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Behaviorology

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ABOUT BEHAVIOROLOGY

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 BEHAVIOR-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*.

AMONG BEHAVIOR SCIENTISTS WHO RESPECT THE PHILOSOPHY OF NATURALISM, TWO MAJOR STRATEGIES HAVE EMERGED THROUGH WHICH THEIR RESPECTIVE PROPONENTS WOULD HAVE THE NATURAL SCIENCE OF BEHAVIOR CONTRIBUTE TO THE CULTURE. ONE STRATEGY IS TO WORK IN BASIC NON-NATURAL SCIENCE UNITS AND DEMONSTRATE TO THE OTHER MEMBERS THE KIND OF EFFECTIVE SCIENCE THAT NATURAL PHILOSOPHY CAN INFORM. IN CONTRAST, BEHAVIOROLOGISTS ARE ORGANIZING AN ENTIRELY INDEPENDENT DISCIPLINE FOR THE STUDY OF BEHAVIOR THAT CAN TAKE ITS PLACE AS ONE OF THE RECOGNIZED BASIC NATURAL SCIENCES.

CONTENTS

<i>A 100th Birthday Conference</i>	3
JÓN GRÉTAR SIGURJÓNSSON JARA KRISTINA THOMASDÓTTIR PÁLL JAKOB LÍNDAL	
<i>The Future and Behaviorology</i>	4
STEPHEN F. LEDOUX	
<i>On Verbal Behavior: The Second of Four Parts</i>	9
LAWRENCE E. FRALEY	
<i>An Introduction to the Philosophy Called Radical Behaviorism</i>	37
STEPHEN F. LEDOUX	
<i>TIBI Online Syllabus for BEHG 101: Introduction to Behaviorology I</i>	41
<i>TIBI Online Syllabus for BEHG 102: Introduction to Behaviorology II</i>	49
<i>TIBI Online Syllabus for BEHG 201: Non-Coercive Child Rearing Principles and Practices</i>	53
<i>TIBI Online Syllabus for BEHG 355: Verbal Behavior I</i>	59
<i>2004 Planning Meeting Prompts Activities</i>	64
STEPHEN F. LEDOUX	
<i>Web Site Content Notice</i>	66
<i>Volume 8 Number 1 Contents Plan</i>	66
<i>TIBI Donors & Levels</i>	66
<i>Syllabus Directory</i>	67
<i>Always More at behaviorology.org</i>	68

<i>Subscriptions & Back Issues</i>	68
<i>TIBIA Memberships & Benefits</i>	68
<i>TIBIA Membership Criteria & Costs</i>	69
<i>TIBIA Membership Application Form</i>	70
<i>TIBI / TIBIA Purposes</i>	71
<i>Periodical Information</i>	71
<i>Some TIBI Contacts</i>	72

NOTE: This issue contains four of the six TIBI syllabi printed before volume 7, and the next issue contains the other two; all have been updated. *Additional* syllabi appeared in the last issue and *new* syllabi will appear in future issues (see the Syllabus Directory on p. 67).—Ed.

ERRATA: Errors in the first printing of the last issue have resulted in the syllabi for BEHG 475 (The prerequisite should be listed as BEHG 355.) and BEHG 420 (A web log is not part of the course.) being corrected and printed in the next issue (Volume 8, Number 1, Spring 2005).—Ed.

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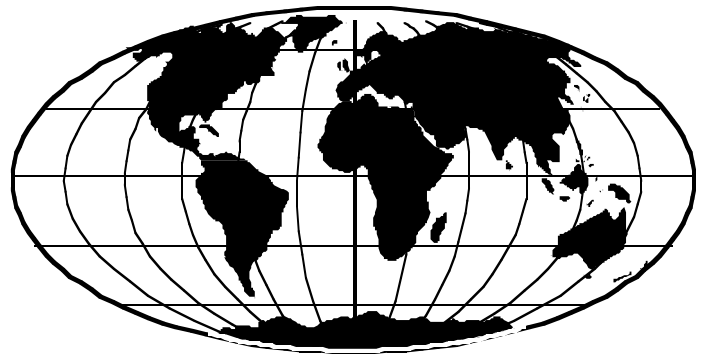
AS PART OF THE ORGANIZATIONAL STRUCTURE OF THE INDEPENDENT NATURAL SCIENCE OF BEHAVIOR, *The International Behaviorology Institute* (TIBI), A NON-PROFIT PROFESSIONAL ORGANIZATION, EXISTS TO FOCUS BEHAVIOROLOGICAL PHILOSOPHY AND SCIENCE ON A BROAD RANGE OF CULTURAL PROBLEMS. TIBI SPONSORS AN ASSOCIATION (THE TIBI ASSOCIATION, OR TIBIA) FOR INTERESTED PEOPLE TO JOIN, SUPPORTING THE MISSION OF TIBI AND PARTICIPATING IN ITS ACTIVITIES. AND *Behaviorology Today* IS THE MAGAZINE/NEWSLETTER OF THE INSTITUTE. THE GUEST AND

STAFF WRITERS OF *Behaviorology Today* PROVIDE AT LEAST MINIMALLY PEER-REVIEWED ARTICLES AS WELL AS, ON OCCASION AND WITH EXPLICIT DESIGNATION, FULLY PEER-REVIEWED ARTICLES. THEY WRITE ON THE FULL RANGE OF DISCIPLINARY TOPICS INCLUDING HISTORICAL, PHILOSOPHICAL, CONCEPTUAL, EDUCATIONAL, EXPERIMENTAL, AND TECHNOLOGICAL (APPLIED) CONSIDERATIONS. PLEASE JOIN US—IF YOU HAVE NOT ALREADY DONE SO—AND SUPPORT BRINGING THE BENEFITS OF BEHAVIOROLOGY TO HUMANITY. (CONTRIBUTIONS TO TIBI OR TIBIA ARE TAX-DEDUCTIBLE.)

A 100th Birthday Conference

Jón Grétar Sigurjónsson
Jara Kristina Thomasdóttir
Páll Jakob Líndal

University of Iceland at Reykjavik



The Faculty of Social Sciences at the University of Iceland hosted, on 29 February 2004, the “Where is it now? The Legacy of Behaviorism in the 21st Century” conference at the University of Iceland, Reykjavik, a conference we organized in celebration of the centennial birthday of B.F. Skinner (which occurred on 20 March 2004). The notion of organizing a conference originally surfaced early in 2003 when we three students, from the university psychology program, noticed that we had not heard of any celebrations, anywhere, being planned in honor of Skinner’s 100th birthday. So, in a perhaps naive display of overconfidence, we decided to plan something special. But what? The answer of “a conference” came quickly.

Our main objective for this conference was to address the following questions: When and where did Skinner’s behaviorism start? What are its strengths and weaknesses? Where can it go from here? And, last but not least, how can it be put into practice? The conference should also be a venue for people who had collected behavior therapy or experimental analysis data to present their findings at a poster session. The desired outcome would be to enable and encourage the general public, professionals, and students to get to know behaviorism better.

To achieve our objective, we got nine lecturers to present ten lectures on various topics in a single-track format. The morning featured basically philosophy-based lectures while the afternoon featured basically data-based lectures. The sequence of lectures was such that even people who had never heard of behaviorism could attend and get an introduction to it.

In the morning part, the philosophy of behaviorism lectures began with an historical lecture about the origins of Skinner’s behaviorism, then proceeded with lectures on the pros and cons of Skinner’s Radical Behaviorism from a philosophical viewpoint, and finished with a lecture on some contributions of behaviorology—a name for the independent natural science of behavior—to the future of humanity. [This last paper is on pp. 4–8 in this issue (Volume 7, Number 2, Fall 2004) of *Behaviorology Today*.—Ed.] Altogether, these philosophical lectures provide something for everyone.

The conference afternoon turned to technical and practical data-based lectures. Topics included experimental analysis with rats, behavioral interventions with young children, benefits of behavioral analysis in business, and teaching behavioral techniques on a regional level.

This coverage of philosophical, technical, and practical aspects guaranteed that people new to behaviorism could understand its foundations while also giving professionals new material to ponder and discuss. To further such outcomes, the University of Iceland Press will publish the conference papers in a book.

In the book of conference papers, some lectures will appear in Icelandic and some in English. Here is some information on each of the four papers to appear in English: (a) *The Emergence of B.F. Skinner’s Theory of Operant Behavior: A Case Study* (Kristján Gudmundsson): In this article the author argues that Skinner’s behaviorism is not rooted in animal experiments but experiments with people. This finding is based on the author’s research into some of Skinner’s earliest work, and on an interview he conducted with Skinner in which Skinner acknowledged this interpretation. (b) *Dennett and Skinner* (Magnus Kristjánsson): Here the author explores Dennett’s critique of Skinner’s views on mentalism and mentalist explanations, and considers what Dennett got wrong. (c) *Skinner’s Psychology: Unique Solutions and Suspected Problems* (Sigurdur J. Grétarsson): In this article the author discusses Skinner’s fresh approach to behavior, compared to the psychology of his day, acknowledging that much of the common criticism launched against him is misguided and that alternative solutions are hardly free of problems. Then some credence is given to the notion, that Skinner’s suspicion of concepts from folk psychology, such as belief or desire, may not have been altogether revolutionary. (d) *The Future and Behaviorology* (Stephen F. Ledoux): Here the author discusses the value of an independent natural science of behavior and how the products of this science are of vital benefit to humanity both now and in the future.

The B.F. Skinner Foundation and The Icelandic Ministry of Social Affairs sponsored this conference along with The University of Iceland. ☺

The Future and Behaviorology

Stephen F. Ledoux

SUNY-Canton

This paper¹ looks briefly at the question of “the future of behaviorology” as a growing discipline. However, the emphasis is on “the future *and* behaviorology,” specifically, what behaviorology has to contribute to the future of humanity.

“Behaviorology” is the name that some natural scientists use for the natural science discipline (Ledoux, 2002a) focused on behavior. Others prefer the name “behavior analysis,” including not only those who are as yet unfamiliar with the reasons for using the term “behaviorology,” but especially those who are trying to mesh this natural science with traditional psychology. Under some circumstances—which this author and Lawrence Fraley discussed elsewhere (see our papers in Ledoux, 2002b, especially Fraley & Ledoux, 2002)—either name could serve. Regardless of the name, this discipline began in the 1930s when B.F. Skinner applied the natural science principles and concepts of biology, which he was studying at Harvard under the head of the physiology department, W.J. Crozier, to the question of what causes behavior. After determining experimentally how behavior works, Skinner and his students and colleagues and their students began addressing the related question of how to change socially significant behavior. The successful history of this behavior science is especially worth noting at this time, near 2004 March 20, as this is the 100th anniversary of Skinner’s birth.²

The growing pace at which natural scientists of behavior have been developing and advancing the concepts, principles, and applications of behaviorological science during the last 50 years portends a vigorous future for our discipline. However, cultural contingencies involving pre-scientific, mystical verbal behaviors continue to cause widespread resistance to the implications of this natural science discipline, implications pertaining to the status of humankind in nature, implications regarding Darwin’s finding of continuity across *all* species including *Homo Sapiens*, implications that *extend* that continuity *from* our biology and its causes *to* our behavior and its causes. These contingencies evoke a special resistance to any implication that divine will has not elevated humanity above other species. And these contingencies also evoke a special resistance to any science responsible for these implications. Long-standing cultural contingencies

make all such implications aversive to many members of society, prompting them to actions of commission and omission that retard the much needed impact of our science, and perhaps threaten the very survival of our discipline. As we work to ensure a bright future for our natural science of behavior, we should look closely at the effects of superstitious verbal behavior across society; we should engage in efforts that reduce society’s reliance on un-scientific verbal behavior; and we should endeavor to increase society’s thinking and speaking from a more naturalistic and valid perspective. Indeed, in the long run, the greatest contribution of behaviorology to humanity’s future may be in prompting a more consistently scientific verbal behavior, especially when considering questions of human behavior, particularly across the range of other natural sciences, and hopefully across the range of applied fields, as well as within the discourse of the general population.

Past to Present

To maintain perspective, one must remember that the past contributions of behaviorological science will likely continue to develop in the future. These include advances in the basic principles and concepts of behavior, made through the experimental analysis of behavior, along with improvements in the applications of those principles and concepts in diverse areas ranging from simple animal training to the challenging complexities of autism interventions. Our very success in these particular areas has, however, caused some problems.

While we bask in the media attention to these successes, we are less successful at assuring that the media inform the populace about our science and how it applies far more widely than these successes. Being ignorant of the particulars of our discipline, and experiencing the aversiveness of our science’s implications, society comes to see our relevance as basically limited to the behavior of non-human animals or autistic children. Are we purchasing our public acceptability with the currency of condoning false impressions that operant contingencies work only with laboratory or entertainment animals, or with severely developmentally disabled people? If we do that, we may be placing the development of further contributions at risk (and possibly risking the survival of our discipline as well). On the other hand, we reduce these risks, and make perhaps our most important contribution to the future, through our efforts to undo the aversiveness of our science’s implications by prompting a consistently scientific verbal repertoire, pertinent to all areas of the culture, regarding questions of human behavior.

Present to Future

At present we are beginning to see some valuable *additional* contributions develop, ones that we should avoid

placing at risk. We see some broadening of our successes in several areas. We see more successes in child rearing as more parents and caregivers, at home and in day care centers, learn to apply skills derived from the behavioral works of authors such as Glenn Latham who has written several books on positive parenting (e.g., see Latham, 1994, 1999; also see Ledoux, 2001). We see more successes in education, with respect to both instructional methods and classroom management, as teachers learn to apply skills derived from the behavioral works of authors such as Kent Johnson and Og Lindsley (e.g., see Johnson & Layng, 1991; also see Lindsley, 1992; Latham, 1998, 2002; Ledoux, 2000; and West & Hamerlynck, 1992). We see more successes in business and industry, through performance management, as workers and managers learn to apply skills derived from the behavioral works of authors such as Aubrey Daniels (e.g., see Daniels, 1989, 2000). And we see more successes—with the potential for a great many more—in the full range of areas across society, from interpersonal concerns to the concerns of governments and diplomacy, as both professionals and members of the general population deal with problems through the kinds of proactive, prevention oriented, non-coercive, behavioral practices that Murray Sidman advocated in his book *Coercion and Its Fallout* (Sidman, 2001; also, see Kopp, 2001).

Some behaviorologists and other behavioral scientists are also turning to areas that have received little scientific scrutiny. They are analyzing these areas not only for the variables currently operating in them, but also to consider how to change those variables to improve behavior in these areas. For example, Lawrence Fraley has gone beyond the question of how to help survivors deal with the impending death of a terminally ill loved one; in a book he is writing, *Behaviorological Thanatology* (also see Fraley, 1998), he explores the behavior-science-based options of those who are experiencing a terminal illness, and how society can help them maintain their dignity. Fraley has also considered the application of behaviorology to the question of penal corrections; in another book he is writing, *Behaviorological Rehabilitation* (also see Fraley, 1994), he investigates behavior-science-based options for improving human interactions and situational factors to build success rates in institutional rehabilitation settings such as prisons. And Ledoux, with his colleagues and students in China, has begun to extend the analysis of verbal behavior (Skinner, 1957; Peterson, 1978) to the language classroom. His current work in this area (Ledoux, Michael, & Miguel, 2002) centers on a one to three day workshop summarizing verbal behavior analysis and exploring some of its implications and applications for increasing the effectiveness and efficiency of foreign language instruction. (People who are interested in behavioral science and technology can access a

continually increasing number of behavioral resources regarding a wide range of behavior-related topics, including links to related web sites, by regularly visiting www.behaviorology.org which is the web site of The International Behaviorology Institute [TIBI].)

Benefits for humanity from those and other areas will continue to accrue. Indeed, as the research of behavioral scientists continues to expand our repertoire regarding the natural causes of behavior, people will eventually come to realize that behaviorology can have a beneficial impact in every area of human behavior. That is an easy promise because the implications of natural science are ultimately more efficient, effective, and humane, than are the implications of investments in superstition that they supercede.

Future

In spite of our successes, the history that our *natural science* discipline shared with the discipline of psychology often leads others to misconstrue our discipline by presuming we are still part of psychology. That is inaccurate; we are not part of psychology. Ours is a discipline of strictly naturalistic explanations of behavior. Traditional psychology, on the other hand, is a discipline of fundamentally mystical explanations of behavior (although some individual psychologists may personally be in disagreement with their discipline about this). Most psychologists ultimately rely on behavior originating spontaneously (i.e., non-naturally) through the ethereal, body-dwelling agents connoted by such terms as mind, psyche, or self. Behaviorology is logically not part of psychology because our reliance on strictly naturalistic explanations of behavior is incommensurable with the fundamentally mystical explanations of behavior retained in the psychology discipline. Could we not change psychology into a natural science? For over 50 years, a minority of natural scientists of behavior working in psychology tried in many ways to change psychology into a natural science discipline. The data from those 50 years of attempts to change psychology, which Fraley and Ledoux (2002) explored in detail, reveal that psychology would have continuously kept the natural science of behavior minimized, while the behavior analysts in psychology wore themselves out struggling unsuccessfully to change psychology into a natural science of behavior. (However, all this does not describe the full range of possible contingency outcomes everywhere. The contingencies in the geographical region of the reader may vary enough to lead to the psychology discipline in that region evolving into a natural science after ending allegiance to mystical assumptions. Many questions about the resulting natural science discipline would, though, still remain. Here are just a couple: (a) What would the relationship of the resulting discipline be to the rest of psychology, in

other regions, that still adheres to superstitious assumptions? And (b), since part of the disciplinary definition of psychology is adherence to mystical assumptions, then the resulting discipline would no longer be psychology, so by what name would it be known?)

Even though a natural science of behavior is separate from psychology, in the view of other natural scientists (e.g., physicists, chemists, biologists) our past association with psychology continues to compromise our position. The significance of our separation from psychology is lost in the confusion over the nature of behavior. When questions of behavior confront these other natural scientists, their answers are not scientific; psychology informs what they say because in their experience psychology has been the only game in town addressing behavior. Since our discipline is still quite young, it has not yet had the time to become included with other natural sciences in the education programs of these scientists and their followers and practitioners. Yet both their culture and their general education include the psychological perspective. Their verbal treatment of behavior is psychological; it is not yet informed by behaviorology. This is why we must work to prompt a consistently scientific verbal repertoire about behavior among other natural sciences and applied fields (which will also yield a more accurate treatment of behavior among the general population). Again, the greatest contribution of behaviorology may be in this prompting of a consistently scientific verbal behavior about behavior across society.

Here are just two examples, gleaned from across the wide range available, where behaviorology needs to be the discipline that informs colleagues in the general population, and in other sciences and applied fields, about behavior. Across society people too readily offer accounts of behavior that are not helpful, in part because more helpful accounts are not available. These unhelpful accounts then become harmful, for their presence reduces the likelihood that better accounts will be well-researched and applied. Consider this as we turn to the two examples. These examples are not special. They are common, even trivial, and that is their significance.

The first example pertains to how members of the *general population* can benefit in the future from a widely available discipline of behaviorology, a circumstance that would improve people's verbal behavior about behavior. The January 2004 issue of *Consumer Reports* contains an article on the importance of people reducing the amount of fat in their diet ("Cut the Fat" on pp. 12-16). The "CR Quick Take" sidebar on page 12 reads "No one is forcing you to overeat..." This quote exemplifies an account that psychology has informed with the psychologically allowed, even advocated, notion of free-will. If "force" (as coercion or punishment) is an example of the only kind of variable considered to exert control over behavior, with

the rest of behavior, such as the behaviors of eating and overeating, arising spontaneously from some body-managing agent inside the body, then we could take this statement at face value: No one *is* tying you down and force feeding you more than you need. Logically then, if you are overeating (perhaps indicated by your being overweight or experiencing other problems related to excess food intake) then the problem rests *with you*, and the solution is just to stop eating so much food. What could be easier? Some people may say that you need to show a little more backbone, in the face of food, to eat less. Or perhaps you need a little more will power, or a little more ego strength, or a little more capacity for cognitive processing. Or maybe you need your body altered by a little more medication, or a little more of the right brain chemicals, or a little more... well, unfortunately, this list could go on and on.

However, are the solutions really that simple? Are coercion and punishment really the only variables that can affect behavior? Are backbone, will power, ego strength, or cognitive processing relevant variables to the prediction and control of behavior? Are medications and altered brain chemicals, etc., fully feasible solutions to behavior problems? Will any of this conventional wisdom stand up to scientific scrutiny? Health problems from overeating are quite real, but are these largely superstitious approaches the best society can offer to solve such problems? And, most importantly, why are we even having to ask such questions?!

We are asking these questions because writers of these kinds of explanation, writers who are typical of society in general, have not learned any better explanations, have not learned any scientific explanations. But what if these writers had had their repertoire originally conditioned through exposure to behaviorological science in their educational history? What if they had avoided the heavy cultural indoctrination in superstition? What if they could offer their readers explanations of overeating, and solutions for overeating, in scientific terms? What if they at least knew enough to talk in terms of the effects of deprivation and stimulus control, and the ways to arrange such variables such that overeating became less likely (i.e., ways the would counteract all the independent variables causing you to overeat that food sellers, and others, use to increase overconsumption, and thus their profits, such as "supersizing" a meal at a bargain price compared to a smaller meal)? And what if their readers also had learned enough behaviorological science to be affected by what they read in ways that helped make overeating less likely? All of these will be more possible as our efforts to broaden the availability of our natural science of behavior become more successful. Multiply this across all areas of society where questions of behavior arise, and one can see why the future can gain so much from behaviorology.

My second example pertains to how *other natural scientists* can benefit in the future from a widely available science of behaviorology, a circumstance that would improve their verbal behavior about behavior. The March 2004 issue of *Sky and Telescope* contains a featured article that Dan Falk wrote to help non-physicists better understand the debate currently raging in astronomy/cosmology over the resurgence of what is called the “anthropic” principle (“The Anthropic Principle’s Surprising Resurgence” on pp. 42–47). In (perhaps overly) simplified terms, this principle says that we must surely have a special place in the universe since we could not exist, let alone ponder the question of the existence of the cosmos, in a universe that differed from this one in the value of some basic parameters that govern the physical world such as the strength of gravity and the masses of subatomic particles. For example, if gravity had been even a little stronger, then the universe should have collapsed in a “big crunch” long before life evolved, whereas if it had been a little weaker, then matter would not have coalesced into galaxies, stars, planets—and life.

The physical science community has members on both sides of this debate, although more seem opposed to it than in support of it. Falk reports that Andrei Linde, a supporter of the anthropic principle, goes so far as to speculate “on links between consciousness and the physical world” (p. 47). In part, such indulgence in superstitious talk results from natural scientists being informed through the mysticism of religion and psychology, and thus suffering from the same illogic that mystics exhibit with respect to naturalism. To be fair, some critics “view the anthropic principle as intellectual surrender” (David Spergel, p. 47). These critiques, however, tend to be limited to issues that the traditional natural sciences have already considered, such as how the anthropic principle “plays into the hands of ‘Intelligent Design’ supporters who feel the universe was custom-made for human beings by a benevolent God” (Dan Falk/David Gross, p. 46), an issue that biology has faced frequently and handled with some success. Since the critics of the anthropic principle are also informed through their recourse to psychology, when questions of behavior (including consciousness) arise, they are unable to apply the more effective critiques that would derive from a natural science of behavior (such as a natural science analysis of the nature of consciousness, and the kind of links that are then possible between consciousness and the rest of the physical world—see Skinner, 1953; also see Fraley, 2004).

What if the natural scientists on both sides of this debate were bringing to their debate a consistent educational background that included the full extension of their natural science approach to the questions about behavior that they inevitably face? That is, what if their verbal behavior about behavior were informed by the natural

science of behaviorology? Rather than becoming hopelessly trapped in solipsistic and sophistic mysticisms which they can debate forever (like the old, still unresolved—and unresolvable—question of how many angels can dance on the head of a pin), they might resolve their debate over the anthropic principle rather expeditiously. This is what virtually always happens: When a valid and appropriate natural science has been finally brought to bear upon such otherwise resistant issues, they have often yielded to quick resolution.

This kind of progress will be more possible as our efforts to broaden the availability of our natural science of behavior become more successful. Multiply this across all natural science and engineering disciplines and fields, where questions about behavior arise because these professionals are dealing with people at one level or another, and you will again see why the future can gain so much from a more widely understood behaviorology.

Reality

Those examples came from everyday reading. You have probably noticed similar examples many times in your own reading. Pursue them. The pre-scientific, mystical view of human behavior remains pervasive even after taking into account all the accomplishments of our discipline. But the culture has long enough endured the adverse implications of its wide spread investment in the superstitious treatment of behavior. The culture has long enough endured the adverse effects of the counter-productive sponsorship of disciplines that use scientific methods to pursue the implications of superstitious assumptions. And the culture has long enough endured the adverse outcomes when such disciplines ignore or deny or warp or suppress the evidence when the data imply that naturalistic assumptions are more appropriate. This reality makes clear what our future work involves.

While we continue to build upon our previous successes, we must also find ways to replace pre-scientific views of behavior with the natural science of behavior. We must do this in ways that gain the support of our colleagues in the other natural sciences. We must insure that our natural science discipline replaces fundamentally mystical disciplines as the accepted science of human behavior within our culture that informs society’s verbal behavior about behavior.

The first, and perhaps greatest, challenge for that task is to establish more firmly the independently organized natural science of behaviorology as an equal citizen of the natural science neighborhood—across the street from chemistry, next door to biology, and with physics just across the backyard alley. Our philosophy and science make us an equal partner in that community. To assert our place within it, our members must shed the distraction of the cultural mainstream. That superstitious cur-

rent is sweeping the culture down a drain. We should not purchase our passage through that maelstrom on some passing but inappropriately appreciated raft, like psychology, with the currency of our integrity. Instead, our mission, and our contribution, involves using scientific realities to divert that current to better prospects.

Within the global culture, natural science will remain the work of a minority for a very long time. As with members of the other natural sciences, the social security of individual behaviorologists inheres in the practical merit of their intellectual products. Natural scientists of behavior, like those here today, are poised to make the kinds of contributions to the future of humanity that we have discussed and which support our collective security. Whether ultimately called behaviorology as it is now, or called behavior analysis at some future time after that name has been cleared of its association with fundamentally mystical disciplines, the natural science of behavior not only faces a bright future, but helps create a bright future for humanity.✱

References

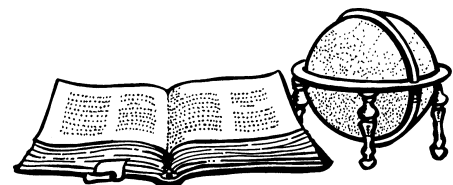
- Daniels, A.C. (1989). *Performance Management*. Tucker, GA: Performance Management Publications.
- Daniels, A.C. (2000). *Bringing out the Best in People*. New York: McGraw-Hill (ISBN 0-07-135145-0).
- Fraley, L.E. (1994). Behaviorological corrections: A new concept of prison from a natural science perspective. *Behavior and Social Issues*, 4 (1 & 2), 3-33.
- Fraley, L.E. (1998). Behaviorological Thanatology: Foundations and implications. *The Behavior Analyst*, 21 (1), 33-35.
- Fraley, L.E. (2004). *General Behaviorology—The Natural Science of Human Behavior*. Reedsville, WV: Lawrence E. Fraley.
- Fraley, L.E. & Ledoux, S.F. (2002). Origins, status, and mission of behaviorology. In S.F. Ledoux, *Origins and Components of Behaviorology—Second Edition*, pp. 33-169. Canton, NY: ABCs (ISBN 1-882508-08-4).
- Johnson, K.R. & Layng, T.V.J. (1991). *Breaking the Structuralist Barrier: Literacy and Numeracy with Fluency*. Seattle, WA: Morningside Corp.
- Kopp, J. (2001). *Coercion and its Fallout Study Guide*. Boston, MA: Authors Cooperative.
- Latham, G.I. (1994). *The Power of Positive Parenting*. Logan, UT: P&T ink (ISBN 1-56713-175-1).
- Latham, G.I. (1998). *Keys to Classroom Management*. Logan, UT: P&T ink [Parents & Teachers ink].
- Latham, G.I. (1999). *Parenting with Love: Making a difference in a day*. Salt Lake City, UT: Bookcraft.
- Latham, G.I. (2002). *Behind the Schoolhouse Door: Managing Chaos with Science, Skills, and Strategies*.

- Logan, UT: P&T ink (ISBN 0-9725742-0-4).
- Ledoux, S.F. (2000). *Study Questions for Glenn Latham's Keys to Classroom Management*. Canton, NY: ABCs.
- Ledoux, S.F. (2001). *Study Questions for Glenn Latham's The Power of Positive Parenting*. Canton, NY: ABCs.
- Ledoux, S.F. (2002a). Defining natural sciences. *Behaviorology Today*, 5 (1), 34-36.
- Ledoux, S.F. (2002b). *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs.
- Ledoux, S.F., Michael, J., & Miguel, C. (2002). *An Introduction to the Elementary Verbal Operant Relations in the Verbal Behavior Analysis Component of Behaviorology Plus Some Initial Implications and Applications for Foreign Language Teaching*. Canton, NY: Stephen F. Ledoux.
- Lindsley, O.R. (1992). Precision teaching: Discoveries and effects. *Journal of Applied Behavior Analysis*, 25 (1), 51-57.
- Peterson, N. (1978). *An Introduction to Verbal Behavior*. Grand Rapids, MI: Behavior Associates.
- Sidman, M. (2001). *Coercion and Its Fallout—Revised Edition*. Boston, MA: Authors Cooperative (ISBN 1-888830-01-8).
- Skinner, B.F. (1953). *Science and Human Behavior*. New York: Macmillan.
- Skinner, B.F. (1957). *Verbal Behavior*. New York: Appleton-Century-Crofts. Reprinted, 1992, Cambridge, MA: The B.F. Skinner Foundation (ISBN 0-87411-591-4).
- West, R.P. & Hamerlynck, L.A. (Eds.). (1992). *Designs for Excellence in Education: The Legacy of B.F. Skinner*. Longmont, CO: Sopris West.

Footnotes

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²The author wrote this paper as an oral presentation of an invited address at the "Where is it now? The Legacy of Behaviorism in the 21st Century" conference at the University of Iceland, Reykjavik, 29 February 2004, a conference in honor of the 100th anniversary of B.F. Skinner's birth on 20 March 1904 [see p. 3 in this issue (Volume 7, Number 2, Fall 2004) of *Behaviorology Today*.—Ed.].✱



On Verbal Behavior: The Second of Four Parts

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Editor's note: Interest in the behaviorological analysis of verbal behavior (Skinner, 1957) continues to grow. (For an example see the editor's note to Fraley, 2004, which is Part 1 of this paper. Also see the syllabi for TIBI's two online verbal behavior courses, BEHG 355-Verbal Behavior I, and BEHG 475-Verbal Behavior II. These syllabi appear, respectively, in these issues of *Behaviorology Today*: Volume 7, Number 2, and Volume 8, Number 1.)

To help support continuing interest in verbal behavior, *Behaviorology Today* presents this four-part series on verbal behavior. The first part appeared in Volume 7, Number 1. This is the second part. And the remaining parts will appear in the next two issues. (One part appears in each consecutive issue, beginning with Volume 7, Number 1.) All four parts derive from a chapter of the author's book *General Behaviorology: The Natural Science of Human Behavior*. (See the "General Behaviorology" page at www.behaviorology.org for more detailed information on this book.)

For each part, the headings hint at the contents:

✂ Some interesting headings in *Part 1* (Fraley, 2004) were: Terminological Issues, The Antecedent Control of Verbal Behavior, How Instances of Verbal Behavior are Classified, and The Mand.

✂ In *Part 2* some interesting headings are: Verbal Behavior Under the Control of Verbal Stimuli, The Tact, Abstraction, Private Events, Reality, and Temporal Relations.

✂ Some interesting headings in *Part 3* are: Autoclitic Verbal Behavior, Descriptive Autoclitics, Autoclitics that Function as Mands, Qualifying Autoclitics, Quantifying Autoclitics, Grammar and Syntax as Autoclitic Processes, and The Nature and Occurrence of Composition.

✂ In *Part 4* some interesting headings are: The Private Verbal Behavior of Thinking, The Productivity of Thought, The Utility of Thought, Issues of Privacy and Antiquity, The Absence of Thinking, and Nonverbal Consciousness.

Here is Part 2.—Ed.*

Part 2

Verbal Behavior under the Control of Verbal Stimuli

With an appropriate conditioning history, verbal behavior may occur under the antecedent stimulus control of other verbal behavior or its products, such as printed text. Such an antecedently functional (evocative) class of verbal behavior may be provided by other persons, as when a teacher speaks the new vocabulary word *emulate*, and a student repeats the word *emulate*. However, the vocalizer's own verbal behavior can also function to evoke the vocalizer's additional verbal behavior, as when a person who is thinking or saying "two, four, six,..." then produces "eight." Thus, in the major class of verbal behavior that is discussed in this section, the analytical concern is with why the response has occurred rather than with its after-effects. This differs from the analysis of mands, which was carried forward in time to reveal how a mand affected a potential mediator.

