmental stimuli, indeed encompasses all real parts, and aspects, and characteristics of the reality around us. But we must also recognize that part of that reality, part of the environment, exists within the skin, skin that is not

any sort of boundary to the laws of the universe. Thus at various times we simply speak of the environment, or we may specify the external, or the internal, environment. While we may have less access to behavioral events in the internal environment, those events are still real. This includes the full range of purely neural behaviors, such as thinking and consciousness, as well as neuro-muscular behaviors, such as talking and walking.

Now, within the constraints of an interview, we can’t pursue the kind of complexity that the internal environment involves, with its thinking and consciousness neural behaviors (so let me refer you to some other resources: ... [see Ledoux, 2014 or 2012a, or Fraley, 2008]); we can, however, account a little for complexity itself, perhaps in a way that helps clarify the context of our discussion. Let’s do that simply by mentioning what I call the *Law of Cumulative Complexity*: This law states that “the natural physical/chemical interactions of matter and energy sometimes result in more complex structures and functions that endure and naturally interact further, resulting in an accumulating complexity” [Ledoux, 2012b, p. 10]. The origin of the universe and of life, the vast range of life forms, the interrelations of physiology and behaviorology, and the extent and significance of thinking and consciousness neural behaviors, are all outcomes of the Law of Cumulative Complexity. All of these are cumulatively complex; all are entirely natural.

And, by the way, we are using the term *natural* in its comprehensive scientific sense here. That is, we are not using it in the limited sense of the “great outdoors” or what you experience on vacation “away from it all.” Instead, we use the term *natural* in its full sense of referring to *all* real, measurable pieces, parts, aspects, and characteristics of the universe, including humans, human nature, human behavior, and this planet that provides us a home.

Question 12. Could you describe how behaviorology does away with personal agency and free will? What about freedom? For example, cannot operant conditioning be given to people in society as a tool so that they can better control their environments, which would lead to a potentially heightened sense of freedom? What are your thoughts on this?

Answer 12. The phrase, “does away with,” regarding self agents and free will, is perhaps somewhat misleading, because science does not work that way. Science, self agents, and free will all rest on basic assumptions—but not the same assumptions, and certainly not equal assumptions—about how to approach questions regarding human nature and human behavior. While considering some assumptions behind each of these—science, self agents, and free will—let’s remember

that no one can prove or disprove assumptions, although these can turn out to be helpful or harmful. Let's consider free will, self agents, and science in turn. Free will rests on *theological* assumptions, made up millennia ago, about some mystical maxi god, who moves mountains, and the souls that this maxi god instills in humans, giving them the status of agents free to do good or evil. Somewhat similarly, self agents, as inner agents that more recent disciplines posit to reside inside each human body, rest on *secular* assumptions that these more recent disciplines made up to avoid the theological complications of maxi gods by emphasizing some mini gods who only move arms and legs while inhabiting human bodies; supposedly these assumed inner agents initiatively, spontaneously decide what the body is to do and tell the body to do it. That is, the theological soul got reinvented originally as the secular mind, then the secular psyche, then the secular self or person or personality. Science, on the other hand, does not make up its assumptions. The assumptions of science include dealing only with real, that is, natural, events as independent and dependent variables, and such assumptions derive from at least the last 400 years of validated experimental research findings and their successful engineering applications that surround us (just look around...) By virtue of the incompatibility of its assumptions with the assumptions behind free will and self agents, science—which means natural science, including behaviorology—simply sets aside anything mystical (like free will and self agents) in its analyses, due to that mystical status. Note, however, that as behavioral phenomena, mostly verbal, concepts like free will and self agents become subjects for scientific analysis by behaviorological science.

Question 13. And what about freedom?

Answer 13. Ahh, yes; freedom. With the concept of freedom, we face difficulties similar to those that we faced with free will and self agents. These difficulties arise due to each of us carrying a lifetime of traditional cultural conditioning that has, for thousands of years, developed contrary to scientific realities. So let's be blunt, and allow any usual negative emotional reactions to run their course—and calm down—while we explain the status of freedom and control. Being blunt, *independent variables control all behavior, while freedom remains an important independent-variable controlled feeling*. This reality invites little attention or opposition so long as behavior controls remain positive, such as control by added reinforcers since positive controls induce feelings of full freedom. On the other hand, lots of attention and opposition accrue whenever behavior controls remain negative, such as control by coercion and punishment since negative controls induce feelings of being pushed around or

bullied. With freedom as certain important feelings that result from emotions, which particular stimuli elicit, the notion of freedom as a lack of control shares the same fate as self agents and free will; we scientifically set this notion aside. By the way, you can easily substitute words like "choice" for freedom in discussions like these...

Now, let's recognize that our scientific analysis is not taking away whatever anyone has as freedom. Instead the analysis can enhance people's feelings of freedom; people and society benefit when people feel free, and as a society we want people to feel freer than they have ever felt. Scientific knowledge provides a solid basis for increases in feeling free for sound reasons. In practical terms feelings of freedom increase with increases in positive, non-coercive controls on behavior. For example when your employer pays you well, you *feel* that you have the freedom to go to work or not, but you still go; you would be crazy not to! But when your employer pays you poorly, a coercive circumstance, you *feel* that you have no freedom to go to work or not; instead you feel forced to go, and you go; you would be crazy not to! And remember that the word "you" refers not to any ethereal inner agent but simply to a physical body. So, the bottom line is that the more the informed use of positive operant-conditioning practices increases in society, the better will be two-way control between people and their environments, and the more they will appropriately feel free about that control.

Question 14. Would you advocate educating the public on adopting behaviourology-specific terms for everyday language descriptions of behaviour?

Answer 14. I think I would begin by advocating that the public receive as much education in behaviorology as it receives in physics or chemistry or biology. This would enhance applications of behaviorological principles and practices not only for solving local personal or social problems but also, as part of the multi-science mix, for solving more widespread, global problems. In time this could indeed lead to increased scientific accuracy in the everyday language that we use to describe behavior. But what is more important, I think, is that *as more people become more familiar with the laws of behavior*, the misuse of this science for purely personal power or gain becomes more difficult. Widespread familiarity with a science provides a major countercontrol to the misuse of that science. This seems a more immediate worry than concern about speeding up our language evolution, even though that too would probably be of help to us.

Question 15. What kinds of suspicions do you think the mainstream have regarding behaviour analysis? Are their suspicions well-founded? And do you see behaviour

analysis as separate from the general field of study known as psychology? If so, why?

Answer 15. The mainstream may lack suspicions about behavior analysis. This term was once simply an older term for the natural science of behavior. This is the term that was in use during a period that we call the “shared history,” the period when both this natural science and the discipline of psychology inhabited the same academic departments, while the natural scientists of behavior made their attempts to change psychology into a natural science. When those attempts repeatedly failed, the natural scientists of behavior began to take their natural science outside of psychology, while still using the behavior–analysis label for the science. However, the behavior analysts came under contingencies to build the political power that was needed to help bring effective interventions to needy populations such as autistic children. Unfortunately this distracted them from following up on their independence origins. Most of those who did follow up on their independence origins became behaviorologists. So then, for some time, two labels—behavior analysis and behaviorology—were available to name the natural science of behavior. Then a new wrinkle occurred that reduced the possible labels to only one. This wrinkle involved the psychology discipline officially claiming the behavior–analysis label through the exercise of some historically based options. And this wrinkle is what raises suspicions, not so much in the mainstream as among traditional natural scientists who then express legitimate concerns over whether or not behavior analysts are still natural scientists. If they are not natural scientists, then they *belong* under the psychology label and should be supervised by psychologists; and if they are under psychology, then they are telling the world that they are not natural scientists... But if they still *are* natural scientists, then they belong under the behaviorology label where normal peer supervision is appropriate. In the interim, while some go one way and some go the other way, the ambiguity raises credibility questions regarding behavior analysis, especially regarding some very much needed contributions to solving global problems. Also, for those “behavior analysts” who remain natural scientists of behavior, their moving out of psychology—and using the behaviorology label as the name for the basic science that informs their Applied Behavior Analysis, ABA—would justify their professional work, programs, status, certification, licensing, and so on, outside of, and independent of, psychology.

