



# Journal of Behaviorology

ISSN 2331-0774

A journal of TIBI: The International Behaviorology Institute

Behaviorology

Conductologia

Xingwei Xue

Gedragologie

Behaviourology

## CONTENTS

**N**OTE: 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, in January 2012, all material receives full peer review. See the "Submission Guidelines" for details.

<i>Editorial</i>	2
<i>Changing Terms is Insufficient to Save our Science and Practice—A Response to the Special Section on the term Behavioral Materialism</i> STEPHEN F. LEDOUX	3
<i>Syllabus Directory*</i>	10
<i>Publishing about Autism Spectrum Disorder in the Journal of Applied Behavior Analysis and the Journal of the Experimental Analysis of Behavior: Bibliometric Analysis (1958–2017)</i> ALEXANDR A. FEDOROV	11
<i>Table of Contents for the Book, About Science, Life, and Reality, by Lawrence Fraley</i> (ASSEMBLED BY STEPHEN LEDOUX)	21
<i>Editorial Review Board &amp; Guest Reviewers / Back Issues &amp; Donations</i>	22
<i>Visit <a href="http://www.behaviorology.org">www.behaviorology.org</a> / Journal &amp; Website Copyrights</i>	22
<i>Submission Guidelines</i>	23
<i>TIBIA Memberships Costs &amp; Criteria &amp; Benefits</i>	24
<i>TIBIA Membership Cost Details (and Application Form)</i>	25
<i>TIBI / TIBIA Purposes</i>	26
<i>About Behaviorology, TIBI, and Journal of Behaviorology</i>	27
<i>Some TIBI Board Member Contacts</i>	28

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

## *Editorial*

**James O’Heare**

(Action Editor for this issue)

This issue of the *Journal of Behaviorology* consists of two articles. The first article, “Changing terms is insufficient to save our science and practice—A response to the Special Section on the term Behavioral Materialism,” by Stephen F. Ledoux, is an excellent contribution to the Special Section that appeared in the last issue (Volume 22, Number 1–2) on the term radical behaviorism and Joe Morrow’s proposal for an alternative name, behavioral materialism. After reading all of the articles in that Special Section, and Ledoux’s article in the current issue, I am personally persuaded of the alternative “behavioral naturalism.” I am also persuaded that a new name would benefit the future of our science.

The word “radical” has come to evoke a completely different set of responses than it would have when it was first used in the label, “radical behaviorism,” and in the *already conditioned* repertoires of disciplinary members. Getting those repertoires, however, always required some extra, explicit conditioning with students, and the public, when the term, “radical behaviorism,” was used with them. That kind of distracting clarification, when the term is used or taught, is a confusing educational inefficiency. This article, however, should not be the last word. Other contributions to this discussion in issues to come would be a welcomed augment to the topic.

The second article, by Alexandr A. Fedorov, has the title, “Publishing about autism spectrum disorder in the *Journal of Applied Behavior Analysis* and the *Journal of the Experimental Analysis of Behavior*: Bibliometric analysis (1958–2017).” This article addresses the broad range of

research on autism spectrum disorder (ASD), a topic of interest to many behavior analysts and behaviorologists. The vast majority of the analyzed studies appeared across the pages of the two prominent behavior–science journals named in the title. An important conclusion involved the schism between basic and applied research and publishing as reported mostly with respect to ASD research.

One last new item in this issue provides readers with the Table of Contents for Lawrence Fraley’s new book, *About Science, Life, and Reality*. This soft–cover, 214–page book breaks new ground by clarifying and connecting the elements of the book’s title, science, life, and reality. The book begins with some details about the imminently needed steps, by traditional natural scientists, to integrate behaviorology courses, programs, and departments into their natural–science units at colleges and universities to enable its practitioners to supply the culture with fully scientific solutions to the behavior components of global—and individual and local—problems. The book then proceeds to describe and resolve some of the difficulties faced by that task. These difficulties begin with the culture’s long–standing intellectual error of accepting pre–scientific—and today, unscientific—accounts for behavioral and other phenomena. These difficulties even extend to misconceptions of reality, with Fraley describing a more scientifically accurate conception of reality. Every applied behaviorologist, every BCBA, indeed every person, interested in understanding behavior and reality better, will find much of value in this book. ☺