Examples of Controlling Relations in this Class

Suppose that a parent mands a child to say *uncle*, whereupon the child says *uncle*. Such a mand is called an *instruction*, and it may be said that the child has complied with the instruction (although the child's response was functionally *evoked* by the mand and was not a willful compliance by a mystical internal child-agent).

If we analyze the antecedent controls on the child's reaction, we can attribute the child's utterance in general to the manding nature of the parent's instruction. The child has been conditioned to behave in ways that reinforce the parent and therefore lead to reinforcing reactions from the parent. The child is also conditioned to avoid the parent's punitive reactions, which may follow any noncompliant behavior from the child. In this example, the parent's statement in the form of a mand to *...say...* controls the utterance of some kind of vocal response by the child. *Say* insures that the child's response will manifest vocally, while *uncle* controls the form of the vocal response that will be reinforced by the audience. Note that in this section of the chapter our analytical attention is focused on what controlled the *mediator's* response, and of interest is the fact that it was a verbal stimulus (i.e., *uncle*).

In common agential language it is said that those features of the parental instruction that define it as a mand to speak *make clear to the child* that a vocal response is now required. Note, however, that mands are not instruments

*The author's footnotes are at the end of the paper.

of persuasion that are directed at the inner child-agent in the hope that such a residential agent will then deign to will that its host body produce a certain kind of response. Instead, as a result of the past conditioning, the parental mand and the child's response are now directly linked in a functional sense. Given that particular mand in the presence of that appropriately conditioned body, the response is simply evoked (i.e., it simply happens, and at that instant it is the only thing that can happen). If the relevant parts of the child's body are currently in working order, but the manded response is *not* forthcoming, our assumption about the adequacy of the child's conditioning history is thereby revealed to have been unwarranted.

Furthermore, as noted in the case of this particular mand, the form of an adequate response has also been specified. That is, the child's vocal response matches the parent's vocal stimulus. The child's response is effective merely insofar as it echoes what the parent specifies. The parent says *uncle* and the child responds *uncle*. Thus, the parent's manded sample and the child's correct response, considered as a pair of stimuli, exhibit two distinct characteristics: (a) what is called a *point-to-point correspondence* and (b) *formal similarity*.

Let us review the relevant controls: (a) The manding form of the parent's statement makes a response probable. (b) The verb *say* determines the *vocal* nature of the child's required response, and in particular that it be an *echoic* verbal response. (c) The vocalized term *uncle* precisely controls the form of the child's echoic verbal response.

The relevant operant conditioning history that prepared the child for an appropriate response of this kind (a) increased the probability that the child's responding will comport with any parental instructions, (b) increased the probability that the child will respond vocally after hearing the word *say*, and (c) increased the probability that the vocal response will have a point-to-point correspondence with any vocalized sample that follows the word *say* in a vocalizer's mand. With those three kinds of conditioning in place, the child is ready to perform in the manner featured in this example.¹

Let us move on to other examples of behavior that fall within this major class of verbal behavior. In the case of *textual behavior*, the response (usually called *reading*) occurs under stimulus control of textual products. Someone's earlier verbal behavior has resulted in a textual product that is now controlling the verbal behavior of the reader. During the early operant conditioning of such textual behavior (i.e., reading), a student may be presented with a sequence of letters (e.g., H-O-U-S-E), following which only the student's audible sound "hous" is reinforced. The operant conditioning procedure is repeated until that audible sound follows the presentation of that letter sequence with sufficient reliability. If the spoken word and the printed text are phonetically related

(e.g., the printed word *tad* and the spoken word *tad*), the spoken word exhibits a letter-to-sound correspondence with the text in the sense that each printed letter evokes a distinct sound. Those sounds string together to make the complete word-sound. Note, however, that such a vocalized utterance bears no formal similarity to the sequence of printed letters (i.e., sound forms and print forms are entirely different kinds of forms).²

During such training, in addition to being manded to say the word, the student may also be manded to draw the picture that is privately evoked either by the sequence of letters or by the audible sound that they evoke. Note that with respect to the word *house*, for the child to render the drawing, some additional special conditioning must have occurred in addition to the conditioning of general drawing skills. Either (a) the child, previously, must have contacted houses or pictures of houses, while utterances of the audible sound *house* were being reinforced differentially; or (b) the child, previously, must have contacted houses or pictures of houses, that were paired with the textual stimulus *HOUSE*.³

Given that the child has never before responded in a graphic way either to the spoken sound "hous" or to the written letters *h-o-u-s-e* (i.e., by drawing a picture of a constructed dwelling), if the drawing does occur, its appearance is evidence that prior conditioning of the kind described above has established the stimulus equivalence relations that are implicitly required for the child's exhibition of the manded pictorial response (i.e., drawing a house). Note that in these functional relations, which feature drawing behaviors, the spoken or textual stimulus and the drawn response do not have a point-to-point correspondence (or any approximation thereof) nor do they have formal similarity.

Let us now reconsider text, such as that which you are now reading. Text is a product of previous verbal behavior and for that reason is usually classed as a verbal stimulus. The person whose verbal behavior is controlled by text is usually called a *reader*. When reading aloud, a vocal sound is produced in response to each functional stimulus element. The particular graphic form of the textual elements remains an independent variable, so while a reader who is exhibiting textual verbal behavior may be responding to printed words, syllables, or even single letters, that reader can also be responding to pictures, pictographs, or hieroglyphics. The only requirement is that repeated presentations of a given mark, or set of marks, reliably evoke the production of the same vocal sound. People refer to the conditioning history that establishes those controlling relations as *learning to read*.

Not all reading falls in this major class of verbal behavior. Here is an example of such an exception: Suppose that many boxes are hauled onto an aircraft. Each box contains 30 round, white, 12-inch diameter disks that are

thin but rigid. Later, in flight, one box at a time is dumped out of the aircraft door into the air stream, and the individual disks from each box flutter to the green fields below where the disks from each box come to rest in a seemingly random cluster. Each such cluster can then be seen from the aircraft as a patch of small white dots.

Let us assume that, by chance, the disks from one box come to rest in a dot pattern that, if properly connected by straight lines, would form the letter sequence *cow*, and a passenger in the aircraft, looking down at that dot pattern, utters the vocal sound *kou*. The person's utterance of the sound *kou* under stimulus control of those white dots would represent normal reading. However, the antecedent stimulus, consisting of the dot pattern, was not a product of verbal behavior, so that vocal utterance would classify as a *tact* (another major division of verbal behavior that will be discussed in a later section of this chapter). Although the vocalizer's utterance of the word *cow* is verbal behavior of the kind that is commonly called *reading*, in this case that reading does not represent the class of verbal behavior that occurs under stimulus control of *other verbal behavior (or its products)*.⁴

Textual behavior is obviously simpler than what is usually implicit in the common term *reading*. When reading, not only are vocal sounds (or their private subvocal versions) produced—that is, not only are the words publicly or privately spoken—but some additional private kinds of verbal behavior are occurring to which people generally refer as *comprehending*. The production of the sounds that are evoked by the textual elements⁵ in turn evoke a variety of further private responses—for instance, a visualization of an object and visualizations or descriptions of its relations to other events—that is, the context in which it exists or operates. As one's reading skill matures, the comprehension behaviors can come under direct stimulus control of the printed text, and the raw textual behavior extinguishes. In that case, as the mature reader's eyes scan the text, comprehension behaviors are evoked directly, but the individual vocal or subvocal production of the sounds, which previously were evoked by the textual elements, no longer occurs.

On the other hand, textual behavior can continue to occur indefinitely *without* comprehension if the reader has had an appropriate, if atypical, conditioning history. For example, a person can be conditioned to pronounce correctly the printed words in an alien language without either those sounds or the textual elements that evoke them ever being related to other particular environmental elements. That precludes the private evocation of any kind of comprehension responses. Thus, a person can become a skilled reader of text that is printed in that strange language without experiencing comprehension behaviors with respect to any of it. As that situation is commonly

described, such persons vocalize the text correctly, but personally have no idea what they are saying.

In fact, as the person's skill becomes refined, such a "reader," who is actually exhibiting only raw textual behavior, could theoretically daydream about entirely different events while engaged in such vocal textual behavior. Raw textual behavior requires, at the minimum, only that the vocal musculature be under direct stimulus control of the printed text. Daydreaming can then occur concurrently, because it need not involve any of the body parts that are preoccupied by such raw textual behavior. However, such a behavioral bifurcation is *not* possible for a comprehending reader, because the neural body parts with which one would daydream are involved in producing comprehension behaviors and are thereby preoccupied.⁶

Another subclass of verbal behavior that is controlled by verbal stimuli is called *transcription*. An example is taking dictation. Recall that vocal verbal behavior involves a vocalizer who exhibits an auditory pattern that is reinforced when it affects the listener as an auditory pattern. In transcription, a writer creates a visual stimulus that is consequated after having affected a reader as a visual stimulus. The reader may be a third party. Both the listener (as transcriber) and the reader of the transcription typically function as mediators of consequences for the verbalizer's verbal productions.

Consider the behavior of the transcriber. The antecedent stimuli that evoke transcribing behavior can be auditory or textual. If a person produces written text in response to linguistic stimuli that are being heard, the process is called *taking dictation*. If the antecedent stimuli are in graphic form, the person is said to be *copying*. In either case, the transcription behavior is shaped by its consequences, which are normally provided by the readers of the written product. If the antecedent graphic stimuli are not linguistic, the transcription process is more likely to be called *drawing* than *copying*, as when an artist who is looking at a tree, *draws* that tree.

The final subclass to be discussed in this section is called *intraverbal behavior*. Note, in regard to the earlier classes of this subsection, that in both echoic behavior (saying what one hears), and in writing from copy, there is a formal correspondence between the evocative stimulus and the verbal behavior of concern. That is, in echoic behavior, the vocalizer is producing sounds that are similar to the sounds being heard. In writing from copy, the writer is producing records that are similar to those being copied. In both cases, the stimuli and behavioral products are in the same medium (i.e., both are sounds, marks on paper or on monitors, etc.).⁷ In cases of reading aloud or taking dictation, the medium changes insofar as a reader produces vocal sounds that are evoked by text printed on paper, and a transcriber produces written text that is evoked by vocal sounds that are produced by a vocalizer.⁸

Note that in all four kinds of behavior that were mentioned in the previous paragraph, some approximation of a point-to-point correspondence exists between the stimuli and the behavior or its products (see the earlier footnote on the connotations of "point-to-point"). For example, in echoic behavior, the sounds being vocalized are similar to the sounds being heard, and each element of the vocalized stream of sounds corresponds precisely to a specific element in the stream of sounds being heard. Likewise, in writing from copy, each element of the written text corresponds precisely to a specific element in the text being copied. In both textual behavior and taking dictation, even though the dimensional system (i.e., the medium of expression) changes within those processes, an approximate point-to-point correspondence is maintained between the evocative stimuli and the behavior of concern (or its products). Here again, each element of the behavioral product corresponds precisely to a specific element in the stimulus stream that controls the production behavior. For instance, each elemental utterance of a reader can be matched precisely to a specific stimulus element in the text that is being read—hence, the point-to-point (or at least range-to-range) correspondence.

In the intraverbal class, however, that location-based correspondence is missing. That is, in many instances of verbal behavior that is occurring under stimulus control of other verbal behavior, no such point-to-point correspondence, nor any approximation of it, can be found. The verbal behavior is precisely evoked by other verbal behavior, but it remains impossible to match a given element of that verbal behavior to any *specific* element of the evocative stimuli.

For example, if the presented stimulus is *a-b-c-d-e-f..* and the response is *g*, we see no locational correspondence between the stimulus (*a-b-c-d-e-f..*) and the response (*g*). The absence of such locational correspondence in verbal-verbal functions defines what B.F. Skinner called the *intraverbal* subclass of verbal behavior. It features verbal behavior that is occurring under stimulus control of other verbal behavior, but the stimulus and its evoked behavioral product lack locational correspondence or any approximation thereof (point-to-point, part-to-part, zone-to-zone, etc.).

Another example of intraverbal behavior occurs when a person hears the sound *apple* and responds with the sign for apple. The audible stimulus *apple* and the response to it in the form of movements of the arms, hands, fingers, and perhaps the face that together constitute the corresponding sign for *apple* share nothing that can represent locational correspondence between their constituent elements. That is, no point or region in the sound corresponds precisely to a point or region in the movements of the body parts that are creating the sign for *apple*.

Intraverbal behavior is readily explicable in terms of the conditioning history that has established the relation between stimulus and response. We quickly point to such a conditioning history to explain a person's saying *World War Two* when presented with *1939-1945* or a person writing *Pierre Renoir* when shown the famous painting that is entitled *Luncheon of the Boating Party*. Likewise, most people are quite familiar with the kind of conditioning history that renders probable the response *g* in the presence of a stimulus consisting of *a-b-c-d-e-f..*

Note that, in the case of intraverbal behavior, not only is there is no point-to-point correspondence between the stimulus and response that it produces, the dimensional system of the stimulus need not match that of the response or its product. In the previous example in which *a-b-c-d-e-f..* evoked the response *...g...*, the stimulus could be presented either as printed text that must be read, as audible sounds, or as Braille that must be felt tactually. Similarly, regardless of the nature of that stimulus presentation, the intraverbal response *...g...* could have been rendered either as text, in spoken form, or as a special array of raised dots. Other unmatched forms for the stimuli and responses to it are also possible.

Consider another typical example: When one encounters an acquaintance, one is likely to say *How are you?*—a kind of greeting to which the other person may have a standard response: *Very well, thanks!* Such a standard and perfunctory response, when controlled intraverbally, is independent of the actual status of the person who is responding and may therefore not validly describe the status of the person who is responding to the inquiry. Given the question *How are you?*, the intraverbally controlled utterance of the standard response *Very well, thanks!* is functionally similar to the utterance of *g* in response to the stimulus *a-b-c-d-e-f..*

The recitation of a lengthy memorized verbal sequence occurs intraverbally, as in the prior example pertaining to the recitation of the alphabet with each response functioning as the stimulus for the next response. The process is often called *chaining*. Each utterance in the chain of responses is analogous to a link in a manufactured chain. Far more complex sequences than the letters of an alphabet may be featured. For instance, a West African griot recites the ancestral history of the tribe members, which may span hundreds of years. Each short passage is evoked intraverbally, mainly by the features of the previous short passage. Such recitations may not require any supplementary private verbal stimulation of the various kinds called *analysis*, *problem solving*, *critical thinking*, *reflection*, or any kind of thought in general. The common descriptive phrase *mindless recitation* reflects the absence of such supplements from the antecedent controls on intraverbal behavior.

However, the control of each link in a chain of intraverbal responses is not usually under the exclusive control of the previous link. Some of the evocative capacity resides in the preceding *sequence* of links. Thus, if interrupted, the griot may be unable to restart from the point of interruption, and may have to resume from an earlier and particularly salient event that is more readily evoked (in agential language, more easily recalled). The griot thus gets a new running start that restores the full measure of intraverbal control over subsequent sections of the narrative.

A school child may have a similar problem when reciting the memorized names of the American states in alphabetical order. The child may successfully complete the task after beginning with *Alabama...*, but if during such a recitation the child is briefly interrupted—for instance, after *Michigan*—the child may be unable to continue with *Minnesota...* If no prior link has special strength among its evocatives that affords a more economical starting point, the child may have to restart from the beginning with *Alabama...*

As some previous examples have suggested, we often respond intraverbally to stimuli that we ourselves generate. If an American vocalizer says *red, white, and...*, that composite verbal sequence tends to evoke *blue* as that speaker's next response. Similarly, among people who have been conditioned in an American verbal community, the vocal or subvocal stimulus *white* is more often followed by the response *house* than among persons conditioned in the verbal communities of other countries. Upon uttering all but the final syllable of a multisyllabic word, the vocalizer is likely to emit the final syllable under stimulus control of the preceding syllables of that word. For instance, given the vocal stimulus *po•lar•i•za...*, the speaker is likely to complete the word by uttering the final syllable *...•tion*.

In the process of pure *translation* a stimulus in one language evokes a corresponding response in another language—a special case of intraverbal behavior. In theory, translators need not respond to relations between their textual or audible products (in either language) and other environmental events. That is, for example, theoretically, the translator need not be able to define *ouk* or *lur* in either language to produce *lur* in language B when given *ouk* in language A (although in practice translators are typically skilled in both languages, because they are usually expected to interpret as well as to translate). Given the stimulus *ouk*, either as text or as an audible sound, a simple translator needs only to respond reliably and appropriately under intraverbal control with a textual or audible rendering of *lur*. However, satisfactory translation usually requires far more than mere intraverbal control of the responding, especially when the differences in the lan-

guages extend beyond words to include structural and compositional issues.

Conceptual Instability

After Skinner published the seminal book *Verbal Behavior* in 1957, the class of verbal behavior that is discussed in this major chapter subsection (Verbal Behavior under the Control of Verbal Stimuli) was subjected to more redefinition than perhaps any of the other major classes of verbal behavior that Skinner delineated. During the final few decades of the twentieth century, two professors of Skinner's general concept of verbal behavior, Jack Michael, at Western Michigan University, and Ernest Vargas, at West Virginia University, were respectively prominent in tweaking the subcategories in the general class that Skinner denoted as *verbal behavior under the control of verbal stimuli*. Vargas reorganized the whole class under Skinner's subclass name *intraverbal* and then divided the verbal phenomena in that major verbal-behavior category into three subcategories called *codic*, *duplic*, and *sequelic*. Michael moved *codic* and *duplic* verbal behavior out of this major class and promoted them to the same kind of major class status that was accorded to mands and tacts.

The Tact

If we divide the behavior-stimulating environment into verbal and non-verbal events, we can discuss kinds of verbal behavior that are evoked respectively by each of those stimulus classes. Previous sections were devoted to verbal behavior evoked (a) by stimuli that are characteristic of deprivation or aversive stimulation and (b) by verbal stimuli.

In contrast, this section will focus on verbal behaviors, called *tacts*. Tacts in some way specify or indicate the stimuli that evoke them, which can be anything in the physical environment. Tacts benefit the listener and are consequated by generalized reinforcers (mands, in contrast, benefit the speaker and are consequated with specific reinforcers that are often specified by that verbalizer). A simple example of a tact occurs when two lookouts are scanning a landscape, and one of them, upon seeing a distant gray plume, exclaims *Smoke!* The other person may respond to the tact *Smoke!* by saying *Well done!*

Consider the functional difference between a mand and a tact. If hunger pangs are occurring within a person's body, and another person is present who can provide food, the person who is experiencing the hunger pangs may respond verbally to those pangs by saying *Feed me!* That request for food is a mand, and it benefits the person who has said it. However, that same person may instead simply report private contact with that kind of stimulation by saying *I am experiencing hunger pangs*.

That statement includes the tact *hunger pangs*. Thus, the pangs, functioning as antecedent stimuli, may evoke a mand, a tact, or one or more of each. Note that, in the presence of someone who has provided food when informed that the speaker is hungry, the previous statement may function as a polite mand to again provide some food. However, if the mediator obviously will not be providing food, perhaps because, as both parties know, no food is available, the same statement merely functions informatively, but the statement is not a mand for food.

In the general analysis of contingencies under which verbal behavior is produced, we specify the evocative stimulus, the verbal behavior that is evoked, and the source and nature of its consequences. When the verbal behavior in such a relation is a *tact*, the evocative stimulus is some piece of the real or physical environment. It can be anything (e.g., a blood cell, a rose, a cow, a distant mountain, a star, or a galaxy). It can also be a relation between or among such environmental events.

Let us consider an example of a behavior-controlling relation in which the verbal product is a tact. Suppose that an observer is confronted with a vertically oriented wooden shaft that is about six inches in diameter and six feet long and exhibits an approximately circular cross section. Its bottom two feet are sunk into the ground and lateral strands of wire are nailed to its upper exposed segment. If that observer reliably responds to that composite stimulus by saying *fence post*, that utterance is a *tact*.

Some people may say, in agential terms, that *the person has tacted the fence post*, but that tact-type of response was not initiated by the vocalizer; it was evoked by the post. That is, to speak accurately, the causal nexus of a tact does not inhere, as some kind of spontaneous generator, within the body of the person that exhibits the tact. Therefore, the person who produces the tact does not *do it* in the sense of originating it. Rather, that person merely mediates the production of that tact. The controlling function is between the tact as a behavioral event and a detectable and measurable (i.e., real) environmental event.

The post could produce that verbal behavior *fence post*, because the body that came into contact with light reflected from the post had undergone micro-structural changes during its operant conditioning history that left it reactive to such posts by exhibiting that particular kind of verbal operant response to them (viz., the vocal utterance of *fence post*). The capacity for that kind of functional relation between fence posts and people inheres in their respective structures. The kind of operant conditioning that is called *language training* is a way of restructuring part of the person's nervous system for susceptibility to involvement in such a functional relation during subsequent encounters with fence posts.

The operant conditioning (neural micro-structuring) of the person is one way to establish the relation that pro-

duces the tact. The other way is to alter the structure of the environmental event. In the fence post example, if the respective structures that can sustain this particular environment-behavior relation (i.e., the tact *fence post*) are generally in place, but the particular post on this occasion has some salient atypical features, the evocation of the tact *fence post* may not occur. (It may be said that the observer does not recognize that the thing is a fence post.) Instead of tweaking the microstructure of the person's body through additional operant conditioning, we may leave the body alone and restructure the fence post to render it more typical of the kind of fence posts that were involved in the past conditioning of the verbalizer to produce that tact. The tact *fence post* may then be evoked. In such a case, the verbal tact *fence post* occurred in reaction to a particular environmental structure following a modification of the environmental structure that removed extraneous features (and perhaps added some common features) until the structure of that post came into the structural range that can evoke the tact *fence post* by that particular body.

When the tact *fence post* is forthcoming, it may be said redundantly that *the person now recognizes the thing as a fence post*. However the current structure-to-structure functional interaction occurs naturally whenever both structures have the necessary configuration to support that particular functional reaction of the one to the other. That natural function does not require the intervention of a person-agent that is superstitiously summoned from a putative spirit world to perform, in some proactive way, the tacting operation. The tact will simply happen naturally and inevitably when the necessary conditions "fall into place" (as they say). That is, the tact happens automatically in the same sense that any kind of dependent variable manifests on the occasion of contact with an appropriate independent variable.

The term *stimulus* implies an energy transfer from some aspect of the environment to the organic body that, in turn, exhibits a behavioral response. However, the energy that is transferred from an environmental stimulus to a behaving body acts only as a reaction-specific trigger, because that energy is insufficient to produce the subsequent behavioral reaction through conservative energy transformations (light waves from an approaching baseball lack the energy required to swing a bat). Organic bodies are inherently structured to maintain a general dynamic potential that releases in the manner that we call behaving. The energy transferred from the environmental event merely triggers the release of some of that potential energy, which has been stored in the body, to produce a behavioral manifestation of the kind that we describe as the behavioral response to that stimulus. While the specificity of the resulting behavior is a function of the properties of the small triggering energy that is impinging from the

environment, the greater energy that is necessary to produce that behavioral manifestation must be released from general reserves that have been stored in the body.

Through the processes of behavioral conditioning, a particular form of the behaving becomes precisely related to a particular triggering event. To establish such a relation between an environmental stimulus and a particular behavior, it is necessary to change the microstructure of the body's nervous system to render it uniquely sensitive to the properties of that particular environmental stimulus. Although that kind of microstructural change could at least theoretically be accomplished by surgery or drugs, it is instead typically the natural result of a behavior-conditioning process.

For a more detailed account of such events, we must switch to a different level of analysis and look to the neural physiologists, who, like the behaviorologists, represent one of the basic natural sciences (i.e., biology, in the case of the physiologists). The respective scientific concerns of the behaviorologists and the neural physiologists overlap along certain disciplinary interfaces, the behavioral conditioning process being an obvious example.

However, to provide such a naturalistic account, the neural physiologists will have to divorce their interpretations from the popular but mystical accounts of behavior that implicitly accept a mind-body dualism by featuring explanatory reliance on autonomous or semi-autonomous body-dwelling self-agents that can "do things on their own." No part of nature can work that way, and there is no natural way that brain activity, that must always operate reactively, can spontaneously initiate behavioral events. Those who assume that brains are somehow engaging proactively, on their own initiative, in the origination of the behavior that the body then exhibits usually speak of *minds* that putatively are either synonymous with *brains* or remain mystical constructs that they conceptually superimpose on brains.

A natural science community cannot do good natural science in conjunction with a scientific community that is informed by non-natural philosophy. Substantial progress can be made only when such a blending of accounts occurs between two natural science communities.

Conditioning a Tact

Consider a person who has never, in any sense, contacted a thromble. It may be said that the person is unfamiliar with thrombles and has no idea as to their nature. Suppose that we then place a thromble before that person in a way that permits different kinds of contact with it, each involving a different sense. We then descriptively label it by saying *This is a thromble*. Next, we mand the person to identify the item by name, which the person can do easily by repeating the term *thromble* that we have just spoken. If the person then produces an echoic response

to the nominal part of our mand by saying *thromble*, let us suppose that we reinforce that response, perhaps merely by replying *You are correct*.

To the extent that the consequence was a reinforcing stimulus, the person thereby will have become more likely to say *thromble* in the presence of such an item. With successive reiterations of that operant conditioning cycle, the person becomes increasingly likely to exhibit that response as a tact in the presence of a thromble. We may then alter the form of our mands in ways that put the person under contingencies to become more verbally involved with thrombles—thinking, speaking, reading, and writing about thrombles, perhaps while in visual, aural, olfactory, and tactile contact with them. During all such interactions, we insure that each correct verbal response pertaining to thrombles is reinforced.

When an acceptable reliability is attained in each of those verbal kinds of behavior-environment functional relations, it may be said that *the person has come to know what a thromble is, and to know something about them as well*. However, operant conditioning does not educate spirits that are called *persons*. Operant conditioning establishes functional relations that manifest naturally when an appropriately structured organic body and a specifically structured environmental elements come into appropriate contact.

The kind of lone response that simply identifies something is sometimes called a *raw* tact, because it consists of nothing more than an unenhanced utterance under stimulus control of an environmental event (e.g., *Thromble!* when uttered in response to contact with a thromble). Raw tacts are common under contingencies to name or identify whatever is presented. However, the raw tact is often accompanied by other verbal behaviors that are functionally controlled in ways to be discussed later: *There is a thromble; It is a thromble; This is a thromble; I see a thromble; I think that I feel a thromble*.

The strength of the relation that controls a tact, being operantly produced, is subject to reduction through punishment or extinction. Presented with an object and mandated to name it, a vocalizer who then says *thromble* may find that that response is followed by what seems to be a punitive consequence supplied by a mediator (e.g., *Wrong! You stupid disgusting dolt!*). A subsequent presentation of the item may then be less likely to evoke the tact *thromble* due to the suppressing effect of its previous aversive consequence—an outcome that confirms the punitive function of the listener's reaction. If the response (*Thromble!*) is simply ignored whenever it occurs, it will also become less likely to occur, but in that case the decrease is said to represent extinction. Just as the verbal community can condition the controlling relations for the production of verbal behavior, the verbal community can also reverse the conditioning of such relations.

Mands and tacts have different effects on a mediator. Upon hearing a mand, the mediator infers something about the condition of the vocalizer—in particular, the vocalizer's state of deprivation with respect to the environmental event specified by the mand. In contrast, upon hearing a tact, the mediator infers something about the environment of the vocalizer. For example, compare the effects on the mediator of hearing *Give me a knife* and hearing *There is a knife*. In the former case, the vocalizer is inferred to be deprived of a knife. In the latter case, a knife is inferred to be a stimulus element of the vocalizer's immediate behavior-controlling environment.

The utility of a tact can be revealed by a simple illustrative interaction between a verbalizer and a mediator. Suppose that the mediator is knife-deprived and is not in current contact with a knife. If the vocalizer then tacts a knife (e.g., *There's a knife*), the mediator may benefit from the vocalizer's tact insofar as that tact may function to evoke elements of the mediator's searching repertoire. That is, the mediator may then start searching for a knife, because, in the past, when verbalizers have provided tacts of that kind, the mediator's searching behaviors have been more likely to be reinforced by contacts with the tacted item. In the present example, the knife-deprived listener is more likely to find a knife if a nearby vocalizer indicates a personal contact with a knife. In fact, a verbal community conditions its members to exhibit tacts precisely for such reasons. All parties generally benefit when an individual indicates to others how he or she is being affected by the environment, especially when at least some part of that environment is being shared with others who are also under contingencies to interact with it.

Tacts are often manded by others, which indicates a greater likelihood of their being reinforced. Suppose, for instance, that two people are confronting the same environmental event. Person A asks *What is that?*, which to person B is an occasion on which B's tact will probably be reinforced. If B then says *It's an impact crater*, person A may respond with *I think you're absolutely right!* However, A may instead punish or extinguish B's tact if in the past A's different tacts of events with similar features have generally been reinforced. In that case, we may say that *A knows better than to call that thing an impact crater*, provided that we have had a conditioning history similar to A's history with respect to such events. On the other hand, if our conditioning history with respect to such events has been similar to B's history, we would exhibit the same tact as B in the presence of that event, and we may react to A's disagreement by concluding that *A just doesn't get it!*

The Stimulus Control of Tacts

Tacts are conditioned operantly, but environmental events have various properties to which the conditioning

of tacts pertains differentially. Suppose that we present a thromble to two persons who have no experience with thrombles. We arrange for both of them to contact the thromble in similar ways. We then announce to both trainees that *This is a thromble*, which is the occasion for an echoic response to our follow-up mand *What is this?* Suppose that both trainees then respond by saying *A thromble*, and continue to do so reliably as we repeat the mand. We may then conclude that *both of those people have learned what a thromble is*, or that *each of them can now identify a thromble*.

Nevertheless, a question remains as to what stimuli have actually come to control their respective common responses. Thrombles have many properties, including color, texture, shape, size, and different kinds of motion. Furthermore, each such property is represented by a particular and unique set of more elemental stimuli. During the operant conditioning that characterized the training, which stimuli, intrinsic to thrombles, were actually gaining functional control of the tact? Perhaps more importantly, were the *same* stimuli gaining control of the tact *thromble*, which both persons can now utter in common when a thromble is presented. Even when a given elemental stimulus that constitutes one aspect of a thromble comes to share in the evocation of each person's common tact *thromble*, we have no reason to assume that its share of the control of that tact is equal for both speakers. The question of stimulus control-share represents a standard kind of challenge during behaviorological analyses of tact-producing functions.

While it is probable that a number of properties share in evoking each person's common tact *thromble*, it remains unlikely that any one stimulus element shares equally in those evocations. Furthermore, it is possible that a given stimulus element that shares in defining a thromble for person A, may have acquired no detectable evocative capacity for the tact *thromble* by person B. After all, a given person's susceptibility to conditioning is always a function of earlier relevant conditioning, so persons A and B cannot be expected to share the same state of readiness for any given lesson. The implications of this fact pose a kind of fundamental challenge to all teachers who must work with groups of students.

It is also possible that certain properties of the settings in which thrombles commonly occur may gain some of the evocative capacity when the tact *thromble* is reinforced. That is, contextual stimuli that are not intrinsic to thrombles may have gained some control of the tact *thromble*. It may then be said that the person's concept of a thromble is *imprecise* or *not entirely correct*. (Note that *concept* is a fictional construct that substitutes for the tact-producing functional relation between an environmental event and a verbal tact.)

These various kinds of imprecision in the conditioning of a tact can leave properties of the environment with unanticipated or disproportional evocative capacities. In common agential terms, it may be said that the two speakers have different reasons for calling the same object a thromble. The commonalty in the respective controls on their common tact contributes to the socio-cultural integrity of their verbal community, while the unsuspected differences may create disconcerting problems. In common language, it may be said that one person's new "knowledge" of thrombles differs from the other person's new "knowledge" of thrombles even though, outwardly, it may appear at first that both have simply learned to identify a thromble by name when it is presented.

Suppose, for example, that the conditioning of one of the persons has left one or more irrelevant properties in partial control of the tact *thromble*. In that case, given a thromble that does not feature such irrelevant properties, the person would fail to call it a *thromble* even though others may reliably do so. Consider a person who has learned to identify sycamore trees, all previously encountered examples of which have been full grown. That individual may fail to identify a sycamore seedling as a sycamore tree, because the conditioning of the functional relation between tree and utterance of name has left size (an irrelevant property) in partial but essential control of the nominal tact. We allude to that kind of flaw in the conditioning of that tact when we note that size is not a definitive property of sycamore trees.

People may say that the person's concept of a sycamore tree is flawed, but the person does not *have a concept* (flawed or perfect). Instead the person has a neural microstructure that requires some further conditioning tweaks, so that when the person's body reacts functionally to sycamore trees by producing the appropriate nominal tact, the range of environmental controls that are evoking those tacts will be appropriately narrower. Only definitive properties must share in evoking the nominal tact, and in the case of sycamore trees, size is an irrelevant property. That is, little sycamore trees are still sycamore trees.

If a new composite stimulus is encountered that shares some property with the stimuli that were present when the tact was reinforced, that novel composite stimulus may evoke that same tact in this new and perhaps inappropriate context. In such cases, that single common property exerts a predominant evocative control over the tact. Often, the result is a familiar kind of mistake. An example occurs when a person, who is familiar only with red fire trucks but not with ambulances in general, is presented with a red ambulance and calls it a fire truck. In some cases, however, the resultant tact is appropriate to the new situation. Such oddly evoked but acceptable tacts are described as *extended tacts*, and several subclasses have been identified.