Question 16. Could you explain what is meant by the term *recombination of repertoires* and the role it plays in understanding complex human behaviours? In what way could such a process benefit the education system?

Answer 16. The term *recombination of repertoires* refers to the process in which several separately conditioned environment–behavior relations come together to produce a new relation—one that conditioning has never *directly* affected—in which a new stimulus evokes a new response that still produces a reinforcing consequence. While this looks to be mysterious, or the result of directives from some inner agent, it is simply another product of scientifically grounded functional relationships, although we look to our physiology colleagues for important components of these accounts. For example the parts of a typical child’s home environment readily—and usually separately—condition not only the behavior of grasping objects but also the behavior of climbing on objects as well as the behavior of moving objects around (although no 24/7 video camera records these events). So when a new situation confronts the child, such as a big cookie atop a high table out of the child’s reach, these separate repertoires come together to produce a solution. The stimuli in this situation evoke the child’s behaviors of moving a stool up to the table, climbing on the stool, and grasping the cookie, all of which constitutes a recombination of the earlier, separately conditioned components. We can easily surmise the contribution that the process of recombination of repertoires makes to complex human behavior, given the vast complexity of the environment and the vast—and ever expanding—number of functional parts that conditioning produces in each person’s extensive behavior repertoire. The education system is an integral part of the complex environment, and the repertoire–recombination process supports the value of conditioning, perhaps through general–education requirements, extensive responses from a wide range of disciplines during a person’s formal educational career.

Question 17. Could you explain what is meant by the term *equivalence relations*? Could this explanation of implicit conditioning be used within the education system as well in order to expedite learning?

Answer 17. Even more than some other terms that we have discussed, the term *equivalence relations* refers to a topic that really requires a description far more extensive than what we can cover in an interview [see the references]. Let’s just say that when some conditioning *directly* establishes the function of some members of a related group of stimuli, other group members begin functioning appropriately as well; they function in ways equivalent to the ways the original stimuli function. Equivalence relation phenomena present a substantial potential for a revolution in education, but

implementation first requires educating potential teachers about behaviorology in general and about equivalence relations in particular.

Question 18. Could you please outline what *Project Follow Through* was about? Did the behaviour-science based models become successfully applied in the education system? Is this reliable evidence that behaviour-science applied to the classroom can be effective? What kinds of resistance have behaviour-science educational techniques come up against?

Answer 18. *Project Follow Through* was the most extensive and expensive federally funded educational experiment in U.S. history. It looked at how the outcomes, on a variety of standard measures—from children taught with a range of distinct instructional models, which whole districts voluntarily sponsored—compared with the outcome measures from children whose school districts across the U.S. had not adopted any particular model. The results of *Project Follow Through* led to a major observation: While some models produced a range of poorer outcomes than those of the comparison group, other models produced consistently better outcomes, particularly the *Direct Instruction* and *Behavior Analysis* models. Importantly, these successful models explicitly derived—before the behaviorology label was in general use—from the application of the principles and concepts of the natural science of behavior. The *Project Follow Through* research had predictably revealed some science-based instructional approaches that work in education.

However, that revelation of some best practices for regular education received little dissemination even to the very teachers who, along with their students, would benefit from implementing its findings. So, sadly, those findings get widely ignored. When giving a workshop about a decade ago to about 100 teachers and staff at a public, kindergarten to pre-college school, I asked who was familiar with *Project Follow Through*; only two people said that they had even heard of it. Also, while the results of *Project Follow Through* focused mainly on student outcomes from the first several years of the project, the funding of various of its models continued for many years. Unfortunately, this funding was *not* limited to the models that produced improved student outcomes; models that had produced poor outcomes, models that seemed to be fancied by the educational establishment, continued to receive funding. This ignoring of *Project Follow Through* data not only indicates some blind respect for ineffective, agentially-focused methods that comport with popular mysticisms, but also indicates some persistence of the discredited notion that behaviorological laws are largely irrelevant to normal humans.

Question 19. What kind of role can behaviourology play in orienting our culture to one that is much more socially sustainable? What kinds of behaviours do you think the field of behaviourology can assist in positively reinforcing in order to bring about a more sustainable culture on the planet?

Answer 19. I am fairly convinced that no single discipline can achieve such an outcome alone. While “orienting our culture to one that is much more socially sustainable” clearly involves human behavior in major ways, which increases the pertinence of behaviorology, other aspects of this task involve all the other natural sciences to one extent or another. Very likely a widespread understanding of behaviorological principles and practices would substantially ease the task, but I think humanity can only accomplish this task with all the sciences, and the non-mystical humanities as well, working together in a team effort. Of course part of behaviorology’s contributions to such an effort may reside in keeping that effort focused on scientifically sound directions by continuing to clarify the need to reduce the effects of, and even to set aside, all the magical thinking, theological and secular, that otherwise interferes with completing the task of reorienting the culture to one that is fully sustainable. This interference occurs through such magical thinking leading to put-downs of science, blaming victims, and justifying inappropriate compromises with harmful notions like free will and self agents, compromises that humanity can simply no longer afford. Yet another part of behaviorology’s contributions includes providing the appropriate behavioral intervention technologies that humanity needs to build more successfully the interactive, prosocial repertoires of patience, collaboration, cooperation, empathy, and critical thinking, among disparate individuals, groups, and peoples. Humanity needs to strengthen these prosocial behaviors as a way to counter the current momentum toward, as you have described on your prosocialprogress.org website, the “increasing pain and suffering [occurring] through cumulative competitive, and unsustainable behavioral practices” that we currently perpetrate against each other and the world around us. Many behaviorological principles and practices are imminently pertinent to solving such problems.

Question 20. Do you think that the sustainable goals anchored to behaviourology could only come about in a new type of economic system, one which is based on the sharing of resources and cooperation in order to decrease the aversive environment that capitalistic institutions produce for many people?

Answer 20. An economy is a complex web of interconnected contingencies that share in controlling a vast amount of daily behavior across society. The current, confrontational, exploitative, and excessively competitive economic system—rooted in profits *before people*—bears substantial responsibility for bringing about our current problems, leaving it likely quite inadequate to the task of solving those problems. Unless we go extinct, sooner or later humanity will have a fully sustainable, nationally diverse and multi-cultural planetary society, although we may have to pass through another long dark age first. That kind of society, and even many of the intermediate steps to get there, will require a different kind of economy, a likely very different kind of economy from our current one, to support the vastly changed kinds of contingencies that make for a successfully prosocial, cooperative culture. Beyond that basic outlook, since economics resides outside my specialities, I would be presumptuous to try to second guess how, economically, we will get from where we are now to that kind of fully sustainable society. Still, when society reaches the point at which it works in a sustainable manner, I think we can be sure that the economic system will operate in fundamentally different ways from the way our current economies operate.

Question 21. How long do you think it will take until the general public is able to recognise the huge benefits offered by the methods derived from a natural science of behaviour? What will it take until governments are onboard with this, and begin taking behaviourology into account when orienting new social programs to support prosocial and sustainable behaviors while preventing problematic, unsustainable behaviours?

