

Origins and Components of Behaviorology— Third Edition

Stephen F. Ledoux, Ph.D.

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Note to Professors

A set of study questions for each paper in this book is available to help you teach your students about the history and components of the behaviorology discipline. The set of study questions guides students through most major points as they focus on each paper. Contact the publisher, or the main author (at ledoux@canton.edu) for details. ✦

Preface to the 2015 Edition— The Third Edition

The *Second Edition* of this book appeared in 2002 with the only substantive change being the addition of an extensive historical *Afterword*. As such, the second edition contained no preface. The changes for this third edition are more extensive. James O’Hare helped me update the *Afterword* and move it to the location that David Feeney’s paper (about on–line, real–time behaviorology applications) previously held, just before the last paper in the book, a paper about China that Glenn Latham wrote. Feeney’s paper is still available; you can find it in the first ten–years archive on the www.behaviorology.org website, as a PDF link with the label “Online Therapy Paper” (at http://www.behaviorology.org/oldsite/origins_book_complete.htm).

While featuring several layers of improvements, this third edition retains its value as a set of papers produced by participant observers of both the times and events surrounding the separate and independent organizing, since 1987, of the then 75–year–old natural science of behavior, under the label *behaviorology*. The main layers of improvements involve (a) no changes—except the updating of some reference information—for either the seven–chapter title paper by Fraley and Ledoux, or the paper by Latham, (b) the updating, in other papers, of various disciplinary terms to reflect the several terminological developments that have accumulated over the last 30 years or so, developments that another book (Ledoux, 2014), which is a companion volume, brought together and thoroughly and systematically presented (e.g., evocative stimuli, function–altering stimuli, and added, subtracted, and coincidental reinforcers), (c) a substantial reduction in passive voice constructions, which is a repertoire enhancement that the editor of *American Scientist* conditioned as “I” (not a mystical inner agent, but a verbal shortcut for a biological locus of contingency effects) prepared a paper (Ledoux, 2012) for that publication, and (d) some trimming of repetitive materials in the earlier prefaces and other front–matter pieces.

Paraphrasing the closing of the previous Preface (from 1997) important abilities and wisdom accrue from studying behaviorology. These are proving crucial to the successful resolution of most of the large or subtle threats to human and planetary sustainability that people must face in our common future. I hope that this volume will encourage readers to seek and develop further knowledge and skills in behaviorology as the natural science of behavior. May doing so help them improve and expand their sorely needed contributions to humanity.☺

Stephen F. Ledoux

Canton, NY, USA

March 2015

Ledoux, S. F. (2014). *Running Out of Time—Introducing Behaviorology to Help Solve Global Problems*. Ottawa, Canada: BehaveTech Publishing.

Ledoux, S. F. (2012). Behaviorism at 100. *American Scientist*, 100 (1), 60–65. Also, see Ledoux, S. F. (2012). Behaviorism at 100 unabridged. *Behaviorology Today*, 15 (1), 3–22. (*Behaviorology Today* had become fully peer–reviewed with this issue, prior to the name changing to *Journal of Behaviorology* the following year.)☺

On Typography & Author Contacts

This book is set in the Adobe Garamond, Adobe Garamond Expert, and Tekton collections of typefaces. In addition, a valuable basis for the typographic standards of this work deserves acknowledgment. As much as possible, this book follows the practices described in two highly recommended volumes by Ms. Robin Williams (both of which Peachpit Press publishes in Berkeley, CA, USA). One is the 1990 edition of *The Mac is Not a Typewriter*. The other is the 1996 edition of *Beyond the Mac is Not a Typewriter*. For example, on page 16 of the 1990 book, Williams specifies practices regarding the placement of punctuation used with quotation marks, an area in which some ambiguity has existed with respect to what is “proper.” In addition the present book follows the advice in these books about avoiding “widows” (which is the name for leaving less than two words on the last line of a paragraph) and “orphans” (which is the name either for leaving the first line of a paragraph alone at the bottom of a page, or for leaving the last line of a paragraph alone at the top of the next page). Also, since some confusing alternatives remain regarding the use of hyphens and dashes, this book would simply limit hyphens to separating the parts of words that break at a line end (although this book never broke words at line ends) while “en dashes” most commonly separate the whole words of compound adjectives, and “em dashes” set off multiple-word—a compound adjective with an en dash—phrases or clauses. (Note that ebook formatting typically ignores most of these easier-reading characteristics.)