Let us consider some examples. Suppose that upon encountering a new kind of knife for the first time, a person says *knife* without additional preparatory conditioning. While that particular knife has some properties not previously encountered in other knives, it shares the minimal definitive properties of all knives. We look for the evocatives of this tact among those previously strengthened common definitive properties, not among the novel features of this particular knife. This kind of extension of a tact is called a *generic extension*. The generically extended tact specifies a class into which the stimulus fits. Generic extension is regarded as desirable insofar as it results in a person eventually responding with the tact *knife* to a large variety of objects that feature one or more cutting blades.

Thus, generic extensions of a particular tact can represent a worthwhile economy for the verbal community. Within a verbal community, it is generally effective for a person to emit the tact *knife* when contacting *any* given member of that class of objects whether or not that person has ever encountered a knife with that particular set of irrelevant properties. Peculiar knives are still knives. It would be too burdensome if the verbal community had to condition each person anew to exhibit the generic tact *knife* in response to each different kind of knife when it was encountered. When an automobile manufacturer first puts a new model on public display, although none of the public viewers will previously have seen that particular style of car, they are all likely to tact it at once as an *automobile*. In fact, that kind of generic extension of a tact is so widely anticipated that a witness's pretense that it is not happening is accepted as humor (e.g., the question *What is that?* expressed with mock start and exaggerated emphasis on the word *What*).

Properties that are not essential to membership in the major class can play a role in controlling the tacts of subclasses within in the major class. For instance, sets of properties that may be associated with some but not all knives can be put in control of the adjective that completes the tact of a category of knives (e.g., *pen* knife, *hunting* knife, or *carving* knife). Such a set of properties is irrelevant to the basic generic tact *knife*, but that set of non-definitive knife properties is the definitive evocative factor for the designation of the categorical tact (i.e., *pen*, *hunting*, or *carving*).

Such categorizations, which are based on *extraneous* properties of knives per se, are to be distinguished from generic extensions of the tact *knife*, which occur when certain *definitive* properties of knives occur in close combination with properties that may bear no relation to familiar knives. Thus, in generic extension, the bow of a ship may evoke *knife* as when a vocalizer describes the bow of a ship as a *great knife that slices the water*. Here, the critical property (a sharp cutting edge) is not extrane-

ous. Rather, it is part of the definitive set of properties for knives, and the bow of a ship functions as a knife to cut the water. Ships are fitted with big knives called bows, and when such a statement first emerges as an original observation it represents a generic extension of the tact *knife*.

Another kind of extension of the tact is characterized by metaphor. In a metaphorical extension of a tact the property that controls the extended tact is not a property that the verbal community respected when originally conditioning the verbalizer to emit that tact. A metaphorically extended tact is evoked instead by a property that was associated with the originally tacted event but was not a definitive property of it.

Consider, for example, the statement *The old crab had nothing nice to say and just stood there with a sour look on his face*. Let us analyze the tact *crab* in that statement. First, we note that *his* indicates that *crab* refers to a male and, because only humans normally talk, we infer that the *crab* in this sentence is a human male. While (a) this particular man and (b) crabs in general both share certain behavioral patterns when provoked, note that those kinds of behaviors by crabs were not the definitive properties of crabs respected by the verbal community when it was conditioning this speaker to tact certain kinds of organisms as *crabs*. Regardless of how a crab is behaving, it is still a crab. That even remains true when the crab is dead. Nothing that a crab does behaviorally bears in any way on its membership in the crab class.

Therefore, when first being conditioned to produce the tact *crab* on appropriate occasions, the verbalizer's tacts had to be freed of control by any behavioral events that are associated with crabs. To accomplish that, the verbal community had to vary the irrelevant behavior-related properties of crabs that appeared along with the minimum definitive set of properties while reliably reinforcing each correct expression, and only correct expressions, of the tact *crab*.

The man in this example was tacted as a crab under stimulus control of a behavior pattern that is often associated with crabs (but not definitive of crabs). That sort of control of the verbalizer's utterance (by a frequently crab-related but non-definitive property) rendered it a metaphorical extension of the tact *crab*.

Another example of the metaphorical extension of a tact occurs in the lyrics of an old but well known song: *You are my sunshine, my only sunshine. You make me happy when skies are gray. You'll never know dear how much I love you. Please don't take my sunshine away*. The person about whom the song is sung is designated by the extended tact *sunshine*.

When the verbalizer was originally being conditioned to produce the utterance *sunshine* as a valid tact, nothing about the electromagnetic radiation emanating from a particular stellar source included behavior-related properties. The contingencies arranged by the verbal commu-

nity to condition valid tacts of that phenomenon kept the verbalizer's tacting free of control by behavior-related events.

However, sunshine does commonly evoke certain behavioral reactions that have reinforcing properties. "*Sunshine makes me feel good!*" is an old and familiar expression. Obviously, one's emotional reactions to sunshine are not definitive properties that should control valid tacts of solar light energy. However, when another person's behavior evokes one's behavior that is similar to that evoked by sunshine, one may then exhibit the tact *sunshine* under stimulus control of that person's behavior. Linguistically, that person is said to *be* sunshine, which, of course, is not true as all parties recognize. Such an utterance is said to represent a metaphorical extension of the tact *sunshine*.

Suppose that, for the first time, a vocalizer describes a narrow projection of land that extends into a lake as a *finger* of land—never before having read nor heard of such a piece of land being described as a finger. Such an elongated projection of land into a large body of water and a finger that is attached to a hand share some geometrical and relational properties. Although those geometrical properties of appendages to hands and land masses are shared, those were not strictly definitive properties of fingers that served as criteria for the verbal community's reinforcement of the tact *finger*. Short, stubby, and round-shaped appendages could also validly have evoked that tact *finger* if other more definitive properties were also present.

When the verbal community is conditioning its members to utter the tact *finger*, the limited subset of geometrical properties typically occurs *as an intrinsic characteristic* along with a larger variety of properties that characterize such appendages to peoples' hands. That is, when conditioning its members to say *finger*, the verbal community reinforces the relations between the tact *finger* and properties that include connection to a biological hand, protrusion from that hand, physiological factors that characterize organic tissues, articulated joints, and perhaps the capacity for movement that enables various behaviors that are characteristic of fingers. In the verbal community, a finger is one of those five, similar, elongated, and triple jointed biological parts that extend from the palm of a hand. Pronounced elongation is typically exhibited along with the other properties of those appendages. However, that elongation is simply not a technically definitive property, and a carefully managed program of conditioning of the tact *finger* would exclude that geometrical property from the contingent relations in which the general tact *finger* manifests. Short, bulging or stubby fingers are still called fingers.

However, during that conditioning, the evocative capacity of some of the irrelevant general geometric properties of fingers may have been strengthened

inadvertently simply because those geometric properties were often paired with the properties upon which the conditioning was focused. Thereafter, those geometrical properties may evoke the tact *finger* even when they appear in a part of the environment that has many other salient properties that are unassociated with fingers. An example is a narrow extension of land projecting out into a body of water.

When such a piece of land first evokes the tact *finger*, that utterance is said to represent a *metaphorical extension* of the tact *finger*. The capacity of the land mass to evoke the extended tact *finger* inheres in geometrical properties that are shared with most organic fingers. Such vocalizers may say that such projections of land remind them of fingers, but events that occur in the normal operant conditioning of the tact *finger* account for its relatively rare metaphorical manifestations in such novel contexts without explanatory recourse to mental agents that have to be *re-minded*. Another similar example of the metaphorical extension of a tact is provided by original references to Italy as a *boot*.

To distinguish between generic and metaphorical extensions of tacts, note that in a generic extension of a tact the new stimulus that has come to evoke that tact represents a valid member of the evocative class. Consider a newly encountered substance that for the first time is tacted as *coffee*. If that has indeed occurred through generic extension, the new substance is actually a kind of coffee. The minimal set of properties that are definitive of coffee were the ones that evoked the extension of the tact *coffee*, and that is what rendered that extension *generic*.

In a metaphorical extension of a tact the functional control is exerted by a set of properties that are insufficient to establish a valid generic extension of the tact. To experience a complete appreciation of a metaphorical extension of a tact, a mediator must recognize both the commonality and the shortfall in the evocative properties that control the verbalizer's statement. Both definitive and non-definitive properties may be involved in controlling a metaphorical extension of a tact, but the set of properties that are controlling it do not include the minimal definitive set of properties for the tact that is undergoing the extension.

For instance, when, for the first time, the phrase *the jutting chin of Gilasitan* is uttered in response to a peninsula on the human head shaped island of Gilasitan, the listener does not react as if that peninsula is really a chin. Note that the metaphorical extension of the tact *chin* did occur in response to certain geometrical and relational properties that are shared with real chins. While the precise shape of the peninsula probably does not match that of any real chin and only approximates the general shape of human chins, the relational property of a rotated protrusion from a central mass is closer to a definitive prop-

erty of a human chin. However, additional properties of other kinds are also necessary to complete the minimal qualification as a human chin.

Nevertheless, the qualitative success of a metaphorical extension of a tact is a function of reliable commonality of the stimuli that are in control of both the normal occurrences of the tact and its metaphorical extension. Consider a person who encounters a grove of red maple trees on a sunny autumn day when the leaves are a bright red color. Suppose that this person describes the scene as *trees of knives*. That statement seems to be some sort of metaphorical reference, but most listeners would be perplexed, and may punish the statement as an unskillfully rendered linguistic product.

Suppose that analysis reveals that the verbalizer had undergone an insufficient program of conditioning of the tact *knife*, perhaps being exposed only to knives that had bright red handles. That salient red hue was common to *all* of the knives that were encountered by this verbalizer during the conditioning of the tact *knife*. Although an irrelevant property of knives per se, the bright red handle color was paired with the definitive properties of each given knife on every occasion during the operant conditioning of the tact. That circumstance permitted some associated respondent conditioning that brought the tact *knife* under stimulus control of the bright red color. Allowing that sort of thing to happen is a common kind of teaching mistake.

Thus, the verbalizer in this example was well prepared for an extension of that tact in response to the bright red patches of color presented by the autumn foliage of red maple trees. To the verbalizer, it was a generic extension (however faulty)—that is, the red leaves were knives too. However, most if not all of the potential mediators in that person's verbal community were conditioned to respond to the tact *knife* only when uttered under a composite stimulus control that excludes color-related properties. In this example the speaker is saying *knife* exclusively under control of a red hue, while the audience disregards color as a relevant property of knives, having failed to contact redness among the constituent properties of many of the knives with which they are familiar. During their conditioning of the tact *knife*, redness and knives were too infrequently paired to sustain the metaphorical extension uttered by this particular verbalizer, and they do not reinforce its production.

As this example illustrates, in a generic extension of a tact, more and more collateral properties may be brought into the range of properties that control the tact, often inadvertently. In the agential language that ignores environmental control and instead regards tacts as evidence of internal constructs called *concepts*, the display of an invalid generic extension such as the tact of red leaves as knives is said to reflect a *faulty concept*. If the invalid ge-

neric tact is instead interpreted by a member of the audience as a metaphorical extension, that audience member would be assuming that the speaker “knew that the leaves were not really knives.” However, for the previously described reasons, that metaphorical reference to leaves as knives would fail to qualify as a worthwhile metaphor. People would tend to say that the implicit relation of knives to leaves seems too vague, a condition that condemns the metaphor to ineffectiveness.

In valid generic extensions of a tact, the new stimulus that comes to control the tact possesses all of the definitive properties that collectively or elementally could control the original tact. We say that a newly recognized hammer is indeed a hammer, although its collateral properties may control a further tact that manifests as a qualifying adjective (e.g., a *sledge* hammer or a *tack* hammer).

In contrast, in metaphorical extensions of tacts, the new stimulus that comes to control the tact does *not* include the complete set of definitive properties that can share in the control of the valid original tact. For example, when a verbalizer refers to the largest watermelon in a garden as the “Jupiter of the patch,” we do not react as if that statement had occurred under stimulus control of the largest solar planet. That is because the only property of Jupiter that is exhibited by that melon is the relational property of largest in a set. All other properties of a watermelon and the planet Jupiter evoke uncommon responses—or, as we say on that basis, that particular watermelon and Jupiter are defined by entirely different properties (except for the one common property on which the metaphor relies).

Some metaphorical extensions of tacts cannot be related to any property that is exhibited in common by (a) the traditional kind of evocative stimulus and (b) the new evocative stimulus. Consider, for example, the statement “*your book is a breath of fresh air*,” uttered by a reader to the author of that book. Detailed examination of the book and of wafts of fresh air are unlikely to reveal *any* common properties, yet the metaphor may seem to be effective. In such cases, the commonalty is not between properties in the respective evocative stimuli, but in the speaker’s responses to them. That is, the book and fresh air, although composed of entirely different stimuli, share the capacity to evoke a common emotional response by the verbalizer, and the metaphor is based on that commonalty in the responses to the entirely disparate sets of stimuli that are specified in the metaphorical statement (viz., book and fresh air).

When certain properties of narrow terrestrial projections into bodies of water came to evoke the tact *finger*, that metaphorical extension relied on two properties, one geometric and one relational (i.e., elongated shape and contact, along a shorter side, with a large area). Except for

those two properties, fingers and land masses share few if any other properties.

Suppose that, in the experience of a particular verbalizer, such fingers of land that project into bodies of water have *always* been covered with vegetation having a particular green shade. Further suppose that that individual is a passenger in an aircraft that is flying over a similarly colored but *not* elongated patch of vegetation in the middle of a large forest far from any bodies of water. When that somewhat circular patch of green is viewed from overhead by this individual, it may evoke the tact *finger*. For instance, that person may mand a companion to *look at that finger of vegetation* (in this case, a *finger of vegetation* within a larger forest).

Here, however, only color and complete isolation by contrast are the critical evocative properties for the extended tact *finger*. Geometric factors are no longer sharing in the control. (For most people, such a set of properties more commonly evokes the tact *patch* than *finger*, and the metaphor may be ineffective with such an audience). However, it may be effective in this case if the verbalizer’s companion has shared this verbalizer’s conditioning history with respect to the initial extension of the tact *finger* under the control of a certain kind of land mass that consistently happened to feature vegetation of the particular green hue that has become functional.

Note that this example illustrates the metaphorical extension of what is already a metaphorical extension. That is, it features a second order metaphorical extension insofar as the phrase *finger of land* already represented a metaphorical extension of the tact *finger* before the final metaphorical extension occurred under control of just the color and its isolation.

Consider another example: Suppose that, in the same geographical region featured in the previous example, big crops of watermelons are produced, but they are grown only on such fingers of land that extend into bodies of water. Further suppose that *all* watermelon patches in that person’s experience have been located on elongated stretches of land that extend outward into bodies of water and that all such peninsulas that this verbalizer knows contain patches of watermelons. Such a verbalizer may then report his or her location by saying that he or she is now “on a *melon patch* about 40 miles west of town,” when he or she is 40 miles west of town on a projection of land that extends into a body of water.

When reporting the location as a *melon patch*, the verbalizer may not, at that moment, be in contact with an actual watermelon patch, although he or she is on the kind of peninsula on which watermelons are invariably produced. Such an expression of position is, of course, effective only with a mediator whose conditioning history has prepared that person to respond to “*melon patch*” in

the same way that people in general respond to “*peninsula*” or merely to the metaphorical phrase “*finger of land*.”

From this example we see that tacts are thus extended in yet another way, called *metonymical extension*, in which the form of the tact is changed. This kind of extension occurs when a stimulus that reliably accompanies the stimulus that controls a tact also gains control of that tact, which emerges in a new form. Functionally, it is the same tact, but a different word or phrase is vocalized. Such an extension is exemplified by the famous exclamation transmitted by Navy Captain James A. Lovell, Jr., commander of the 1970 Apollo 13 lunar mission, following an on-board explosion in space while en route to the moon: *Houston, we have a problem!*

Lovell was not speaking to the city of Houston, Texas, but was instead speaking to a flight controller at the mission control center that was located in Houston. The essential fact is that the mission control facility from which that flight controller spoke was located within the area to which people refer as *Houston*. In the past, whenever more direct tacts of that controller had been reinforced, the proximal city shared in the conditioning effects of those reinforcements. Once the city name began to replace the controller’s usual designator as the tact, the relation between the controller and the speaker’s tact *Houston* began to absorb the *main* reinforcing effect of the reinforcing consequences, and that metonymical extension of the original tact therefore became increasingly probable during subsequent transmissions. The natural metonymical extension of what originally may have been a nominal tact (e.g., *Jack*) or a generic tact (e.g., *Flight Controller*), as described above, actually occurred historically before Lovell’s time in space and thereafter was simply taught to new astronauts, Lovell included.

Many other common examples can be cited. *According to the New York Times...* is not a reference to a newspaper that writes itself. It is a reference to some text written by some author that was published in that newspaper. Through a metonymical extension of the tact of that author’s name, the name of the newspaper has become the tact. When we read that *the rank and file of musket advanced behind the charge of twenty horse*, we respond as if we are being informed that a group of foot soldiers advanced behind twenty cavalymen who led the way with a horse mounted charge. The appearance of the tact *musket* in place of foot soldiers, and *horse* in place of cavalymen, represent metonymical extensions of those respective tacts. The conspicuous omission of the conventional plural *...s* from *musket* and *horse* in the printed report is a stimulus tweak that helps alert the reader to the metonymical nature of those tacts within the statement.

Metonymical extensions of tacts may occur accidentally and surprise both speakers and listeners. They may also emerge under contingencies to exhibit novel forms

of speech. They sometimes gain strength as negatively reinforced escape behaviors as, for example, when a vocalizer, unable to identify the mediator, resorts instead to a metonymical extension. For example, suppose that a person has placed a telephone call to the Chief of Police to report a crime, but when Chief Badger answers, the excited caller cannot recall the Chief’s name (i.e., Badger). The caller may say *Hello, Police Department, I want to report a theft in progress*. However, the caller is actually talking only to the Chief Badger, not to the whole police department.

Note that this extension of the tact is metonymical because of the change in form. In the earlier metaphorical extension, the *finger* of a hand became a *finger* of land; the verbal form of the tact *finger* survived the extension. However, when *Flight Controller* became *Houston*, and when *Chief Badger* became *Police Department*, the original forms of the tact did not survive the extension. Thus, the latter examples represented metonymical extensions.

In metonymical extensions of a tact, the paired stimulus, which gains control of the tact in the functional sense, is already in control of a different nominal tact, so, as they say (invalidly), “the vocalizer starts saying a different name.” Functionally, it is an equivalent tact in terms of what it accomplishes, but the transfer of control to the new paired stimulus results in a new nomination. That is, the same flight controller that previously may have evoked “*Joe*” now evokes “*Houston*”; the same person that previously evoked “*Chief Badger*” now evokes “*Police Department*.” The new nomination is determined by the stimulus that is paired with what remains the functional referent.

In yet another kind of extension of a tact, known as a *solecistic* extension, the shared property that gains control is only remotely related to the definitive property upon which standard reinforcements are contingent or it bears only an irrelevant relation to it. For example, a person who runs from a burning building may exclaim that “the whole place is *inflated*!” The term *inflated* bears some obvious resemblance to the term *inflamed* and to the phrase *in flames*. However, we must still account for the curious transformation, the salience of which pertains both to its rarity and its vague hint of the curious relations by which it has emerged.

First, the entire phrase (i.e., “the whole place is *inflated*!”) is similar to the more common phrase, “the whole place is going up in flames,” or more briefly, “the whole place is in flames.” A somewhat tenuous relation exists between the facts that both flames and inflated things (e.g., balloons) often “go up.” If the speaker is particularly familiar with balloons and if effective instances of the term *inflated* have been reinforced strongly in that context, some of that strengthening may have accrued to the upward motion of the balloons that got inflated. That can happen when upward movement is reliably paired with inflation. Upon later encountering flames that also move

upward, the stimulus control exerted by the flames may be faulty insofar as the speaker, responding under the inappropriately restricted control of the previously misconditioned property of upward motion, exclaims that “the whole place is inflated.” This particular sequence of historical events is not the only way that the term *inflated* could have been prepared for emergence in the instance that is featured in this example. Other sequences of historical conditioning could have prepared the speaker to exclaim that “the whole place is inflated.” However, if it happens as a result of the kind of conditioning history that has been described in this example, the emergence of the term *inflated* represents a solecistic extension of a tact.

Solecistic extensions of tacts are seldom appropriate and hence are typically extinguished or even punished within a verbal community. Solecistic extensions have often been assumed to reflect some kind of neurological disorder. However, while any pattern of unusual behavior could be rendered more probable by an unusual kind of physiological state that we call a *disorder*, we can account for the general occurrence of solecistic extensions of tacts through explanatory recourse only to behavioral conditioning in conjunction with current circumstances. Some solecistic extensions can be useful for their humorous effects and on that basis may be reinforced.

Although the term *tact* often describes a response in isolation, a tact is more correctly construed to be the behavior–environment functional relation in which that response is merely the dependent variable. Thus, given a response that could be a tact, we complete the diagnostic analysis by seeking and specifying the relevant antecedent stimulus and demonstrating the functional relation between the two variables. As we have seen in this section, we can then further categorize a tact on the basis of how it was conditioned and the history of changes in how it is controlled.

Abstraction

Abstraction is often attributed to special mental powers, and examples of abstraction are adduced as evidence of what are assumed to be cognitive activities initiatively demonstrated by a mental agent (i.e., a creative mind at work). However, the process of abstraction, by which ultimately a response can be brought under control of a single stimulus property, is a natural process. The process of abstraction has been demonstrated, not only in human behavior, but in the behavior of other species as well.

Normally, when a particular response is reinforced in the presence of some stimulus, that stimulus will actually be a composite set of stimuli. During a conditioning process, those stimulus elements take on different evocative strengths with respect to the subsequent response. For example, given an experimental subject, let us begin by presenting a stimulus consisting of a large yellow beach ball

and manding an utterance of *sphere*. Suppose that, as we conduct repeated trials of this procedure, we reinforce only the vocal response *sphere* in the presence of this stimulus. Such conditioning of the tact *sphere* may render that relation reliable, but what exactly is then evoking the response *sphere* in the presence of this large yellow beach ball?

The salient properties of this particular ball include size (e.g., relatively large), and color (yellow), as well as the additional set of properties that define beach balls, only one of which is spherical shape (others include elasticity, surface texture, overall density, construction seams, etc.). The capacity to evoke the response *sphere*, which the operant conditioning has imparted to this beach ball, has been distributed among the various properties of this ball, and among various combinations of those properties, all in proportions that remain unknown. Although, as a result of the previously described program of conditioning, our subject now responds reliably with the tact *sphere* to presentations of this large yellow beach ball, we remain unable to specify, in terms of the specific properties of that ball, the precise controlling function, or functions, through which the tact *sphere* is being evoked.

People may say that we cannot be sure that our subject has “learned the true concept” of *sphere*, but more accurately, we cannot identify the properties that are now in control of the tact *sphere*. We may find that our subject now identifies as a sphere any relatively large object that is yellow in color regardless of its shape. In that case, that response would be under the shared evocative control of relative size and yellow color, neither of which are among the definitive properties of a sphere.

The technical definition of a sphere has nothing to do with size, color, construction materials, or applications. To avoid the undesirable extensions of tacts that leave them under the control of such irrelevant properties, the members of a verbal community, especially teachers, will counter such potential extensions by confining reinforcement to tacts that are more narrowly evoked.

For instance, in the current example, the evocative control of the tact *sphere* by irrelevant factors can be eliminated if on some occasions we present those irrelevant properties in the absence of the properties that define a sphere. On the occasions of such presentations we would extinguish manifestations of the tact *sphere*, while reinforcing that tact on all other occasions when the definitive properties of a sphere are present. Although teachers deliberately pursue such procedures under the controlled conditions of formal education, such narrowing of the controls on tacts also occurs naturally if somewhat imprecisely across the years of informal language conditioning within a verbal community.

Eventually, regardless of whether irrelevant properties are also present, only those that define a sphere will be left in control of the tact *sphere*. At that point, any sphere

will be tacted as such, regardless of its superfluous properties. It may be said invalidly that the subject *has mentally abstracted the concept of sphere*, but we completely account for the phenomenon of abstraction by considering only that the stimulus controls on the tact *sphere* have been narrowed to the minimal definitive set of properties for a sphere.

Tacts of Private Events

The stimuli that collectively constitute the real physical world are not confined to the realm beyond the skin. In pursuing our analyses of behavior-controlling functions, we do not cross into a mystical domain simply because we begin to investigate the behavior-controlling capacities of stimuli that are located *within* the body of the behaving organism. Many contingencies of reinforcement involve stimuli that occur within the body that is exhibiting the behavior of concern. As often noted, the environment pervades the body, and the naturalness of functions between environment and behavior is not dependent on where in the world the functional antecedent stimuli are located. It matters only that behavior-controlling stimuli are measurable events, although the relatively inaccessible location of some such stimuli pose substantial challenges to those who are under contingencies to measure them. The tact *tree* and the tact *pain* may be equally valid even though the evocative stimulus for the former is in public view on a remote mountain side and the evocative stimulus for the latter is deep within the knee of the vocalizer.

Stimuli that arise within the body are usually private in the sense that other people seldom have access to them. That problem of access is not limited to others. We ourselves seldom see, and only occasionally hear, events within our own body, nor can we usually touch, taste, or smell them. Many of our senses are biologically evolved to facilitate contacts with the outside environment and are of limited help in making contact with internal stimuli.

However, we do have interoceptive nervous systems of limited range by which we privately contact certain kinds, although not all kinds, of internal events. Such contacts enable speakers to produce tacts that are evoked by certain kinds of events within their own bodies. Thus, a person may tact such internal events as hunger pangs, pains, various pulses, and the kinds of systemic after-effect of glandular chemical discharges into the blood stream that we know, in general, as *emotional arousal*.

The privacy of the kind of behavior-controlling relations that feature internal stimuli creates problems for a verbal community. Those problems pertain to access, but the privacy of those functions does not preclude the potential reality of their constituent events. Although the members of the verbal community must supply the behavior-changing consequences of verbal behavior (i.e.,

the postcedent stimuli), they cannot accurately and precisely do so when they cannot share in contacting whatever has evoked an instance of public verbal behavior. If the mediator is reliably to provide timely and appropriate consequences for a vocalizer's response, the antecedent stimulus for that response must affect *both* the vocalizer *and* the mediator.

In cases of a vocalizer's tact-like response that seems to have been evoked by a private stimulus that has arisen within that vocalizer (a stimulus to which a mediator cannot be privy), a given kind of consequence that is then supplied by the mediator may not be appropriate. That is because, from the mediator's limited perspective, that specific instance of the vocalizer's verbal behavior may or may not represent a valid tact of the private event of which it is a *prima facie* description. If a vocalizer says *I have a headache*, that statement may be occurring in response to stimuli that are entirely unrelated to pain-generating events within the speaker's head.

Let us further consider that kind of important distinction. If a person produces the vocal utterance *bird* as an apparent tact, a member of the verbal community can often determine independently whether a bird is present before providing consequences. In that way the mediator reinforces only appropriately controlled responses by the vocalizer. If, on the other hand, the utterance is *headache*, a mediator may have no way to confirm the reality of the implicit stimulus. In fact, the feigned headache is a common social ploy of avoidance when the verbalizer would prefer not to describe the impending events, thereby aborted, as aversive in general.

When consequating a statement that tacts a private event, the mediator may have to rely on indirect evidence, however tenuous, or simply follow the general social prescription, common within the culture, for how to react on such occasions. An example is the common practice of politely giving the benefit of the doubt to a person who claims to have a headache. Speakers thus have some latitude to manipulate the behavior of their listeners by falsely reporting private events, while listeners cannot be held strictly accountable for inappropriately consequating what seems superficially to be a speaker's tact of a private event occurring within his or her own body.

One solution to the mediator's problem of limited access is the use of special equipment to expose events that occur within the vocalizer's body, thus making those events publicly detectable. Modern medical facilities feature a wide variety of such devices. A patient who says that a strange sensation is being felt in the abdomen may be vocalizing that tact to a doctor who is looking at an image of that patient's internal organs and seeing a metal shard lodged in the wall of the small intestine. That doctor is thus prepared to consequate the patient's report in a way that comports with a valid tact.

In addition to the use of special equipment, a mediator may simply probe the body of the vocalizer tactilely, as when a mediator feels for a suspicious lump of which that vocalizer claims to be aware within some part of his or her own body. Note that the patient and the doctor do not contact, in the same way, an event that is occurring within the patient. The patient may be responding to pain or pressure sensations that manifest in response to transmission along the interoceptive nervous system, while the doctor is responding to the feel of the lump that is generated by tactile probing from without. However, when the respectively detected events seem to share a common location, they tend to be accepted by both parties as the same event. Thus, the patient's tact *lump* and the doctor's tact *lump* may depend respectively on control by different properties of what both parties treat as the same event.

Note that the tact of a pain is necessarily a response to certain properties of the arriving energy and not a response to the latent properties of the source from which that energy emanated. One's response can pertain to the location from which the energy began its neural transmission, and the response may comport with aversive stimulation. Thus, a person may report a pain in the right elbow or an ache in the left calf muscle, yet remain unable to respond to any other potential independent variables that may define the events that are occurring at those locations. In agential terms it may be said that the verbalizer could not *provide more detail*, because only pain is available to control the responses.

An external analogy would be a person's report of an almost blindingly bright light shining directly into the person's eyes. The person's tact may occur under exclusive control of the impinging light and be vocally descriptive only of its direction, wavelength, and intensity. Certain properties of that response may comport with aversive stimulation, but, as with the private pain, the person may remain unable to respond to additional independent variables and thus provide a more detailed account. That is, this person may be unable to say anything more about the external light source just as the other person could say nothing more about the internal source of the pain.

In the frequent absence of special help for listeners in contacting private stimuli that are implicit in tacts that are uttered by speakers, listeners are not always helpless in producing appropriate responses to those speakers' statements. Many private events have non-behavioral publicly detectable accompaniments. The person who says *My left leg hurts* may have a visible wound or bruise on that leg of a kind that, in the past, has produced pain for the listener. The potential mediator is not privy to the vocalizer's pain but is contacting a kind of non-behavioral event that has accompanied pain sensations in that mediator's own experience. That correlation increases the

probability that consequences relevant to pain, supplied by the mediator, will be strengthening what was a valid tact by the vocalizer.

Another kind of indirect confirmation of the validity of a private tact involves *collateral responses*, which may be nonverbal, yet are also exhibited by the vocalizer along with that tact. If the vocalizer who is reporting a private pain in the left leg is also holding or rubbing that leg—and perhaps exhibiting a grimacing facial expression, the listener is more likely to consequte the verbal utterance as if it is a valid tact of a private event. Such reinforcement of the vocalizer's audible report conditions the vocalizer to report future pains on such occasions, thus establishing that tact in the vocalizer's verbal repertoire⁹. The reinforcers of the tact also incidentally strengthen the correlated practices of manipulating the sore spot and grimacing. Thus, in general, the private event that evokes a publicly audible verbal response may also be evoking other kinds of public responses—a multiplicity of dependent behavioral variables that together increase the verisimilitude of their hidden, implicit, and commonly shared, independent variable.

A mediator may comprehend a vocalizer's tact of a private event if, within the verbal community, that tact has been strengthened in public contexts. The vocalizer is merely extending that tact to a private event that shares some properties with whatever has evoked that same tact when it has been uttered and reinforced in public contexts.

Suppose, for example, that a vocalizer describes the feeling that is generated by a private emotional state as *frothing*. The term *frothing* describes the exuding of foam, often correlated with agitated states of fluids, and, in the case of animals, with the aggressive madness that may characterize rabies. A vocalizer who is emotionally aroused under aversive stimulation, especially when that stimulation has been arranged by an identifiable party, may exhibit agitated, aggressive, and hostile patterns of behavior that share some properties with the kind of circumstances that produce froth. If that aroused person vocally tacts his or her private state as *frothing*, the listener may have no difficulty in reacting appropriately to the vocalizer's remark. It could still be an invalid tact, but at least the mediator is not confused about the general nature of the internal state that the vocalizer is putatively describing in that metaphorical way.

As we have seen in the previous discussion, listeners are not always exclusively reliant on a vocalizer's tacts of private events. Additional evidence may be available to support or contradict what implicitly is a tact of a private event. However, even with such additional evidence, the mediator's response to such a tact will always be occurring under less than complete control. (Put agentially, the mediator's confidence in the vocalizer's tact is always less than complete.) A person's request to be excused from an

activity because of a toothache may not be occurring in response to such pain, and that may still be true even though the vocalizer exhibits publicly visible damage to a tooth, holds the jaw in one hand, displays a grimacing facial expression, and describes the pain as *piercing*.

Tacts and Reality

Special analytical problems arise when a tact of an implicitly external event occurs in the public absence of the kind of event that normally evokes that tact. A person saying *blue* while looking at the daylight sky poses no problem. However, suppose that a person, in the complete absence of any stimuli that evoke the tact *blue* by other members of the verbal community, says *I see blue*. One immediate issue is what, if anything, is evoking that response as a tact. Perhaps it is an extended tact of some kind.