Answer 21. I find that the people I know personally, many of whom work for government agencies, are good people providing their best efforts with the tools available to them. Unfortunately their tool box contains items that are quite detrimental to successfully establishing a sustainable society, such as the age-old but false, and misleading, notions that human behavior comes from the directives of theological and secular inner agents, notions that currently pervade the world's governmental and legal systems. Worse, their tool box lacks the strategies and tactics that behaviorology could add to the tools available from other natural sciences. I think it will take at least as long for the general public, and governments, to recognise and implement the beneficial methods that derive from a natural science of behavior, as it takes to develop and provide the requisite education and practice in this natural science to these groups through the widespread development of behaviorology

departments and programs in higher education. While the certain interrelation of these two suggests a kind of “chicken-and-egg” problem, most likely we need to start with lots of behaviorology Ph.D. programs so that graduates are available not only to expand research on behavior and on applications supportive of sustainable living, but also to teach additional cohorts of students, especially those who become teachers in society's regular education classrooms.

On the other hand, at the undergraduate and master's degree levels, perhaps we should begin by instituting programs in what we might call *Behaviorology and Green Engineering*. These programs—which could become quite popular—would have two equal components. One component would assure well-rounded coverage of all the traditional natural sciences, including those like physics, chemistry, and biology, that students have already contacted in their pre-college education. Recognizing that most students will not have had previous exposure to natural behavior science, the other component would provide detailed coverage of the behaviorology discipline and its applications, interventions, and engineering interactions with the other natural sciences, particularly focused on solving global problems.

With all the research and application development that we can expect from the serious establishment and expansion of behaviorology departments and programs across a widespread cross section of universities and colleges around the globe, I think we might begin to see meaningful developments toward a sustainable society within a matter of years. How many years? Well, we may have less than 50 years before the worst effects of global warming become inescapable, so we better make it happen in substantially fewer years than that. Let's not debate how long these educational efforts might take; let's just keep moving things along. We all have contributions to make to solving our global problems. And the clock is ticking.

Question 22. Earlier, you described a number of factors as coming together to produce your “Behaviorism at 100” article, which began to show other natural scientists that behaviourology, the natural science of behaviour, exists and has a part to play on the natural-science and engineering teams working to solve global problems. Is that article the only resource available to help people work on these problems?

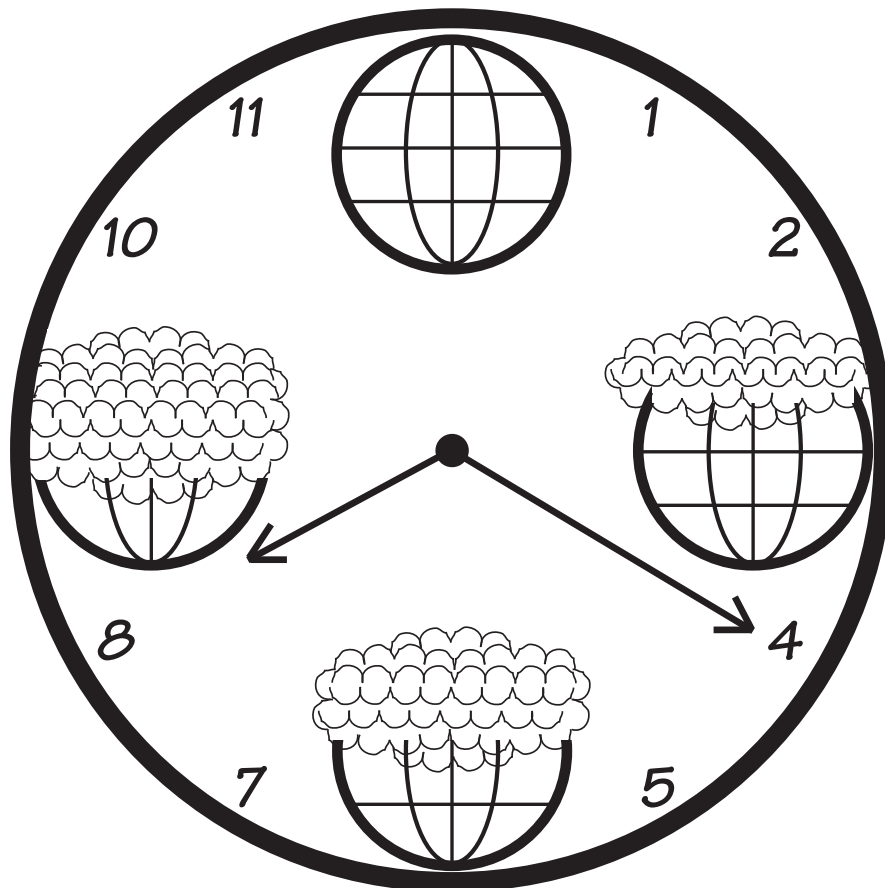
Answer 22. The unabridged version of that article actually became the core of the first chapter in a book for that audience, and for anyone concerned about environmental issues and human survival. This book, with the title, *Running Out of Time—Introducing Behaviorology to Help Solve Global Problems*, details

this natural science of *why* human behavior happens, a natural science that can help build a sustainable society in a timely manner. Using ordinary examples of everyday human behaviors, this 600-page book serves to convey—in a friendly, conversational manner—a basic behavior repertoire in behaviorology and its applications. After the first chapter provides an historical overview, the remaining 23 chapters address the principles, methods, concepts, and practices of behaviorology, along with some scientific answers to some long-standing human questions (e.g., questions about values, rights, ethics, morals, language, consciousness, personhood, life, death, and reality) while continually pointing to interconnections with solutions to global problems. For us\$63 the publisher (BehaveTech Publishing of Ottawa, Canada) is releasing this hardcover book in early February 2014. It contains an extensive glossary, bibliography, and index, and you can purchase copies through local bookstores or from the main distributor, **Direct Book Service, Inc.**, at 800-776-2665. They will likely answer the phone with “Dogwise,” because one of their oldest and most popular specialities involves books about our canine friends; several of these books already specifically apply the laws

of behavior that *Running Out of Time...* systematically introduces. (Of course, an eBook edition will also be available.) On a lighter note, through its web site, www.behaviorology.org, The International Behaviorology Institute [TIBI] offers a CD of the public-radio interview with the organizers of the first behaviorology convention that was held in Potsdam, NY, in 1988. These organizers were Lawrence Fraley, Stephen Ledoux, Ernie Vargas, and Julie Vargas. Even more resources are listed in the bibliography in the *Running Out of Time...* book.♣

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Behaviorological Science and the Complexity of Unfathomable Variation

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Natural scientists in any field and specialization could address natural complexity, relating their arguments to their respective lines of scientific work. Being a behaviorologist, my examples will feature behavioral phenomena, which affords the incidental advantage of being somewhat familiar to everyone regardless of whether or not a person studies behavior formally.

The Traditional Challenge of Complexity

Critics of the scientific approach often point to a class of complex phenomena and observe that it presents a seemingly endless number of interacting variables and that most of those can exhibit wide-ranging variation. Behavior is often cited as an example. Those critics may then insist that such complexity exceeds the analytic capacity even of science. Some will further argue that only the mystical and unlimited powers of a deity could sort through and manage such a seemingly endless landscape of variables. Indeed, to many nonscientists, scientists seem to be backed into the kind of corner implied in such criticisms.