# *Changing Terms is Insufficient to Save Our Science and Practice—A response to the Special Section on the term Behavioral Materialism*

Stephen F. Ledoux\*

*Abstract:* For decades the label “Radical Behaviorism” has named the philosophy of science of behaviorology as an extension of Naturalism, the general philosophy of science of the natural sciences. Substituting the label “Behavioral Materialism” for the label “Radical Behaviorism” would end some continuing difficulties that have reduced efficient dissemination of information in public and educational settings. Yet for people outside philosophy, the “Behavioral Materialism” label could create the new difficulty of confusion over the meaning of “materialism.” Science cannot leave anyone behind, because all must help solve global problems. A label, like “Behavioral Naturalism,” that ends the same difficulties that the “Behavioral Materialism” label ends, but without creating a new one, would help, and also carries the connection with the natural sciences and their general philosophy of science. This, along with other efforts, could, and must, help save our science and practice, if *we*, under any name, are to help solve global problems.

When the editor of the *Journal of Behaviorology* accepted the suggestion, one that Traci Cihon and I made, for a Special Section of commentaries discussing Joseph Morrow’s Behavioral Materialism paper (2019), I recused myself<sup>1</sup> both from any initial commentary contribution and from reviewing manuscripts directly addressing his paper, because Dr. Morrow had served most effectively, in the early 1970s, as my undergraduate mentor and as my MA thesis advisor. Making this “In Response” contribution in a subsequent journal issue, however, seems reasonable. The commentary papers in the Special Section, in their order of appearance, were Fedorov, 2019; Critchfield & Epting, 2019; Morris, 2019; Fraley, 2019; and Ferreira, 2019.

Professor Morrow’s paper describes various difficulties that adhere to the label “Radical Behaviorism” every time it is used, especially with new listeners or readers, in both public and educational settings. Time and energy

must then go into addressing these difficulties, clarifying and explaining them, if the audience has not already simply “left the room,” put off by its misunderstanding of both words “radical” and “behaviorism.” For the lost audience as well as the audiences that remain, such efforts necessarily reduce the efficiency of education and dissemination. Current global problems, however, have established a shrinking time frame in which to solve these problems before their worst effects overtake humanity (Thompson, 2010). As Marshall McLuhan pointed out, “There are no passengers on spaceship Earth; we are all crew” (see Worth, 2019, p. 17).

That shrinking time-frame contingency, however, necessitates *increasing* education and dissemination efficiencies. Even when the efforts seem small, like changing from a less helpful label to a more helpful label naming a philosophy of science, any efforts to increase the associated efficiencies deserve encouragement. Of course,

---

\* Address correspondence regarding this paper to ledoux@canton.edu.

<sup>1</sup>Agents (like “I”) and agential selves (like “myself”) are irrelevant to dealing with behavior. Until a new grammar (see Ledoux, 2014) widely controls verbal behavior, however, such terms typify a range of standard verbal shortcuts, familiar to behaviorology-discipline readers as *verbal shortcuts*, that appear in this (and many) articles to move the content along rather than bog it down in *already-understood*, long-winded technicalities, which would greatly reduce readability. This concern similarly extends to other verbal shortcuts such as descriptions of contingencies as “on” individuals or groups even though contingencies really only operate on behavior.

*Key words:* Philosophy of science, naturalism, behaviorism, radical behaviorism, behavioral materialism, behavioral naturalism, behaviorology, The Experimental Analysis of Behavior (TEAB), Applied Behavior Analysis (ABA), natural science, contingency engineering

larger efforts also deserve encouragement, including efforts to put the natural science of behavior and its contingency engineering into the mainstream, supported by as many natural scientists of behavior as possible, who go by a couple of different disciplinary names.