You can address correspondence regarding this book to the author (at ledoux@canton.edu). You can also reach the contributing authors: Lawrence Fraley at 5754 Kingwood Pike, Reedsville WV 26547 USA (email: lfraley@citlink.net) and James O’Heare at 1333 Rainbow Crescent, Ottawa, Ontario K1J 8E3 CANADA (email: jamesoheare@gmail.com). (Sadly, our friend and colleague, Glenn Latham, is deceased.)

For more information, see the pages of *Behaviorology Today* (ISSN 1536-6669) which is the journal of TIBI (The International Behaviorology Institute). TIBI renamed it *Journal of Behaviorology* (ISSN 2331-0774) in 2013. Also, visit the TIBI website at www.behaviorology.org for additional works by these and other authors.

Some related volumes may interest the reader. In addition to the 1,600-page textbook, *General Behaviorology: The Natural Science of Human Behavior*, that Fraley published in 2008, Fraley also wrote two other volumes that deserve mention. These are (a) *Dignified Dying—A Behaviorological Thanatology* (2012), and (b) *Behaviorological Rehabilitation and the Criminal Justice System* (2013). ABCs, of Canton NY, USA, is the publisher of all these books (and may in the future publish this book as ISBN 978-1-882508-36-5). In addition, *BehaveTech Publishing* (of Ottawa, Ontario, CANADA) publishes *Running Out of Time—Introducing Behaviorology to Help Solve Global Problems* (2014) by Stephen Ledoux as well as *The Science and Technology of Animal Training* (2014) by James O’Heare. (You can order *BehaveTech Publishing* books from the 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.)✿

Original (1997) Dedication

*This book is
dedicated to my children*

Miles & Susannah

who

experienced a little parental deprivation while this book was in preparation so that they and the rest of their generation and their offspring would be closer to taking behaviorology for granted, relying on it along with other natural sciences as we today rely on biology.

May we and they all soon experience the benefits of behaviorologically informed cultures. *SFL*✿

Acknowledgments

The author expresses appreciation to *Behaviorology* for permission to include the paper “Behaviorology Curricula in Higher Education” in this book of readings. This paper is quite similar to a paper previously peer-reviewed and accepted by that journal under the title “Behaviorology Curricula in Post-Secondary Education.” *Behaviorology* subsequently transferred this paper to the incipient Journal *The International Behaviorologist* due to the evolving nature of the types of articles each of these journals was to publish. The author also expresses appreciation for the copyright policy of the journal *Behaviorological Commentaries* (later renamed *The International Behaviorologist*). After peer-reviewing and accepting papers for publication, this journal leaves article copyrights with the authors (as does the *Journal of Behaviorology*). This has eased the republication process for many of the papers in this collection.

Dr. Jerome Ulman especially deserves appreciation for providing access to, and use of, the significant 1989 exchange of letters between himself and B. F. Skinner.

Furthermore, the author expresses appreciation (a) to **Anne Marsh** for invaluable assistance on library-related tasks, as well as (b) to the staff of *Commercial Press* of Canton, NY, (c) to the staff of *BookCrafters* (now known as *Sheridan Books*) of Chelsea, MI, (d) to **Joanne Thornhill**, and also (e) to **Scott Beach**, who both provided informative and cooperative advice and assistance; this helped to clarify and smooth the publication process at several points.

Most importantly, the author expresses special appreciation to his spouse, musicologist **Dr. Nelly Maude Case**, not only for the understanding and support that enable a project like this book to come to completion, but also for her valuable comments on the whole manuscript.✿

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Preface to the 1997 Edition

Behaviorologists, historians, and scholars of science comprise an important audience for this book. They share that status, however, with all who either would sharpen their discrimination among behavior-related disciplines or would care to apply such disciplines to benefit humanity.

The coincidences of history (such as birth date, birth place, and life span) have allowed some people to experience personally the events and contingencies surrounding the emergence of behaviorology. Other coincidences have prevented other people from doing so. This book may especially benefit the latter by informing them about the activities of those in the behaviorology movement and what they went through as behaviorology emerged, and as these and other behaviorological scientists strove to apply this discipline for humanity's benefit.

For the most part, the contingencies that are and have been extent in North America produced this material. But the implications of the reported events, concerning increasing effectiveness in improving cultural practices, extend beyond these borders and around the world. The resulting lessons, from the accounts presented here, may make easier for others the task of elsewhere advancing behavior science and its benefits.