However, we natural scientists insist, on the basis of our philosophy of naturalism, that everything in the real world has a natural history—that is, a *functional* history. Despite what some contemporary physicists currently see as contradictions emerging from studies in quantum mechanics, in the realm of more familiar human experience every event is linked to prior events, and the medium of that linkage is energy. Implicit in that assumption is that the reality of everything within our experience, including all behavioral activity, is established by theoretically traceable energy transfers. To follow the energy backward in time is to retrace the unfolding of reality, and scientists, in general, can accomplish such feats. But reality seemingly comprises multitudinous variables, typically more than can be taken into account under any available budget.

The scientific and philosophical management of this complexity by natural scientists manifests in the medium of behavior. People's bodies must behave both scientific and philosophical activity, that being the only way that those activities happen. As behaviorologically noted, such behavior is not controlled by an independent body-managing spirit or essence called a "self." However, those who rely invalidly on mystical body-driving self agents, including many who describe themselves as "scientists," tend to assert, with

common phrasing, that "it is *people* that **do** science" and that "it is *people* that **do** philosophy." But, objectively, no behavior (including the scientific and philosophical kinds) is "*done*" as the executed will of a pronominally designated self agent (me, you, him, her, etc.).

Instead, behavioral responding simply happens automatically given the specific preceding circumstances that result in particular flows of energy impinging on particular neural bodily microstructures. The discriminative orderliness of behavior reflects an intrinsic orderliness in those energy flows and in the neural structures on which they impinge, ...neural structures that now discriminatively reflect in their structures the contingencies that prevailed during the prior conditioning processes that arranged them.¹ During a behavioral event nothing is left for a self agent to do. And that is not changed by the fact that both the relevant energy flow and the affected bodily structures respectively exist in states of continuous flux.

But implicit in the revelations about incoming energy flows is a seemingly unlimited number of ever-changing contributory, or "independent," variables. Obviously, in most cases, those variables are too numerous, and frequently too irrelevant for all of those that play a functional role in meeting the prevailing contingencies of scientific inquiry into a particular behavioral event, to be taken into analytical account. Hence the corner into which our natural philosophy has led our science, and to which advocates of

¹Behavioral conditioning processes, delineated in behaviorology at one level of analysis, change neural microstructures so that the behavior that those structures mediate becomes accordingly discriminative. The details of that neural activity fall within the scientific province of physiology, which fields an entire subdivision devoted to explicating, at its own level of analysis, the structural intricacies of nervous systems and their functions during behavioral events.

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mysticism may point in defense of their superficially more simplistic and superstitiously conceived alternatives.

Scientific Avoidance of Such Difficulties

The philosophically sanctioned procedural sidestep around that complexity-induced predicament is to acknowledge that complexity and then, reconsidering it with scientific formality and with appropriate philosophical oversight, sort the functional relations according to the extent of their respective address of the contingencies driving our inquiry and in accordance with the prevailing budget. Let us examine this circumvention of complexity in more detail.

From the behaviorological natural-science perspective, any given behavioral response by a body-part occurs entirely and exclusively under the functional control of environmental variables. That is, a theoretically traceable stream of energy flows, with appropriate transformations, from each involved environmental stimulus to the behaving body part,² and it is such an energy flow that renders a particular environmental variable “involved” as a relevant stimulus in the production of a particular behavioral response.

It is that flow of energy, from stimulus to behaving body part, that imparts what we call “functionality” to that stimulus/response relation in the sense that order in the environmental stimulus is preserved in that energy flow and is ultimately reflected in the resulting behavioral manifestation. Behaviors thus differ according to variations in the energy streams that respectively stimulate them—differences that stem from the environmental events from which those energy streams have emanated or reflected.³ Given that energy-mediated differentiation, we speak of the resulting behavioral responding as being environmentally “discriminative.” That production and control of behavior by a flow of incoming energy is why we refer, in the technical sense, to a behavioral event as a *response*, either to a single environmental stimulus or, more realistically, to a set

of stimuli, the sufficiently preserved energetic contributions from which have joined together in transit.

The *environment* to which this discussion alludes is the inferred environment of the behaving body part. A specific reference thereto may pertain to the environmental realm that is interpreted as being external to the whole body, which Ferreira (2013) has labeled the *ectovironment*. For example, the invalidly agential statement, “I see an apple on that tree,” is largely a function of (i.e., controlled by...) what is presumed to be an impinging energy flow from a remote aspect of the environment—a feature that evokes the discriminative verbal behavior, “apple,” and is regarded as being outside of the body that includes the behaving body parts. But the behavior-controlling environment also may include the intrabody realm that surrounds a behaving body part, labeled as the *endovironment* (Ferreira, 2013). For example, the statement, “I have a pain in my left knee” represents verbal behavior presumably controlled largely by an energy flow inferred to be coming directly from elsewhere *within* the body of the behaving organism.⁴

We note that, despite common assertions or implications to the contrary, the whole organism does not behave a given response. A specific instance of behavior is confined to certain body parts to which the energy stream is channeled and that are structurally endowed with a behavioral capacity of the appropriate kind. Most body parts have some discernable behavioral capacity, although in many cases their behaviors are respondent, pertain merely to bodily maintenance, and may remain of more physiological than behaviorological interest.

Note however that, in practical situations, on each instance of asserted control of a behavioral response by an environmental stimulus, we tend to describe what is actually only one, or a limited set, of the behavior-controlling environmental stimuli, while the multitudinous remainder of functionally involved stimuli go unacknowledged. That is, while a large and perhaps seemingly endless number of environmental factors may share in controlling a given behavioral response (i.e., may share in contributing to the energy stream that ultimately stimulates that behavioral response) an analysis of that response will focus analytically on only those environmental variables that seem to be accounting for *most* of the resulting behavioral manifestation, including especially those environmental features that play important roles in meeting the contingencies under which the investigation is occurring.

The fictitious agential self may be said “to isolate conceptually” the most important environmental features, but bodies are merely conditioned to respond

²A transfer of energy is intrinsic to how behavior works, and that is the only way that it works. The energy involved in that transfer gains supplementary input from the body that is mediating the behavioral reaction. To the extent that the behaving body adds to the incoming energy from the environment we say that the subsequent behavior is merely “triggered” by the arriving energy. The adjective *nutritional* alludes to the general mechanism and maintenance of those relevant energy-supplementing processes.

³In the case of gustatory, olfactory, and tactile senses, the incoming energy stream is comprised of moving matter chunks (molecular scale: taste and smell; larger scale: touch). Thus, for those latter three senses, the incoming energy flow involves kinetic energy. The auditory sense also relies on the kinetic energy of molecules put into motion by transmitted compression waves. The visual sense relies on electromagnetic radiation.

⁴The detailed explication of energy transmission through various parts of the nervous system remains a scholarly challenge reserved for the neural physiologists.

automatically to, and in proportion to, the stimuli that together are producing the initial responses—often simple awareness. No self agent exists to be “doing” the responding, including that described as “isolating”; it all happens automatically. The aspect of behavioral complexity that is organized in the behavior-controlling environment cannot originate from within a body that merely, and only, mediates behavior accordingly. The preconditioned neural microstructuring of the body for that behaving has prepared the body to mediate certain kinds of behaving, but the body does not, and cannot, spontaneously originate the particular behaviors.⁵

While a vast number of theoretically discriminable environmental stimuli may share in the functional control of a particular behavioral response, in most cases a small number, sometimes only one of those stimuli, will functionally account for such a large portion of the behavioral outcome of interest that the minor effects of the typically large remainder of lesser contributing environmental factors will go unacknowledged by observers. People tend to say, agentially, that those lesser contributing factors can safely be ignored for what, fundamentally, are economic reasons. However, given the absence of an agent to do the ignoring, such lesser environmental factors have merely resulted in minor and generally unremarkable modifications to behaviors that were largely controlled by other factors.