Professor Morrow's paper also persuasively describes his proposal that the "Behavioral Materialism" label can put an end to many of the problems that adhere to the "Radical Behaviorism" label; his paper should be read as much for the details of these problems as for the details of his solution (so, few such details get repeated here). While less problematic than the "Radical Behaviorism" label, the "Behavioral Materialism" label is not fully helpful if it brings with it problems of its own. For example, while Morris (2019) discusses some problems, here is another. Outside philosophy circles many people remain uninformed about the philosophical meaning of the term "materialism" as referring to the opposite of "idealism" (the philosophical meaning of which many people also misunderstand). Indeed, many people, including those in other disciplines and fields along with clients, consumers, and students, respond to the term "materialism" by equating it with "possession of material goods," a notion commonly arising from some contingencies at work in the generally pre-scientific, traditional cultural conditioning of unquestioned childhood upbringing. This misunderstanding survives, leaving little reason to hunt for other meanings.

Can a different label solve the other problems that the "Behavioral Materialism" label solves and avoid this one as well? Such a label could be well placed to increase education and dissemination efficiencies. And, as Critchfield and Epting (2019) ask in different words, what contingencies can bring about the widespread use of new terms and, by implication, further support mainstreaming the natural science of behavior and its contingency engineering (i.e., our science and practice)?

Similarly, what contingencies can bring about the even greater changes needed to help solve global problems, especially those with behavior components in the problems and the solutions? These need our time and energy and effort. If the involved scientists find such questions daunting, and back away from trying, others may retreat also, which is unhelpful for everyone. Instead *we need a range of new responses*. Whether these new responses involve just adopting relatively "little" new terms, or involve adopting relatively "big" new cultural practices, is not the point, because either one may help the other. Let the new responses flow. As we work with the contingencies and their functional control of behavior, some new responses will predictably get selected.

### About New Terms

Regarding the question of adopting new terms in general, some experience has already accumulated. Over recent decades lots of new terms have ended problems with older terms. Some of these include (a) the terms "added" and "subtracted" reinforcement and punishment replacing the terms "positive" and "negative" reinforcement and punishment (see Ledoux, 2015, pp. 199–204); (b) the term "coincidental" reinforcement replacing the term "accidental" reinforcement (see Ledoux, 2014, Chapter 11); (c) the terms "evocation" and "evocative" replacing the terms "discrimination" and "discriminative" (see Ledoux, 2014, Chapter 12); (d) the term "behaviorology" replacing the term "behavior analysis," which was replacing the term "The Experimental Analysis of Behavior" (TEAB; see Fraley & Ledoux, 2015); and (e) the term "contingency engineering" (the applied part of behaviorology, the largest area of which is commonly known as Applied Behavior Analysis: ABA) replacing the term "behavior engineering" which was replacing the term "behavior modification" (various authors, and discussed in Ledoux, 2014, 2017).

Looking more closely at that last change in terms (i.e., about changing from "behavior modification" to "behavior engineering" to "contingency engineering") can also show how interconnected improving terms might be with bigger concerns like solving global problems. Many professionals stopped using the term "behavior modification," due to bad press about the word "modification." Another reason, however, exists for dropping this term. And this reason also applies to why the term "behavior engineering" is an inadequate alternative. Due to the contingencies in their traditional cultural conditioning, people in general respond negatively, particularly with negative, respondently conditioned emotional responses, to modifying—or manipulating, or controlling, or engineering—*behavior*. Meanwhile, the responses to modifying—or manipulating, or controlling, or engineering—independent variables, and environments, and even contingencies, are far more neutral.

Now, with those more neutral responses in hand—neutral responses to engineering independent variables, environments, and contingencies—consider the facts about the activities of natural scientists and engineers who study behavior. They do not actually—as in directly—modify or manipulate or change or control or engineer *behavior*. For these two reasons (i.e., the negative emotional reactions against "modify [etc.]" and the fact that scientists and engineers who study behavior do not directly "change [etc.]" behavior) much confusion, misunderstanding, and objection arises when these scientists and engineers claim or even imply that



they do so, by using these older terms. Instead their engineering efforts and interventions and practices all focus on changing the environment, on changing the contingencies, on changing the functional relationships—between independent variables and behavior—that determine behavior.