The 1992 edition of this book had the title *Origins, Status, and Mission: The Emergence of the Discipline of Behaviorology*. In the intervening years since that edition went out of print, the value of certain improvements and extensions has become apparent. The present book addresses these concerns. However, the general description of the book in the preface to the 1992 edition is still accurate (and appears elsewhere in the present volume). That preface begins:

Through this volume, the history of the emergence of behaviorology is available both for the first time and comprehensively. As current today as when originally written, this book is unique, because it is the only analyzed historical treatment of the emergence of an independent natural science of behavior written during the early years of that emergence by participant-observers of that emergence.

Yet the present volume differs from the 1992 edition in an important way. As its title states, the present volume encompasses not only the emergence of behaviorology but also includes some coverage of the various disciplinary components of behaviorology [which, technically, makes this 1997 edition the first edition of *Origins and Components of Behaviorology*]. After an introductory paper, each of the remaining papers addresses, either directly or by an example, one or another disciplinary component. Here is the title of each paper following the component each paper addresses (in their order in this book, which both partly reflects the interrelationships existing among the papers and partly reflects the sequence in which the papers were originally written):

- ✦ *Introduction: An Introduction to the Origins, Status, and Mission of Behaviorology: An Established Science with Developed Applications and a New Name.*
- ✦ *Philosophical component: An Introduction to the Philosophy Called Radical Behaviorism.*

- ✦ *Historical component* (co-authored with Lawrence E. Fraley): Origins, Status, and Mission of Behaviorology.
- ✦ *Developmental component*: Behaviorology Curricula in Higher Education.
- ✦ *Analytical / interpretative component* (example): Behaviorology in China: A Status Report.
- ✦ *Conceptual component* (example): Increasing Tact Control and Student Comprehension through such New Postcedent Terms as Added and Subtracted Reinforcers and Punishers. (This paper is new to the 1997 edition.)
- ✦ *Experimental component* (example): Multiple Selectors in the Control of Simultaneously Evocable Responses. (This paper is new to the 1997 edition.)
- ✦ *Applied component* (example): Successful Smoking Control as an Example of a Comprehensive Behaviorological Therapy. (This paper is new to the 1997 edition.)
- ✦ *Technological component* (example by David R. Feeney): Creative Life-style Management Through On-line and Real-time Application of the Behaviorological Education Practices of Precision Teaching. (This paper is new to the 1997 [first] edition.) [For the *Second Edition* of this book, in 2002, I added an Afterword with more detail about the growing history of behaviorology. Then, for the *Third Edition*, in 2015, James O’Heare and I updated and expanded the Afterword and, with a better title, it took the place of Dr. Feeney’s paper, which is still available as explained in the Preface to the 2015 edition—the *Third Edition*.]
- ✦ *Social action component* (example by Glenn I. Latham): China Through the Eyes of a Behaviorologist. (This paper is new to the 1997 edition.)

The Papers

The first five papers of this volume formed the 1992 edition of this work. A brief description of each of these papers appears in the preface to the 1992 edition (minor editorial changes were made to that preface before including it in this edition). The other papers joined the collection in the 1997 edition; here is a brief description of each paper new in the 1997 edition (author initials appear in parentheses after each title):

Increasing Tact Control and Student Comprehension through such New Postcedent Terms as Added and Subtracted Reinforcers and Punishers (SFL)

This paper reports efforts to improve behaviorological terminology. The efforts focus on terms which concern events in the third term of the three-term contingency. The result is an integration of various old and new terms into a systematically related set of terms. The terms in this set are *postcedents*, *selectors*, *consequences*, *coincidental selectors* and the opposites of these terms. In addition, and with explanation, the terms *added*

and *subtracted* replace the terms “positive” and “negative,” with respect to reinforcers and punishers. This set of terms reduces the terminological confusion that students in the past experienced on their initial contact with behaviorological science. Researchers in the science may also find their tacting to be more accurate, and their effectiveness enhanced, through use of this set of terms.

Multiple Selectors in the Control of Simultaneously Evocable Responses (SFL)

This paper reports an experiment and describes a research program that extends this experiment. Analyzing contingencies of extinction and continuous reinforcement, the experiment addresses a procedure for studying multiple operants. These are operants that (a) can occur simultaneously, and (b) can have separate (i.e., independent) selectors (e.g., reinforcers) also occurring simultaneously. This complexity of operants appears in the behavior of animals, especially humans, and so deserves the attention of behaviorological researchers. A research program that extends this experiment is designed to study, catalog, and characterize an ever widening series of contingencies involving these multiple–behavior/multiple–selector operants. The conceptual level of the basic program is such that the program can stimulate and allow the interest and participation not only of more advanced students and researchers but also of undergraduate students. The latter’s participation would let them experience both the patience required in research and the thrill of discovery when they ask and answer basic research questions in a relatively short period. They might also gain a further measure of satisfaction should they apply those answers to concerns in the world at large.