Behavior, like any other naturally occurring process, is totally controlled, typically by a multitude of theoretically measurable factors. When accounting for a particular behavioral event, the inclusion of any particular independent variable in that account depends on the contingencies under which the analyst is operating.

The Environmental Controls on a Simple Response

Consider an extended example featuring a person's verbal response to the approach of another person. If the approaching individual is evoking only general responses, as opposed to familiar specific responses, our subject responds to the generality of his or her *own* responding to that approaching individual by classifying the approaching party as a *stranger*. That is, some special features of the speaker's *own* ongoing responding to the approaching individual evoke the designation of “stranger”—a response to one's own pattern of responding.

Let us further suppose that in this example the behavioral response is occurring in a culture in which

strangers tend to pass by without being greeted as is common, for example, when throngs of people pass nearby one another on city sidewalks. Normally, under those circumstances, we would not expect a stranger to be greeted. However, for this example, let us assume that the rapidly approaching stranger is not on a course to pass nearby the speaker but instead is on a collision course, perhaps also making eye contact with the speaker, a situation that can be described as an impending confrontation. Those vectorial factors tend in general to result in some kind of utterance by the speaker as opposed to alternative silence of the ignoring variety.⁶

Note that the term *greet* has been mentioned in this exemplification as opposed to *warn* or *challenge*. Let us assume that the approaching stranger evoked a *greeting*. The term *greet* denotes a disarming tenor in such vocal contacts with strangers, a traditionally well-conditioned feature of social self-protection in human subcultures (the prudent rules being, [a] *never rile a stranger* and, absent counteracting factors, [b] *hasten to form a quick camaraderie*).

Let us suppose that the speaker's vocal expression of the emergent greeting features the common *t-to-d* slang form of *partner*, “Howdy, pardner!” The prior social conditioning of such greetings may have differed somewhat according to the gender of the involved parties. Given the kind of social conditioning that has prevailed historically in North American culture, at least mildly implicit in this greeting is that both the speaker and the approaching stranger are males. Female strangers tend more commonly to evoke “Mam” from a male speaker rather than “pardner”; and male strangers more frequently evoke “Sir” from female speakers. If two females are involved, the approaching stranger's evocations would tend to occur under any of a more ranging subset of factors and hence be less predictable but would rarely include “pardner” in a context of mere social proximity. These distinctions allude to socially conditioned, neural, micro-structural differences among the mentioned classes of speakers.

In the current example, the greeting, “Howdy, pardner” is one of many forms of greeting that, currently, a male speaker will have been conditioned to utter as a male stranger approaches. Typically, in accordance with one's conditioning history, the unpredictability of an approaching stranger's behavior narrows one's response-repertoire, usually to cautiously polite reactions. The term *pardner* is assertively, if not sincerely, implicative of

⁵Consider the radio example: Some people may mistakenly think that a radio generates its own complex programming, but the complexity of its programmed presentations, which it merely mediates, comes to the radio in the arriving electromagnetic energy stream.

⁶Note the change in level of analysis from the specific to the general as denoted by the term “tend.” In any given instance, a specific response either will happen, or will not happen, as determined by environment, energy stream, and bodily structure. In general, across many cases, the more frequent outcome emerges, which we then say, “tends” to happen.

trust. The slang form of the greeting contributes to its informality thus augmenting its disarming tenor.

Such cautious initial responding to an oncoming stranger tends also to occur under partial stimulus–control exerted by the most salient of the approaching individual's exhibited and commonly shared features, because chances are higher that an approaching stranger will have grown accustomed to greetings controlled in that way and hence be more likely to respond to them with equanimity. Alternatively, a greeting evoked by a salient idiosyncratic feature of an approaching stranger (such as, “Hi there mister long nose”) tends not to happen, because, even if valid, such greetings have often elicited aversive emotional arousals in strangers. Instead, a somewhat innocuous kind of greeting such as “howdy, pardner” is more common insofar as it tends to have relatively safer implications for an initial speaker who is responding to an oncoming stranger.

The speaker's neural capacity for that safely polite greeting style will have been constructed through a long history of social conditioning. That conditioning history has not “persuaded the speaker's self–agent to be nice,” but instead has micro–restructured certain neural aspects of the speaker's behavior–mediating body so that it now behaves in that disarming way in reaction to the particular kind of energy flow from its environment that we describe as “an approaching stranger.” (Note that our own awareness behavior is as close as we can ever come to our respective environments, which are internally constructed entirely of the behavioral implications of our initial awareness responses.)

To further pursue the current example from our traditionally interpreted perspective, consider in more detail the specifics of the uttered greeting in relation to the environment. Suppose that the approaching stranger is wearing cowboy attire and that the setting is a modern American city located far from cattle–raising country. While a speaker could have emitted any of several common and relatively safe greetings to an approaching stranger (e.g., hello, hi there, welcome, greetings, etc.), this speaker says, “Howdy, pardner.” The cowboy garb worn by the stranger probably evoked that particular greeting, which is now widely treated as a friendly greeting common among men in cattle–raising regions during the bygone cowboy era.

Let us further suppose that this greeting was spoken with a facetious tone. What controlled that stylistic aspect of the spoken greeting? The stranger's attire, incompatible with the surrounding urban context, could be for a costume party, for a role in a motion picture, or for participation in an advertising campaign. The stranger was still unfamiliar, so the greeting was safely friendly and disarming, even though the tone of the greeting, under control of the garb/context disparity, poked mild fun at the sartorial mismatch. Thus, in the manner of a small

social gamble, the greeting emerged in a mildly teasing way that has tended to appeal disarmingly to a stranger's sense of humor. Our speaker was conditioned to rely on everyone else's having shared in the social conditioning of a humorous reaction to such discrepancies.

Next, consider volume. The distance between the speaker and the approaching stranger, along with the volume of the background noise, exerted most of the control on the volume of the speaker's utterance (“Howdy, pardner!”). The speaker's body (not his fictitious agential self) had long ago been conditioned (i.e., neurally microstructured) such that its vocal volume varied in direct proportion both to speaker–listener displacement and to background noise.

Next, we might ask about other response–controlling factors that could also be in play, although perhaps tempted to suggest that, at this point, we may have addressed all of them. But what about the myriad of lesser contextual details that inhere in the speaker's range of perception—for example, the various small details of the stranger's costume such as the shiny unblemished surface of his black cowboy boots, the extraordinary cleanliness of his costume, or the conspicuousness of the bright red trim stitched on his clean white shirt? To the extent that such lesser features emerge as behaviorally implicit environmental constructs within the speaker, we assume in theory that each such feature plays some controlling role, however minor, in stimulating the further behavioral reactions of the speaker. For example, each of these three minor characteristics of the stranger's costume probably, to some small extent, bolstered the controls on the facetious overtone in the uttered greeting by adding slightly to the contextual disparity created by the cowboy garb in the city. Furthermore, this conspicuously overdone costume thereby implied that this stranger was conditioned to respond favorably to exaggerated reactions to it by others.

Suppose that the facial expression of the approaching stranger could be described as serious and firm but unfocused—an expression that could represent a general anger, displeasure, or perhaps merely resolve. This facial expression, implicative of greater risk for the speaker, could enhance the courtesy or friendliness of the speaker's greeting, although again to a degree dependent on the speaker's conditioning history in relation to the immediate circumstances. However, if sufficiently extreme, that facial expression might panic the speaker. For example, if our current speaker had recently been informed that a man with a blankly determined facial expression was wandering about the area shooting people at random, the stranger's facial expression would probably have garnered a much greater fraction of the stimulus control over the speaker's greeting, perhaps facilitated by the speaker's aversive emotional arousal. In that case the result could have been a gross exaggeration of politeness

in the speaker's response or possibly a change in its form entirely from "Howdy, pardner" to something such as "Please, mister, don't shoot me!"