In setting aside the “behavior engineering” term, natural scientists of behavior could not, without also causing unnecessary confusion, use the term “environmental engineering,” because others, grounded in other sciences, were already using this term for a different field. That is partly why some in the natural science of behavior, behaviorology, and its engineers have begun to use the term “contingency engineering” (e.g., Ledoux, 2014, 2017). This engineering changes contingencies that then generate and shape and maintain behaviors that garner the support of individuals and society. Some contingency–engineering areas of behaviorology include its ABA areas of parenting, regular and special education, behavioral medicine, green contingency engineering, dignified dying, companion animal training, behavioral safety, business and organizational management, penal rehabilitation, and autism and developmental disabilities interventions, among others (Ledoux, 2019).

### **Objections and Interconnections**

Some people object to that list of contingency–engineering areas, because it seems to them as merely a kind of claim–staking exercise. Others object to some people’s policy of trying to make behaviorology go away by telling impressionable students to ignore whatever anyone says if they use the term “behaviorology,” a policy that also looks like a kind of claim–staking exercise. Such extinction policies have failed while ABA areas continue to derive from the natural science that Skinner started in the 1930s, a name for which is behaviorology, a name which is here to stay. *But time spent arguing such issues is time wasted* in terms of helping solve global problems, because if mutual attempts at response extinction by associated professionals succeed in dictating the reduction of further efforts, then success gets reduced, even precluded, for everyone.

Those concerns exemplify how everything is interconnected. Solving global problems is in some vital ways connected to bringing the natural science of behavior and its contingency engineering into the mainstream, which is in some ways connected to adopting more appropriate terms that cause fewer difficulties and so lead to education and dissemination efficiencies, which are now needed more than ever. So, back to the terminology concerns.

As mentioned, the term “Behavioral Materialism” solves a bunch of problems, yet it also introduces the new one regarding misunderstandings over the

word “materialism.” This term poses few problems for philosophers, one of the major audiences for Morrow’s proposal. The contingencies on philosophers regularly compel them to deal with the philosophical connotations of the term “materialism.” The contingencies on many members of the general public, however, leave them confronting mostly the “possession of material goods” connotation of the term “materialism,” a connotation typically found objectionable.

That raises a question. Can we find a term that can replace the label “Radical Behaviorism” while solving all the problems with it that the suggested replacement term “Behavioral Materialism” solves, but that does not create any new problems?

In answer, here is one possibility; perhaps it also creates new problems. Given that “Naturalism” continues as a common label tacting the general philosophy of science of the natural sciences including behaviorology, perhaps the label “Behavioral Naturalism” would make a reasonable replacement for the label “Radical Behaviorism,” for the same or similar reason, and solving mostly the same or similar problems, as Morrow discussed for the “Behavioral Materialism” label. The label “Behavioral Naturalism” explicitly connects our philosophy of science, the philosophy of science of the natural science of behavior, to Naturalism, the philosophy of science of the natural sciences. And explicitly acknowledging this connection remains appropriate because, after all, our philosophy of science *is an extension* of the Naturalism of the natural sciences (Ledoux, 2019).

### **Larger–Scale Problems**

Larger problems, however, remain. Even before solutions to global problems come before us for consideration, Critchfield and Epting (2019) raised other problems. These concern how, successfully, to change terms and, even more importantly, how to improve the prospects for our science and practice. To begin answering, a return to the implications of our scientific roots seems appropriate.