If the statement presents a tact of a real on-going event, which currently is not also affecting any potential mediators (i.e., they don't detect it), then the evocation of that complete *statement* (i.e., *I see blue*) is being shared by (a) some privately detected general seeing behavior as well as (b) the properties of the particular private vision that is occurring. That is, in that case, the vocalizer who says *I see blue* is responding to the behavior of seeing (i.e., *I see...*) as well as to a property of the vision that is occurring (i.e., ... *blue*). That blueness may also be regarded as a property of an environmental event that implicitly is the source of the impinging energy (e.g., a piece of blue paper, a patch of sky, or the open flower of a morning glory).

With respect to the issue of blueness, blue is a behavior in the class that is commonly called *visual consciousness* or *visual awareness*. When the verbal tact *blue* is being conditioned, the blue visual behavior that is being tacted tends to happen when light of a certain range of wavelengths impinges upon the eyes of the behaving organism as well as the eyes of those who provide consequences for the tact. We cannot confirm that contact with light of consistent wavelength results in exactly the same private behavioral manifestation within each person in the verbal community. That is, we cannot be sure that how you behave blue is identical to how I behave blue.

Nevertheless, given common access to wavelengths of light impinging from the same environmental direction, individuals become conditioned to tact their private respective visions as *blue*. The commonality that supports interpersonal communication pertinent to these ongoing events thus inheres in the incoming wavelengths and in the resulting tacts; it does not necessarily inhere in the particulars of the private behavioral manifestations that are evoked by that incoming energy.

The *capacity* to produce behaviorally the private manifestation of blue is apparently a biological endowment. Taking that into account, we simply expect private blue behaviors, which manifest neurally, to occur

automatically in the presence of appropriate stimulation. That being the case, the private neural behavior described as *blueness* would occur respondently and do so simply because its manifestation is physiologically capacitated by genetically endowed structure. That is to say that, given the appropriate eliciting stimulation, the private neural behavior called *blue* occurs automatically. However, its tacts (such as calling it *blue* and reporting that it is occurring [*I see blue*]) are verbal operants that must be conditioned by a verbal community. That is also true of the nonverbal classes of discriminative responding to that private neural behavior.

Actually, among behavior scientists, the question of whether the visual awareness of *blue* precedes the conditioning of the tact *blue* (and other kinds of discriminative behavior) has long been debated. Is the very awareness of blue a product of conditioning? As the question is often posed, is one aware of blue before being conditioned to talk about it? That is, at issue is whether a blue sensational behavior (i.e., a visual awareness of blueness) is a predecessor or a correlated product of the operant conditioning of discriminative behavior with respect to blue. Put another way, given the environmental input of light having a particular range of wavelengths, must a new person's first private blue visual awareness response be prompted in some way before it can occur—or does it happen automatically?

Some organisms that have no physiological capacity for verbal behavior and little if any capacity for consciousness nevertheless respond differently in nonverbal ways to contacts with respectively different wavelengths of light. This could be occurring respondently, or it could be occurring operantly under direct stimulus control—in either case without the additional neural behavior of color awareness.

Something similar can occur in the case of humans if the capacities to behave consciously are sufficiently preoccupied. For instance, a person who is given batches of marbles each containing a mix of blue and red marbles can be trained to sort them by color while daydreaming about entirely different events. The training need only continue long enough for the extinction of the various behaviors of consciousness that are evoked by the sorting-related events, so that the alternative behavior of daydreaming can emerge prepotently and thus preoccupy that behavioral capacity. While engaged in that sorting during such daydreams, the person is not visually aware of the marbles or their colors.

Likewise, the right foot of a daydreaming automobile driver may discriminatively alternate between pressing the throttle and the brake in respective response to changing events in the external driving environment without any concurrent behaviors of awareness being produced by the driving-related events. (In such in-

stances that feature humans, the body parts that exhibit the behavior of awareness are preoccupied; in many other species the body does not include neural parts that can exhibit awareness-type responses.)

At issue is how that neural behavior of color awareness (or any kind of awareness) first arises. As the question has often been posed, is an awareness that manifests as blue a respondent behavior that occurs automatically in response to certain wavelengths of light and, upon occurring, can then evoke whatever verbal behaviors a verbal organism becomes conditioned operantly to exhibit in the presence of that kind of visual awareness? ... Or, is an awareness of blue an operant neural behavior the primal manifestations of which must somehow be teased into operant occurrence? One must be conditioned operantly to talk and think about one's visual awareness of blue, but what about the origins of that kind of awareness behavior per se?

All verbal behavior is based on awareness behavior in the sense that verbal behaviors consists of responses to awareness behaviors. Eliminate awareness, and a state of ultimate oblivion ensues—a state in which, *for all verbal behavior*, the functional connection with the behavior-controlling environment has been severed by the removal of one of its critical internal links. Organisms that successfully interact with their environments exclusively under direct stimulus control (echinoderms, for example), not surprisingly, exhibit no kind of verbal behavior.

Evolution operates by the selection mechanism, and evolutionary progress can be made only in the presence of variations from which selection can occur. The class of events that exhibits the variation must already be present, and in addition, certain of the variations must portend a greater survival advantage than others.

As we attempt to relate these principles to the physical capacity for awareness behavior, a relevant family of questions lingers: Do awareness behaviors happen automatically in a respondent mode even before we react operantly to them in further discriminative ways? Or, are they already operant responses that we have had to acquire through some kind of operant conditioning? Is the capacity for awareness behavior an essential element in the mediation of unconsciously occurring behaviors in response to sensory inputs—or, is the capacity for visual awareness not in the linkage of such mediation? That is, do the structures that exhibit awareness behavior have to be in place even for direct stimulus control to occur, even though in such cases those structures would not be exhibiting awareness behaviors? If that is so, the structural capacity for awareness behavior would at least be available to “come under operant control” whether that implies some further biological evolutionary tweaking or merely their subjection to some new kinds of behavior-

controlling arrangements within the scope of operant conditioning (or both).

This issue of how a private neural behavior such as blue can first arise is somewhat peripheral in the field of behaviorology. It is more central to the concerns of evolutionary physiologists, who bring the appropriately relevant scientific repertoire to such issues.

Logically, it seems as though a person must behave blue privately *before* being conditioned by a verbal community to call it *blue*, otherwise there would be nothing to talk about. We remain less sure about the need to behave blue before responding discriminatively to it in non-verbal ways under natural contingencies. For instance, a visual awareness of colors may not be relevant to the discriminative approach of an insect to blue flowers in the presence of both red and blue flowers even when the discriminative responding is controlled by the wavelength of the impinging light. Here we allude to a *direct* stimulus control of the approach behaviors. That is, if visual awareness is a *separate* behavior in response to impinging light waves of a certain frequency, that kind of behavior may not be a necessary link in the control of the discriminative behavior of approaching certain flowers but not others even if the behavioral elements of approach are controlled by those light waves via the visual sense. Such control would be direct, just as the daydreaming driver's car-steering behavior is controlled by light impinging from the scene that is ahead of the car, although that light is failing to evoke any concomitant seeing behavior.

In the case of verbal organisms, we assume that the private behavioral sensation that comes to be tacted as *blue* must precede the operant conditioning of its tact, and people have usually extended that reasoning to other kinds of discriminative operant responding to the incoming wavelength of light such a pressing a blue key but not a red one. Yet the basic question remains: Is the human bodily structure entirely prepared, as a matter of genetic endowment, to produce the behaviors of *awareness* in the same sense that the body is genetically structured to produce a wide variety of other respondent behaviors, given the appropriate antecedent stimulation? ... Or, must the body undergo further micro-structuring through some kind of behavioral conditioning before it is ready to exhibit awareness behaviors?¹⁰

Knowing per se is a behavioral phenomenon. To be aware of, or to know of, a distinction (e.g., the presence vs. the absence of a given stimulus, or stimulus A as different from stimulus B) is already to behave discriminatively. We say that that awareness behavior occurs under the respective alternative environmental conditions. The *knowing* of the distinction, which is but one class of discriminative behavior, can manifest only as discriminative behavior (that is simply the nature of knowing per se). That is, we are constrained to behave our knowing

just as we are constrained to behave our elbow bends. When we posit environmental reality beyond the *behavior* of knowing it, that reality is necessarily a speculative *inference* (i.e., just more of our private verbal behaving). Our *knowing* of a remote mountain (or of a private feeling) consists of discriminative behavior, and our further insistence that either of those events is “really there” is but more behavior in response to that behavior. Thus, the closest that we can come to the *environment* is our own discriminative behavior, *presumably* in response to that posited environment. We are trapped on one side of those posited functional relations, because “we” *are* but one side of those functional relations.

A person’s verbal behavior has many characteristics that can evoke that individual’s own further discriminative verbal behavior. For example, we have discussed how people respond overtly to the covert nature of their private verbal behavior (e.g., the audibly vocalized statement *I am thinking about you*). In addition, people often respond to characteristics of the functional relations that control their behaviors, verbal or nonverbal. For instance, the currency of their behavior may evoke *I am running*. They may also respond both to the historical nature of their behavior (*I ran yesterday*) and to the environmental factors that determine the probability of their future behavior (*If a fire starts, I will run*).

In the case of a statement that is rendered in the present tense, the identification of the evocative stimuli by a listener typically presents relatively few if any analytical problems. For instance, when another person says *There’s a car*, we look around in ways that, in the past, have resulted in car-seeing behavior, and often, as a result of looking, we experience the behavior that is described as *seeing it*. That contact (of a sort) is the basis for our subsequent conclusion that the vocalizer’s statement (*There’s a car*) was valid. Obviously, the car is *known* only in the sense that we have behaved it.

However, the evocative stimuli for statements cast in the past and future tenses can seem more illusive. A statement such as *I ran yesterday* is often described as a *memory*. However, the independent variables remain unidentified. Those functional independent variables must be present currently, because current behavior is evoked only by current stimuli. However, the body that is currently vocalizing in the past tense about running is not currently exhibiting the behavior that is being described. The stimuli that shared in defining yesterday do not leap forward in time to evoke the future behavior that shares in defining today. At best, they are links in chains of functionally determined events that account for what has become the current environment.

The behavioral events of yesterday produced, at that time, structural changes in both the body and its environment that may remain in place to capacitate the cur-

rent evocation of the statement *I ran yesterday*. For example, a current stimulus pertinent to running may now evoke a covert vision of yesterday’s running episode, because the body has been left, since yesterday’s conditioning episode, with the structural capacity to produce that kind of seeing behavior in response to certain stimuli that may remain available a day later. However, although triggered by a current stimulus (i.e., by an element of the current environment), the constituent events of that vision are out of context in the current environment as a whole (in the sense that the current environment is not evoking running behavior, but is evoking only a vision of yesterday’s running behavior).

We are linguistically conditioned by our verbal community to speak of such visions, which are incongruous with the current environment, in the past tense, just as we are conditioned to call them *memories*. That conditioned grammatical nuance along with our subsequent responses to it, constitutes our *knowing* that such currently re-stimulated visions pertain to originals that have occurred in prior contexts. That is the essence of our sense of *past*. Behaviorally, we exist only in our present, and current behavioral re-visitations of our past are actually always new behaviors that are occurring in our present in response to stimuli that also are present. Thus, the *reality* of the past is always necessarily a currently produced inference that is evoked by the kind of current behavior-controlling circumstance that is described above.

The residual issue for analysis is why some current running-related stimulus so readily evokes a new vision similar to a vision that occurred in the presumed past. That, of course, is not a difficult question, at least at the theoretical level, because it is answered by explanatory recourse to the physiological implications of the basic model of operant conditioning: The original vision of the behavior was reinforced, which left the body reconfigured, at a microstructural level, to more readily behave in that way whenever an appropriate evocative stimulus is again contacted.

Thus, today, contact between a body and a running-related stimulus is, to describe it more precisely, a running-related stimulus in contact with a body that is now better configured to reproduce a similar episode of visual awareness. A response now occurs in the presence of the running-related stimulus, which by its very manifestation defines the *currency* of that vision-type of response, but the context of the vision that is now being evoked is not current (i.e., is not now present in the sense that that context would evoke behavior different from that evoked following current looking and other environment-sampling posturing of the body). That is, the environment that, if contacted, would evoke the current vision differs from the environment that is contacted through current attending behaviors. In common par-

lance, what one is now seeing is not what one would be seeing if one were alertly to look around and pay attention to what currently is there.

That kind of on-going vision, or private seeing behavior, which is discrepant with respect to the current environment, may then, on the basis of that discrepancy, evoke the statement *I ran yesterday*. When such a past-tense verb form manifests, is little more than a description of some current private behavior that is now occurring in the absence of most of its typical evocative thematic events. That is, in response to a current although isolated or fragmentary stimulus, one may re-see or re-feel oneself running while, at the same time, reacting to one's currently non-running body as well as to an environment that does not currently evoke running. Casting the description of the visualized running in the past tense is a response to that kind of *incompatibility* between (a) one's current visual awareness of the motive state of one's body relative to a running-compatible environment and (b) other immediate attention-directed responses to the motive state of one's body in relation to the current environment. That is, one is seeing oneself running in an environment that would evoke running, but it is an environment that differs from the alternative environment that is seen when one exhibits inspection behaviors pertinent to one's immediate environment.

As described in common agential terms, if one snaps out of one's reminiscence and pays attention to what is currently happening, the behavior being recalled would be out of place in the immediate situation. Given that those classes of responding differ, the test for the currency of the *remembered* behavior thereby fails, and the present tense is *not* evoked when describing it. The person could explain what is happening by saying something like this: *I have been experiencing a vision of myself running in a realistic context. That vision has been evoked in a way that did not anticipate (i.e., prompt) its contents. However, I have also then contacted (a) the current state of my body and (b) the environment in which it currently exists, and, when I did so, the inspection-induced vision my body was not running in either a manner or context that comports with the initial vision of myself running. Therefore, I am conditioned to regard the running in my initial kind of vision as having occurred previously, and I have been conditioned to describe any such running in the past tense.* (If one remembers running yesterday while running today, that situation would be subject to the same kind of analysis, but the distinctions to which the analyst would have to respond would be more subtle.)

Note, however, that the behavior of sensing the past is happening in the present and is actually evoked by current (not past) events. The behaviors that are commonly classed as memories, recollections, or remembrances occur exclusively as a function of current events (as do *all*

behavioral reactions). That is, everything behavioral happens in the present, and we must account for our behavioral senses of both past and future in terms of *present* evocative events. A sense of the reality of the past, by its nature, is often said to be an abstraction that is derived from past tacts, visions, and other nonverbal reactions, that have accumulated, but those are all behaviors, which are processes, not entities, so they do not really *accumulate*. They happen transiently and can have no status of endurance beyond their durations. Thus, memories cannot be reiterations of stored behaviors.

When occurring initially, however, behavioral reactions to the environment, including tacts, result in consequences that physically change the body that has mediated that behavior of contact—a kind of molecular scale change that renders that body more or less behaviorally susceptible to such contacts¹¹ on similar future occasions. On such future occasions of contact with environments that share stimulus elements with the present occasion, that kind of contact behavior, or a fragmentary version of it, may be re-evoked. However, that will be happening in a future context that differs from the current context. On such future occasions, it is that contextual disparity, between currently re-evoked versions of earlier contacts and on-going contacts of current events, that controls the casting of descriptions in the past tense. (Such evocations of specific tense forms, which depend comparatively on the properties of behavior-controlling relations, represent another large class of verbal behavior, called *autoclitic* verbal behavior, that will be discussed in the next major section of this chapter.)

Thus, what is called *a sense of the reality of the past* is necessarily always a current behavioral manifestation. It can be said that one *behaves* the reality of the past, but one must always be doing so in the present. Thus, the past can have no essence beyond current behavior and how it is being controlled. The so-called *reality* of the past necessarily inheres only as an artifact of *current* behavioral phenomena. *Past* is a current behavioral reaction to some currently encountered behavior-controlling relations and to the *relations among those relations*.

Although, upon analysis, these controls may seem complex and subtle, the time-related verbal behaviors that denote the past tense are typically produced with a natural ease, largely because one comes so often under contingencies to speak of the past that the necessary relations are strongly conditioned and kept so. While an accounting for grammatical tenses as natural phenomena can quickly become complex, the contingencies under which tense forms are produced are encountered frequently. Thus, within verbal communities, especially those in which verbal behavior is presumed to be the manifest will of a mystical self-agent, the intuitive gram-

mathematical skills of the members quickly outstrip their capacity to provide a rational account for those skills.

The statement *I will run tomorrow* must also occur under current stimulation. Future events, being virtual or potential, are necessarily unreal and cannot function as evocative stimuli for current behaviors such as that statement. An assumption that a future event is controlling a current statement is classed as a teleological error. In general, during past behavioral episodes of operant conditioning, we have seen ourselves repeating behavior that has been reinforced. In particular, in the past we have repeated previous behaviors on later occasions when reinforcement was possible or probable (*occasions* that were defined by the presence of appropriately strengthened evocative stimuli).

Given such a conditioning history featuring, for example, the reinforcement of running behavior, if currently I contact events that, in the past, have preceded, by about a day, the evocative stimuli for running—current events that, after about a day, have in the past led to the presentation of stimuli that evoke running, I am conditioned to respond now to those *current* precursory circumstances by saying something like *Tomorrow, I'll have an opportunity to run, and I will run*. If I have not run recently, the evocative capacity of those current stimuli may be further increased by the effects of deprivation.

If, instead of a history of reinforcement, one has had a history of aversive stimulation with respect to events now encountered, a corresponding analysis of the controls on tense forms can be made with respect to avoidance and escape behaviors. Suppose that one contacts stimuli that reliably have preceded a punished behavior. One may then describe those stimuli as *threatening*. In addition to evoking reviews of past sequences of behavior and its punishment, those currently encountered stimuli may also evoke a vision, or other kind of sensation, of one engaging in avoidance behavior that one has not yet exhibited.

The avoidance behavior may take a familiar form that has never before been associated with this *particular* kind of aversive stimulation, or it may represent a new instance of a familiar way of avoiding the impending kind of aversive stimulation. The critical aspect is that the avoidance behavior featured in the current neural iteration is either a repeated version of a specific pattern of behavior that is occurring under a *new* aversive stimulation (new kind of threat; old means of avoidance) or a *new* combination of behaviors that are occurring under a familiar kind of stimulation (familiar threat; new set of avoidance behaviors).¹² If one then comes under contingencies to describe the situation, the description will be rendered in the future tense (e.g., *Upon seeing that bully approaching, I am going to leave the area before he arrives*).

Casting the verb in the future tense is a response to the relation among some behavior–controlling relations.

In the above example, a current event reliably evokes an awareness and recognition of previous behavior along with its punishment. The current event, along with this evoked neural behavior, may together also evoke a vision of one engaging in an alternative to the previously punished behavior. The imagined episode is not an *exact* reiteration of a past episode (i.e., not an imagined copy of some previous behavior). That is, either the evocative stimuli or the combination of responses is new. Members of a verbal community has been conditioned to describe the imagined manifestation of that different potential relation in situations of this kind as what one is *going to do* (i.e., in the future tense).

In any case, a predictive statement such as *I will run tomorrow* or *I will say something nice* does not imply a magical functional contact with a future event, but is instead actually a response to some *current* events. Neither does it imply the reality of a knowledgeable self. The grammatical form of the verb in such a statement, which is said to represent the future tense, has been conditioned on such occasions by the linguistic practices of one's verbal community. The linguistic forms indicative of tense then manifest automatically under control of some nuances among the controlling relations on some private neural behaviors in the class to which people refer as one's *imaginings*.

The imagined future episode may manifest in the elaborate detail of a daydream or it may recede to the level of a sketchy, fleeting, and fragmentary glimpse. Only temporal and associative factors pertaining to its controls discriminatively evoke the tense–indicative forms. Thus, a person may describe a behavior in the future tense in the absence of a complete imagined version of that behavior, because the future tense forms are controlled by non–thematic details of the imagined episode—namely, by relations among the controlling relations of its elements. When one says *I will go to the store*, for the tense to be correctly rendered, one need not first imagine in detail a complete trip to the store. Those tense forms need only be under control of relations among the controls on the elements of such an imagined story. Thus, the appropriate tense form can manifest quickly, and the imagined story per se need not actually unfold in detail for references to it to include forms that denote futurity.

Note that a *sense of futurity* inheres in *current* circumstances. That sense of futurity manifests in the form of statements being cast in the future tense. However, *futurity* is always a current behavioral product. Again, with respect to our futures, as with respect to our pasts, the reality of past and future can manifest only as *current* behavioral phenomena, with the critical distinction inhering in the nature of the controlling relations. We behave our sense of future as we behave our sense of past, with both occurring as aspects of our present behavior. The essence of the

distinction between past, present, and future (including tense-indicative constructions, and any other aspects of our so-called *sense of time*) inheres in some different ways in which *current* behaviors are being controlled.¹³

Responding to Temporal Relations

Suppose that people are sensing their own behaviors. Further suppose that those behaviors are occurring in a context that does not share in defining the current ambient environment. That is, such people are witnessing self-behavior that is occurring in reaction to virtual environments that differ from the environments that are revealed when "they start paying attention to what actually surrounds them." In such cases, the behavior that they sense themselves exhibiting is virtual too. Neither the environment nor the behavioral responses to it will pass tests of reality.

Let us further assume, in this case, that the virtual behavior is occurring in a context that, relevant to real time, places it in the past. People, in situations of this kind, can normally specify whether such neural activity represents *memory* or *imagination*. Future events must be imagined necessarily, and consciousness of past events also may be imagined (i.e., past events that have not actually occurred). However, a current consciousness of past events may also represent reiterations of previous behavior that actually occurred in the past.

We distinguish (a) the virtual behaviors that we regard respectively as representing actual past behavior and (b) imagined behavior when we tact the former as a *memory* and the latter as a *daydream*. We seldom confound a memory and an episode of imagination. If one is asked whether one is *remembering* a real party or merely *imagining* an alternative to what actually occurred, in most cases a valid report is forthcoming with ease. At issue is the question of what enables peoples' normally easy discriminative reactions to a memory and an imaginary recasting of history.

During a memory of a sequence of events, each neurally reviewed event evokes the next one *without the addition of new supplementary stimuli that add to, or enhance, either the behavior that is being recalled or the context in which it occurred*. That is, for an *accurate* memory, nothing about the circumstances and the behavioral events that occurred under those circumstances must change during the process of remembering.

However, the current environment differs from the environment in which the original behavior occurred, so one must sense again not only the original behavior but also a functional equivalent of the behavior-controlling environment that produced it. That is, to remember is to engage again in some previous neural behavior. However, in an episode of memory, although those sensations (awareness, recognition, comprehension, etc.) must hap-

pen again as they happened before, this time they must be evocatively initiated by current events instead of the events that evoked the original neural behavior (of consciousness). Thus, some aspect of the *current* environment must initiate the review—perhaps an evocative verbal prompt, or an encounter with other kinds of stimuli in common with those that defined the previous episode that is to be remembered.

If the privately reiterated behavior was strongly conditioned by consequences that ensued at the time of its initial occurrence, the current memory, once initiated, may chain in a self-sustaining manner. However, a weak memory may have to be probed, but effective probes for memories do not add to, or subtract from, the context of the revisited episode. The conservative probes merely function to narrow or confine the range of the constituent stimuli that will share in evoking the next sequential moment of private reiteration.

For example, one may be having again a vision of a party that one attended a few days earlier, but suppose that one is re-seeing aspects of that party that do not saliently feature all of the guests. If one is under current contingencies to identify each of the guests who attended that party, an appropriate probe may take the form of a simple instruction: *Identify all persons who were in attendance*. Functionally, such an instruction has the effect of narrowing the composite stimulus of a general party scene to the human figures within it, and the subsequent party scenes tend to feature the people who attended the party in more salient ways that enable nominal tacts of those people. Importantly, such a probe, while exerting its focusing function with respect to a particular class of stimulus elements, does not otherwise alter the overall stimulus array that is re-presenting as the memory.

To ask, simply, *who was present* avoids the presentation of specific stimuli that may have strong capacities to evoke visions of certain people. For instance, the presentation of a probe such as *Was George at that party?* may inadvertently prompt a George-seeing response that is sufficiently strong to intrude into the on-going neural reiteration. That is, one may then experience a George-seeing response in the context of the party when, in fact, George had not been in attendance. What are intended as probes must be constructed conservatively lest they miscarry by functioning as prompts—a point not lost on devious inquisitors who may inject subtle prompting elements into what are otherwise disguised as thematically neutral probes.

Imagination behavior pertaining to past events that have never actually occurred must manifest as neural behavior that could not have been strengthened by past consequences *in the thematic context that is currently being produced*, so sequential manifestation during imagination is not facilitated by that kind of special strength. While

the behavioral elements in the theme of the imagined episode produce reinforcing outcomes, the sequencing of those behaviors is new and is thus controlled differently from the sequencing in a memory.

Note that in a memory, a given neural behavioral event tends to be followed by a specific subsequent event on the basis of a microstructural susceptibility that was established through consequence that occurred during the past behavioral episode that is now the theme of the memory. That is true of the control of *each* subsequent event, so that the unfolding events in a memory share the unbroken sequential predetermination that we liken to a preexistent chain.

In contrast, during the imagined coalescence of some virtual history, a given neural behavioral event is not already linked to a *specific* next event by such thematic preconditioning. In an imagined historical episode, one event follows another on the basis of preconditioning that was never constrained in a thematic way. That is, in an imagined historical episode, while that next event is predetermined by past conditioning, that conditioning history may have occurred in thematic isolation from the conditioning that strengthened the other elements of the imagined sequence. Thus, during the imagination of a fictitious past episode, neural behavioral elements strengthened during disparate historical episodes can fall into place in the *new* sequence.

The person in whom both of these two classes of private neural behavior (memory and imagination) can manifest can usually *tell the difference*, as they say. That is, the individual can usually respond discriminatively to the kind of control on the sequencing, tacting one as a *memory* and the other as a *bout of imagination*. When such control is too weak and the discriminative responding fails, a familiar self-probe may emerge: *Did this really happen, or am I just imagining it?* On the other hand, descriptive features that cast the episode merely as belonging to the past are controlled by two factors: (a) by the predetermined fix of the sequencing, and (b) by thematic or contextual clues.

Let us consider an example. When one imagines that one is sailing aboard the H.M.S. Beagle with Charles Darwin during the 1830s, no matter how vivid and realistic the unfolding scenes of that daydream, they were *never* originally stimulated, even to the slightest degree, by direct energy inputs from that historical environment. Furthermore, when one imagines an alternative reality, that daydream is not occurring under strict stimulus control of the current environment, and may be occurring in the absence of *any* control by the current environment.

However, during some bouts of imagination, some of the imagined behavior may actually be occurring, as, for example, when a person who is imagining being in battle exhibits some of the bodily motions that characterize

combat. Also, while the current environment would not precisely evoke the behavior being imagined, some aspects of the current environment may actually tend to evoke some of the behavioral elements of the imagined activity. For instance, the person who participates in an imaginary battle may wield a real weapon of a kind that suits the theme, or an approximation of such a weapon. That is why an imagined episode often seems more vivid, and hence more reinforcing, when the person is in a setting in which such an imagined episode may actually tend to occur.

For a person to distinguish between memory and imagination, the person must respond discriminatively to the nature of the controlling relations in which that private neural behavior occurs. The neural behavioral events that constitute a memory originally occurred under tight and precise control by an environment that, at that time, would have passed tests of reality. At that time, precise linkages among the sequential elements of the original neural behavior were conditioned. Later, on an occasion of the kind of private reiteration to which we refer as *the memory of that episode*, the order of the neural behavioral elements is predetermined through that conditioning, which occurred during the original episode, and the original sequencing conservatively reoccurs. In contrast, the events in a bout of imagination feature private neural behavior the elements of which are coming together for the first time. Each is some fragment from the person's general conditioning history, but the sequencing is new.

A verbal community imposes strong contingencies on each member to respond discriminatively to the differences in the controls on memory and imagination. However, an intuitive level of responding generally suffices, so although nearly everyone can exhibit that discrimination rather accurately, few people outside of behaviorological circles have been conditioned to account for how it happens.

Unlike a remembered environment, the imaginatively constructed environment, never having had to exist in reality, is free to violate temporal constraints and thus may be interpreted as a past, present, or future setting. A daydream—whether a recasting of the past, indulgence in an alternative present, or a virtual preview of future events—rather than being teased into manifestation with conservative probes (as may be necessary with a memory) can be prompted constructively as necessary to maximize its reinforcing qualities.

The initially evoked scene of a daydream may be contrived through prompting or may arise through naturally encountered stimulation, and further evocative supplementation may not be necessary. That is, the subsequent episode of daydreaming may then proceed through a generally reinforcing chain of scenes in a relatively automatic way that is sometimes described as *free-flowing imagination*. In that mode each scene is said to evoke the

next scene. The kinds of thematic behavior that are featured in a daydream are respectively well conditioned as a result of their respective histories of reinforcement, and therefore they tend to be consciously reiterated in the daydream. However, because the sequence is new, a new kind of environment would be required to produce it, so along with the neural reiteration of the thematic behavior, the daydreamer must behave a kind of environment that would tend to produce it. In an imagined sequence, the environment-behavior function that characterizes reality works backwards in the sense that the emergence of strong behavior is evoking a neural iteration of the environment that in reality would control that behavior.

Note that in imagination, the conscious iteration is the *only* real behavior that occurs to take the effect of any operant and respondent conditioning. That is, if, for example, reinforcement occurs, it pertains only to the on-going neural behavior of imagining. The imagined thematic behavior per se never really occurs, so it is never really reinforced. Any reinforcement thus pertains to the behavior of imagining, not to the thematic behavior that is being imagined.

This distinction is important in the analysis of fantasies that feature thematic events the reality of which would probably be intolerable to the daydreamer. In the historical absence of a science by which to analyze the issue effectively, human culture has featured an ancient and reoccurring debate about whether antisocial fantasies are likely to be "acted out." For example, suppose that over a long period a person is mercilessly tormented by another individual. The tormented individual may often fantasize about revenge, perhaps by imagining scenes that feature the persecutor being burned at the stake.

The imaginary immolation is entirely reinforcing simply because only those thematic aspects of the neural behavior that are reinforced will survive. Whereas a real environment continues to impose its aversive stimulation as long as contact is maintained, any aversive aspects of an imagined environment are subject to extinction and suppression. In a fantasy the only real behavior is the neural behavior of imaging, and that neural behavior includes both the thematic behavioral events and the environment that would be necessary to elicit and evoke those events.

If the imaginatively constructed environment were to be replaced with its real and behaviorally unsanitized counterpart, the fantasizing person would probably be repelled by the spectacle of a person really burning to death while tied to a post. That is because the real environment would inclusively be imposing a wide variety of aversive stimuli that could not be subtracted directly from the real environment by operant extinction or suppression. To rid a real immolation of its intrinsic aversive features, nor-

mally one must avoid contact with it, either by departing the scene or preventing the whole episode before it begins.

In a real immolation, a piece of sizzling flesh melting away in the flames is generating the energy that triggers the spectator's consciousness of the event. That energy continues to impinge on the spectator regardless of the aversive nature of its behavioral effects on that spectator. In contrast, during a fantasized episode, the corresponding environmental events are being generated behaviorally and are therefore under the operant control of their own aversive effects. In a fantasized version, if a piece of sizzling flesh melting away in the flames is aversive, the behaviors of consciousness that are generating that aversive aspect of the overall spectacle are suppressed, and that feature is thus behaviorally subtracted from the on-going scene (all of which is occurring only in the sense that it is being behaved in response to energy that is circulating internally rather than impinging from without).

A daydream is susceptible to continual self-prompting, which typically occurs in ways that maximize the reinforcing thematic and contextual effects. That occurs as thematic aspects of an on-going daydream evoke brief thoughts about potentially reinforcing thematic variations any of which may initiate a new chain of daydreaming along the contextual and thematic path of that variation. On the other hand, in accurate remembering, one is under contingencies to reproduce an unchanged version of some private neural behavior that has already occurred. If one is privately to behave again as one has behaved previously, then the stimulus controls on the privately reiterated version of that behavior must conservatively re-present as a functional equivalent of the controls that prevailed in the original episode.

Accurate memories are important to a verbal community, so its members are taught how to engage in the kinds of self-probing practices that are least likely to alter the content of the reiterations that they share in evoking. For example, a person who is challenged to recall the mode of transportation that that person used to get from town A to town B may find that the response is not forthcoming. One approach is to follow a self-instruction to describe the contingencies under which the trip was undertaken, if that is possible. If the reason for the trip can be reiterated, then the selected mode of travel would probably have been the one that best afforded the kind of travel-related experiences that comport with that contingency. Such a sequence of thinking may share in strengthening the current identification of the travel mode that was used.

Suppose, on the other hand, that one were first to select arbitrarily any travel mode that would have been available to a traveler at that time (for example, a bus) and then ask, "*Might I have taken the bus?*" The prominent manifestation of the term *bus* may evoke memories of past bus trips that could then be mistakenly associated

with the trip in question. If one actually made the trip by canal barge under contingencies to scout for scenes that could serve as the subjects of landscape paintings, then the advantage of the non-committal probe for the travel mode, based on a review of the contingencies under which the trip was undertaken, becomes obvious.