By exploring extended examples of simple behaviors such as this greeting of a stranger, one tends to realize that a list of mostly minor potential contributions to the control of a speaker's greeting response could be extended, in many cases with no perceptible limit, although typically it is presumed theoretically to be finite. In the current example such further minor controls might include factors such as those pertaining to lighting, proximity of witnesses, the speaker's social relation to nearby people, potential escape routes, and the speaker's defensive preparedness.

The combined effects of all involved controlling factors result in a particular behavioral response that seems to be matched uniquely to the totality of the behavior-controlling environment on that particular occasion. People tend to attribute that uniqueness to the "character" of the behaving individual, but there is no self agent (a.k.a. a body-managing *person* or *individual*) present to produce the behavioral nuances that define a person's *character*. It is just energy from many sources combining to impinge on conditionally arranged neural structures and leading to subsequent behaviors possessed of correspondingly unique overtones.

Note that the term *environment* represents a vast and seemingly unlimited field of potential behavior-controlling variables. That is how, essentially, a particular "environment" accrues. An *environment* consists of awareness behaviors and their subsequent implications, and it remains a construct consisting exclusively of internal neural behavioral manifestations. An organism-type chunk of matter cannot transcend itself. That is, an environment remains a neural behavioral construct that is neurally behaved by an organic matter-chunk, and such neural behavioral constructs consist of process-type phenomena that are intrinsic to the bodies that mediate them.

Economic Implications when Analyzing a Behavioral Response

Experiments could continue to sort out the contributory effects of ever more minor environmental variables, but no budget can indefinitely support such an unlimited analytical reach. Although such an analytical process may be carried ever further and with great systematic formality, such efforts eventually approach economic limits beyond which the functional contributions of additional variables, usually minor, are relegated to analytical neglect. While theoretically the functional complexities of any behavioral response can be subjected to any degree of scientific analysis, the increasing cost of that analytical progress must be born, and always implicit in meeting that cost is practical limitation.

Behaviorologists have developed managerial ways of describing the functional roles of lesser controlling variables in such situations—especially those that are of sufficient importance to include in the account that is currently being rendered. The usual approach falls under the rubric of *function-altering stimuli*. In the preceding example we recognize that the principal environmental stimulus for the greeting response was the totality of the approaching stranger per se. The other behavior-stimulating factors, recognizably of a supplementary nature, modified the greeting being evoked by the approaching stranger in various and often small ways. If some such stimuli are of sufficient importance to include in an ongoing analysis, a behaviorologist will regard the approaching individual as the primary evocative stimulus and then treat a related lesser feature (for example, the cowboy garb) as a *function-altering stimulus* that changes that individual's evocative status. Instead of evoking a simple "hello" (or a similarly common and simple greeting) the approaching individual, altered by his cowboy garb, thereby becomes evocative of "howdy, pardner."

Analytically, the cowboy garb is treated as a function-altering stimulus that changes the evocative function of the approaching stranger. Furthermore, the perceived contextual disparity between the garb and the general setting can be regarded as a secondary function-altering stimulus that changes the effect of the primary function-altering stimulus (the garb per se).⁷ Accordingly, the "howdy pardner" comes to be rendered with a facetious tone. Behaviorologists have developed schemes of symbolic notation with which to denote such relations between a primary evocative stimulus and its associated function-altering stimuli (see Fraley, 2008, Chapter 15).

A systematic scientific experimental approach to the analysis of a behavioral response is both potentially possible and theoretically doable, because, as the philosophy of naturalism acknowledges, behavior is *totally* controlled via functional relations that remain subject to scientific analyses. With an inductive leap based on objective observations, natural scientists of behavior assume that behavior has no mystical component that could supplement the objectively treatable functionality in a behavioral event. To develop the necessary scientific control for effective experimentation, we may transfer the situation from field to laboratory. But as natural scientific accounting has advanced, superstitious accounting has always retreated, and that, predictably, will continue to hold true in the field of human behavior. While the science and philosophy may be in place to withstand the

⁷Note that a response to a contextual disparity is actually a response to differences in one's own responding as one's responding alternates, with contrast, between two aspects of the environment.

comprehensive challenge posed by natural complexity, the supportive economics are always limited. Rarely, if ever, could we afford to carry a program of scientific analysis to the exhaustion of *all* potentially involved functions that theoretically may be identifiable through theoretical or practical means.

In any given practical situation, at the point that we cease the objective search for, and analyses of, additional functional controls over a behavioral response, we must accept the residual ignorance that lingers at that point in our investigation. As a result, we are left with some “variance.” However, to retain scientific objectivity in coping with such residual ignorance, we can resort to statistical methods including probability statements. This represents a convenient change in the level of analysis from the specific to the general and permits us to continue saying some useful general things about multitudinous matters the specifics of which remain economically beyond our analytical reach.

In the deterministic context of theoretical science, as B. F. Skinner explained on page 112 in *Science and Human Behavior* (1953) if a behavioral response *can* happen, it *will* happen; and if it does not happen, it could not have happened. Thus, a probability statement about the occurrence of a behavior or a behavioral characteristic is implicitly a confession of ignorance pertaining to the presence or absence of some *potentially* functional stimulus control that is known, in general, to be capable of functional potency but the presence or absence of which has been neglected in the current analysis. Beyond our economic limits to analyze the totality of the functional control over a behavioral response, probability statements, rendered attainable by shifting our level of analysis, provide a practical kind of management for our residual ignorance. Following a given line of scientific inquiry, the “probabilities” with which we are left should simply be within acceptably useful limits. But note that *probability* is a term of ignorance management imposed by resource limitation; it is *not* a concession to an implicitly unnatural capriciousness.

The myriad of minor unanalyzed factors that contribute in often small ways to the stimulation of a particular behavioral response tend to impart to that response the superficial characteristics that render it unique. The behaving body must have been conditioned (i.e., neurally microstructured) to respond to those minor environmental factors such that those resulting minor particulars of the behavior—mediating body structure result in the superimposition, on the primary behavioral outcome, of many small variations. Those kinds of minor behavioral variations impart to the primary behaviors on which they are superimposed some of the special superficial differences that people tend to attribute to the “special unique character” of an individual.

If our question of interest remains *why* a particular speaker in a particular situation greeted an approaching stranger by saying, “Howdy, pardner” with a particular style of intonation—and if, as always, we are operating scientifically on a particular budget of one kind or another—then we will identify and consider the major controlling factors to a practical extent while generally acknowledging the existence of lesser others as we ignore their specifics. As is true of everyone else, scientists and engineers do not bog down in the seemingly limitless insignificant details of every phenomenon that they investigate.

Summary

A natural science of behavior is possible under the assumption that behavior comprises only naturally functioning phenomena, as, presumably, does everything else in the natural universe. Theoretically traceable streams of energy from natural sources impinge on certain neural structures resulting in the release of potential energy and ultimately yielding behavioral effects. The relevant natural sciences for a somewhat comprehensive accounting of such phenomena are (1) physics, which accounts for the energetic medium per se, (2) physiology, which accounts for the behavior—mediating body structure, and (3) behaviorology, which accounts for (a) the relations between order in the energy flows that stimulate the bodily structures to behave and (b) the resulting behavioral manifestations.

Although only objectively specified factors qualify for involvement in a scientific accounting for a specific response, the various kinds of contributing factors may lie within, or outside of, our technical analytical capacity. But typically, from an economic perspective, the numerosity of the lesser contributors seems insurmountably to tax our analytical efforts. We must deal with this complexity without recourse to mystical forces and other superstitious conjuring. The scientific approach to the management of such complexity involves the timely shifting of the level of analysis from the specific to the general. Doing so facilitates the selective omission of unimportant factors that are involved in functional relations—the specific tracing of which remains as yet too costly.