The process of changing to any and all of those mentioned newer terms, including “Behavioral Materialism” or “Behavioral Naturalism,” involved and involves the occurrence of these terms, consistently and continually (unless something even better comes along) while the contingencies that build history decide on the staying power of the terms. Of course, traditional agential phrasing would speak of “using” these terms, while scientific readers respond to “using” as a well–understood verbal shortcut. More importantly, adopting those terms works better when done *from within a clear program* for disciplinary—science and practice—improvement, such as behaviorologists pursue with respect to maintaining (and perhaps even growing) a natural science of behavior

that (a) stands as the fourth basic science subject matter at the roundtable of natural sciences (i.e., energy, matter, life, behavior as subject matters of physics, chemistry, biology, and behaviorology respectively; Fraley, 2019), and (b) remains aligned in science and philosophy with other natural sciences, while also separate from and independent of any disciplinary connections or shared history with fundamentally non-natural disciplines (e.g., psychology; Fraley & Ledoux, 2015).

That program for disciplinary improvement and mainstreaming is particularly important now, because traditional natural scientists, recognizing both that *human behavior* causes most global problems, and that humanity needs changes in *human behavior* to solve those problems, have called for a natural science of *human behavior* (e.g., McIntyre, 2006). Without knowing that such a science has existed for 100 years (Ledoux, 2012), these traditional natural scientists (e.g., physicists, chemists, biologists) also recognize that this circumstance means that a natural science of human behavior *is required* if humanity is to solve its global problems in the timely manner that the problems and their outcomes impose.

So it behooves all natural scientists of behavior, under whatever name, including the few remaining in our laboratories and the many in our various contingency-engineering areas, to do their share supporting all efforts that bring us together with each other and with our traditional natural-science colleagues for enhanced mutual understanding and collaboration. Such enhancements will support our science and practice by helping establish departments and programs of our natural science of behaviorology (e.g., in green contingency-engineering programs; see Ledoux, 2018a) that increase our share in supporting all natural sciences in the efforts to solve global problems (i.e., see Chapter 27 of Ledoux, 2017; also see Ledoux, 2018b, for shared experiences in developing courses and programs in the natural science of behavior). Otherwise, the unmitigated outcomes of our current global problems will likely make all of these discussions rather meaningless (Thompson, 2010).

### ***Intermediate Concerns***

Still, the question that Critchfield and Epting (2019) very reasonably raised, about how to get a replacement term to take hold, remains. The answer presumably resides in the discipline of disciplinary contingencies. Cannot everyone involved in the natural science of behavior, and in the contingency engineering to which it leads (under whatever disciplinary labels) find or design and engage in steps that help adjust the contingencies that improve terminology-related behaviors? Can this not be one of our interventions? Is this a daunting task? Are we not all under the additional, even longer-range,

culture-future determining contingencies that must induce many behaviors, including these, relevant to improving and extending our science and practice?

Just for starters, we all benefit when everyone in the natural science of behavior, and its contingency-engineering areas, examines the written reference resources regarding all the new terms (as well as the accumulation of other historical disciplinary developments in our science and practice) and then employ these terms. We can employ them regularly and continually, with all audiences, *and experience the reactions and feedback* from listeners, and maybe even report some of the reactions and feedback to others across these fields. Perhaps the reactions of philosophers will support the “Behavioral Materialism” label. Perhaps the reactions of traditional natural scientists will encourage the “Behavioral Naturalism” label. Perhaps the *experience of trying* will show us that we can accomplish so much more by applying our own science and practice to these problems. And that is a step to saving our science and practice as well.

We are all under contingencies to improve and extend our science and practice. Perhaps some help for all will occur from at least some data accruing from the smaller effort needed to adopt new terms. Perhaps the biggest factor will involve the biggest audiences with whom natural scientists of behavior and contingency engineers interact the most. Perhaps philosophers will constitute most of the audience, with the biggest impact. Then maybe the “Behavioral Materialism” label will become the best replacement term for the “Radical Behaviorism” label. Papers in the Special Section in the last issue of this journal have addressed this relation. Or, perhaps the combination of service clients and consumers plus students and other natural scientists will prove a bigger audience, with the biggest impact. Then maybe the “Behavioral Naturalism” label will become the best replacement term for the “Radical Behaviorism” label. Maybe helping solve global problems will become even more important than personal preferences about terms or science and practice. This might even lead to not changing terms now. Or maybe some other term might arise that proves even better than either of these two. Perhaps just the ongoing and evolving discussion provides benefits. However, humanity *is* running out of time.