Thus, in a sophisticated verbal community, each member may be taught to probe with a thematically neutral self-question whenever the person is challenged to recall the details of an event. That kind of question is devoid of intrinsic qualities that may directly evoke details that could then be reported as invalid memories about that particular journey. In the legal sub-community, accurate recall is especially important. In a courtroom, an attorney's question, posed to his or her own witness, that explicitly suggests a particular potential answer tends to evoke an objection from opposing counsel on the grounds that that attorney is "leading the witness."

Note the differences in the controls on memory and imagination. Both classes represent currently evoked behaviors, but in the case of memory, the contextual controls remain functionally similar to those that prevailed during the original episode, so that one behaves now, in a private neural way, as one behaved previously in that same private neural way. One cannot behave again if one did not previously behave that way in the first place. Thus, one cannot remember (i.e. cannot re-behave) a behavioral event that one did not originally behave (i.e., an event of which one was not initially conscious, as they say) However, in the case of original imagination, the controls on the private neural behavior do not functionally match the controls that prevailed during a prior episode.

Note that the behavioral reiteration that we call a *memory* consists of private neural behaviors. Note also, that the behavior that is now reoccurring as a memory is a *re-occurrence* of some behavior that originally occurred as the private neural behaviors of consciousness. That is, the behaviors that reoccur in a memory, consist only of repetitions of the original behaviors of consciousness, not repetitions of any other kinds of behaviors of which the person may have been conscious. It is only the behaviors of consciousness that repeat during a bout of remembering.

For example, suppose that one is recalling one's flipping the light switch that turned off the ceiling light as one was leaving a room on a particular occasion. The behavior being recalled is the muscle-driven flipping of the switch, but the behavioral mode in which that memory manifests consists only of private neural behavior, and, furthermore, it is a reiteration of what originally was only private neural behavior. The behavior of recall manifests in, and pertains only to, behaviors in the class called consciousness. If, during the original behavioral episode, the motor behavior of reaching toward the light switch and flipping it did *not* evoke concurrent behaviors of con-

sciousness (i.e., awareness, recognition, comprehension, etc.), then later memory of that switch flip will be impossible, because that memory would have to occur as a reiteration of original private neural behavior that had not occurred in the first place.

Absent an evocation of that kind of neural behavior of consciousness during the initial episode, a reiteration of it cannot later reoccur. Thus, behaviors that originally occur under direct stimulus control cannot be recalled, because the kind of behavior that would have to repeat does not happen in the first place.

Note, however, that daydreaming and other kinds of imaginings can, in theory, be recalled, because they originally manifest in the neural behavioral mode that is necessary for recall to pertain. However, the neural micro-structuring that was established (i.e., conditioned) during the original bout of imagination is, of course, subject to the kind of on-going natural degradation that is responsible for forgetting. Thus, the thematic content of either a bout of imagination or an environment-induced bout of consciousness can be rendered progressively unrememberable (i.e., unreviewable) as a result of the forgetting process. However, the thematic content of an interaction with a real environment that fails to evoke the concurrent neural behaviors of consciousness cannot later be reviewed in the memory mode because no capacity is being established to support that later kind of neural re-behaving (as in the previous light switch example).

A person distinguishes between the memory and imagination classes of private neural behavior on the basis of differences in the controlling relations on some current private neural activity. The distinction per se thus involves some further behavior that does not always emerge, thus leading, perhaps, to the familiar self-probe "*Am I remembering or imagining this episode?*"

Imagined behavior can be interpreted as an alternative past, present, or future. The designation of tense that emerges under the control of an on-going episode of imagination can be evoked by either of two classes of events, or both.

The first is contextual and pertains to the temporal implications of the thematic content. If the activity pertains to events that are correlated with points on a time line, then the daydream can be classified temporally. For example, virtual characters that are dressed in the clothing of earlier times and who work with old-fashioned tools evoke a designation of *past*. If the imagined events rely on the solutions of problems that are as yet unsolved, that circumstance evokes designations of *future*. Absent such contextual clues, the time frame may remain ambiguous.

The second class of controls on temporal designations pertains to the contingencies under which the episode of imagination is occurring. For instance, if one is under an explicit contingency to imagine what daily life

will be like 500 years in the future, the ensuing bout of imagination would involve temporal specifications that can denote *futurity* in exclusive response to the kind of contingency under which that bout of imagination was initiated. For instance, an imagined scene that includes a common wall calendar in some detail would feature a calendar that is labeled with a future year. The verbs in verbal descriptions of the scenes being imagined would be rendered in tense forms that indicate futurity.

Responding to The Nature of the Controls on a Tact

If the utterance of a tact is impending because of contact with its evocative stimuli, the vocalizer may also be in a position to respond to the number, strength, and other properties of those stimuli as well as merely exhibiting the descriptive tact that they tend to evoke. For example, suppose that a potential verbalizer is in visual contact with a bird flying overhead. The bird can present as a variety of different bird-related stimuli, but those stimulus elements, which collectively define that particular bird, become respectively salient in a differential way depending on the duration, viewing angle, and other circumstances of their presentation to that vocalizer.

Suppose that the bird zips past so rapidly that the verbalizer hardly catches a glimpse of it. Only a very few of its properties exert stimulus control over the vocalizer's verbal behavior. If those are properties that, in the past, have been associated with ravens, they may evoke the raw tact *raven*. However, that set of behavior-controlling stimuli is also small, and some of those properties may also have been present during past contacts with other kinds of birds. These historical facts too are aspects of this behavior-controlling situation, and they too may affect the verbal utterance. The verbalizer is likely to say *It could have been a raven*. The term *raven* is a composite tact of the few properties of the bird that shared in exerting functional control during the brief fly-by. The term *could* is controlled both by the paucity of the evidence and by the previous appearances of at least some of those same characteristics in other species of birds.

Suppose, on the other hand, that the same bird had soared slowly past the verbalizer. Assume that it had remained in view for an extended interval with favorable lighting while wheeling so as to present different viewing angles. In that case, several additional properties of the bird would be likely to gain stimulus control over the speaker's verbal behavior, and those well presented properties would tend to establish their respective conditioned evocative functions to a greater extent. In that case, the tact *raven* could again be evoked under that broadened stimulus control, but the vocalizer is also in a position to respond to the relatively large *number* of bird-related properties that are sharing in the control of that tact plus

the circumstances of their near optimal presentation. In that case, the verbalizer may say *I'm sure that that was a raven*. The *sure* is a response to the richness of the evidence, including its variety as well as the special circumstances that insured the behavior-controlling effectiveness of its elemental presentations.¹⁴

In the past, when a speaker said either *It could be a raven* or *I'm sure that it is a raven*, it has often been asserted that the verbalizer is responding to the probability that the primary tact *raven* is valid. However, the vocalizer in such cases did not contact a "probability" in the sense of an environmental entity. Instead, the vocalizer contacted sets of stimuli, each of some relative salience, the elements of which were presented in ways that differentially exploited their respective conditioned evocative capacities. The class of responses that are evoked by those kinds of features of the situation are related to the primary tact insofar as such responses are evoked by certain qualities of the controls on the primary tact. When a vocalizer says *It could have been a raven*, a mediator tends to respond with less raven-related behavior than when the vocalizer says *I'm sure that it was a raven*.

Consider that *relation* refers to two variables, one of which exhibits change that bears an orderly correspondence to on-going changes in the other variable. While either of the two variables acting independently can evoke verbal responses, so can the relation between them. Note that a verbal response to a behavior-controlling relation occurs as a response to two on-going classes of change, one occurring among some independent (in this case, environmental) variables and the other among some dependent (in this case, behavioral) variables. That is, changes in the contacted environment correspond in an orderly way to changes in a behavioral variable. That is, the order in the behavioral change is defined by the nature of the on-going environmental change.

Those two kinds of on-going changes are all that is available to be contacted (we do not really contact a relation or a correspondence), and although that is all that can be contacted, such a pair of changes, with one reflecting the other in some orderly way, collectively evoke the inferential tact *relation*, which chains to the subsequent verbal behaviors that we call its comprehension. Such an extended tact reifies certain aspects of what, fundamentally, are processes. The compound adjective *behavior-controlling*, which modifies *relation*, is evoked by the orderly reflection of environmental change in the corresponding change to the *behavioral* variable.

Many such responses to aspects of the controls on other verbal behaviors manifest, not as tacts, but as a wide variety of other linguistic nuances. Such subtle responses to the properties of the controls on other verbal behaviors are so important that they command their own major classification of verbal behavior. The next main

section of this chapter is devoted to that special class, which is called *autoclitic* verbal behavior.

[Part 3 continues in the next issue.—Ed.]✻

Footnotes

¹Note that we do not speak technically of this conditioning history in terms of *the child having learned these things*. That is because there is no agential child that presumably inhabits the body as an agent who, through its own initiatives or allowances, *learns* what to do. There is only a body to be operantly conditioned, and that conditioning occurs automatically as a result of external events. People do not *learn* (because the people—agents that would have to do it, do not exist). Instead, conditioning *happens* to bodies. When such conditioning has happened to the body of a person, that person then has an altered body structure that, thereafter, responds differently to its environment. Persons who believe superstitiously in autonomous self—spirits that control behavior then interpret those changes in behavior as evidence of changes in the putative will of the responsible agent, who is then said to have *learned*. The behaviorological definition of the verb *to learn* is merely *to exhibit change in behavior in the presence of a given stimulus as a result of an appropriate history of conditioning*.

²The relation between the textual stimulus and the vocal production of the word “house” is traditionally said to represent a “point-to-point” correspondence, but the correspondence is more accurately described by “range-to-range.” The smallest functional increment of the textual stimulus is a whole letter, which presents as a far broader range than a mere point. Likewise, during the vocal pronunciation of the word, it is not possible to specify a single instant of sound production that corresponds exclusively to any one point in a printed letter of the text version. That is, the vocal sounding that is controlled by a single letter, consists of a broader range of sound than a single point of sound (whatever that would mean). At best, a range of sound production corresponds to a letter, or letter combination, within the printed word. Consider, for instance, the control exerted on a reader’s vocal behavior by the printed letters ...*ough*... in the printed word *thought*.

³In everyday agential language, it could be said that the child must already have learned the spoken name for a house or the written label for a house (i.e., the child must know what that word means when spoken or written). Note, however, in the previous sentence, that substantial conceptual errors are implicit in each of the four terms *child* (as an agent), *learned*, *know*,

and *means*. This illustrates what is wrong when common language descriptions of even simple behavioral events are left unchallenged.

⁴If a box dumper in the aircraft were able to dump the disks in such a way that they would flutter to the ground in an array determined by how they had been dumped, that skilled disk dumper could then insure any desired ground pattern of white dots by dumping the disks in a particular manner. For example, that disk dumper could dump a box of disks in a way that would predictably result in the word *cow* being spelled in a sequence of dot patterns that respectively suggest the letters c, o, and w. In that case, the reader would be responding to verbal stimuli that had been produced by an author who had a curious way of writing text.

⁵A *sound* being heard is a behavioral response. Such a behavior can occur directly—for example, in the sense of privately hearing a word that is being read silently. Light waves from the printed text enter the eyes and are transformed into corresponding neural impulses that are transmitted to the neural body parts that have the capacity to behave the corresponding sound. The private audition occurs under direct stimulus control of the visually appreciated text in the absence of any sound waves that would typically evoke that hearing response. That is, upon contacting the printed word *book*, the reader privately hears the sound of that word even though the reader’s vocal system has not produced the corresponding sound waves in the ambient air. The behavior of hearing the word *book* can also occur indirectly when such a vocalization does occur—that is, when the vocal musculature responds to the printed text by producing some corresponding sound waves in the ambient air. Those waves then travel outside the body from the mouth to the ears, where they stimulate the aural system of the body. That aural system converts the sound waves into electro—chemical neural impulses that are transmitted to the neural body parts that have the capacity to behave the corresponding sound, whereupon the behavior of audition occurs. It may then be said, incorrectly, that “the person hears his or her own voice saying *book*.” However, the natural occurrence of that audition—type of behaving is a part of the behavior that defines the concept of *person* in the first place. The *person* does not exist independently apart from the behaviors that define it. The hearing behavior *is* a part of the person.

⁶The basis of such a statement is that no one seems able to exhibit both kinds of behavior at the same time, which increasingly implies that the same body part is exclusively required for each kind of behavior. Just as a person’s right hand cannot concurrently scratch the

top of that person's head and rub that person's stomach, some neural body parts cannot concurrently exhibit two distinct kinds of private neural behavior, and no program of behavioral conditioning can make that happen.

⁷This subclass of intraverbal behavior has been called *duplic* behavior, a term derived from the verb *duplicate*.

⁸This subclass of intraverbal behavior has been called *codic*, a term derived from the noun *code*.

⁹The term *repertoire* does not refer to the contents of an archival mental storage facility for behaviors, but to the neural capacities to reproduce them upon occasions of appropriate environmental stimulation. Every response is produced anew, and is never an old one retrieved from mental storage in mystical archives. Conditioning does not put behaviors in storage; it produces the microstructures that represent the capacity to behave in a certain way, given the necessary stimulation. Upon the arrival at such a specific structure of such a specific transmission of energy, the incipient stage of a particular behavioral response is automatically initiated.

¹⁰Recall that the bodily structure develops in response to its genetic code and may do so with a structure that is already capable of specific respondent reactions to specific environmental stimuli. In contrast, behavioral conditioning is a subsequent process of *restructuring* the body, which capacitates new kinds of environment-behavior relations. Whether capacitated through (a) genetics, (b) respondent conditioning, or (c) operant conditioning, *all* behavior manifests as a dependent variable in structure-to-structure functional relations (structure of environment to structure of behaving body). Respondent-operant distinctions are based on when and how bodily structures become configured for their functional participation in such environment-behavior relations. Manifestations of such relations require that the behavioral variable be triggered by energy that may impinge from without (e.g., light, sound, or energy imparted by impinging projectiles). The energy that triggers behavior may also be released from storage within the body (as when a person's hand moves back and forth in contact with a stationary surface thus making possible the person's feeling behavior).

¹¹Note that the term *contact* really refers to a behavioral reaction. *Contacts with...* manifest as *behavioral reactions to...* As will be further explored in the next chapter, the reality of the environment, as determined by our contacts with it, is an inference (i.e., a subsequent kind of behavioral reaction) that is based on prior behavioral reactions that presumably were evoked by an *environment*. Thus, our own behavior is

as close as we ever get to the reality of what we call "our environments."

¹²Recall that, if the current neural behavior is entirely a restimulated rendition of a prior one, it is called a *memory* and described using indicators of the past tense. If, on the other hand, it features a composite of behaviors from different earlier episodes that have never occurred together, all evoked by a current event that, in the past, has preceded punitive stimulation, one describes the avoidance behavior as impending insofar as it is cast in the future tense. The forms that indicate futurity are thus controlled antecedently by a current event that restimulates neural reiterations of past behavioral reactions that originally occurred as parts of different episodes. An example is when, in response to a current event, one imagines one taking some composite action the elements of which have, in the past, occurred on different occasions. "Different past occasions" are discriminatively distinguished as different on the basis of how elements of current neural behaviors (called *recollections*) are being controlled.

¹³*One* is confined within the prison of one's own behavior and serves a life sentences exclusively in the functional present.

¹⁴Note that, as functional accounts for such nuances of verbal behavior accumulate, the apparent need for explanatory reliance on a body-managing self-spirit is proportionally diminished. That is, the self-agent retreats with the advance of functional accountings. Thus, the relative certainty reflected in this vocalizer's statement does not reflect the increasing resolve of a comprehending self-agent. Instead, the inclusion of the phrase *I am sure that...* is merely a functional response that is determined (evoked) by special properties of the set of stimuli that evoke the raw tact *raven*—namely, the large number of its stimulus elements, the quality of their presentations, and their endowments of evocative strength from their previous respective episodes of operant conditioning.

References

- Fraley, L.E. (2004). On verbal behavior: The first of four parts. *Behaviorology Today*, 7 (1), 10-20.
- Skinner, B.F. (1957). *Verbal Behavior*. New York: Appleton-Century-Crofts. Reprinted, 1992, Cambridge, MA: The B.F. Skinner Foundation. ☺

An Introduction to the Philosophy Called Radical Behaviorism

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[This paper was originally prepared as a basis for discussions in a graduate *Behaviorology and Education* class at Xi'an Foreign Languages University, China.—Ed.]

The work of B.F. Skinner simply did not follow the majority views of his time. In this he was not the first. He stood, as the saying goes, on the shoulders of giants. He advanced another major step in a trend whose continuity in the West began nearly 500 years ago. That trend is one of replacing what could be characterized as humanity's self-centeredness with an increasingly more effective natural science perspective about people's place in the order of things. This trend got a big push when Copernicus reiterated what Aristarchus of Samos and the ancient Ionian Greeks had discovered much earlier but which had been lost in the intervening centuries: the Earth, and thus humanity, were not the center of everything. Later, Darwin showed that our bodies (our physical forms, structures, and functions) are also products of the same natural laws that apply to all other living and non-living things. Then Skinner, through the behaviorology discipline arising from his work, demonstrated that our very being, our consciousness, our conduct, our behavior, is also necessarily and properly within the reach of natural science. From that demonstration, and its associated applied technologies, arises an increased opportunity for humanity to solve its problems: from day-to-day personal difficulties, through challenges such as the crisis in education, to the global problems threatening survival itself. To benefit from that opportunity, people must expand their behavior repertoires with respect to behaviorology, the discipline responsible for the relevant science and technology. An appropriate starting point is the *philosophy of science* that informs that discipline. This paper introduces that philosophy.

Skinner gave the name *radical behaviorism* to the philosophy of science under which he operated. That philosophy now informs the behaviorology discipline, a continuing extension of Skinner's work. The term, *radical*, in radical behaviorism, means thoroughgoing or fundamental (Ulman, 1991). Radical behaviorists use this

term to distinguish this form of behaviorism from other forms of behaviorism such as Watson's original behaviorism (Watson, 1913), methodological behaviorism, interbehaviorism, or paradigmatic behaviorism (Ulman, 1992a). The distinction is necessary because the criticisms commonly leveled at behaviorism are not applicable to all forms. Those criticisms have become appropriate only for the other forms of behaviorism because radical behaviorism developed partly as a corrective response to some legitimate concerns raised in the criticisms. Skinner provides a comprehensive discussion of these issues in his 1974 book *About Behaviorism*.

Simply as a name originating in an historical context, the name radical behaviorism has little problem itself as an acceptable name for the philosophical position informing the behavior science Skinner started, at least to practitioners of that science. However, some authors have expressed legitimate concerns over misunderstandings caused outside that science and historical context by the terms used in this name. Schneider and Morris (1987) try to reduce the misunderstandings by providing a thorough history of the use and evolution of the terms radical and behaviorism. Meanwhile Vargas (1990) argues for avoiding the misunderstandings by using a different term, such as *selectionism*, to replace the older terms in naming this philosophy of science. Ulman (1992b), while not insisting that a change was unnecessary, questioned selectionism as a good choice for an appropriate name. He pointed out a particular problem with selectionism: one can be a selectionist without holding to a radical behaviorist philosophy (for example, Hegel or Tielhard de Chardin). Since no alternative name is as yet generally accepted, this paper continues to use the name radical behaviorism.

This philosophy of science, radical behaviorism, has many components. These components are at the core of the science and movement that became the natural science behaviorology discipline (several applicable components are shared by other natural sciences). As radical behaviorists and natural scientists, behaviorologists respect these components. Four of these components arise regularly in discussions of radical behaviorism and were especially important in the emergence of behaviorology. Rather than saying "radical behaviorism does this or that," certain behaviors of radical behaviorists represent these components: (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 or emotions, as covert behaviors involved in the same lawful relationships that involve overt behavior. (d) Radical behaviorists ac-

knowledge that scientists are also behaving organisms whose behavior, scientific or not, is affected by the same variables that affect other people's behavior, and that those variables include scientists' philosophy of science. Other concerns are inseparably intertwined with these components of radical behaviorism. Some of these concerns include the preference for single-subject experimental designs rather than group statistical designs, the refusal to allow metaphysical events to enter explanatory accounts, and the question of parsimony in accounts of human behavior (see Chiesa, 1994).

Any and all of these components might be covered in discussions of radical behaviorism. Some authors take (a) and (b) for granted and mainly cover (c) and (d) in descriptions of this philosophy (e.g., Hake, 1982). Similarly, this brief introduction concentrates on (c) and (d), only mentioning (a) and (b) in passing. But this is partly because (a) and (b), and their implications, are extensively covered in a paper by Fraley and Ledoux (2002; also, see Ledoux, 2002a).

Private Events: Covert Behaviors

Radical behaviorism has been misunderstood and misrepresented concerning private events, their evaluation, and their place in a science of behavior (e.g., Mahoney, 1989). Radical behaviorists do not deny that such events occur inside the skin. They ungrudgingly accept the reality of the physiological events occurring within the body, some as behavior. They take private events into account. But in so doing, they also insist that, in any serious scientific endeavor, private events be considered in ways respectful of the natural science continuity of events that accumulates as a natural history. That is, they insist that private events be considered without appeal to metaphysical causality or metaphysical implications. Since this precludes mentalistic and cognitive explanations, those who court such explanations resist radical behaviorism. Skinner (1974) addressed this issue in *About Behaviorism*:

But if a behavioristic interpretation...is not all we should like to have, it must be remembered that mental or cognitive explanations are not explanations at all. (p. 106)

Adherents of radical behaviorism assume that the same natural laws prevail on both sides of the skin. This, of course, does not change the nature of either the person, the events inside the skin, the events' effects, or the events' independent variables. The skin is not any special sort of boundary to the laws of the universe. Furthermore, radical behaviorists recognize that a person may at times be the *only* observer in a position to detect or discriminate the occurrence of certain events within his or her skin (words like "detect" and "discriminate" need not

imply agency; see Baum, 1995). So radical behaviorists invest scientific consideration also in events detectable by only one person. They do not restrict scientific consideration to events detectable only by more than one person. And they are willing to work with the resulting increase in technology required to manage the greater inaccessibility of such events.

Radical behaviorists find that the most effective way to handle private events is to recognize them as covert behaviors under the same laws affecting overt, public behaviors. Private events are lawful in the same way that one would regard public events. Radical behaviorists cannot grant scientific status to private events invented to be causes of behavior. Nor do they use real private events as primary causes of behavior. They do not need to, because they analytically pursue any causal chain to other, outside events. They do this for the sake of control in their subject matter. They do not treat private behavioral events as indicators of internal hypothetical constructs conjured up, or conveniently given just the right characteristics, to explain those events.

Instead, radical behaviorists see behavior, on the overt level, as neurologically based actions of the glands and muscles (both smooth and striped). They see private events as covert behaviors, under the same laws as overt behaviors. These covert behaviors are usually less accessible than overt behaviors, often being observable and reportable only by a public-of-one (see Ledoux, 1973). And sometimes these covert behaviors involve only the neurological-level events; the behavior of "seeing in the absence of the thing seen" is one example (see Ledoux, 2002a; also see Skinner, 1953, Ch. 17).

The Behavior and Philosophy of Scientists

When considering the behavior and philosophy of scientists, perhaps radical behaviorism has been more overlooked than misunderstood, as well as confused with other behaviorisms. That is unfortunate, because the practice of science itself, and philosophy of science, are both effectively addressed by the principles of radical behaviorism.

The Behavior of Scientists

The work of scientists is twofold. It is (a) to be exposed to precise and controlled contingencies that are unlikely to have affected others in this controlled way. It is also (b) to pass along descriptions and applications of those contingencies to others.

Scientific work is initially the behavior of the scientist under direct control of the contingency relations (that is, under the direct control of the complex of multiple stimuli, behaviors, and consequences) experienced in research.

This is the point of science. After extensive study and preparation, scientists are exposed to the contingencies of the unknowns in their disciplines. Due to their study and preparation, they derive the maximum benefit from that exposure. And that is what doing science is all about.

The rare and precise arrangement of contingencies experienced in research generally limits the availability of these particular contingencies to scientific contexts. Hence only people operating in those contexts have their behaviors effectively shaped by those contingencies. The subsequent steps a scientist takes are largely determined by the consequences of the previous steps. The result is a unique, contingency-shaped expansion of the scientist's scientific behavior repertoire. Due to this expansion, scientists can behave more effectively with respect to the subject under their study than others who lack that exposure to those contingencies.

The disciplinary behaviors of scientists also include the behavior repertoires of summarizing, reporting, and applying their expanded scientific repertoires. These disciplinary repertoires involve verbal stimuli. And these verbal stimuli provide *rules*. The rules are statements of the contingencies the scientists have experienced. These rules affect the behaviors of others. Colleagues, disciplines, fields, and the public benefit from using these rules because when their behavior is affected by these rules (that is, when their behavior comes to be rule-governed—i.e., verbally mediated) their behavior often becomes more effective than it would be without the rules. As a result the rules become responsible for much of the behavior of these groups. In essence, such benefits accrue by expanding the repertoires of those people without each of them having to await the unlikely experience of the research contingencies themselves. In this way they benefit from scientists' work. While much of scientists' scientific behavior is contingency-shaped in vital ways, the behaviors of these other groups is to a large extent rule-governed (see Skinner, 1969, about this distinction).

Vargas (1988) has recently recast the distinction between contingency-shaped and rule-governed behavior as the distinction between event-governed and verbally-governed (or mediated) behavior. This distinction and its implications, and several other advances, provide the current state of the art for the scientific comprehension and handling of complex human behaviors. Some of the other advances include (a) the analysis of verbal behavior (Skinner, 1957), (b) recombined repertoires (Epstein, 1981), (c) establishing operations (Michael, 1982), (d) multi-term (n-term) contingencies (Sidman, 1986a, 1986b), (e) the function-altering effects of contingency-specifying stimuli (Schlinger & Blakely, 1987), (f) stimulus equivalence relations (Sidman, 1994; Sidman, Wynne, Maguire, & Barnes, 1989; Stromer, 1991), (g) the general level of reinforcement (Cautela, 1994), and (h) behavioral

engineering and cultural design (Skinner, 1971; Ulman, 1991; West & Hamerlynck, 1992). Indeed, the radical behaviorist and behaviorological perspectives encompass a far wider domain than that denoted traditionally as "respondent and operant conditioning in the learning of new behavior."

The Philosophy of Scientists

Scientists, like everyone else (including radical behaviorists), are behaving organisms whose behaviors, scientific or not, are affected by the same laws that affect other behaviors. Those laws essentially reflect the functional relations between behavior and the variables inherent in an organism's (a) species history (e.g., genetics), (b) personal history, (c) current situation and, for people, (d) cultural setting. These contain the variables which a behaviorologist addresses when trying to analyze, understand, predict, control, and interpret the behavior of organisms.

A scientist's philosophy of science is itself among the variables affecting his or her work. The philosophical repertoire derives partly from the history and setting variables. This repertoire later affects the scientist's work as a part of those variables. The philosophical repertoire includes various underlying assumptions. Comprised mostly of verbal behaviors, a discipline's philosophy of science is usually learned at advanced stages in disciplinary training, although precursors are present long before that (parts of the personal history variables). This repertoire is behavior, and as such continues to be subject to the laws of behavior. But, through the scientist's colleagues and discipline which share it, the philosophy itself becomes one of the variables affecting the scientist's subsequent work (part of the cultural setting variables).

A scientist's philosophy of science affects her or his work in several ways. One way involves the philosophy evoking investigations of certain variables and not others. Cooper, Heron, and Heward (1987, p. 12) provide some examples:

...the philosophical decisions to ignore all private events or to use explanatory fictions as the causes of behavior may both produce a similar effect on research and practice. Both positions restrict practice and research even though for different reasons. Methodological behaviorism is restrictive because it ignores areas of major importance for an understanding of behavior. Mentalistic positions are also restrictive, for as noted by Skinner (1974), "Mentalistic explanations allay curiosity and bring inquiry to a stop. It is so easy to observe feelings and states of mind at a time and in a place which make them seem like causes that we are not inclined to inquire further."

A philosophy of science can also affect a scientist's work by playing a role in the conditioning of a scientist

to be reinforced by certain classes of events and not others. Hake (1982, p. 24) provides some examples:

The issue here is what the radical behaviorist believes the reinforcement contingencies for the scientist should be. The most common view and that of the methodological behaviorist is that inclusion of a finding in the body of knowledge or theory is based on acceptability to the scientific community in the terms of (1) the research procedures used (e.g., agreement among observers, replicable individual data, precise measurement and control) and (2) the relation of the content to the existing theory (e.g., related to a productive content area but an extension of it). The radical behaviorist would not believe those contingencies alone to be totally desirable, because they include insufficient reinforcement for innovative content and procedures, and thereby delimit the growth of science... The radical behaviorist would suggest workability, stimulation, and contribution to society as additional worthwhile contingencies that would encourage innovation of content and method. The major contention is that scientists should recognize that all aspects of their scientific behavior are shaped by the reinforcers of some scientific community and that this control of their behavior affects the science.

Conclusion

The philosophy of science called radical behaviorism played a fundamental role in B.F. Skinner's determination that our very being, consciousness, conduct, and behavior is necessarily and properly within the reach of natural science. (Regarding these concerns radical behaviorists have addressed relevant aspects as far-afield as ethics and religion; see Krapfl & Vargas, 1977; Schoenfeld, 1993; and Vargas, 1975, 1982.) The result has been increased opportunities for humanity to solve its problems through the science informed by that philosophy, namely, behaviorology.

A question that often arises in discussions of philosophy of science concerns how the radical behaviorist philosophy differs with the philosophies of science in other disciplines, most notably psychology. That question was not covered in this introductory paper. Extensive coverage can be found, for example, at appropriate points in a paper by Fraley and Ledoux (2002) which weaves its comprehensive way through the origins, status, and mission of behaviorology. However, comprehensive coverage of the radical behaviorist philosophy of science is beyond

the scope of either that paper or this one. (For comprehensive coverage, see Skinner, 1953, 1974. For more recent comprehensive coverage, see Chiesa, 1994.)*

Endnotes

The author thanks the members of the graduate *Behaviorology and Education* class in Xi'an, China (see Ledoux, 2002b), for whom this paper was originally prepared, for their discussions which provided a good foundation for subsequent improvements. The author uses this material to help students and colleagues begin to understand the philosophical basis of behaviorology in a way that encourages them to seek details from more extensive sources (e.g., Skinner, 1953, 1974; Chiesa, 1994). The paper was revised for publication (1992) in *Behaviorological Commentaries, Serial No. 4*, pp. 3-10. Then, before receiving further minor revisions for inclusion in *Origins and Components of Behaviorology* (Ledoux, S.F. [1997/2002—*Second Edition*]. Canton, NY: ABCs.), it received minor revisions for inclusion in the 1992 edition of this book of readings.

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References

- Baum, W.M. (1995). Radical behaviorism and the concept of agency. *Behaviorology*, 3 (1), 93-106.
- Cautela, J.R. (1994). General level of reinforcement II: Further elaborations. *Behaviorology*, 2 (1), 1-16.
- Chiesa, M. (1994). *Radical Behaviorism: The Philosophy and the Science*. Boston, MA: Authors Cooperative.
- Cooper, J.O., Heron, T.E., & Heward, W.I. (1987). *Applied Behavior Analysis*. New York: Macmillan.
- Epstein, R. (1981). Of pigeons and people: A preliminary look at the Columban simulation project. *The Behavior Analyst*, 4, 43-55.
- Fraley, L.E. & Ledoux, S.F. (2002). Origins, status, and mission of behaviorology. In S.F. Ledoux. *Origins and Components of Behaviorology—Second Edition* (pp. 33-169 [seven chapters]). Canton, NY: ABCs.
- Hake, D.F. (1982). The basic-applied continuum and the possible evolution of human operant social and verbal research. *The Behavior Analyst*, 5, 21-28.
- Krapfl, J.E. & Vargas, E.A. (Eds.). (1977). *Behaviorism and Ethics*. Kalamazoo, MI: Behaviordelia.
- Ledoux, S.F. (1973). *The Experimental Analysis of Coverants*. M.A. thesis, California State University, Sacramento.