Successful Smoking Control as an Example of a Comprehensive Behaviorological Therapy (SFL)

This paper derives from the author’s and, especially, others’ research. It originated as lecture and discussion material using smoking–control therapy as an example to convey two points to students: The material (a) details how a therapy can and should focus *comprehensively* on the problems, such as smoking, presented for therapeutic intervention, and (b) describes how explicitly *analyzing and addressing* the variables directly responsible for those problems appears to be substantially responsible for the success of some therapies. The substantial clinical success rate of a particular smoking–control therapy shows it to be a valuable example of how this general approach—behaviorologically analyzing and addressing explicit functionally controlling variables—can benefit clients with smoking problems. Extension of this approach to many other kinds of problems, large and small, will likely enable people with those problems to attain similar success rates.

Creative Life–style Management Through On–line and Real–time Application of the Behaviorological Education Practices of Precision Teaching (DRF)

This paper reports efforts to expand delivery methods for behaviorological interventions. Pilot research, combining problems from life–style management with solutions from precision teaching, receives attention. With interventions delivered on–line, and occasionally in real time, using personal computer technologies, precision teaching practices manage life–style problems regarding decreases in smoking and

weight, and increases in college study through creative computer-based interactions between the client and the educator. [In the 2015 edition, as already described, an updated version of the Afterword, which first appeared at the end of the 1997 edition, took the place of this still available paper.]

China Through the Eyes of a Behaviorologist (GIL)

This paper is essentially a well-stated and well-justified “call to action” issued to all behaviorological scientists. The author calls them to help develop and extend the whole behaviorology discipline to any place in the world where its benefits are as yet unavailable. Here the focus is on extending behaviorology to the People’s Republic of China where one quarter of the world’s population resides. Many concerns, particularly involving child-rearing and education, crystallized for the author during his second professional speaking visit to that country in the fall of 1996. This paper originates partly as a brief report of that trip. More importantly, it originates as a brief description of some actions—especially the hosting of visiting scholars who are determined to become expert in this science—that behaviorological scientists can take as part of fulfilling those responsibilities of scientists that pertain to assuring the comprehensive dissemination of their science as widely as possible in the service of others. As such, this paper nicely rounds out this collection of components of behaviorology by providing readers with a continuously timely reminder that the continuation of any science owes as much to reaching out to others, through dissemination, as to conceptualization, experimentation, application, and organization.

Appendices (SFL)

The appendices provide some additional material while also tying up some loose ends. Included among the appendices are a short paper (*Adventitious Control*), some excerpts from the title paper in the 1992 edition of the book, and several short items supplying information—extending some of the other papers in the book—on behaviorology curricular concerns, research equipment, and the formal organizations of the independent behaviorology discipline. The latter is particularly relevant to the ongoing historical development of behaviorology, encouraging readers to take part in one way or another in that development.

Authorship

In the early version of this book, in 1992, Lawrence E. Fraley was the first author of the title paper which filled half of the book. I was second author on that paper, and sole author of the remaining papers. As a result Dr. Fraley was listed as co-author of that edition. That substantial, dual-author paper, on the origins of behaviorology, is the core of the present edition as well. However, this edition of the book appears under only one author’s name while listing other authors as contributing authors. Our reasons for this are two: (a) Dr. Fraley’s editorial and authorship responsibilities continue to pertain only to our joint paper (though he has provided collegial reviews of the other papers), and (b) the addition of more papers to this edition makes our joint paper less than half of the volume.

Reference Note

Most of B. F. Skinner's papers have been collected in books of readings such as *Cumulative Record*. References to Skinner's papers here in *Origins and Components of Behaviorology* often cite the original publication dates. However, readers may find easier access to these papers through the collections. Most of the collections are listed in the bibliography at the end of the book (i.e., Skinner, 1968, 1969, 1972, 1978, 1987, & 1989).

Conclusion

Books of readings sometimes entail repetitions; this book is no exception. Readers will occasionally come across paragraphs in one paper that are very similar to paragraphs in a previous paper. This is because, out of respect for the integral place of these paragraphs in their respective papers, no editing occurred to eliminate the repetition.