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Submission Guidelines

Journal of Behaviorology (previously known as *Behaviorology Today*) is the peer-reviewed Journal of TIBI (*The International Behaviorology Institute*) and is published in the spring and fall of each year.

To submit items, contact the Editor:

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Considerations

The Journal entertains experimental or applied research papers and theoretical or conceptual or literature review articles (all of which will have at least three reviewers) as well as book reviews, on terms, in response, and program descriptions (two reviewers) plus letters, memorials, etc. The members of the TIBI Board of Directors constitute the basic Editorial Review Board (ERB) on which others can serve as members or guests. Authors will not be identified to reviewers and reviewers will not be identified to authors, except when they opt to sign their reviews. (Some reviewers prefer to sign, usually in acknowledgement of the additional assistance that they are prepared to offer the author.) Each reviewer will provide constructive feedback as well as a recommendation: accept, or accept with revisions, or revise and resubmit, or reject.

Based on the set of reviewer recommendations and comments, the Editor will convey the feedback and summary decision to the author(s). With assistance from members of the ERB, the Editor will also provide authors with guidance to shape the best manuscripts possible in a reasonable time frame.

All accepted pieces must contribute to the behaviorology discipline (e.g., by relating to or clarifying or expanding some part of the discipline such as the philosophical, conceptual, theoretical, experimental, applied, or interdisciplinary aspects). Accepted pieces must also be crafted in ways that convey as much consistency as possible with the principles, concepts, practices, philosophy, and terminology of the discipline.

Research paper authors (a) must obtain any necessary permissions or approvals from the Human-Subjects

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Mechanics

Authors are encouraged to contact the editor to discuss their manuscript prior to submission to answer questions and clarify procedures and processes. Initially, a paper should be submitted to the editor by email as a PDF attachment.

The email will contain a cover letter. This letter should describe the article, and the work or history behind it, and will include the author name(s), affiliation(s), addresses, phone numbers, paper title, footnotes (e.g., acknowledgements, disclosures, and email or other contact information for publication) as well as comprehensive contact information on up to six suggestions for possible reviewers.

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The TIBI 27th Behaviorology Anniversary Convention

Focusing on concepts, research, demonstrations, and interventions of interest to a range of professional audiences, including human service practitioners, TIBI will host the 27th Behaviorology Anniversary Convention on 21–23 May 2014 in Canton, NY. Visit www.behaviorology.org for details. TIBI will have a range of behaviorology-related items available, including a CD recording and several books, including these:

& The CD *August 1988 Public Radio Interview of the Organizers of the First Behaviorology Convention*

& The book *General Behaviorology: The Natural Science of Human Behavior* (Lawrence Fraley, 2008)

& The book *Dignified Dying—A Behaviorological Thanatology* (Lawrence Fraley, 2012)

& The book *Behaviorological Rehabilitation and the Criminal Justice System* (Lawrence Fraley, 2013)

& The book *Running Out of Time—Introducing Behaviorology to Help Solve Global Problems* (Stephen Ledoux, 2014)

& The book *The Science and Technology of Dog Training* (James O’Heare, 2014)

The last two books are also available through local bookstores or from their main distributor, **Direct Book Service, Inc.**, at 800-776-2665, who will likely answer the phone with “Dogwise,” because their most popular speciality involves books, like O’Heare’s dog-training book, about our canine friends.

TIBI Web Site Updated

After its first 10 years online, TIBI has completely renovated its web site. Navigation is far easier than on the old site. News announcements not only appear regularly, but they are also archived. You can still visit the original—and now unchanging—site, by clicking on “First 10-years Archive” under the HOME menu. Other main menu categories include NEWS, GENERAL, JOURNAL, BOOKS, EDUCATION, and CONTACTS. Each of these includes any necessarily related submenus. Check them all out! ☺

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Behaviorology

THE INTERNATIONAL BEHAVIOROLOGY INSTITUTE, LTD. (TIBI)

Welcome

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- The natural science of human nature and human behavior
- A natural science of *why* human behavior happens
- A natural science that helps build a sustainable society in a timely manner

This is the current Web site of TIBI (The International Behaviorology Institute). You can find out more about us under [ABOUT US](#) under **HOME**.

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- TIBI's annual *Behaviorology Anniversary Conventions*
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- The appearance of important behaviorology articles elsewhere
- The publishing of books on various behaviorology topics
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Syllabus Directory

The most recent issue of *Journal of Behaviorology* that features a syllabus directory contains these two lists of current syllabi. These lists show where to find the most up-to-date versions (in title and content) of TIBI's current course syllabi. The first list organizes the syllabi by the chronological volume and number where you can find each one (with volumes 5 through 15 under the name *Behaviorology Today*). The second list organizes the syllabi by numerical course number.

Current Syllabi by Volume & Number

Volume 7, Number 2 (Fall 2004): BEHG 101:
Introduction to Behaviorology I.*

Volume 7, Number 2 (Fall 2004): BEHG 102:
Introduction to Behaviorology II.*

Volume 7, Number 2 (Fall 2004): BEHG 201:
Non-Coercive Child Rearing Principles and Practices.*

Volume 7, Number 2 (Fall 2004): BEHG 355:
Verbal Behavior I.*

Volume 8, Number 1 (Spring 2005): BEHG 400:
Behaviorological Rehabilitation.

Volume 8, Number 1 (Spring 2005): BEHG 415:
Basic Autism Intervention Methods.*

Volume 8, Number 1 (Spring 2005): BEHG 420:
Performance Management and Preventing Workplace Violence.*

Volume 8, Number 1 (Spring 2005): BEHG 425:
Non-Coercive Classroom Management and Preventing School Violence.*

Volume 8, Number 1 (Spring 2005): BEHG 475:
Verbal Behavior II.*

Volume 8, Number 2 (Fall 2005): BEHG 410:
Behaviorological Thanatology and Dignified Dying.

Volume 9, Number 1 (Spring 2006): BEHG 365:
Advanced Behaviorology I.

Volume 9, Number 2 (Fall 2006): BEHG 470:
Advanced Behaviorology II.

Volume 10, Number 1 (Spring 2007): BEHG 120:
Non-Coercive Companion Animal Behavior Training.

Current Syllabi by Course Number

BEHG 101: *Introduction to Behaviorology I*:
Volume 7, Number 2 (Fall 2004).*

BEHG 102: *Introduction to Behaviorology II*:
Volume 7, Number 2 (Fall 2004).*

BEHG 120: *Non-Coercive Companion Animal Behavior Training*:
Volume 10, Number 1 (Spring 2007).

BEHG 201: *Non-Coercive Child Rearing Principles and Practices*:
Volume 7, Number 2 (Fall 2004).*

BEHG 355: *Verbal Behavior I*:
Volume 7, Number 2 (Fall 2004).*

BEHG 365: *Advanced Behaviorology I*:
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BEHG 415: *Basic Autism Intervention Methods*:
Volume 8, Number 1 (Spring 2005).*

BEHG 420: *Performance Management and Preventing Workplace Violence*:
Volume 8, Number 1 (Spring 2005).*

BEHG 425: *Non-Coercive Classroom Management and Preventing School Violence*:
Volume 8, Number 1 (Spring 2005).*

BEHG 470: *Advanced Behaviorology II*:
Volume 9, Number 2 (Fall 2006).

BEHG 475: *Verbal Behavior II*:
Volume 8, Number 1 (Spring 2005).* ☺

*An older version appeared in an earlier issue.