- Ledoux, S.F. (2002a). An introduction to origins, status, and mission of behaviorology: An established science with developed applications and a new name. In S.F. Ledoux. *Origins and Components of Behaviorology—Second Edition* (pp. 3–24). Canton, NY: ABCs. (Or, see pp. 27–41 in *Behaviorology Today*, 7 (1), Spring 2004.)
- Ledoux, S.F. (2002b). Behaviorology in China: A status report. In S.F. Ledoux. *Origins and Components of Behaviorology—Second Edition* (pp. 187–198). Canton, NY: ABCs.
- Mahoney, M.J. (1989). Scientific psychology and radical behaviorism. *American Psychologist*, 44 (11), 1372–1377.
- Michael, J.L. (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of the Experimental Analysis of Behavior*, 37, 149–155.
- Schlinger, H. & Blakely, E. (1987). Function–altering effects of contingency–specifying stimuli. *The Behavior Analyst*, 10, 41–45.
- Schneider, S.M. & Morris, E.K. (1987). A history of the term radical behaviorism: From Watson to Skinner. *The Behavior Analyst*, 10, 27–39.
- Schoenfeld, W.N. (1993). *Religion and Human Behavior*. Boston, MA: Authors Cooperative.
- Sidman, M. (1986a). Functional analysis of emergent verbal classes. In T. Thompson & M. Zeiler (Eds.). *Analysis and Integration of Behavioral Units* (pp. 213–245). Hillsdale, NJ: Erlbaum.
- Sidman, M. (1986b). The measurement of behavioral development. In N.A. Krasnegor, D.B. Gray, & T. Thompson (Eds.). *Developmental Behavioral Pharmacology* (pp. 43–52). Hillsdale, NJ: Erlbaum.
- Sidman, M. (1994). *Equivalence Relations and Behavior: A Research Story*. Boston, MA: Authors Cooperative.
- Sidman, M., Wynne, C.K., Maguire, R.W., & Barnes, T. (1989). Functional classes and equivalence relations. *Journal of the Experimental Analysis of Behavior*, 52, 261–274.
- Skinner, B.F. (1953). *Science and Human Behavior*. New York: Macmillan.
- Skinner, B.F. (1957). *Verbal Behavior*. New York: Appleton–Century–Crofts. Reprinted, 1992, Cambridge, MA: The B.F. Skinner Foundation.
- Skinner, B.F. (1969). *Contingencies of Reinforcement: A Theoretical Analysis*. New York: Appleton–Century–Crofts.
- Skinner, B.F. (1971). *Beyond Freedom and Dignity*. New York: Knopf.
- Skinner, B.F. (1974). *About Behaviorism*. New York: Knopf.
- Stromer, R. (1991). Stimulus equivalence: Implications for teaching. In W. Ishaq (Ed.). *Human Behavior in Today's World* (pp. 109–122). New York: Praeger.
- Ulman, J.D. (1991). Toward a synthesis of Marx and Skinner. *Behavior and Social Issues*, 1 (1), 57–70.
- Ulman, J.D. (1992). Behaviorology and psychology are incommensurable paradigms: A rejoinder to Staats. *Behaviorological Commentaries, Serial No. 2*, 23–28.
- Ulman, J.D. (1992b, January). On the philosophical origins of behaviorology. Paper presented at the fourth annual convention of The International Behaviorology Association, New Orleans, LA.
- Vargas, E.A. (1975). Rights: A behavioristic analysis. *Behaviorism*, 3 (2), 120–128.
- Vargas, E.A. (1982). Hume's "ought" and "is" statement: A radical behaviorist's perspective. *Behaviorism*, 10 (1), 1–23.
- Vargas, E.A. (1988). Verbally–governed and event–governed behavior. *The Analysis of Verbal Behavior*, 6, 11–22.
- Vargas, E.A. (1990). A name for our philosophy. *TIBA Newsletter*, 2 (3), 11–12.
- Watson, J.B. (1913). Psychology as the behaviorist views it. *Psychological Review*, 20, 158–177. Reprinted in T. Shipley (Ed.). (1961). *Classics in Psychology*. New York: Philosophical Library.
- West, R.P. & Hamerlynck, L.A. (Eds.). (1992). *Designs for Excellence in Education: The Legacy of B.F. Skinner (Limited Edition)*. Longmont, CO: Sopris West. ☞

TIBI Online Syllabus for BEHG 101: Introduction to Behaviorology I

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[This is another installment in the series of syllabi for TIBI's online courses. Each syllabus appears in *Behaviorology Today* basically in the same form as it appears online. The series continues whenever there are syllabi that have yet to be printed, or that require reprinting due to substantial revisions. Locate additional syllabi through the *Syllabus Directory* at the back of the most recent issue.—Ed.]

Note #1: This syllabus contains some notes that supplement the more traditional syllabus parts. Each note is numbered for convenient reference. And some notes, like this one, have multiple paragraphs.

This syllabus is a long document. It is longer than a syllabus for a face–to–face course as it contains material that the professor would otherwise cover in person. *Hence it was designed to be printed out for reading!* Furthermore, it

was designed to be used *as a task check-off list*. Please print it out and use it these ways.

The only activity in this course for which you might need access to a computer, before the web-log, is to print this syllabus as a reference for how this course works so you can follow the directions to complete this course. This is a matter of access, student access to education, so that everyone who wants this course can take it regardless of whether they own several computers or only have access to one in their local library or in a friend's home.

Students can, if they wish, study the topics of this course free of charge, perhaps to fulfill their own interests. They would do so simply by completing the activities described in this syllabus.

Students can also study the topics of this course for TIBI (The International Behaviorology Institute) credit, perhaps toward a TIBI certificate. They would do so by paying the necessary fee to be assigned a professor to provide feedback on, and assessment of, their efforts. (This course is part of several TIBI certificates, including both the Behavior Literacy Certificate and the Effective Autism Intervention Certificate. Visit www.behaviorology.org or contact TIBI for details.)

Also, students can study the topics of this course for regular academic credit; they would do so by contacting any accredited institution of higher education that offers behaviorology courses accepted by TIBI, such as the State University of New York at Canton (SUNY-Canton) at www.canton.edu which is SUNY-Canton's web site. At SUNY-Canton this course is offered as *SSCI 245: Introduction to the Science and Technology of Behavior*. TIBI automatically accepts A or B grades from the academic-credit version of this course as equivalent to its own course toward its certificates (and C and D academic-credit grades can be remediated through TIBI for TIBI credit; contact TIBI for details). Alternatively, the work done completing the course through TIBI may make taking the course for academic credit easier; ask the professor who teaches SUNY-Canton's equivalent course about this.

The parts of this syllabus cover many topics. While the headings may be different, these include (a) the course content and objectives, (b) the text, study, and assessment materials, (c) the grading policy, (d) the necessary work-submission methods and professor feedback, and (e) the study-activity sequence and completion timelines.

Note #2: This course has no prerequisites. Completing this course, however, fulfills a fundamental prerequisite for most other behaviorology courses.

Course Description

BEHG 101: Introduction to Behaviorology I. Introduction to Behaviorology is a two-course sequence, for both majors and non-majors, on the natural science of the

variables controlling the behavior of humans and other animals. This first course of this sequence introduces the student to the range of components that comprise the discipline of behaviorology including (a) its philosophy of science and selection paradigm, and (b) its experimental methods, theory, and technology. The philosophy and paradigm include the criteria for natural science, the fallacy of inner causes, the significance of control and selection, the status of private events, and the behavior of the scientist. Methods include basic single-subject designs and measurement. Theory includes the fundamental natural laws describing the antecedent and postcedent relations between behavior and its controlling variables; these include such basic principles as added and subtracted—and primary and conditioned—reinforcement and punishment, extinction, simple schedules, stimulus control (discrimination and generalization), and concept formation. Technology includes the basic practices used to apply behaviorological principles to change accessible variables so as to change and especially to expand behavior repertoires through behavior engineering. Basic techniques include differential reinforcement, shaping, fading, chaining, and modeling and imitation. Other topics include avoidance and escape, emotion, deprivation and satiation, and superstitious behavior.

In summary, this course introduces students both to the elementary scientific principles governing behavior, and to the basic behavior-engineering techniques derived from these principles (i.e., why people do what they do, and what can be done about it). The principles are discovered, and the practices are developed, by the discipline of behaviorology which is the *natural* science of behavior. It was known originally as behavior analysis and now is known more precisely as behaviorology. This is the *independent* discipline of strictly *naturalistic* explanations of behavior and so should not be confused with disciplines that feature fundamentally *mystical* explanations of behavior and which thus cannot be natural sciences (e.g., psychology).

Historical considerations also receive attention. For example, as a name for the natural science of behavior, behavior analysis is the older and so still the more widely used term. But it is a less accurate name than behaviorology because psychology claims it as a type of psychology, as this name came into use during the period when behavior analysis and psychology were sharing their history. During this 50-year period, the natural scientists of behavior, the behavior analysts, tried to get psychology to shed its inherent mysticism and become a natural science. However, psychology *as a discipline* (and not necessarily as individual psychologists) did not (could not?) do so, and *that* created the basis for today's separate and independent disciplines...

Note #3: The second course in the two course sequence is *BEHG 102: Introduction to Behaviorology II*. (The

equivalent SUNY-Canton course is SSCI 345: Applied Science and Technology of Behavior.) To check out other behaviorology courses offered by TIBI, visit their locations on the TIBI web site (www.behaviorology.org). To check out other behaviorology courses offered by SUNY-Canton, see the list and descriptions—and in some cases, the syllabi for the asynchronous versions—on the faculty web page of the professor who teaches them (which currently is Dr. Stephen F. Ledoux; click Ledoux in the faculty directory at www.canton.edu).

Some information regarding some academically equivalent behaviorology courses, while relevant to many TIBI course syllabi, is included only in this syllabus as this course is the prerequisite for most of the other courses: Since SUNY-Canton's behaviorology—natural science of behavior—courses carry the SSCI (i.e., social science) designator for the course numbers, an accounting is in order. These courses are natural science of behavior courses because they are concerned with behavior solely from a strictly naturalistic perspective, thereby necessarily and automatically leaving out mystical perspectives, while using scientific methods with a subject matter focused on people. [For some details, see the article titled “Defining Natural Sciences” (*Behaviorology Today*, Volume 5, Number 1, Spring 2002, pp. 34–36).—Ed.] Indeed, SUNY-Canton's behaviorology courses were originally proposed and approved with the BEHG (i.e., behaviorology) designator for the course numbers (e.g., BEHG 135—Parenting Knowledge and Skills). However administrators, out of concern to simplify student credit transfer, had the designator changed to SSCI for two reasons: (a) The SSCI designator is more common than the BEHG designator. And (b) the SSCI designator is not inappropriate to the scientific-method-based *people focus* of these courses. So the SSCI designator would indeed simplify the transfer of credit for students. Hence, for administrative convenience, SUNY-Canton's natural science of behavior—behaviorology—courses carry the SSCI designator. [For additional details, see the article titled “Developing Opportunities to Disseminate the Natural Science of Behavior” (*Behaviorology Today*, Volume 5, Number 1, Spring 2002, pp. 50–54).—Ed.]

Course Objectives

The main objective of this course is to expand the student's behavior repertoire measurably in relevant areas of behaviorological course content. The student will:

- ✧ Describe fundamental principles and concepts;
- ✧ Relate basic methods and measurements;
- ✧ Systematize elementary practical technologies;
- ✧ Incorporate technique applications in several common prevention/intervention settings;
- ✧ Summarize disciplinary history;
- ✧ Compare philosophical perspectives;

- ✧ Connect disciplinary ethics and practices;
- ✧ Analyze current trends in the discipline.

Additional Objectives

✧ Successful, A earning students will be able to use (at an accuracy level of 90% or better) basic disciplinary terminology when discussing the general principles, concepts, methods, theories, practices philosophy, and ethics of the natural science and technology of behavior.

✧ Such successful students will also ask questions, seek answers, converse about, and act on the uses and benefits of this discipline for humanity.

✧ Such successful students will also behave more effectively in other ways with respect to themselves and others.

Required Materials (in their order of use)

✧ Wyatt, W.J. (1997). *The Millennium Man*. Hurricane, WV: Third Millennium Press. (ISBN 0-9663622-0-9)

✧ Ledoux, S.F., Wyatt, W.J., & Bias, E.F. (1999). *Study Questions for W. Joseph Wyatt's The Millennium Man*. Canton, NY: ABCs. (ISBN 1-882508-11-4)

✧ Holland, J.G. & Skinner, B.F. (1961). *The Analysis of Behavior*. NY: McGraw-Hill. (ISBN 07-029565-4)

✧ Ledoux, S.F. (2002). *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs. (ISBN 1-882508-08-4)

✧ Ledoux, S.F. (2002). *Study Questions for Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs. (ISBN 1-882508-09-2)

Note #4: After being in print for about 40 years, the Holland and Skinner (*H&S*) book went out of print in 2001. It was in print so very long because it was so very effective in teaching its contents to readers. This was because it was comprehensively designed and thoroughly tested (and revised) as a completely programmed text that taught readers the laws of behavior by applying those very same laws. (No other programmed textbook has reached this level.) This course uses it because it is still the very best introduction to basic behaviorological methods, principles, and practices even though it has some terminology problems, being written, as it was, during the period when the natural science of behavior, as behavior analysis, and the discipline of psychology were sharing their histories.

When *H&S* went out of print, its copyright went to the B.F. Skinner Foundation. If you cannot locate a copy, contact the course professor or ledoux@canton.edu or TIBI for assistance. (You can work on the *MM* book assignments while locating a copy...)

You can order the required books through the publishers, including ABCs at 1-315-386-2684. You may also order these books through the online bookstore at www.behavior.org which is the web site of the Cambridge Center for Behavioral Studies. Parts of two of these books

(the “Origins” book and its study question book) carry over as part of the materials for the next course in the two-course introductory behaviorology sequence (described in Note #3).

Also, this course is grounded in the Shaping Model of Education which is informed by behaviorological science (rather than the Presentation Model of Education which is informed by psychology). In the Shaping model, teaching is not seen as mostly talking (nor is learning seen as mostly listening). Instead, teaching is the scientifically grounded design, arrangement, and application of educational materials, methods, and contingencies in ways that generate and maintain small but continuously accumulating behaviors the short and long range consequences of which are successful in producing an ever wider range of effective responding (i.e., learning) on the part of the student.

Grades

Grading policy does not involve curves, for you are not in competition with anyone (except perhaps yourself). That is, all students are expected to produce the academic products demonstrating that they have, individually, achieved at least mastery of the subject matter, if not fluency. Therefore, all students are expected to earn an A or a B (although inadequate products will produce a lower result that requires remediation before it can become a passing grade). Also, all students will receive the grades they earn. This holds even if the expectation for which the course is designed—that all students earn *As*—is met: If all earn *As*, then all receive *As*.

Passing grades are limited to A and B, and are earned according to the amount of assigned work that is successfully completed:

✦ Earning an A consists mainly of satisfactorily completing 90% or more of the work on all assignments.

✦ Earning a B consists mainly of satisfactorily completing more than 80% of the work on all assignments (but not more than 90% on them).

For convenience a point-accumulation system is invoked to keep track of progress through the course. Each of the three assignments on *The Millennium Man* and its study questions is worth 40 points, for a total of 120 points. Each of the assignments on the 14 Parts of the *H&S* book is worth 20 points for a total of 280 points. And each of the seven assignments on the *Origins* book readings and their study questions is worth 30 points, for a total of 210 points. The *web-log* assignment is worth 90 points. This provides a grand total of 700 possible points. The grade that you receive is partly based on the percentage of these possible points that you actually earn.

However, point accumulation is not the grade determiner but is merely used as a convenient way to track progress *on the presumption that all course tasks are in progress*. This is because doing work on *all* of the tasks for

the course is the more relevant determiner of grades than is the accumulation of points. (For example, a student who tries to accumulate just enough points, on some easier tasks, to get a B—while ignoring other course tasks—would not that way actually meet the criteria for a B and so would have to continue and complete all the required work satisfactorily to earn one of the passing grades.)

Also, students should expect to be asked occasionally to complete various test-like assessments. The level of success on these assessments helps gauge the extent to which the work on the course assignments is actually producing the learning implied by the completion of that work.

These practices are in place because the scientific research-data based Shaping Model of Education recognizes the student/professor relationship as a professional relationship in which coercive practices (i.e., aversive educational practices) are seen as inappropriate (so long as extreme conditions do not exist making such practices unavoidable). Instead, the more effective, efficient, and productive non-coercive practices of carefully designed and sequenced assignments emphasizing added reinforcement for timely work well done is generally seen as more appropriate. So, your effort and cooperation are expected and presumed; please do not disappoint either your professor or yourself.

About Using the Texts & Study Question Books

Unless specified otherwise, you need to write out your answers in longhand. The reason you are to write out your answers by hand is that this type of verbal response brings about more learning than merely saying—or even typing—the answer. This is because—as taught in another, advanced behaviorology class (i.e., BEHG 355: Verbal Behavior I)—writing the answer in longhand involves both point-to-point correspondence and formal similarity between the stimuli and the response products of the answer.

The Millennium Man Book

The Millennium Man (MM) is a short novel featuring a natural-science perspective on viewing, and dealing with, behavior. While it is basically a work of fiction, it makes use of many facts from a range of arts and sciences. It was designed to be enjoyable. It was also designed to develop critical thinking skills and to improve attitudes toward learning and the educational process.

The author wrote this novel for many reasons and for readers of many ages. One of the reasons was to help readers become more aware of certain aspects of art history, especially some interconnections between art and science. Another reason was to help readers become more aware of the multitude of beneficial scientific and technological advances, from a wide range of natural science and engineering disciplines, that accumulated in the twentieth century after many centuries of far less development. Yet perhaps the most significant reason was to help read-

ers become more aware of the many similar advances from a particular scientific and engineering discipline that itself arose in the twentieth century, the natural science of behaviorology (for which the author uses the older and less accurate name: behavior analysis). This natural-science perspective on behavior is a significant alternative to the mysticism-based perspective presented by traditional psychology; thus it is important to know about it, and the *MM* book introduces it well.

The H&S Book

The Holland and Skinner (*H&S*) book is a book that teaches the laws of behavior by using those laws to teach them. The authors wrote this book to accomplish that task and succeeded so well that the book has been used as a first textbook in this science for over 40 years!

After *all* of the textbooks for this course are described, but before the *Assignment Sequence* section, you will find an extensive set of guidelines on “How to Use the *H&S* Text.” *H&S* assignments are provided in the *Assignment Sequence* section. Submit your work according to the method specified in the *Submitting Your Work* section.

The Origins Book

Origins and Components of Behaviorology (the *Origins* text) is a book comprised of a dozen or so papers, of which seven (a little over half of the book) will be used in this course. These papers introduce and exemplify the broader discipline whose basic principles and practices are introduced in this course. (Other parts of this book carry over as parts of the next course in the two-course introduction to behaviorology sequence.)

The Study Question Books

The *Origins* text and the *Millennium Man* text each have a book of study questions. These were prepared to help you expand your behavior repertoire based on the material in each textbook. You are to complete each textbook’s study questions in the sequence assigned because learning occurs when reinforced responses are made (like writing question answers), especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out study question answers correctly. You complete the assigned study questions, *after reading the chapter through*, by *writing out* the answer to each question when you come to it as you *reread* the chapter. You *write out* the answers right in the *Study Question* book. Write out your answers in full sentences that incorporate the questions. Check all your answers. And make any corrections that you find you need to make as you review and learn the material.

Most study question books start with a section titled To the Student and Teacher. *Read this section first!* It explains more on how to do the study questions success-

fully. (You will also find it helpful to mark the number of each study question in the margins of the text at the location of the study question’s answer.) Study question assignments are provided in the *Assignment Sequence* section. Submit your work according to the method specified in the *Submitting Your Work* section.

Note #5: Since you are to write out your answers to the study questions directly in the study question books, you need to have your own study question books. To assure that this is followed by everyone equally, you need to fill out and send in to your professor (by regular postal mail) the original ownership forms in the rear of your ABCs-published study question books.

The Web-Log Assignment

This written assignment requires you to create a five to six page *typed* log (like a diary) from a three to four hour visit (although not necessarily all at the same time) to the various pages on www.behaviorology.org which is the TIBI web site. Your log should include not only the times, visited page names, visited page sequences, and page-visit durations, but also your account of the best things you learned at these sites, plus any interesting discoveries worthy of return visits. You may begin this assignment anytime *after* completing the *H&S* book. You should submit this assignment *before* you finish the *Origins* text (which allows a period of four to five weeks). Submit your work according to the method specified in the *Submitting Your Work* section.

Submitting Your Work

Different assignments have different work submission methods. These only apply if you are taking the course for TIBI credit. (Any addresses and phone/fax numbers that you may need will be clarified upon enrollment.)

To submit your *H&S* answers and study question answers, which must be hand-written, you can scan and fax to your professor the pages that have your answers for each assignment. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

To submit your web log, you may email your work to your professor (but do not use email attachments). Or, you may scan and fax it to your professor. However, your professor would prefer that you print out your work (although it too may be handwritten), photocopy it, and send it to your professor by regular postal mail.

In all cases, you are to keep the original of your work. This insures against loss and enables you and your professor to communicate about your work (as you will then both have an identical copy). Note, however, that for study question answers, email and email attachments are

neither reliable enough, nor identical enough, for this purpose, so they are not to be used for this purpose.

Your work will be perused and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your professor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

Guidelines for Using the H&S Text Successfully

These guidelines, which are about using the H&S (Holland and Skinner) text: *The Analysis of Behavior*, are needed because this book is not a typical book. Rather, it is a program of instruction in book form. Originally written for an early teaching machine—predating computers—this program is a successful applied example of the natural science that it teaches. To ensure its effectiveness, the authors thoroughly researched and tested the program with regular, undergraduate students prior to publication. Evidence for this effectiveness can be seen in the continuing demand for the book by professors which has kept it in print since 1961. That demand occurs because, as a result of completing the book, students acquire an extensive repertoire in the fundamentals of the natural science of behavior. Indeed, this book's success was an important factor leading to an extensive movement in programmed instruction in many disciplines and in many geographical areas worldwide. (That movement is now limited to those who are willing to do *all* the work needed not only to write a program but also to research and validate the program's effectiveness—such as in the case of today's effective computer instructional programs.)

To learn more about why this book is effective, and how to use it, read both the *To the Instructor* and *To the Student* sections (which start on pages v and vii respectively). Since this book covers fundamental laws of behavior that have not changed, it remains up-to-date for those laws. (To bring students up to date on progress since its publication, today's professors combine its use with other sources.)

In the time since publication in 1961, some significant disciplinary changes have taken place. As a result, the references in the *To the Instructor* and *To the Student* sections to “psychology...the analysis of behavior” have become somewhat inaccurate. For that reference implies—perhaps adequately then but inadequately now—that the analysis of behavior is, or is part of, psychology. Today, neither of these is the case, at least in the West. The problem stems from the book's being published near the end of what can now be seen as a period of 30 to 40 years in which psychology and the natural science analysis of behavior shared, under the psychology label, their

academic departments and history. That is, Western psychology (which is a discipline of fundamentally *mystical* explanations of behavior because it allows non-natural events in its explanations) and what was called behavior analysis or, now, behaviorology (which is a discipline of strictly naturalistic explanations of behavior because it *disallows* non-natural events in its explanations) shared their history from the 1930s through the 1960s. However, the incommensurable differences between Western psychology and behaviorology have gradually led, since then, to recognition of their status as separate disciplines.

However, there is no need to change those uses of the term psychology in the H&S book since what this book reports did arise during the shared history, and so is a part of the history of both disciplines. What *is* needed is *this* direction of update: Many advances and developments in the natural science of behavior (i.e., what the authors call *The Analysis of Behavior*) have occurred since publication in 1961. These advances have been little reported in Western psychology (and so cannot be reasonably seen as ongoing advances in that discipline). Furthermore, these advances *have* been fully reported in behavior analysis/behaviorology (and so *are* to be reasonably seen as ongoing advances in that natural science). Thus, the continuity between this book and subsequent advances resides with the developments occurring in behavior analysis/behaviorology. (See Ledoux, 2002, for further details about the shared history. See Fraley & Ledoux, 2002, for extensive details on disciplinary differences and developments. References are at the end of the syllabus.)

More How-to-Use Details

The details provided here presume that the *To the Student* section has already been read. Using the book according to that section and these notes and procedures will increase the efficiency with which a student's repertoire is effectively expanded; the student is unlikely to need repeating part of the book if she or he follows these procedures. He or she will get it right the first time. Here are the detailed “how-to-use” procedures:

✦ Be clear on the difference between *Parts* and *Sets*. The book has 14 Parts, and each Part contains two or more Sets. There are 53 Sets altogether. The Parts are numbered with Roman numerals while the Sets are numbered with Arabic numerals. (And each Set contains many, many individual *Frames* which will soon be described.) The distinction is important because the course assignments involve Parts, not Sets. If you are not clear on the difference, and so only cover Sets 1 and 2 (pages 1–13), rather than Parts I and II (i.e., Sets 1 through 11; pages 1–71), for the first assignment, you will miss lots of material that needs to be completed before the next assignment. Note that there is no need to test your knowledge, other than to track your successful completion of the as-

signments, because one *cannot* successfully progress through later Parts/Sets without first having mastered the material in all earlier Parts/Sets, for later material presumes, uses, and builds upon the earlier material. (Indeed, you may be occasionally asked to complete a Set in a classroom or other supervised setting, because completing a Set in a supervised setting to the usual high standard will demonstrate that you yourself must indeed have completed the prior sets successfully also, since comprehending them would be the needed foundation for success in the supervised Set. In this way you would be assuring that you yourself are properly doing the work you turn in, and that you yourself are benefiting from that work.)

❧ Each Set is made up of frames that have a word or phrase missing. You read each frame and, based on experience with previous frames, provide a response for the missing part of the frame. To do this, you follow the numbers. That is, *you do not read down the page* as is the usual fashion. Rather, *you read the frames in the order in which they are numbered*, which means you read across each page, page after page, at the same level, until instructed to turn back to a particular page and drop down to the next level. Each frame and its corresponding answer box (which is usually on the next page) has the same number, and you follow them in sequence. (The numbers have two components: the Set number followed by the frame/answer box number. So 25-18 would be Set 25, frame or answer box 18.)

❧ Note that each Set is titled at the top of its first page, but the first frame of the Set is on the top of the *next* page. For example, Set 1 is titled on the top of page 1, but frame 1-1, the first frame in Set 1, is on the top of page 2.

❧ Note also that some Sets have an exhibit page, before their first page, to which you will need to refer while doing the Set. For example, while Set 3 is titled on page 15, an exhibit needed for the Set appears on page 14.

❧ Here is the basic procedure: (a) Read the frame. (b) Form your response for the missing part of the frame. (c) Write down your response by hand on the page of a notebook you have just for this purpose. (Put only the Set number at the top of the page for the Set, and then put one answer-response on each line of the page. You need not bother to put any line, frame, or answer numbers on your notebook pages.) (d) Turn to that frame's answer box and check your response with the correct response in that box. (e) Either go on to the next frame (if your response was correct) or *cross out your response and write the correct response* while rereading the frame (if your response was incorrect). Do not write in you book as often there is insufficient room for the correct answer. Also, *do not write out the contents of the frame!*

❧ You really *must* cross out an incorrect answer and write the correct one next to it while/after rereading the frame. If you do not do so, then you are most likely to

have learned that incorrect answer. And then you will have to unlearn it before later learning the correct answer, and that is no fun at all!

❧ The program works by providing you with the occasion to make responses that can then get learned through the consequences provided by seeing the correct response *after* writing your own response. Thus, peeking ahead to see the correct response before writing out your own response will not help you; in fact, peeking ahead will prevent you from learning. *It is imperative that you understand this danger of peeking ahead!* If you peek ahead, what you then write will not be the product of a response that would be learned by seeing the correct answer *after* writing; peeking ahead will only necessitate redoing the material so that the required progress can be made.

❧ As you turn each page, the left side of the book is either blank or looks up-side-down. Actually, what you are seeing is pages from the second half of the book; when you get to the end of Set 24, you turn the book over and proceed back with Set 25, etc.

❧ Making, on average, one or two incorrect responses (that you then correct) in every ten is typical and acceptable even for students earning an A. However, if you find that you are, on average, providing incorrect responses on three or more frames out of ten, then you need to verify that you are following all the procedures, and check with your professor. You do not want to learn the material in some Sets weakly because all the Sets that come after that will be more difficult to master.

❧ The title box for each Set includes an estimated time that is reasonably realistic when the program is presented on a teaching machine. You will probably find that using the book to cover the Sets takes a little more time (e.g., when using the book, Set 1 may take 30 minutes rather than the estimated 23 minutes). The estimated times for all the Sets totals less than 15 hours; you can probably expect to spend more like 25 hours overall, or about 1.5 to 2 hours *average* on each Part, as you go through the book. If English is not your first language, then perhaps you may need 3 hours for each part. (With two Parts assigned each week, that would be about the right amount of time and work for each week of a course.)

❧ Due to the focused nature of your interaction with the material in this book, you will probably find yourself more aware of the time you spend on this book in comparison with your awareness of time spent in normal reading of a regular textbook. Do not let this deter you from putting in as much time as you need to master the book's material.

❧ Here are some extras and reminders: The more fluently (thoroughly) you master earlier Sets, the more easily you will master later Sets. Remember to consider the whole of each frame, and not just the blank, because the rest of the frame is preparing the foundation for suc-

cess with future frames. Concepts are usually used in different ways across several frames before any frame asks you to provide that concept as a response. Indeed, if you find a frame difficult, or making a response difficult, then go back and repeat/review the last few frames; doing that will often provide the assistance you need just then. And *always write a response before going to the answer*; (a) you will be correct more often than you might suspect, (b) a correcting consequence for a wrong answer can keep you from learning the wrong answer but if you have made no answer response then you can learn nothing, and (c) similarly, seeing a correct answer without having made a response can condition peeking which does not teach you anything of value.

If your response was correct but you were not confident about it (i.e., you guessed) then back up a few frames to find out why that response is correct. Similarly, when you are wrong, make sure you know why your response was not correct, and figure out what made you think you were correct. You may feel that doing these things will slow you down, but *they are a part of doing it right the first time*. You will be much happier following these procedures than you will be having to repeat several Sets because you did not follow them and so find yourself inadequately prepared to continue and succeed with later Sets.

✧ Also, studying after midnight is usually a waste of time because so little is actually learned under that circumstance, in spite of all your effort. Similarly, avoid studying for hours and hours continuously; instead, take a short (five or ten minute) break during each hour of study.

✧ If you follow these guidelines, you will learn the contents of the Sets well. Then the later Sets in the book will be just as easy for you as the early Sets are, since you will be well-prepared for them.

Other General Comments

Again, this book teaches by applying the same laws of behavior that it is teaching. It uses numerous small steps that are immediately consequated through the added reinforcement of correct-answer presentation, and the steps successfully build on each other, accumulating to form a large, new part of your behavior repertoire that you can apply beneficially in numerous areas of human concern.

Caution: Still, for all its efficiency and effectiveness, many people do not find reading the *H&S* book to be an enjoyable endeavor. Probably no one reads it twice, and few would read it the first time unless they are required to do so as part of a course. Nonetheless, the success—over the last few decades—of the students who have read this book demonstrates that you will learn more from reading this one book than you would from reading two or three ordinary textbooks. (Or, to put it another way, to get the same amount of knowledge, you would have to read an

ordinary textbook two or three times over; now *that* would likely be worse than reading this book once!)

Assignment Sequence

Students should work their way through the course by reading and studying the texts and materials, and sending in their work for each assignment. The slowest reasonable self-pacing of the coursework (presuming a typical 15-week semester) is this sequence which can be used as a check-off list:

- Week 1: The *MM* novel and study questions, Chs. 1–7.
- Week 2: The *MM* novel and study questions, Chs. 8–14.
- Week 3: The *MM* novel and study questions, Chs. 15–22.
- Week 4: Parts I & II of *H&S*.
- Week 5: Parts III & IV of *H&S*.
- Week 6: Parts V & VI of *H&S*.
- Week 7: Parts VII & VIII of *H&S*.
- Week 8: Parts IX & X of *H&S*.
- Week 9: Parts XI & XII of *H&S*.
- Week 10: Parts XIII & XIV of *H&S*.
- Week 11: The *Origins* book, (a) the Terminology paper (on pages 199–204, with the study questions on pages 47–49 [of the *Origins-Study Questions* book]), and (b) the China Eyes paper (on pages 297–302 (with the study questions on pages 63–65); also, begin the *Web-Log* assignment.
- Week 12: The *Origins* book, (c) the Philosophy of Science paper (on pages 25–32, with the study questions on pages 11–13), and (d) the Adventitious Control paper (on pages 303–306, with the study questions on pages 66–68).
- Week 13: The *Origins* book, (e) the Introduction to Behaviorology Origins paper (on pages 3–24, with the study questions on pages 1–9).
- Week 14: The *Origins* book, (f) the Multiple Operants paper (on pages 205–241, with the study questions on pages 50–54).
- Week 15: The *Origins* book, (g) the Therapy paper (on pages 243–258, with the study questions on pages 55–58); also, finish the *Web-Log* assignment.

Do the assignments in this sequence, even if you do them at a faster pace than the pace presented here. If you go slower than this schedule, assignments could easily back up on you to the point where insufficient time remains to complete them in a satisfactory manner.

Note #6: Be sure that everything you submit is readable and contains your name!

Note #7: The usual higher education workload expectation for a course is about 150 hours. (The typical face-to-face course features about 50 in-class contact hours with

the university expecting about 100 more hours of additional study at the average rate of about two hours out of class for each hour in class.) This can be accomplished at rates ranging from about 50 hours per week over three weeks to about ten hours per week over the typical 15 weeks of a semester. Of course, some students may take a little less than 150 hours, while others may take more than 150 hours, to do the work to the same acceptable and expected standard.

You can—and are encouraged to—go through the assignments as rapidly as your schedule allows. This could mean spending a typical 15 weeks on the course. Or it could mean doing the whole course in as little as—but not in less than—three weeks, as one would progress through the *single* allowed course in a three-week summer school term. That is, you could work on the course anywhere from minimum part-time (i.e., at the rate of about ten hours per week, as described in the *Assignment Sequence* section) to maximum full-time (i.e., at the rate of about 50 hours per week).