The present volume encompasses both *comprehensive* coverage of the historical emergence of the discipline of behaviorology, as the one disciplinary component receiving such treatment, and *some* coverage of most other disciplinary components. The history of behaviorology continues to accumulate. But the main historical paper in this volume, by Fraley and Ledoux, does not extend coverage of that history beyond 1993 (other than to supply a few, more accessible sources officially presented or published a year or three later). Other authors are sure to supply the history since 1993 in due time [as is the case with both my Afterword in the Second Edition, and the expanded version of it by James O'Heare and me in this Third Edition]. The range of other disciplinary components covered in this volume is more extensive than in the 1992 edition. I extended this range because all of these disciplinary components work together to help people understand and deal with their own behavior and that of others.

I believe that important abilities and wisdom accrue from the study of behaviorology. These are likely to prove crucial to the successful resolution of many, perhaps all, of the large, subtle, and sometimes new threats to human sustainability and survival, such as global warming and overpopulation, that people must face in our common future. I hope that study of this volume will encourage readers to develop further knowledge and skills in the natural science of behavior, behaviorology. May doing so help them improve their sorely needed contributions to humanity.☺

Stephen F. Ledoux

Canton, NY, USA

December 1996



*(Minimally revised for later editions)**

Occasional blank pages provide extra space for:

Reader's Notes

Foreword to the 1992 Edition

Through this text, Drs. Ledoux and Fraley provide the reader a unique opportunity to develop an understanding and appreciation for a current scientific movement of historic dimension. Labelled “behaviorology” by its proponents, this discipline of research and practice can show humanity how to solve our most pressing problems; how to progress toward our fondest ends. Glimpses of this phenomenal promise can sometimes be seen directly in the authors’ words and at other times it can be developed by reflection on the part of the reader. While the aim of the authors is modest, that is, to document an analyzed history of behaviorology, the more sweeping value of this text also deserves direct recognition.

First I will comment on the directly presented content of this important text. In the thoughtfully developed Preface and papers/chapters that follow, the authors provide us with fundamental information, conceptions, and encouragement regarding the science and practice of behaviorology. The early papers describe the discipline of behaviorology and differentiate it from apparently similar paradigms of science. Later chapters inform us more about the contributions and promise of the behaviorological movement.

Students of behavioral science are well served by the authors’ careful development of the philosophical, historical, and rational underpinnings of the discipline they advocate. The internal consistency of their analysis is admirable and effective. These qualities equip the reader to witness the shortcomings of other approaches and to recognize why they might be proponents of behaviorology.

In the second half of the text we are treated with papers that indicate the wide scope of study and application that behaviorologists can enjoy. In these pages we are introduced to how major aspects of human affairs, for example, educational systems and cultural sciences, can benefit by being developed in a behaviorological manner.

Throughout the text the authors are careful not to stray from empirical fact or legitimate extension from the established principles of behavioral science. Their objectivity is well taken. Certainly, to build an appreciative audience or attract adherents for this currently little-known discipline, it is important to establish a firm basis of understanding. With this they succeed while avoiding temptation to proselytize their descriptions of the great values of behaviorology for its students and for humanity.

Those of us who are not so constrained can immediately suggest some of the outstanding virtues associated with the practice of behaviorology. Uppermost for the individual practitioner might be the enormous stimulation, and the functional utility, offered by this unitary, comprehensive system called behaviorology. By being equipped with an encompassing approach, the behaviorological scientist is generally able to interpret, predict, and support constructive alterations in the environment that benefit the behavior of people.

This generative capability brings with it an ease for appreciating the deliberations and applications of all sorts of disciplines and endeavors. That is, all manner of scientific and applied activities are open to constructive scientific analysis and contribution by behaviorologists. To realize this great potential of behaviorology requires extensive and sophisticated use of interprofessional skills, which should be given more direct attention in the literature.

While the positive motives for adopting the authors' view are attractive, the reasons that behaviorological science must be widely applied are becoming more pressing each day. Namely, for the well being of all inhabitants of the earth, we have to develop and apply systems that support adaptive behaviors, an assignment for which behaviorology is more suited than any other discipline. Pollution, conservation, education, and all forms of interaction are legitimate areas of concern that should benefit from the promise and power of behaviorological productivity.

Drs. Ledoux and Fraley offer us a fine text and succeed with sharing information about a substantial approach to the study of humanity. This text is easy to appreciate for what it delivers so effectively. Appreciable, also, are the vistas that the authors begin to open for us. We can hope that this is only one in a collection of publications by these authors and similarly inclined others from which we can benefit.