### ***An Expansive Review***

To the extent that contingency engineers interacting with clients or consumers—or professors interacting with students—need to discuss philosophy of science, the term “Behavioral Naturalism” seems a simpler term that may prove more successful in those discussions. Similarly, when natural scientists of behavior interact

with traditional natural scientists, which is currently particularly necessary regarding the share of contributions from our discipline needed to help solve global problems, then again, the term “Behavioral Naturalism” may prove more successful in those interactions, to the extent, again, that interactions with other natural scientists need to consider philosophy of science (e.g., Ledoux, 2019). And behaviorology has far more to contribute that benefits traditional natural scientists than just philosophical discussions (e.g., see Ledoux, 2017, pp. 371–392).

In elaborating a review, consider that *everyone* involved in behavior science and practice, under any name, probably produces benefits by considering and engaging all three terms that are the focus of this discussion (i.e., “Radical Behaviorism,” “Behavioral Materialism,” and “Behavioral Naturalism”) along with any additional worthy alternatives that arise, *while noting and reporting the contingent reactions*. Predictably a lot of additional and valuable contingency development will also derive from this activity. This applies to all these terms, and the other new terms already mentioned. We can all work them in at every opportunity (e.g., in conversations, discussions, lectures, reports, and writings). And let the operating contingencies select from among the alternatives which ones are appropriate and which are inappropriate.

Such activity and other activities are interrelated. We all benefit by engaging in these activities while helping solve individual and local problems of various consumers and clients, and while interacting with students whose contingencies compel seeking this science and engineering in courses, programs, and departments, as well as while actively helping solve global problems. We all benefit by establishing—in college and university natural–science units, possibly starting in biology departments—additional general disciplinary undergraduate programs in our natural science, programs that cover not just the principles, methods, and concepts needed for decent contingency–engineering interventions with clients and consumers, but also programs that cover the extensions, implications, and interpretations in the basic science. Various chapters elaborate many of these basic–science extensions, implications, and interpretations, for example, chapters in Fraley, 2008 (for doctoral students) and in Ledoux, 2014 and 2017. And, *based on these foundations*, we can add graduate programs in experimental behaviorology (to rebuild our professorial research laboratories) along with graduate programs in our contingency–engineering areas of ABA. By first studying the science *thoroughly*, with its extensions, implications, and interpretations, students in these programs would then be more thoroughly and appropriately prepared and qualified to study the engineering interventions, which would

help our science and practice by raising the respect for our applied interventionists, and improving our interdisciplinary relationships.

Has not the time come for our disciplinary engineers to have the same level of grasp of the full extent of their basic science (including its extensions, implications, and interpretations) that other engineers, in other fields, have of theirs? This is quite different from receiving only enough basic–science instruction to enable using an intervention cookbook (at an undergraduate level) or enough to pass a certification exam (at a graduate level). Such a scenario, if it happens even once, is happening too often. Does that scenario describe any current applied programs? Should not our professional education be completed to higher levels than just what is legally needed to pass exams? True, the difficulties multiply when ABA programs inappropriately exist in psychology departments where any interest must officially and realistically lag regarding committing resources to these programs. For example, more of the courses required of students in these programs would have to be natural science of behavior courses rather than psychology courses, a pattern about which very few if any psychologists could be enthusiastic. And they are right; such courses and programs don’t belong in psychology departments but in independent behaviorology departments in college and university natural–science schools.