If you are to be successful, you need to exercise some self-management skills by starting immediately and keeping up a reasonable and steady pace on the course work. You need to do this because your professor will *not* be reminding you that the products of your work are due; all the course work is set forth in this syllabus and so is automatically assigned. You are expected to follow through on your own. You need to set an appropriate pace for yourself (or accept the pace in the *Assignment Sequence* section) and adhere to that pace, and thereby get the sequence of assignments done and submitted to your professor. This will assist your success.

At various points in the course, you will be provided with feedback about your work. Upon completing all the coursework, you will be provided with your earned grade. (The grade is provided solely for the person whose work earned the grade.) We at TIBI are sure that the outcomes of your efforts to study this aspect of behaviorological science will benefit both you and others, and we encourage you to study further aspects.✻

References

- Ledoux, S.F. (2002). An introduction to the origins, status, and mission of behaviorology: An established science with developed applications and a new name. In S.F. Ledoux. *Origins and Components of Behaviorology—Second Edition* (pp. 3–24). Canton, NY: ABCs.
- Fraleigh, L.E. & Ledoux, S.F. (2002). Origins, status, and mission of behaviorology. In S.F. Ledoux. *Origins and Components of Behaviorology—Second Edition* (pp. 33–169). Canton, NY: ABCs.✻

TIBI Online Syllabus for BEHG 102: Introduction to Behaviorology II

Stephen F. Ledoux

SUNY–Canton

[This is another installment in the series of syllabi for TIBI's online courses. Each syllabus appears in *Behaviorology Today* basically in the same form as it appears online. The series continues whenever there are syllabi that have yet to be printed, or that require reprinting due to substantial revisions. Locate additional syllabi through the *Syllabus Directory* at the back of the most recent issue.—Ed.]

Note #1: This syllabus contains some notes that supplement the more traditional syllabus parts. Each note is numbered for convenient reference. Some notes, like this one, have multiple paragraphs.

This syllabus is a long document. It is longer than a syllabus for a face-to-face course as it contains material that the professor would otherwise cover in person. *Hence it was designed to be printed out for reading!* Furthermore, it was designed to be used *as a task check-off list*. Please print it out and use it these ways.

The only activity in this course for which you might need access to a computer, before the web-log, is to print this syllabus as a reference for how this course works so you can follow the directions to complete this course. This is a matter of access, student access to education, so that everyone who wants this course can take it regardless of whether they own several computers or only have access to one in their local library or in a friend's home.

Students can, if they wish, study the topics of this course free of charge, perhaps to fulfill their own interests. They would do so simply by completing the activities described in this syllabus.

Students can also study the topics of this course for TIBI (The International Behaviorology Institute) credit, perhaps toward a TIBI certificate. They would do so by paying the necessary fee to be assigned a professor to provide feedback on, and assessment of, their efforts. (This course is part of several TIBI certificates, including the Behavior Literacy Certificate and the Effective Autism Intervention Certificate. Visit www.behaviorology.org or contact TIBI for details.)

Also, students can study the topics of this course for regular academic credit; they would do so by contacting any accredited institution of higher education that offers

behaviorology courses accepted by TIBI, such as the State University of New York at Canton (SUNY-Canton) at www.canton.edu which is SUNY-Canton's web site. At SUNY-Canton this course is offered as SSCI 345: *Applied Science and Technology of Behavior*. TIBI automatically accepts A or B grades from the academic-credit version of this course as equivalent to its own course toward its certificates (and C and D academic-credit grades can be remediated through TIBI for TIBI credit; contact TIBI for details). Alternatively, the work done completing the course through TIBI may make taking the course for academic credit easier; ask the professor who teaches SUNY-Canton's equivalent course about this.

The parts of this syllabus cover many topics. While the headings may be different, these include (a) the course content and objectives, (b) the text, study, and assessment materials, (c) the grading policy, (d) the necessary work-submission methods and professor feedback, and (e) the study-activity sequence and completion timelines.

Note #2: The prerequisite (or corequisite) for this course is BEHG 101: Introduction to Behaviorology I. If you have not had this prerequisite course (or its academic-credit equivalent: SSCI 245: Introduction to the Science and Technology of Behavior, from SUNY-Canton), you need to take it either before taking the current course, or at the same time as you take the current course.

Course Description

BEHG 102: Introduction to Behaviorology II. Introduction to Behaviorology is a two-course sequence for both majors and non-majors. This second course of that sequence introduces the student to the basic behavior/environment engineering applications of behaviorological principles and techniques to the prevention and solution of mild to moderate (non-incapacitating) behavior problems in the most common settings (e.g., homes, schools, businesses, and institutions) along with analyses of the accessible independent variables of which these behaviors are a function as discovered by the natural science of behavior. Also considered are (a) the historical circumstances leading to these applications, (b) the value in design over accident or chance in the control of individual behavior and cultural practices, and (c) the place of ethics in considering and solving behavior problems.

Note #3: The first course in the two-course sequence is BEHG 101: Introduction to Behaviorology I. (The equivalent SUNY-Canton course is SSCI 245: Introduction to the Science and Technology of Behavior). To check out other behaviorology courses offered by TIBI, visit their locations on the TIBI web site (www.behaviorology.org). To check out other behaviorology courses offered by SUNY-Canton, see the list and descriptions—and in some cases, the syl-

labi for the asynchronous versions—on the faculty web page of the professor who teaches them (which currently is Dr. Stephen F. Ledoux; click Ledoux in the faculty directory at www.canton.edu).

Course Objectives

The main objective of this course is *to expand the student's behavior repertoire* measurably in relevant areas of behaviorological course content. The student will discuss and, as appropriate, apply:

- ✦ ABC analysis and measurement methodology;
- ✦ Technologies to increase behavior frequency;
- ✦ Technologies to decrease behavior frequency;
- ✦ Technologies to establish discriminations;
- ✦ Technologies for generalization and maintenance;
- ✦ Technologies to change respondent behavior;
- ✦ Ethics in applying behaviorological technologies;
- ✦ Historical developments and trends;
- ✦ Self-control and complex cases.

Additional Objectives

- ✦ Successful, A earning students will use (at an accuracy level of 90% or better) basic disciplinary terminology when discussing the general contents, problems, methods, theories, and practices—and their applications—of the natural science and technology of behavior.
- ✦ Such successful students will also ask questions, seek answers, converse about, and act on the uses and benefits of this discipline for humanity.
- ✦ Such successful students will also behave more effectively in other ways with respect to themselves and others.

Required Materials (in their order of use)

- ✦ Chance, P. (1998). *First Course in Applied Behavior Analysis*. Pacific Grove, CA: Brooks/Cole.
- ✦ Ledoux, S.F. (2002). *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs.
- ✦ Ledoux, S.F. (2002). *Study Questions for Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs.

Note #4: You can order the required books through the publishers, including ABCs at 1-315-386-2684. If you took the first course in the two-course introductory behaviorology sequence (described in Note #3), then you already have the last two of these books. You may also order these books through the online bookstore at www.behavior.org which is the web site of the Cambridge Center for Behavioral Studies.

Also, this course is grounded in the Shaping Model of Education which is informed by behaviorological science (rather than the Presentation Model of Education which is informed by psychology). In the shaping model, teaching is not seen as mostly talking (nor is learning seen as mostly

listening). Instead, teaching is the scientifically grounded design, arrangement, and application of educational materials, methods, and contingencies in ways that generate and maintain small but continuously accumulating behaviors the short and long range consequences of which are successful in producing an ever wider range of effective responding (i.e., learning) on the part of the student.

Grades

Grading policy does not involve curves, for you are not in competition with anyone (except perhaps yourself). That is, all students are expected to produce the academic products demonstrating that they have, individually, achieved at least mastery of the subject matter, if not fluency. Therefore, all students are expected to earn an A or a B (although inadequate products will produce a lower result that requires remediation before it can become a passing grade). Also, all students will receive the grades they earn. This holds even if the expectation for which the course is designed—that all students earn As—is met: If all earn As, then all receive As.

Passing grades are limited to A and B, and are earned according to the amount of assigned work that is successfully completed:

✧ Earning an A consists mainly of satisfactorily completing 90% or more of the work on all assignments.

✧ Earning a B consists mainly of satisfactorily completing more than 80% of the work on all assignments (but not more than 90% on them).

For convenience a point-accumulation system is invoked to keep track of progress through the course. Each of the 13 assignments (one on each of the 13 chapters) in the Chance book is worth 20 points, for a total of 260 points. Each of the seven assignments on the *Origins* book readings and their study questions is worth 20 points, for a total of 140 points. And the web-log assignment is worth 50 points. This provides a grand total of 450 possible points. The grade that you receive is partly based on the percentage of these possible points that you actually earn.

However, point accumulation is not the grade determiner but is merely used as a convenient way to track progress *on the presumption that all course tasks are in progress*. This is because doing work on *all* of the tasks for the course is the more relevant determiner of grades than is the accumulation of points. (For example, a student who tries to accumulate just enough points, on some easier tasks, to get a B—while ignoring other course tasks—would not that way actually meet the criteria for a B and so would have to continue and complete all the required work satisfactorily to earn one of the passing grades.)

Also, students should expect to be asked occasionally to complete various test-like assessments. The level of success on these assessments helps gauge the extent to which

the work on the course assignments is actually producing the learning implied by the completion of that work.

These practices are in place because the scientific research—data based Shaping Model of Education recognizes the student/professor relationship as a professional relationship in which coercive practices (i.e., aversive educational practices) are seen as inappropriate (so long as extreme conditions do not exist making such practices unavoidable). Instead, the more effective, efficient, and productive non-coercive practices of carefully designed and sequenced assignments emphasizing added reinforcement for timely work well done is generally seen as more appropriate. So, your effort and cooperation are expected and presumed; please do not disappoint either your professor or yourself.

About Using the Texts & Study Question Books

Unless specified otherwise, you need to write out your answers in longhand. The reason you are to write out your answers by hand is that this type of verbal response brings about more learning than merely saying—or even typing—the answer. This is because—as taught in another, advanced behaviorology class (i.e., BEHG 355: Verbal Behavior I)—writing the answer in longhand involves both point-to-point correspondence and formal similarity between the stimuli and the response products of the answer.

The Chance Book

The Chance book introduces the basic techniques and general applications of the natural science of behavior, behaviorology. (The author has made this book look mostly like a behavior analysis book for historical reasons as discussed in the “Introduction to Behaviorology Origins” paper covered in the prerequisite course.) Read all sections of every chapter in the book (including the substantive endnotes, but not the list of recommended readings) according to the assigned schedule, and answer *all* of the questions that are in *all* of the exercises (including the practice quiz) at the end of each of those chapters. Whenever possible, write your answers right in your book; check all your answers; and make and learn any corrections that you find you need to make when you are reviewing the chapters. Chance book assignments are provided in the *Assignment Sequence* section. Submit your work according to the method specified in the *Submitting Your Work* section.

The Origins Book

Origins and Components of Behaviorology (the *Origins* text) is a book comprised of a dozen or so papers, of which five (about half of the book) will be used in this course. These papers introduce the history of, and exemplify, behaviorology’s basic principles/techniques and

general applications that are covered in this course. (The other parts of this book were used in the first course in the two-course introduction to behaviorology sequence.)

The Origins Study Question Book

The *Origins* study questions were prepared to help you expand your behavior repertoire based on the material from each of the papers in the *Origins* book. You are to complete each paper's study questions in the sequence assigned because learning occurs when reinforced responses are made (like writing question answers), especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out study question answers correctly. You complete the assigned study questions, *after reading the chapter through*, by *writing out* the answer to each question when you come to it as you *reread* the chapter. You *write out* the answers right in the *Study Question* book. Write out your answers in full sentences that incorporate the questions.

The study questions book starts with a section titled To the Student and Teacher. *Read this section first!* It explains more on how to do the study questions successfully. (You will also find it helpful to mark the number of each study question in the margins of the textbook at the location of the study question's answer...) Study question assignments are provided in the *Assignment Sequence* section. Submit your work according to the method specified in the *Submitting Your Work* section.

Note #5: Since you are to write out your answers to the study questions directly in the study question book, you need to have your own study question book. To assure that this is followed by everyone equally, you need to fill out and send in to your professor (by regular postal mail) the original ownership form in the rear of your study question book. (You may have already sent in your ownership form for the *Origins*-study questions book when you took the prerequisite course.)

The Web-Log Assignment

This written assignment requires you to create a three to five page *typed* log (like a diary) from a one to two hour visit to *each* of three specific web sites. The three sites you are to visit are Glenn Latham's Parenting Prescriptions site (www.parentingprescriptions.com), the Cambridge Center for Behavioral Studies site (www.behavior.org), and the Los Horcones Community site (www.loshorcones.org.mx). Your log should include not only the times, visited page names, visited page sequences, and page-visit durations, but also your account of the best things you learned at these sites, plus any interesting discoveries worthy of return visits. You may begin this assignment anytime *after* completing Chapter 5 of the Chance book. You should submit this assignment

before you finish Chapter 13 of the Chance book (a period of four weeks). Submit your work according to the method specified in the *Submitting Your Work* section.

Submitting Your Work

Different assignments have different work submission methods. These only apply if you are taking the course for TIBI credit. (Any addresses and phone/fax numbers that you may need will be clarified upon enrollment.)

To submit your Chance book answers and the Origins book study question answers, which must be hand-written, you can scan and fax to your professor the pages that have your answers for each assignment. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

To submit your web log, you may email your work to your professor (but do not use email attachments). Or, you may scan and fax it to your professor. However, your professor would prefer that you print out your work (although it too may be handwritten), photocopy it, and send it to your professor by regular postal mail.

In all cases, you are to keep the original of your work. This insures against loss and enables you and your professor to communicate about your work (as you will then both have an identical copy). Note, however, that for study question answers, email and email attachments are neither reliable enough, nor identical enough, for this purpose, so they are not to be used for this purpose.

Your work will be perused and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your professor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

Assignment Sequence

Students should work their way through the course by reading and studying the texts and materials, and sending in their work for each assignment. The slowest reasonable self-pacing of the coursework (presuming a typical 15-week semester) is this sequence which can be used as a check-off list:

- Week 1: The Chance book, *A Word to the Student* & Ch. 1.
- Week 2: The Chance book, Ch. 2.
- Week 3: The Chance book, Ch. 3.
- Week 4: The Chance book, Chs. 4 & 5 (and begin the web-log assignment).
- Week 5: The Chance book, Chs. 6 & 7.
- Week 6: The Chance book, Chs. 8 & 9.
- Week 7: The Chance book, Chs. 10 & 11.

- Week 8: The *Chance* book, Chs. 12 & 13 (and finish the web-log assignment).
Week 9: The *Origins* book, Chs. 1, 2, & 3 of the Behaviorology Origins paper.
Week 10: The *Origins* book, Ch. 4 of the Behaviorology Origins paper.
Week 11: The *Origins* book, Chs. 5, 6, & 7 of the Behaviorology Origins paper.
Week 12: The *Origins* book, the Curricula paper.
Week 13: The *Origins* book, the Behaviorology in China paper.
Week 14: The *Origins* book, the Online Change paper.
Week 15: The *Origins* book, the Afterword paper.

Do the assignments in this sequence, even if you do them at a faster pace than the pace presented here. If you go slower than this schedule, assignments could easily back up on you to the point where insufficient time remains to complete them in a satisfactory manner.

Note #6: Be sure that everything you submit is readable and contains your name!

Note #7: The usual higher education workload expectation for a course is about 150 hours. (The typical face-to-face course features about 50 in-class contact hours with the university expecting about 100 more hours of additional study at the average rate of about two hours out of class for each hour in class.) This can be accomplished at rates ranging from about 50 hours per week over three weeks to about ten hours per week over the typical 15 weeks of a semester. Of course, some students may take a little less than 150 hours, while others may take more than 150 hours, to do the work to the same acceptable and expected standard.

You can—and are encouraged to—go through the assignments as rapidly as your schedule allows. This could mean spending a typical 15 weeks on the course. Or it could mean doing the whole course in as little as—but not in less than—three weeks, as one would progress through the *single* allowed course in a three-week summer school term. That is, you could work on the course anywhere from minimum part-time (i.e., at the rate of about ten hours per week, as described in the *Assignment Sequence* section) to maximum full-time (i.e., at the rate of about 50 hours per week).

If you are to be successful, you need to exercise some self-management skills by starting immediately and keeping up a reasonable and steady pace on the course work. You need to do this because your professor will *not* be reminding you that the products of your work are due; all the course work is set forth in this syllabus and so is automatically assigned. You are expected to follow through on your own. You need to set an appropriate pace for yourself (or accept the pace in the *Assignment*

Sequence section) and adhere to that pace, and thereby get the sequence of assignments done and submitted to your professor. This will assist your success.

At various points in the course, you will be provided with feedback about your work. Upon completing all the coursework, you will be provided with your earned grade. (The grade is provided solely for the person whose work earned the grade.) We at TIBI are sure that the outcomes of your efforts to study this aspect of behaviorological science will benefit both you and others, and we encourage you to study further aspects. ☺

TIBI Online Syllabus for BEHG 201: Non-Coercive Child Rearing Principles and Practices

Stephen F. Ledoux

SUNY-Canton

[This is another installment in the series of syllabi for TIBI's online courses. Each syllabus appears in *Behaviorology Today* basically in the same form as it appears online. The series continues whenever there are syllabi that have yet to be printed, or that require reprinting due to substantial revisions. Locate additional syllabi through the *Syllabus Directory* at the back of the most recent issue.—Ed.]

Note #1: This syllabus contains some notes that supplement the more traditional syllabus parts. Each note is numbered for convenient reference. Some notes, like this one, have multiple paragraphs.

This syllabus is a long document. It is longer than a syllabus for a face-to-face course as it contains material that the professor would otherwise cover in person. *Hence it was designed to be printed out for reading!* Furthermore, it was designed to be used *as a task check-off list.* Please print it out and use it these ways.

The only activity in this course for which you might need access to a computer, before the web-log, is to print this syllabus as a reference for how this course works so you can follow the directions to complete this course. This is a matter of access, student access to education, so that everyone who wants this course can take it regardless

of whether they own several computers or only have access to one in their local library or in a friend's home.

Students can, if they wish, study the topics of this course free of charge, perhaps to fulfill their own interests. They would do so simply by completing the activities described in this syllabus.

Students can also study the topics of this course for TIBI (The International Behaviorology Institute) credit, perhaps toward a TIBI certificate. They would do so by paying the necessary fee to be assigned a professor to provide feedback on, and assessment of, their efforts. (This course is part of several TIBI certificates, including the Behavior Literacy Certificate and the Effective Autism Intervention Certificate. Visit www.behaviorology.org or contact TIBI for details.)

Also, students can study the topics of this course for regular academic credit; they would do so by contacting any accredited institution of higher education that offers behaviorology courses accepted by TIBI such as the State University of New York at Canton (SUNY-Canton) at www.canton.edu which is SUNY-Canton's web site. At SUNY-Canton this course is offered as *SSCI 135: Parenting Knowledge and Skills*. TIBI automatically accepts A or B grades from the academic-credit version of this course as equivalent to its own course toward its certificates (and C and D academic-credit grades can be remediated through TIBI for TIBI credit; contact TIBI for details). Alternatively, the work done completing the course through TIBI may make taking the course for academic credit easier; ask the professor who teaches SUNY-Canton's equivalent course about this.

The parts of this syllabus cover many topics. While the headings may be different, these include (a) the course content and objectives, (b) the text, study, and assessment materials, (c) the grading policy, (d) the necessary work-submission methods and professor feedback, and (e) the study-activity sequence and completion timelines.

Note #2: You may take this course without a prerequisite even though it is listed as having both BEHG 101 and BEHG 102 (the introduction to behaviorology sequence) as prerequisites. That listing was designed to show the *preferred* course sequence based on the relation among these three courses: the *basic* science principles (BEHG 101), followed by the applications of the principles to *general* concerns (BEHG 102), and then the application of the principles to the *specific* area of child care (BEHG 201), an area of interest to many sectors of society.

Course Description

BEHG 201: Non-Coercive Child Rearing Principles and Practices. This course introduces students of any age and interest to the scientific contributions that the disci-

pline of behaviorology can provide to enhance their knowledge and skills regarding caring for children in effective, positive, pro-active, non-coercive, and loving ways. These contributions include two broad areas: (a) They include some methods applicable throughout pre-adult years that encourage the prevention of the common behavior problems of these years. Some common problems that can be avoided are associated with bedtime, eating, dressing, shopping, and automobile travel. Some methods to prevent these problems include catch 'em being good, let kids help, monitor kids, orderly routines, and time out and other forms of instructive discipline. (b) These contributions also include some methods applicable to helping distraught parents change problem behaviors that are already occurring (i.e., cure techniques, rather than prevention techniques). Other topics include toilet training, language, intelligence, creativity, achievement, reading, Aircribs, and morality.

Note #3: To check out other behaviorology courses offered by TIBI, visit their locations on the TIBI web site (www.behaviorology.org). To check out other behaviorology courses offered by SUNY-Canton, see the list and descriptions—and in some cases, the syllabi for the asynchronous versions—on the faculty web page of the professor who teaches them (which currently is Dr. Stephen F. Ledoux; click Ledoux in the faculty directory at www.canton.edu).

Course Objectives

The main objective of this course is *to expand the student's behavior repertoire* measurably in relevant areas of behaviorological course content. The student will discuss and, as appropriate, apply:

- ✦ Origins and research foundations of advances in scientifically informed child rearing practices;
- ✦ Scientifically informed practices with respect to specific concerns (e.g., self esteem, fussy babies, spanking, sibling rivalry, tantrums, lying, thumb sucking, toilet training);
- ✦ Scientifically informed practices in various common settings (e.g., home, store, playground);
- ✦ Long term benefits of scientifically informed practices (e.g., reducing child abuse, enhancing school success, increasing loving relationships);
- ✦ Scientifically consistent recommendations for cases in which all else fails.

Additional Objectives

- ✦ Successful, A earning students will use (at an accuracy level of 90% or better) basic disciplinary terminology both when discussing behaviorological knowledge, and when applying behaviorological skills, relevant to parenting and child care.

✧ Such successful students will also ask questions, seek answers, converse about, and act on the uses and benefits of this discipline for humanity.

✧ Such successful students will also behave more effectively in other ways with respect to themselves and others.

Required Materials (not in their order of use)

✧ Latham, G.I. (1994). *The Power of Positive Parenting*. Logan, UT: P&T ink. (ISBN 1-56713-175-1)

✧ Ledoux, S.F. (2000). *Study Questions for Glenn Latham's The Power of Positive Parenting*. Canton, NY: ABCs. (ISBN 1-882508-15-7)

✧ Latham, G.I. (1999). *Parenting with Love: Making a difference in a day*. Salt Lake City, UT: Bookcraft. (ISBN 1-57008-661-3)

✧ Ledoux, S.F. (In Progress). *Study Questions for Glenn Latham's Parenting with Love*. Canton, NY: ABCs.

✧ (A/V) Latham, G.I. (2-part video program). *The Making of a Stable Family*. Logan, UT: P&T ink.

✧ (A/V) Latham, G.I. (2-cassette program). *Parenting Prescriptions*. Logan, UT: P&T ink.

✧ (A/V) Latham, G.I. (2-cassette, or 2-CD program). *An Angel Out of Tune*. Logan, UT: P&T ink.

Note #4: You can order the required books and A/V items through the publishers, including ABCs at 1-315-386-2684, and P&T ink, either at 435-752-5749 or—toll free—for credit-card orders only at 1-888-750-4814. You may also order these materials through the online bookstore at www.behavior.org which is the web site of the Cambridge Center for Behavioral Studies.

Recommended Materials

These are references to materials that, while not required for the course, may also be of interest to those who wish to go deeper into the course topics and extensions (and you can order them from the same sources that supply the required materials):

✧ Latham, G.I. (2-part video program). *The Teenage Years: Your Window of Opportunity*. Logan, UT: P&T ink. (These video tapes may not yet be available.)

✧ Latham, G.I. (1-cassette tape program of a presentation at an international conference). *Behind the Schoolhouse Door: Eight Skills Every Teacher Should Have*. Garden City, NY: Eyedears A/V. (Call 516-739-8864 and ask for tape #20-ASAT-12, or get this tape from P&T ink.)

✧ Latham, G.I. (6-part video program). *Managing the Classroom Environment to Facilitate Effective Instruction*. Logan, UT: P&T ink.

✧ Latham, G.I. (1998). *Keys to Classroom Management*. Logan, UT: P&T ink.

✧ Ledoux, S.F. (2000). *Study Questions for Glenn Latham's Keys to Classroom Management*. Canton, NY: ABCs.

✧ Latham, G.I. (1997). *Behind the Schoolhouse Door: Eight Skills Every Teacher Should Have*. Logan, UT: P&T ink.

✧ Latham, G.I. (1999). *Management, Not Discipline: A Wake-up Call for Educators*. Logan, UT: P&T ink.

✧ Latham, G.I. (2003). *Behind the Schoolhouse Door: Managing Chaos with Science, Skills, and Strategies*. Logan, UT: P&T ink. (This book combines *Behind the Schoolhouse Door...* and *Management, Not Discipline...*)

Dr. Latham is not the only author of quality materials on these topics. However, his peers have judged his work to be the very best available. (For example, see "About the Book" on p. vii in *Study Questions for Glenn Latham's The Power of Positive Parenting*.) Hence his works are used for this course.

Also, this course is grounded in the Shaping Model of Education which is informed by behaviorological science (rather than the Presentation Model of Education which is informed by psychology). In the shaping model, teaching is not seen as mostly talking (nor is learning seen as mostly listening). Instead, teaching is the scientifically grounded design, arrangement, and application of educational materials, methods, and contingencies in ways that generate and maintain small but continuously accumulating behaviors the short and long range consequences of which are successful in producing an ever wider range of effective responding (i.e., learning) on the part of the student.

Grades

Grading policy does not involve curves, for you are not in competition with anyone (except perhaps yourself). That is, all students are expected to produce the academic products demonstrating that they have, individually, achieved at least mastery of the subject matter, if not fluency. Therefore, all students are expected to earn an A or a B (although inadequate products will produce a lower result that requires remediation before it can become a passing grade). Also, all students will receive the grades they earn. This holds even if the expectation for which the course is designed—that all students earn As—is met: If all earn As, then all receive As.

Passing grades are limited to A and B, and are earned according to the amount of assigned work that is successfully completed:

✧ Earning an A consists mainly of satisfactorily completing 90% or more of the work on all assignments.

✧ Earning a B consists mainly of satisfactorily completing more than 80% of the work on all assignments (but not more than 90% on them).

For convenience a point-accumulation system is invoked to keep track of progress through the course. Two of the 27 chapter assignments on *The Power of Positive Parenting* and its study questions, Chapters 3 and 27, are long and so earn 25 and 15 points respectively. Four other chapter assignments, Chapters 14, 15, 16, and 17, are so

short that they each earn 5 points. The other 21 chapters each earns 10 points. All together the 27 chapter assignments earn a total of 270 points. Each of the eight Audio/Visual assignments is also worth 10 points, for a total of 80 points. The web-log assignment is worth 20 points. And the half-page story-writing assignment is worth 30 points. This provides a grand total of 400 possible points. The grade that you receive is partly based on the percentage of these possible points that you actually earn.

However, point accumulation is not the grade determiner but is merely used as a convenient way to track progress *on the presumption that all course tasks are in progress*. This is because doing work on *all* of the tasks for the course is the more relevant determiner of grades than is the accumulation of points. (For example, a student who tries to accumulate just enough points, on some easier tasks, to get a B—while ignoring other course tasks—would not that way actually meet the criteria for a B and so would have to continue and complete all the required work satisfactorily to earn one of the passing grades.)

Also, students should expect to be asked occasionally to complete various test-like assessments. The level of success on these assessments helps gauge the extent to which the work on the course assignments is actually producing the learning implied by the completion of that work.

These practices are in place because the scientific research—data based Shaping Model of Education recognizes the student/professor relationship as a professional relationship in which coercive practices (i.e., aversive educational practices) are seen as inappropriate (so long as extreme conditions do not exist making such practices unavoidable). Instead, the more effective, efficient, and productive non-coercive practices of carefully designed and sequenced assignments emphasizing added reinforcement for timely work well done is generally seen as more appropriate. So, your effort and cooperation are expected and presumed; please do not disappoint either your professor or yourself.

About Using the Texts & Study Question Books

Unless specified otherwise, you need to write out your answers in longhand. The reason you are to write out your answers by hand is that this type of verbal response brings about more learning than merely saying—or even typing—the answer. This is because—as taught in a more advanced behaviorology class (i.e., BEHG 355: Verbal Behavior I)—writing the answer in longhand involves both point-to-point correspondence and formal similarity between the stimuli and the response products of the answer.

The Parenting Book

The *Power of Positive Parenting* book details the scientific contributions of behaviorology that can produce or

enhance one's knowledge of, and skills for, caring for children in effective, positive, pro-active, non-coercive, and loving ways that are solidly grounded in, and validated by, extensive scientific research. (Since the slowest self-pacing plan involves chapter/study question assignments ranging in length from 20 to 40 pages, you would cover an average of about 30 pages per week. As chapter lengths vary from 5 to 50 pages, this works out to covering less than one long chapter in some weeks, and up to four short chapters in other weeks.)

The Parenting Study Question Book

The *Power of Positive Parenting* study questions were prepared to help you expand your behavior repertoire based on the material from each of the chapters in the book. You are to complete each chapter's study questions as assigned because learning occurs when reinforced responses are made (like writing question answers), especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out study question answers correctly. You complete the assigned study questions, *after reading the chapter through*, by *writing out* the answer to each question when you come to it as you *reread* the chapter. You *write out* the answers right in the *Study Question* book. Write out your answers in full sentences that incorporate the questions.

The study question book starts with a section titled To the Student and Teacher. *Read this section first!* It explains more on how to do the study questions successfully. (You will also find it helpful to mark the number of each study question in the margins of the textbook at the location of the study question's answer...) Study question assignments are provided in the *Assignment Sequence* section. Submit your work according to the method specified in the *Submitting Your Work* section.

Note #5: Since you are to write out your answers to the study questions directly in the study question book, you need to have your own study question book. To assure that this is followed by everyone equally, you need to fill out and send in to your professor (by regular postal mail) the original ownership form in the rear of your study question book.

The Audio/Visual (A/V) Assignments

An important component of the course is to provide you with a series of audio-visual (A/V) experiences that extend your homework-based book-learning toward the area of skill development. During each assigned A/V activity, *you need to write out a continuous outline/summary of the material* on regular 8.5 x 11 binder paper (as if you were taking sophisticated notes at a lecture). A/V assignments are provided in the *Assignment Sequence* section.

Submit your work according to the method specified in the *Submitting Your Work* section.

The Web-Log Assignment

This written assignment requires you to create a one to two page *typed* log (like a diary) from a one to two hour visit to two specific web sites. The two sites you are to visit are Glenn Latham's Parenting Prescriptions site (www.parentingprescriptions.com) and the Cambridge Center for Behavioral Studies site (www.behavior.org). Your log should include not only the times, visited page names, visited page sequences, and page-visit durations, but also your account of the best things you learned at these sites, plus any interesting discoveries worthy of return visits. You may begin this assignment anytime *after* completing Chapter 3 and its study questions. You should submit this assignment *before* you start Chapter 14 which allows a period of 4 weeks to complete it. Submit your work according to the method specified in the *Submitting Your Work* section.

The Story-Writing Assignment

This short, written assignment requires you to create a one-half to one page long story that conveys to others—young and old alike—any one of the many elements of positive parenting. You may begin this assignment anytime *after* completing Chapter 3 and its study questions. You should submit this assignment *before* you start Chapter 27. Submit your work according to the method specified in the *Submitting Your Work* section. Here is an example which is one-half page in length (and to make things easier, you may use the characters of Jamie and Mr. Glenn, from this example, in your own story if you wish):

Jamie's Lesson

Have you seen other kids doing mean things? And have you seen others doing nice things?

Well, this is a story about Jamie, and about an early lesson she had on helping others learn to do nice things.

Jamie and her classmates were out on the playground. It was the middle of winter, with a cold sun in the bright blue sky, and a thin glaze of ice on the ground.

However their teacher, Mr. Glenn, saw Jamie off to one side, sniffing. Going over to her, he asked, "Jamie? Are you okay?"

"I don't like Freddy!" she replied rather abruptly. "He's so mean. He said I was clumsy, just because I slipped on the ice..."

"I can understand why you are upset," Mr. Glenn said calmly. "It's hard when other people do things that hurt your feelings."

"And everyone laughed, too," Jamie added, softening a little.

"It's even harder when others give attention to bad things," Mr. Glenn continued pleasantly. "We have talked in class about a better way to handle these things. What is that better way?"

After a pause, Jamie replied, "We said it's better to pay attention when people do good things." But then she added, "But Freddy doesn't do any good things!"

"Well," Mr. Glenn said, "at times like these, it *is* hard to see good things. But tell me just one thing Freddy has done recently that was good."

"Well," Jamie said, deep in thought. Then, beaming, she said, "Yesterday I saw him go right over to a little kid who fell off the slide, and see if he was okay... And, this morning he helped pick up a box of spilled pencils—and he wasn't even the one who spilled them. That was nice of him."