Robert E. Crow, Ph.D.
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School of Allied Health Professions
Louisiana State University Medical Center
New Orleans, 1992 ❀

Preface to the 1992 Edition

Through this volume, the history of the emergence of behaviorology is available both for the first time and comprehensively. As current today as when originally written, this book is unique, because it is the only analyzed historical treatment of the emergence of an independent natural science of behavior written during the early years of that emergence by participant–observers of that emergence.

This book is thus persistently timely for both the uniqueness of the authors' perspective and because it can provide generations of readers with insights into new and recurring lessons about the origins and developments of natural sciences in general and of a natural science of behavior in particular.

As a natural science discipline on the life science continuum, behaviorology is the science and technology of behavior relations. First, it discovers the variables that are in "causal" relationships with the behavior of individuals during their lifetime. Then it designs and implements changes to these accessible variables bringing beneficial change and expansion to the individual's behavior repertoire.

These behavioral engineering applications contribute to all human endeavors, including child and health care, education, rehabilitation, environment policy, international relations, industrial management, and even science itself. In such areas, behaviorology as a natural science addresses what no social science has been able to address effectively, namely the ancient question: "Why does human behavior happen?" Furthermore, behaviorology effectively addresses the extension of that ancient question, namely: "And what can be done about it?"

This book reviews, in historical context, the incompatible paradigms and philosophical developments among disciplines addressing the behavior of individuals. In familiarizing the reader with the history of behaviorology's emergence, this book also makes further comprehension and application of behaviorology's science and technology easier and more effective and beneficial. (An extensive bibliography is provided to enable further pursuit of behaviorology.)

The 1992 edition proceeded to press under the title: *Origins, Status, and Mission: The Emergence of the Discipline of Behaviorology* and listed Lawrence E. Fraley as co-author. It contained five papers plus a bibliography and an index.

The Papers

As an overall theme, this book, especially the title paper, provides an analyzed history both of the emergence of the discipline of behaviorology and of the behaviorology movement. Each of the included papers elaborates on one or another aspect of this theme, as a brief (relative to length) description of each paper shows (author initials appear in parentheses after each title; regarding authorship of this book as a whole, Dr. Fraley's author and editorial responsibilities pertain to that half of the book which is comprised of the co-authored title paper for which he is first author):

An Introduction to the Origins, Status, and Mission of Behaviorology: An Established Science with Developed Applications and a New Name (SFL)

This opening paper summarizes the general themes of the book. Here are the questions that this paper briefly addresses: What is behaviorology? Where does it come from? How does it differ from other disciplines and fields that evince some interest in why human behavior happens? How is it related to other disciplines? What are its contributions? Why should anyone learn anything about behaviorology? Questions such as these typically arise when people, especially students, first come across behaviorology. This first paper presents some initial answers to these questions by surveying an analyzed history of the origins, status, and mission of behaviorology (the title paper provides extensive elaboration).

An Introduction to the Philosophy Called Radical Behaviorism (SFL)

This paper addresses some major characteristics of the philosophy of science that informs behaviorology and thereby implies how this philosophy differs with the underlying philosophies of other disciplines. Such information helps set the record straight regarding some basic premises for a natural science of behavior, especially since the other papers appropriately provide little detail on those premises. This paper discusses four basic components of the radical behaviorist philosophy of science, components which have value beyond the boundaries of behaviorology itself: (a) Radical behaviorists respect behavior as a *natural* phenomenon as part of respecting the continuity of events in space and time which, in natural sciences, accumulates as a natural history. (b) Radical behaviorists emphasize experimental control over dependent variables and the application of that control in culturally beneficial ways. (c) Radical behaviorists recognize private events, such as thinking and emotions, as covert behaviors involved in the same lawful relationships that involve overt behavior. (d) Radical behaviorists acknowledge that scientists are also behaving organisms whose behavior, scientific or not, is affected by the same variables that affect other behavior, and that those variables include scientists' philosophy of science.

Origins, Status, and Mission of Behaviorology (LEF & SFL)

This is the *title paper* of the book [in the 1992 edition]. This work especially addresses *future* behaviorologists, scholars of science, and other interested persons. It describes in detail the origins of the behaviorology movement and of behaviorology as a concept and as a verbal community organized around this discipline. Included are (a) a history of the concept of behaviorology as a separate discipline—from earlier formulations under other names through early appearances of the term “behaviorology” and forward to the present recognition of a comprehensive philosophy, science, and related set of applied technologies under this label, (b) reasons for the independence of behaviorology, (c) a detailed analysis of the relation of behaviorology to other behavior-related disciplines, principally psychology, (d) an analysis of the interrelations among contemporary professional organizations of behaviorally trained persons, (e) the formal organization of the independent behaviorology discipline through formation

of The International Behaviorology Association (TIBA), (f) a review of issues related to training in behaviorology, (g) the place of this discipline among related natural science disciplines, and (h) the cultural implications of an independent discipline of behaviorology. This paper is divided into seven chapters, with the middle five chapters (Chapter Two through Chapter Six) comprising the main parts.