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The intrinsic value of TIBIA membership rests on giving the member status as a contributing part of an organization helping to extend and disseminate the findings and applications of the natural science of behavior, behaviorology, for the benefit of humanity. The levels of TIBIA membership include one “free” level and four paid levels, which have increasing amounts of basic benefits. The four annual paid membership levels are Student, Affiliate, Associate, and Advocate. The Student and Affiliate are non-voting categories, and the Associate and Advocate are voting categories. All new members are admitted provisionally to TIBIA at the appropriate membership level. Advocate members consider each provisional member and then vote on whether to elect each provisional member to the full status of her or his membership level or to accept the provisional member at a different membership level. Here are all the membership levels and their criteria and basic benefits (with dues details under *TIBIA Membership Cost Details* on the application-form page):

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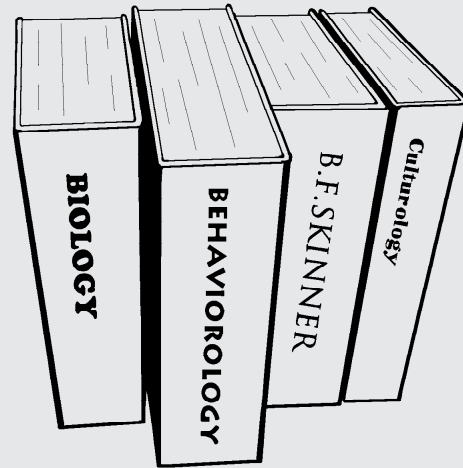
TIBI / TIBIA Purposes*

TIBI, as a non-profit educational corporation, is dedicated to many concerns. TIBI is dedicated to expanding and disseminating the behaviorological literature at least through the fully peer-reviewed *Journal of Behaviorology* (previously called *Behaviorology Today*) and the behaviorology.org web site; TIBI is also dedicated to teaching behaviorology, especially to those who do not have university behaviorology departments or programs available to them; TIBI is also a professional organization dedicated to organizing behaviorological scientists and practitioners into an association (*The International Behaviorology Institute Association—TIBIA*) so that they can engage in a range of coordinated activities that carry out their shared purposes. These activities include (a) holding conventions and conferences and so on; (b) enabling TIBI faculty to arrange or provide training for behaviorology students; and (c) providing TIBI certificates to students who successfully complete specified behaviorology curriculum requirements. And TIBI is a professional organization also dedicated to representing and developing the philosophical, conceptual, analytical, experimental, and technological components of the separate, independent discipline of behaviorology, the comprehensive natural-science discipline of the functional relations between behavior and independent variables including determinants from the environment, both socio-cultural and physical, as well as determinants from the biological history of the species. Therefore, recognizing that behaviorology's principles and contributions are generally relevant to all cultures and species, the purposes of TIBI are:

- A. to foster the development of the philosophy of science known as radical behaviorism;
- B. to nurture experimental and applied research analyzing the effects of physical, biological, behavioral, and cultural variables on the behavior of organisms, with selection by consequences being an important causal mode relating these variables at the different levels of organization in the life sciences;
- C. to extend technological application of behaviorological research results to areas of human concern;
- D. to interpret, consistent with scientific foundations, complex behavioral relations;
- E. to support methodologies relevant to the scientific analysis, interpretation, and change of both behavior and its relations with other events;
- F. to sustain scientific study in diverse specialized areas of behaviorological phenomena;
- G. to integrate the concepts, data, and technologies of the discipline's various sub-fields;
- H. to develop a verbal community of behaviorologists;
- I. to assist programs and departments of behaviorology to teach the philosophical foundations, scientific analyses and methodologies, and technological extensions of the discipline;
- J. to promote a scientific "Behavior Literacy" graduation requirement of appropriate content and depth at all levels of educational institutions from kindergarten through university;
- K. to encourage the full use of behaviorology as an essential scientific foundation for behavior related work within all fields of human affairs;
- L. to cooperate on mutually important concerns with other humanistic and scientific disciplines and technological fields where their members pursue interests overlapping those of behaviorologists; and
- M. to communicate to the general public the importance of the behaviorological perspective for the development, well-being, and survival of humankind. ☺

*This statement of the TIBI / TIBIA purposes has been adapted from the TIBI by-laws.—Ed.

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BEHAVIOROLOGY IS AN INDEPENDENTLY ORGANIZED DISCIPLINE FEATURING THE NATURAL SCIENCE OF BEHAVIOR. BEHAVIOROLOGISTS STUDY THE FUNCTIONAL RELATIONS BETWEEN BEHAVIOR AND ITS INDEPENDENT VARIABLES IN THE BEHAVIOR–DETERMINING ENVIRONMENT. BEHAVIOROLOGICAL ACCOUNTS ARE BASED ON THE BEHAVIORAL CAPACITY OF THE SPECIES, THE PERSONAL HISTORY OF THE BEHAVING ORGANISM, AND THE CURRENT PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH BEHAVIOR OCCURS. BEHAVIOROLOGISTS DISCOVER THE NATURAL LAWS GOVERNING BEHAVIOR. THEY THEN DEVELOP BENEFICIAL BEHAVIOROLOGICAL–ENGINEERING TECHNOLOGIES APPLICABLE TO BEHAVIOR–RELATED CONCERNS IN ALL FIELDS INCLUDING CHILD REARING, EDUCATION, EMPLOYMENT, ENTERTAINMENT, GOVERNMENT, LAW, MARKETING, MEDICINE, AND SELF–MANAGEMENT.

BEHAVIOROLOGY FEATURES STRICTLY NATURAL ACCOUNTS FOR BEHAVIORAL EVENTS. IN THIS WAY BEHAVIOROLOGY DIFFERS FROM DISCIPLINES THAT ENTERTAIN FUNDAMENTALLY SUPERSTITIOUS ASSUMPTIONS ABOUT HUMANS AND THEIR BEHAVIOR. BEHAVIOROLOGY EXCLUDES THE MYSTICAL NOTION OF A RATHER SPONTANEOUS ORIGINATION OF BEHAVIOR BY THE WILLFUL ACTION OF ETHEREAL, BODY–DWELLING AGENTS CONNOTED BY SUCH TERMS AS *mind*, *psyche*, *self*, *muse*, OR EVEN PRONOUNS LIKE *I*, *me*, AND *you*.

AS PART OF THE ORGANIZATIONAL STRUCTURE OF THE INDEPENDENT NATURAL SCIENCE OF BEHAVIOR, *The International Behaviorology Institute* (TIBI), A NON–PROFIT ORGANIZATION, EXISTS (A) TO ARRANGE PROFESSIONAL ACTIVITIES FOR BEHAVIOROLOGISTS AND SUPPORTIVE OTHERS, AND (B) TO FOCUS BEHAVIOROLOGICAL PHILOSOPHY AND SCIENCE ON A BROAD RANGE OF CULTURAL CONCERNS. AND *Journal of Behaviorology* IS THE REFERRED JOURNAL OF THE INSTITUTE. JOURNAL AUTHORS WRITE ON THE FULL RANGE OF DISCIPLINARY TOPICS INCLUDING HISTORY, PHILOSOPHY, CONCEPTS, PRINCIPLES, AND EXPERIMENTAL AND APPLIED RESEARCH. JOIN US AND SUPPORT BRINGING THE BENEFITS OF BEHAVIOROLOGY TO HUMANITY. (CONTRIBUTIONS TO TIBI OR TIBIA—THE PROFESSIONAL ORGANIZATION ARM OF TIBI—ARE TAX DEDUCTIBLE.)✂

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