That, however, simply reminds us that our natural science of behavior is not a part of, nor any kind of, psychology. Indeed it *never* really was a part of psychology, as natural scientists of behavior, from Skinner on, were always under natural–science contingencies, involving philosophy of science concerns, that disallowed buying into any part of the range of inner–agent causes of behavior that remain a required part of the psychology discipline. The psychology discipline officially discards our natural–science approach of *both* experimental methods *and* philosophies of Naturalism and Behavioral Naturalism; the result of buying into any two, let alone all three, of these would just not be psychology! It would be a different discipline. Similarly, philosophers did not want experimental methods in philosophy. That just would no longer be philosophy; it would be a different discipline. Those who wanted such methods had to start their own discipline, namely psychology. For many decades now, psychologists have kicked us out for wanting strictly natural science and philosophy, telling us that the result would not be psychology but would be a different discipline. So those who wanted strictly natural science and philosophy had to move our own discipline officially and completely out of psychology. Some of us took this action back in 1987 (see Fraley & Ledoux, 2015, for details). Meanwhile, psychology continues to claim the “behavior analysis” label; an “etic” reason (Harris,



1979) could be that this term endows some (unearned) natural–science credibility.

For many natural scientists of behavior who are stuck in a psychology department, that can be a hard pill to swallow, even if you are personally successful in those circumstances. But for most people, and for our science and practice in general, trying to make “changing psychology” work has failed for over 100 years. This is data. As natural scientists, data controls our behavior. The involved contingencies are complicated (see Fraley & Ledoux, 2015). And for the sake of our share in helping humanity, especially in solving global problems, the contingencies are inducing the finding of ways to make our decades of separation and independence from psychology even more successful.

So should not we all be endorsing—and putting up with the temporary disadvantages of—that independence movement, a movement that the behaviorologists officially began for everyone back in 1987 (see Fraley & Ledoux, 2015). While the professionals working under the behaviorology label have made some contributions to the world, they have not yet brought about *big* changes. Yet the same applies to those natural scientists who cling to psychology or to the “behavior analysis” label, and disdain the behaviorology label and the independence it signifies. So, yes, both groups have made some changes to the world. Perhaps chief among these could be that this “natural science of behavior” not need to be reinvented again.

### Conclusion

In conclusion, the contingencies surrounding my own introduction to Radical Behaviorism, decades ago, have left me feeling personally quite comfortable with this label. While the same might describe the experience of many current natural scientists and contingency engineers of behavior, fifty years of experiencing the difficulty of teaching or explaining Radical Behaviorism *to others*, in diverse circumstances (e.g., courses or consultations) speak loudly about the need for, and benefits of, an alternative label. One gets tired of being stalled early in a description of Radical Behaviorism—and so maybe never getting to the helpful points about it—due to the need to explain not only *behaviorism* (to which contingencies have usually conditioned many inaccurate reactions) but also that “radical” means *thoroughgoing* or *fundamental* or *comprehensive* (or something even more complicated) rather than *extreme* (in the usual negative connotation). Any of these alternative labels would avoid that and, in doing so, seem better than retaining the many problems that the “Radical Behaviorism” label continues to have, even if it did not start out trying to have them.

My verbal behavior remains under two contingencies in particular that induce the frequent occurrence

of the “Behavioral Naturalism” label. One involves the punishing contingency of having to explain “materialism,” (and de-condition the negative response to it) when using the “Behavioral Materialism” label with some audiences before getting to the helpful points of this philosophy of science. The other involves, in my work with other natural scientists, the reinforcing contingency that their ready familiarity with “Naturalism” helps with using the “Behavioral Naturalism” label, because “Naturalism” is the common name of their general philosophy of science, which allows getting right into the helpful points that our philosophy of science provides. I should have referred to *Behavioral Naturalism* in my “Ten commandments of natural science” paper (Ledoux, 2019) but the contingencies that first induced the “Behavioral Naturalism” label to occur in my repertoire were not operating until after the discussion arose, through the appearance of the papers in the Special Section, of a possible new label to replace the “Radical Behaviorism” label.

That has lessons for us all. The contingencies your behavior is under may induce the more frequent occurrence of one label as compared to the others. But the point is to expose these labels through their occurrence and so discover what the contingencies are inducing. History will do the rest.✧

### References<sup>2</sup>

Critchfield, T. S. & Epting, L. K. (2019). Tempest in a teapot: Relabeling radical behaviorism will not rescue the science or practice of behavior analysis. *Journal of Behaviorology*, 22 (1–2), 19–22.