Chapter 1: Introduction. Chapter 1 introduces the content and topic order of the rest of the chapters. This chapter also reports the context in which this paper was written, and clarifies the purposes and non-purposes, and the audience, for whom the paper was written. It also addresses chronology issues and writing policies.

Chapter 2: The Evolution of the Concept of Behaviorology. Chapter 2 reviews the evolution of the concept of an independent behaviorology including the paradigmatic and historical differences between behaviorology and other disciplines and fields. This chapter also introduces the difference between the *discipline* of behaviorology and the behaviorology *movement*. With any relatively new discipline the nature and origins of its conceptualization become prime questions of interest. Before people took concrete actions to launch an organized discipline, the concept of that discipline had to be shaped to maturity in the verbal repertoires of many people. Chapter Two describes how that concept arose, what variables shaped people's responses to it, and the impact of its nature and origins on its increasing ill fit within organized psychology.

Chapter 3: Issues Driving the Independence Movement. Chapter 3 addresses the analytical differences between behaviorology and other disciplines and fields, and considers the contingencies supporting individual commitments to a disciplinary independence movement. This chapter reports the increasing strength, in five different classes of contingencies, to incur the high costs of organizing an independent discipline. This involves reviewing the accumulating and intensifying reasons for the actions of the early behaviorologists. Chapter 3 analyzes these different classes of contingencies, each affecting individuals to varying degrees, that controlled personal commitments to the behaviorology movement. Among the kinds of contingencies participants most frequently identified as having been important in individual cases were these five: (a) paradigmatic incompatibility (mainly with psychology), (b) control of arrangements to train future behaviorologists, (c) better professional position in relation to job markets, (d) improvements in one's capacity to make scientific contributions to the culture, and (e) control over the disciplinary infrastructure.

Chapter 4: The Transition Period: Organizing the Discipline and Developing its Infrastructure. Chapter 4 presents a comprehensive overview of the activities to establish the organized discipline of behaviorology. This chapter discusses the cultural engineering by which the new discipline was formalized, rendered operational, and debuted in the natural science community. To do this, the chapter describes (a) the relevance of other professional organizations, and (b) the rise of TIBA, the scientific professional organization of behaviorology, including its statement of purpose.

Chapter 5: The Continuing Debate: Reactions from the Behavioral Community at Large. Chapter 5 (a) explores the prevailing cultural milieu, reviewing the support for the growing behaviorology movement, and the opposition to it, as the community at large witnessed its coalescence on the scientific professional scene; and (b) describes the self-management problems facing those who were taking the lead in formalizing the new discipline. While the behaviorologists moved steadily ahead to refine the concept of their discipline and organize the scientific verbal community that would exercise

intellectual proprietorship over it, the general behavioral community continued an increasingly moot debate on the concepts of a behaviorology discipline and movement.

Chapter 6: *Interdisciplinary Context: A Cultural Role for the New Discipline.* Chapter 6 considers the relationship of the behaviorology discipline to other disciplines and fields, and also discusses “culturology.” This chapter extends the account of the emergence of the discipline of behaviorology to an examination of the prevailing views of the early behaviorologists on where their discipline fit both among the community of natural science disciplines extant in the culture and in the cultural marketplace. Chapter Six also lists the range of areas affected by behaviorology’s contributions, and some of the unique, culture–level aspects of these contributions.

Chapter 7: *Conclusion.* Chapter 7 concludes this paper by briefly reaffirming behaviorologists’ concerns for continued, even enhanced, cultural survival, including concerns for the increased risks to that survival that continue when the balancing effects of a natural science of behavior relations are unavailable. As the last sentence of this chapter points out, “The early behaviorologists believed, of course, that that was what was at stake, or they would not have organized the behaviorology movement, incurring the costs of doing so.”

Authorship history. To reduce confusion in the historical record, an account of this paper’s authorship is in order. I began this *emergence of behaviorology* paper early in 1987. Within the year, due to the importance and extent of the topic, I had invited Professor Fraley, whose repertoire in this topic was extensive, to collaborate. He accepted. During the next five years, *many* drafts followed. Each of us continually revised and extended each other’s work with additions and improvements as we passed the material back and forth with enthusiasm. We presented versions at different annual professional meetings, and we appropriately listed me as first author for these occasions and for other early published versions. Then, as the paper neared book publication [in 1992] Professor Fraley’s growing contributions became the greater. So, since then, we have appropriately listed him as first author.

Behaviorology Curricula in Higher Education (SFL)

This paper contains details typical of behaviorology training programs, reflecting the depth and range of basic behavior science training unavailable elsewhere. The question “How do behaviorologists arrange behaviorology training time when we are entirely responsible for it?” forms the basis for describing these curricula. The paper discusses several possible academic behaviorology programs, especially in terms of different audiences to be served including potential behaviorological professionals, professionals in other human–service and human–development disciplines and fields, and the general population. The discussions include course descriptions, course sequences within programs, and issues common to all the programs. The paper also addresses some implications for the future of the discipline of early consensus on these questions, consensus that behaviorologists reached before completing this paper.

Behaviorology in China: A Status Report (SFL)

This last paper [in the 1992 edition] provides a concrete example of some effects that can occur when a natural science of behavior is unavailable. The paper focuses on the status of behaviorology in relation to the situation in psychology in the People’s Republic of China. Chinese behavior science professionals in Xi’an, Shaanxi, provided

the author with extensive commentary on that situation while he was in China teaching courses on Verbal Behavior, and Behaviorology and Education, during the 1990–1991 academic year.

The discussions uncovered several points of interest to both Chinese and Western behavior scientists. In the 1950s, the Chinese lost contact with Western developments. They spent the 1980s trying to update, and thought the update complete. But they were disturbed by what they saw as very few advances in principles and practices, in those missing years, relevant to solving practical, behavior-related problems. In beginning to look elsewhere for solutions, they were discovering that their update was not complete. It involved little beyond the traditional Western psychology sources (literature, texts, personnel) and these contained little of the substantial behavioral advances from those years. The Chinese were discovering that they had overlooked virtually all the advances in principles and practices in the behaviorological science originally founded by B. F. Skinner. This occurred because at about the same time that the Chinese lost contact, the greatest proportion of those advances began to be, and have since been, increasingly reported and supported *outside* psychology. The Chinese are considering the possible reasons for this situation, including the incommensurable paradigm differences indicating and validating separate disciplines.

Beyond the paper's specific attention to those points, other topics also receive attention. These include (a) some historical and philosophical aspects of Chinese behavior science, (b) some circumstances that may interfere with improvements, especially in relation to certain aspects of Chinese culture and the Chinese higher education system, and (c) some steps that non-Chinese behavior scientists can take to contribute to Chinese efforts to modernize behavior science in China.

Design and Benefits

This book was produced on user-friendly Macintosh computer equipment (rather than on what my colleague Carl Cheney often called his "user-surlly" equipment). This preface was written for all versions of the 1992 edition. These included a *Student Manual* version, which you may be reading, that I designed to address better the educational needs of students. They would benefit from a design that could increase response density since that could improve retention. The design of the student version could do that by increasing response opportunities. This was achieved by incorporating "Notes and Quotes" boxes on each page. The presence of these boxed areas would provide the reader with clear space to respond in writing to the material. Many of the boxes also contain quotations of particularly important material for rereading and emphasis, and many of these quotations contain fill-in blanks for more student responses. Also, the comb binding on this version would more easily allow the open pages to lie flat. Readers would then be more able to relate quotes in the "Notes and Quotes" boxes to their original locations, and hence contexts, on the appropriate open page.

Summary

Again, the overall concern of this book, especially the title paper, is an analyzed history of the emergence of the discipline of behaviorology, and the behaviorology movement. Thus the book is not a comprehensive review of the natural laws describing the relations between behavior and independent variables as discovered and applied by behaviorology. [For such a book, see my *Running Out of Time—Introducing Behaviorology to Help Solve Global Problems* (2014) from BehaveTech Publishing in Ottawa CANADA.] Nor is it a review of behaviorology's philosophy of science, interpretations, or analyses (although elements of these are covered). Nor is it a comprehensive review of behaviorology's past, current, and potential cultural contributions, however important these may be. Those kinds of coverage would take several more books. Many such books and a multitude of articles are already available on these topics (see the bibliography for an initial list).

I hope that by providing these analyses, the reader will be more likely, and better prepared, to acquire an even larger knowledge and skill repertoire in the natural science of behavior, behaviorology.☺

Stephen F. Ledoux

Canton, NY, USA

Summer 1992



(Minimally revised for later editions)☺