<sup>2</sup>Behaviorology can stand on its own references. Those references, however, make clear that they “stand on the shoulders of giants,” as the saying goes, as in giant repertoires and the contingencies that produced them (e.g., the contingencies and repertoires of Darwin, Skinner, Moore, Day, Michael, and so many more). When a group of natural scientists of behavior adopted the label “behaviorology” as the name for their decades–old discipline in 1987, several—including the present author—pledged most of their future writing output to building the explicit disciplinary literature of behaviorology (i.e., works by behaviorologists about behaviorology in behaviorology journals and books). The works in this literature get appropriately cited first, even when many other works are also worthy of citation for the same points. Hence this reference list contains mostly works from the explicit disciplinary literature of behaviorology. In many articles like this one, that means that some authors may seem over represented in the references, yet that happens simply because they have contributed their works to this literature.



- Fedorov, A. A. (2019). Behaviorology and dialectical materialism: On the way to dialogue. *Journal of Behaviorology*, 22 (1-2), 15-18.
- Fraley, L. E. (2019). The behaviorology movement differs from other behavioral organizations: Comments prompted by Joseph Morrow's Behavioral Materialism paper. *Journal of Behaviorology*, 22 (1-2), 31-32.
- Fraley, L. E. & Ledoux, S. F. (2015). Origins, status, and mission of behaviorology. In S. F. Ledoux. *Origins and Components of Behaviorology—Third Edition* (pp. 33-169). Ottawa, Canada: BehaveTech Publishing. This multi-chapter paper also appeared across 2006-2008 in these five parts in *Behaviorology Today* (see the journal page at [www.behaviorology.org](http://www.behaviorology.org)): Chapters 1 & 2: 9 (2), 13-32. Chapter 3: 10 (1), 15-25. Chapter 4: 10 (2), 9-33. Chapter 5: 11 (1), 3-30. Chapters 6 & 7: 11 (2), 3-17.
- Ferreira, J. B. (2019). Radical is right for behaviorism. *Journal of Behaviorology*, 22 (1-2), 33-35.
- Harris, M. (1979). *Cultural Materialism: The Struggle for a Science of Culture*. New York: Random House.
- Ledoux, S. F. (2012). Behaviorism at 100 unabridged. *Behaviorology Today*, 15 (1), 3-22.
- Ledoux, S. F. (2014). *Running Out of Time—Introducing Behaviorology to Help Solve Global Problem*. Ottawa, CANADA: BehaveTech Publishing.
- Ledoux, S. F. (2015). Increasing tact control and student comprehension through such new postcedent terms as added and subtracted reinforcers and punishers. In S. F. Ledoux, *Origins and Components of Behaviorology—Third Edition* (pp. 199-204). Ottawa, Canada: BehaveTech Publishing.
- Ledoux, S. F. (2017). *What Causes Human Behavior—Stars, Selves, or Contingencies?* Ottawa, CANADA: BehaveTech Publishing.
- Ledoux, S. F. (2018a). Running out of time for new “Behaviorology and Green Engineering” programs to be effective. In S. F. Ledoux, *Science Works on Human Behavior* (pp. 77-88). Ottawa, Canada: BehaveTech Publishing.
- Ledoux, S. F. (2018b). More assistance in developing behaviorology courses and programs. *Journal of Behaviorology*, 21 (2), 19-28.
- Ledoux, S. F. (2019). Ten commandments of natural science. *Journal of Behaviorology*, 22 (1-2), 3-12.
- McIntyre, L. (2006). *Dark Ages—The Case for a Science of Behavior*. Cambridge, MA: MIT Press.
- Morris, E. K. (2019). The name of the rose. *Journal of Behaviorology*, 22 (1-2), 23-29.
- Morrow, J. E. (2019). A rose by another name: Behavioral Materialism. *Journal of Behaviorology*, 22 (1-2), 13-14.
- Thompson, L. (2010). Climate change: The evidence and our options. *The Behavior Analyst*, 33 (2), 153-170.
- Worth, P. (2019). Art for Science Rising. *UCS Catalyst*, 19 (Winter), 14-17. 🌸