"Wow!" said Mr. Glenn. "That's great. That's two things!" After a short pause, he added, "Did you tell him you thought that was nice of him?"

"...Oops," said Jamie.

"You can still tell him, if you want to," said Mr. Glenn. "That will still help him do more good things, and become a better person."

"That would be good," Jamie replied. "I will!" And off she went to do so.

You can do that too. Just once today, try to notice something good that someone does, and let them know it was nice. Do that every day, and you will surely make a better world.

Submitting Your Work

Different assignments have different work submission methods. These only apply if you are taking the course for TIBI credit. (Any addresses and phone/fax numbers that you may need will be clarified upon enrollment.)

To submit your study question answers, which must be hand-written, you can scan and fax to your professor the pages that have your answers for each assignment. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

To submit your A/V outlines, web log, and story, you may email your work to your professor (but do not use email attachments). Or, you may scan and fax your work to your professor. However, your professor would prefer that you print out your work (although it too may be handwritten), photocopy it, and send it to your professor by regular postal mail.

In all cases, you are to keep the original of your work. This insures against loss and enables you and your professor to communicate about your work (as you will then both have an identical copy). Note, however, that for study question answers, email and email attachments are neither reliable enough, nor identical enough, for this purpose, so they are not to be used for this purpose.

Your work will be perused and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your professor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

Assignment Sequence

Students should work their way through the course by reading and studying the texts and materials, and sending in their work for each assignment. The slowest reasonable self-pacing of the coursework (presuming a typical 15-week semester) is this sequence which can be used as a check-off list:

- Week 1: The *Parenting* text, the Foreword, Note, & Ch. 1 (with, as always, the relevant study questions) plus the *first* of the two *Stable Family* video tapes. (You will watch these videos twice. This time will not only introduce you to the author but also provide you with his friendly face and voice to see and hear as you read the text.)
- Week 2: The *Parenting* text, Ch. 2, and the *second* of the two *Stable Family* video tapes.
- Week 3: The *Parenting* text, the first half of Ch. 3 (pp. 37-59, with study question #s 1-55).
- Week 4: The *Parenting* text, the second half of Ch. 3 (pp. 59-86, with study question #s 56-89).
- Week 5: The *Parenting* text, Chs. 4 & 5, plus the *first* of the two *Parenting Prescriptions* audio tapes, and begin the web-log and story-writing assignments (and finish them before Ch. 14 and Ch. 27 respectively).
- Week 6: The *Parenting* text, Chs. 6 & 7, and the *second* of the two *Parenting Prescriptions* audio tapes.
- Week 7: The *Parenting* text, Chs. 8, 9, & 10.
- Week 8: The *Parenting* text, Chs. 11, 12, & 13, and the *first* of the two *Angel Out of Tune* audio CDs or tapes (and finish the web-log assignment).
- Week 9: The *Parenting* text, Chs. 14, 15, 16, & 17.
- Week 10: The *Parenting* text, Chs. 18, 19, & 20, and the *second* of the two *Angel Out of Tune* audio CDs or tapes.
- Week 11: The *Parenting* text, Chs. 21 & 22 (and continue [Finish?] the story-writing assignment).
- Week 12: The *Parenting* text, Chs. 23 & 24, and the *first* of the two *Stable Family* videos again, emphasizing what seems new, now that you have covered so much else already.

Week 13: The *Parenting* text, Chs. 25 & 26, and the *second* of the two *Stable Family* videos again, emphasizing what seems new, now that you have covered so much else already.

Week 14: Finish the story-writing assignment, and begin the long, summary chapter, Ch. 27.

Week 15: Finish the *Parenting* text, Ch. 27.

Do the assignments in this sequence, even if you do them at a faster pace than the pace presented here. If you go slower than this schedule, assignments could easily back up on you to the point where insufficient time remains to complete them in a satisfactory manner.

Note #6: Be sure that everything you submit is readable and contains your name!

Note #7: The usual higher education workload expectation for a course is about 150 hours. (The typical face-to-face course features about 50 in-class contact hours with the university expecting about 100 more hours of additional study at the average rate of about two hours out of class for each hour in class.) This can be accomplished at rates ranging from about 50 hours per week over three weeks to about ten hours per week over the typical 15 weeks of a semester. Of course, some students may take a little less than 150 hours, while others may take more than 150 hours, to do the work to the same acceptable and expected standard.

You can—and are encouraged to—go through the assignments as rapidly as your schedule allows. This could mean spending a typical 15 weeks on the course. Or it could mean doing the whole course in as little as—but not in less than—three weeks, as one would progress through the *single* allowed course in a three-week summer school term. That is, you could work on the course anywhere from minimum part-time (i.e., at the rate of about ten hours per week, as described in the *Assignment Sequence* section) to maximum full-time (i.e., at the rate of about 50 hours per week).

If you are to be successful, you need to exercise some self-management skills by starting immediately and keeping up a reasonable and steady pace on the course work. You need to do this because your professor will *not* be reminding you that the products of your work are due; all the course work is set forth in this syllabus and so is automatically assigned. You are expected to follow through on your own. You need to set an appropriate pace for yourself (or accept the pace in the *Assignment Sequence* section) and adhere to that pace, and thereby get the sequence of assignments done and submitted to your professor. This will assist your success.

At various points in the course, you will be provided with feedback about your work. Upon completing all the coursework, you will be provided with your earned grade. (The grade is provided solely for the person whose work earned the grade.) We at TIBI are sure that the outcomes of your efforts to study this aspect of behaviorological science will benefit both you and others, and we encourage you to study further aspects. ☺

TIBI Online Syllabus for BEHG 355: Verbal Behavior I

Stephen F. Ledoux

SUNY-Canton

[This is another installment in the series of syllabi for TIBI's online courses. Each syllabus appears in *Behaviorology Today* basically in the same form as it appears online. The series continues whenever there are syllabi that have yet to be printed, or that require reprinting due to substantial revisions. Locate additional syllabi through the *Syllabus Directory* at the back of the most recent issue.—Ed.]

Note #1: This syllabus contains some notes that supplement the more traditional syllabus parts. Each note is numbered for convenient reference. Some notes, like this one, have multiple paragraphs.

This syllabus is a long document. It is longer than a syllabus for a face-to-face course as it contains material that the professor would otherwise cover in person. *Hence it was designed to be printed out for reading!* Furthermore, it was designed to be used *as a task check-off list*. Please print it out and use it these ways.

Indeed, the only activity in this course for which you might need access to a computer is to print this syllabus as a reference for how this course works so you can follow the directions to complete this course. This is a matter of access, student access to education, so that everyone who wants this course can take it regardless of whether they own several computers or only have access to one in their local library or in a friend's home.

Students can, if they wish, study the topics of this course free of charge, perhaps to fulfill their own interests. They would do so simply by completing the activities described in this syllabus.

Students can also study the topics of this course for TIBI (The International Behaviorology Institute) credit, perhaps toward a TIBI certificate. They would do so by paying the necessary fee to be assigned a professor to provide feedback on, and assessment of, their efforts. (This course can be part of several TIBI certificates. Contact TIBI or visit www.behaviorology.org for details.)

Also, students can study the topics of this course for regular academic credit; they would do so by contacting any accredited institution of higher education that offers behaviorology courses accepted by TIBI, such as the State University of New York at Canton (SUNY-Canton) at www.canton.edu which is SUNY-Canton's web site. At SUNY-Canton this course is offered as *SSCI 380: Introduction to Verbal Behavior Analysis and Applications*. TIBI automatically accepts A or B grades from the academic-credit version of this course as equivalent to its own course toward its certificates (and C and D academic-credit grades can be remediated through TIBI for TIBI credit; contact TIBI for details). Alternatively, the work done completing this course through TIBI may make taking the course for academic credit easier; ask the professor who teaches SUNY-Canton's equivalent course about this.

The parts of this syllabus cover many topics. While the headings may be different, these include (a) the course content and objectives, (b) the text, study, and assessment materials, (c) the grading policy, (d) the necessary work-submission methods and professor feedback, and (e) the study-activity sequence and completion timelines.

Note #2: The prerequisite for this course is BEHG 101: Introduction to Behaviorology I. If you have not had this prerequisite course (or its academic-credit equivalent such as SSCI 245: Introduction to the Science and Technology of Behavior, from SUNY-Canton), then you need to take it before taking the current course.

Course Description

BEHG 355: Verbal Behavior I. Based on natural science of behavior principles and practices, this course introduces students to (a) the behaviorological analysis of verbal behavior/language, (b) the historical context in which verbal behavior analysis arose, and (c) some applications of verbal behavior analysis especially as it is applied to enhance the acquisition of verbal behavior/language either by foreign language learners or by learners with language deficits perhaps from developmental disabilities. Covered analysis topics include such fundamental concepts as (a) differentiating verbal and non-verbal behavior, (b) the verbal community, (c) mediated reinforcement, (d) the basic verbal behaviors called mands, tacts, intraverbals, codics, and duplcs, (e) various extensions of these elementary verbal operants, (f) the most common variables of which verbal operants are a function, (g) some of

the ways these variables combine in the multiple control of complex verbal behaviors, (h) response products, (i) point-to-point correspondence, (j) formal similarity, (k) thematic and formal controls over verbal behavior, and (l) the ways the verbal community teaches speakers appropriate verbal responses to their private experiences.

Note #3: To check out other behaviorology courses offered by TIBI, visit their locations on the TIBI web site (www.behaviorology.org). To check out other behaviorology courses offered by SUNY-Canton, see the list and descriptions—and in some cases, the syllabi for the asynchronous versions—on the faculty web page of the professor who teaches them (which currently is Dr. Stephen F. Ledoux; click Ledoux in the faculty directory at www.canton.edu).

Course Objectives

The main objective of this course is to expand the student's behavior repertoire measurably in relevant areas of behaviorological course content. The student will:

- ✧ Summarize each of the scientific principles and concepts upon which verbal behavior analysis is based;
- ✧ Summarize each of the additional fundamental concepts specifically relevant to verbal behavior analysis;
- ✧ Analyze verbal operant behaviors and the variables of which they are a function;
- ✧ Classify elementary verbal operants in terms of their evoking stimuli and their maintaining consequences;
- ✧ Systematize the variety of verbal operants;
- ✧ Interpret extensions of elementary verbal operants;
- ✧ Demonstrate the factors that enable the verbal community to teach speakers appropriate responses to private stimuli;
- ✧ Identify the ways variables combine in the multiple control of complex verbal behaviors;
- ✧ Describe the historical context in which verbal behavior analysis and applications arose;
- ✧ Compare some of the basic applications of verbal behavior analysis in various general settings;
- ✧ Formulate explicit examples of how he or she can apply verbal behavior analysis in her or his own work, present and future.

Additional Objectives

- ✧ Successful, A earning students will use (at an accuracy level of 90% or better) basic disciplinary terminology both when discussing behaviorological knowledge, and when applying behaviorological skills, relevant to verbal behavior analysis and applications.
- ✧ Such successful students will also ask questions, seek answers, converse about, and act on the uses and benefits of this discipline for humanity.

✧ Such successful students will also behave more effectively in other ways with respect to themselves and others.

Required Materials (in their order of use)

✧ Peterson, N. (1978). *An Introduction to Verbal Behavior*. Grand Rapids, MI: Behavior Associates. [This book may be available online. Contact TIBI regarding this and other options.]

✧ MacCorquodale, K. (1970). On Chomsky's review of Skinner's *Verbal Behavior*. *Journal of the Experimental Analysis of Behavior*, 13 (1), 83-99.

✧ Ledoux, S.F., Michael, J., & Miguel, C. (2002). *An Introduction to the Elementary Verbal Operant Relations in the Verbal Behavior Analysis Component of Behaviorology Plus Some Initial Implications and Applications for Foreign Language Teaching*. Canton, NY: Stephen F. Ledoux. [Contact TIBI for options on obtaining this booklet.]

✧ Chapter 14 of Maurice, C., Green, G., & Luce, S.C. (Eds.). (1996). *Behavioral Intervention for Young Children with Autism*. Austin, TX: Pro-Ed. (Only those not engaged in foreign language or ESL teaching need this material to complete the "area-focused" assignment.) [To read and study this chapter when scheduled, buy the book—the publisher's phone number is in "Note #4"—or borrow it from your local library, or contact TIBI for other options on obtaining this material.]

✧ Chapter 14 of Ledoux, S.F. (2003). *Study Questions for Maurice et al's "Behavioral Intervention for Young Children with Autism."* Canton, NY: ABCs. (Only those not engaged in foreign language or ESL teaching need this material to complete the "area-focused" assignment.) [Contact TIBI for options on obtaining this material.]

Recommended Materials

These are references to materials that, while not required for the course, may also be of interest to those who wish to go deeper into the course topics and extensions:

✧ Cautela, J.R. (1994). General level of reinforcement II: Further elaborations. *Behaviorology*, 2 (1), 1-16.

✧ Chomsky, N. (1959). *Verbal Behavior* by B.F. Skinner. *Language*, 35, 26-58.

✧ Eshleman, J.W. & Vargas, E.A. (1988). Promoting the behaviorological analysis of verbal behavior. *The Analysis of Verbal Behavior*, 6, 23-32.

✧ Fraley, L.E. (1996). Verbal behavior in the measuring process. *The Analysis of Verbal Behavior*, 13, 123-126.

✧ Ledoux, S.F. (2002). 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—Second Edition*. Canton, NY: ABCs.

✧ MacCorquodale, K. (1969). B.F. Skinner's *Verbal Behavior*: A retrospective appreciation. *Journal of the Experimental Analysis of Behavior*, 12 (5), 831-841.

✧ Michael, J.L. (1982). Distinguishing between discriminative and motivational functions of stimuli. *Journal of the Experimental Analysis of Behavior*, 37, 149–155.

✧ Premack, D. (1970). A functional analysis of language. *Journal of the Experimental Analysis of Behavior*, 14, 107–125.

✧ Schlinger, H. & Blakely, E. (1987). Function–altering effects of contingency–specifying stimuli. *The Behavior Analyst*, 10, 41–45.

✧ Sidman, M. (1986). Functional analysis of emergent verbal classes. In T. Thompson & M. Zeiler (Eds.). *Analysis and Integration of Behavioral Units* (pp. 213–245). Hillsdale, NJ: Erlbaum.

✧ Sidman, M. (1994). *Equivalence Relations and Behavior: A Research Story*. Boston, MA: Authors Cooperative.

✧ Skinner, B.F. (1953). *Science and Human Behavior*. New York: Macmillan. (Paperback edition published by Free Press, 1965.)

✧ Skinner, B.F. (1957). *Verbal Behavior*. New York: Appleton–Century–Crofts. Reprinted, 1992, Cambridge, MA: The B.F. Skinner Foundation.

✧ Stromer, R. (1991). Stimulus equivalence: Implications for teaching. In W. Ishaq (Ed.). *Human Behavior in Today's World* (pp. 109–122). New York: Praeger.

✧ Vargas, E.A. (1988). Verbally–governed and event–governed behavior. *The Analysis of Verbal Behavior*, 6, 11–22.

✧ Vargas, J.S. (1990). Cognitive analysis of language, and verbal behavior: Two separate fields. In L.J. Hayes & P.N. Chase (Eds.). *Dialogues on Verbal Behavior* (pp. 197–201). Reno, NV: Context Press.

Note #4: You can order the required or recommended books through the publishers, including *Pro–Ed* at—toll free—1–800–897–3202, and *ABCs* at 315–386–2684. You may also order these books through the online bookstore at www.behavior.org which is the web site of the Cambridge Center for Behavioral Studies.

The simplest way to access required or recommended articles is to seek them through your local community or college library. Alternatively, the parent journals may have web sites where the articles are available online. Visit www.behaviorology.org for some relevant links.

Also, this course is grounded in the Shaping Model of Education which is informed by behaviorological science (rather than the Presentation Model of Education which is informed by psychology). In the shaping model, teaching is not seen as mostly talking (nor is learning seen as mostly listening). Instead, teaching is the scientifically grounded design, arrangement, and application of educational materials, methods, and contingencies in ways that generate and maintain small but continuously accumulating behaviors the short and long range consequences of which are successful in producing an ever wider range of effective responding (i.e., learning) on the part of the student.

Grades

Grading policy does not involve curves, for you are not in competition with anyone (except perhaps yourself). That is, all students are expected to produce the academic products demonstrating that they have, individually, achieved at least mastery of the subject matter, if not fluency. Therefore, all students are expected to earn an A or a B (although inadequate products will produce a lower result that requires remediation before it can become a passing grade). Also, all students will receive the grades they earn. This holds even if the expectation for which the course is designed—that all students earn As—is met: If all earn As, then all receive As.

Passing grades are limited to A and B, and are earned according to the amount of assigned work that is successfully completed:

✧ Earning an A consists mainly of satisfactorily completing 90% or more of the work on all assignments.

✧ Earning a B consists mainly of satisfactorily completing more than 80% of the work on all assignments (but not more than 90% on them).

For convenience a point–accumulation system is invoked to keep track of progress through the course. The assignments on the first four chapters of the Peterson book are all worth 40 points each, while the assignment on the shorter, fifth chapter is worth 20 points, for a total of 180 points. The read–and–summarize assignment on the MacCorquodale book–review article, and the completion assignment on the Ledoux *et al* material, and completion of the “area–focused” assignment, are all worth 40 points each, for a total of 120 points. This provides a grand total of 300 possible points. The percentage used to consider what grade you are earning is the percentage of these possible points that you actually earn.

However, point accumulation is not the grade determiner but is merely used as a convenient way to track progress *on the presumption that all course tasks are in progress*. This is because doing work on *all* of the tasks for the course is the more relevant determiner of grades than is the accumulation of points. (For example, a student who tries to accumulate just enough points, on some easier tasks, to get a B—while ignoring other course tasks—would not that way actually meet the criteria for a B and so would have to continue and complete all the required work satisfactorily to earn one of the passing grades.)

Also, students should expect to be asked occasionally to complete various test–like assessments. The level of success on these assessments helps gauge the extent to which the work on the course assignments is actually producing the learning implied by the completion of that work.

These practices are in place because the scientific research–data based Shaping Model of Education recognizes the student/professor relationship as a professional

relationship in which coercive practices (i.e., aversive educational practices) are seen as inappropriate (so long as extreme conditions do not exist making such practices unavoidable). Instead, the more effective, efficient, and productive non-coercive practices of carefully designed and sequenced assignments emphasizing added reinforcement for timely work well done is generally seen as more appropriate. So, your effort and cooperation are expected and presumed; please do not disappoint either your professor or yourself.

Assignment Method

Unless specified otherwise, you need to write out your answer in longhand. The reason you are to write out your answers by hand is that this type of verbal response brings about more learning than merely saying—or even typing—the answer. This is because—as covered in this course—writing answers in longhand involves both point-to-point correspondence and formal similarity between the stimuli and the response products of the answer.

The Peterson Book

Peterson's textbook, *An Introduction to Verbal Behavior*, introduces all the basic concepts that B.F. Skinner covered in his substantive book, *Verbal Behavior*. (That book is covered in BEHG 475: Verbal Behavior II.) Thus, while Peterson's book describes the elementary verbal operants and explores fundamental controlling relationships, it does *not* contain detailed explanations of exceptions, ambiguities, controversies, and many of the implications of the analysis. However, it effectively provides the necessary preparation for efficiently studying Skinner's *Verbal Behavior*. Write your answers right in the Peterson book. The Peterson book assignments are provided in the *Assignment Sequence* section. Submit your work according to the methods specified in the *Submitting Your Work* section.

The MacCorquodale Review

This assignment involves reading MacCorquodale's review of Chomsky's review of Skinner's *Verbal Behavior* and then writing a two to three page *typed* summary of the main points of this paper. Do this assignment as scheduled in the *Assignment Sequence* section. Submit your work according to the methods specified in the *Submitting Your Work* section.

The Ledoux et al Material

This assignment involves studying all the sections of the material by Ledoux *et al*. As you do so, complete the integrated exercises. *Then* make any needed corrections using the answer sheets provided. For each correction, state what makes your initial answer inaccurate and why the correct answer *is* correct. Do this assignment as

scheduled in the *Assignment Sequence* section. Submit your work according to the methods specified in the *Submitting Your Work* section.

The Area-Focused Assignment

This last assignment focuses each student on one of the two application areas that this first course on verbal behavior emphasizes. These two applications involve enhancing the acquisition of verbal behavior either by foreign language learners or by learners with language deficits perhaps from developmental disabilities. Locate the area appropriate for you, and follow the instructions. Do this assignment as scheduled in the *Assignment Sequence* section. Submit your work according to the methods specified in the *Submitting Your Work* section.

Foreign Language Area. If you teach foreign languages or ESL, then the assignment requires you to write a three to five page *typed* description of how you will incorporate applications of verbal behavior analysis into your teaching. *Your* applications may begin with, but should also go beyond, those included in the Ledoux *et al* material.

Language Deficit Area. For all others (i.e., for all who are not, or will not be, actively engaged in teaching foreign languages or ESL) the assignment involves reading chapter 14 of the Maurice *et al* book, and answering the set of study questions for this chapter. This chapter is titled "Strategies for Promoting Language Acquisition in Children with Autism." Answering the study questions will help you absorb the material from the chapter. You complete the study questions, *after reading the chapter through*, by *writing out* the answer to each question when you come to it as you *reread* the chapter. You *write out* the answers right on the *Study Question* pages. Write out your answers in full sentences that incorporate the questions. Learning occurs when responses (like writing question answers) are made, and reinforced, especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out study question answers correctly.

Submitting Your Work

Different assignments have different work submission methods. These only apply if you are taking the course for TIBI credit. (Any addresses and phone/fax numbers that you may need will be clarified upon enrollment.)

To submit your answers for the Peterson book, the Ledoux *et al* material, and the area-focused assignment / language-deficit chapter—all of which must be hand-written—you can scan and fax to your professor the pages that have your work. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

To submit your review of the MacCorquodale article, or your area-focused assignment / foreign language ap-

plication description, you may email your work to your professor (but do not use email attachments). Or, you may scan and fax your work to your professor. However, your professor would prefer that you print out your work (although it too may be handwritten), photocopy it, and send it to your professor by regular postal mail.

In all cases, you are to keep the original of your work. This insures against loss and enables you and your professor to communicate about your work (as you will then both have an identical copy). Note, however, that for study question answers, email and email attachments are neither reliable enough, nor identical enough, for this purpose, so they are not to be used for this purpose.

Your work will be perused and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your professor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

Assignment Sequence

Students should work their way through the course by reading and studying the texts and materials, and sending in their work for each assignment. The slowest reasonable self-pacing of the coursework (presuming a typical 15-week semester) is this sequence which can be used as a check-off list:

- Weeks 1 & 2: The Peterson book, Preface (with review of the “prerequisite terminology”) & Ch. 1.
- Weeks 3 & 4: The Peterson book, Ch. 2.
- Weeks 5 & 6: The Peterson book, Ch. 3.
- Weeks 7 & 8: The Peterson book, Ch. 4.
- Week 9: The Peterson book, Ch. 5.
- Weeks 10 & 11: The summary of the MacCorquodale article.
- Weeks 12 & 13: The completion of the Ledoux *et al* material.
- Weeks 14 & 15: The description of your applications, *or* your study-question answers, from the Area-Focused assignment.

Do the assignments in this sequence, even if you do them at a faster pace than the pace presented here. If you go slower than this schedule, assignments could easily back up on you to the point where insufficient time remains to complete them in a satisfactory manner.

Note #5: Be sure that everything you submit is readable and contains your name!

Note #6: The usual higher education workload expectation for a course is about 150 hours. (The typical face-to-face course features about 50 in-class contact hours with

the university expecting about 100 more hours of additional study at the average rate of about two hours out of class for each hour in class.) This can be accomplished at rates ranging from about 50 hours per week over three weeks to about ten hours per week over the typical 15 weeks of a semester. Of course, some students may take a little less than 150 hours, while others may take more than 150 hours, to do the work to the same acceptable and expected standard.

You can—and are encouraged to—go through the assignments as rapidly as your schedule allows. This could mean spending a typical 15 weeks on the course. Or it could mean doing the whole course in as little as—but not in less than—three weeks, as one would progress through the *single* allowed course in a three-week summer school term. That is, you could work on the course anywhere from minimum part-time (i.e., at the rate of about ten hours per week, as described in the *Assignment Sequence* section) to maximum full-time (i.e., at the rate of about 50 hours per week).

If you are to be successful, you need to exercise some self-management skills by starting immediately and keeping up a reasonable and steady pace on the course work. You need to do this because your professor will *not* be reminding you that the products of your work are due; all the course work is set forth in this syllabus and so is automatically assigned. You are expected to follow through on your own. You need to set an appropriate pace for yourself (or accept the pace in the *Assignment Sequence* section) and adhere to that pace, and thereby get the sequence of assignments done and submitted to your professor. This will assist your success.

At various points in the course, you will be provided with feedback about your work. Upon completing all the coursework, you will be provided with your earned grade. (The grade is provided solely for the person whose work earned the grade.) We at TIBI are sure that the outcomes of your efforts to study this aspect of behaviorological science will benefit both you and others, and we encourage you to study further aspects. ☺



2004 Planning Meeting Prompts Activities

Stephen F. Ledoux

SUNY-Canton

Since Columbus, Ohio, is supposed to be the geographic center of the US population, TIBI held a general planning meeting at the AmeriHost Inn near Washington Court House, Ohio, about 35 miles from Columbus, on 10 July 2004. In keeping with members' concern to spend our resources wisely, this venue avoided the high costs typical of big cities while still being fairly centrally located. The meeting was designed to provide an opportunity for anyone friendly toward the natural science of behavior to contribute to developing ideas for activities that can help improve the prospects for behaviorology, and the prospects for humanity, and the relationship between these two. Of course, no meeting place or date can suit everyone who wants to attend, so many future meetings will have other venues and dates. (These meetings will be held with some regularity, probably annually, so readers interested in attending should contact TIBI with their suggestions about workable venues and dates. Such suggestions carry important weight in deciding about venues and dates.)

TIBI meetings are not merely for making plans. Friends of behaviorology do not always know each other, and some people interested in behaviorology would like to get to know others with the same interest better than they can through names on a list (or even through correspondence or phone conversations). Also, some would like to see who shares interest in particular areas or ideas. And all are interested in exploring important questions such as (a) how we can make our current behaviorological activities (individual, work-related, or organizational) more effective, including avoidance of organizations unnecessarily duplicating each other's work, and (b) what other endeavors behaviorologists might undertake. Such questions arise in terms not only of maintaining our discipline's ongoing presence but also in terms both of increasing the development of the independent natural science of behavior, and of increasing the rate at which this discipline can provide its contributions to a humanity in increasing need of it. As this first meeting was a purely planning meeting rather than a conference, the schedule did not feature any formal presentations. However, since one of the suggestions made at this meeting was to consider allowing such presentations, they may be included as part of the schedule at future meetings.

People came to the meeting with their ideas about actions we could take to further guarantee the future of the behaviorology discipline, its professional organizations, and its contributions. These we shared in ways that enabled us improve on them and thereby reach toward common goals. All ideas were and are welcome, and were/are considered in a friendly atmosphere of mutual respect, and mutual concern for the near, and long term, future. (To encourage participation, this meeting had no registration fee; TIBI paid for the meeting room, a scenario TIBI will continue so long as it is feasible.) Some people were unable to take part in this first meeting, so they sent in their ideas and suggestions; those who could attend appreciated this action by those who could not attend, and these contributions received substantial consideration at the meeting.

Those at the meeting found a wide variety of ideas available for consideration. Altogether, these ranged from holding some meetings in other countries and cultures to clarifying behaviorology's potential contributions to future cultural designs, such as not only the design of improved cultures and cultural practices here on Earth but also the design of cultures and cultural practices for the future extension of the human presence off-Earth, in space or on solar system bodies (e.g., the other planets or their moons) or other bodies, with Mars being a particularly likely initial focus of cultural design efforts. (Readers interested in the latter topic may wish to consult with Scott Beach at sgb123456@netscape.net for further discussion.)

As already mentioned, a well-supported idea was to let those who attend the meetings discuss a range of conceptual or experimental or philosophical or historical or technological topics by way of prepared papers in addition to discussing activity planning topics. That is, we might arrange these TIBI meetings as dual-function meetings. The planning function should continue, but the meetings should also become an annual series of conferences on "behaviorological foundations for the future" or "behaviorological foundations for society." Both students of behaviorology and younger behaviorological professional could especially benefit from additional outlets for their work, and additional opportunities to respond to the work of others. Such dual-function meetings could be a successful way to encourage their work. Here are some of the other planning ideas or suggestions pertaining to possible future activities:

Several suggestions concerned efforts to reach out more to others. (a) We should try to make TIBI courses and certificates more available for line staff in applied settings. Our courses could provide them with additional training in the basics of behavior science and technology that is directly applicable in their work, and our certificates could provide them with documentation upon which their employer could base additional financial benefits.

(b) After updating the behaviorology.org web site following the printing of each issue of the *Behaviorology Today* magazine, we should announce the appearance of the new web-site material on several of the behavior science web-site discussion lists. (c) We should—and do—restate the willingness of TIBI to publish timely announcements, in the *Behaviorology Today* magazine, regarding the activities of other behaviorological organizations whenever we come into possession of such information (e.g., information pertaining to the annual convention of the International Society for Behaviorology [ISB]). (d) Whenever feasible, we should, and will, provide complimentary copies of the *Behaviorology Today* magazine to members of other behaviorological organizations (e.g., ISB) whenever we have their current addresses. And (e), we should increase efforts to inform other members of the natural science community about the availability of an independent natural science of behavior, perhaps initially by creating an informational brochure that includes some essential references and contact information.

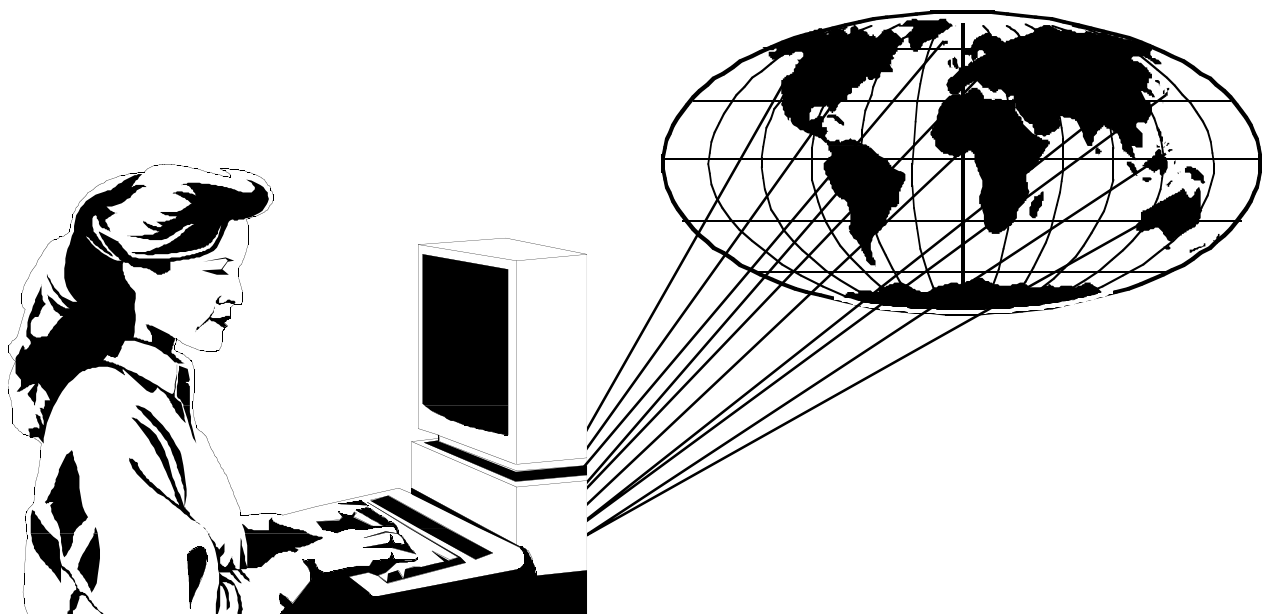
Many other suggestions about possible future activities concerned organizational arrangements. (a) We should consider having advisory (i.e., non-voting) members, including student members, on the TIBI Board of Directors. (b) We should focus more effort on finding ways to enable graduate students, young professionals, and others to discover us when they find their circumstances compelling them toward an increasing interest in the value of an independent natural science of behavior. (c) We could allow TIBI's administrative items to appear only on the behaviorology.org web site instead of requiring them to take up pages in the *Behaviorology Today* magazine. These items would likely include the By-Laws,

the Policies and Procedures, and the descriptions of TIBI's courses and certificates. (d) We might add a simple "shop" to the behaviorology.org web site that lists books and other items that promote behaviorology, with simple methods for obtaining desired items. (e) We should schedule some planning meetings in other countries and cultures. In recognition of the recent conference at the University of Iceland honoring B.F. Skinner's 100th birthday, those present at this planning meeting favored scheduling the next meeting in Iceland. Arrangements to do this, in late June 2005, are currently underway; contact TIBI for details. (For those who cannot attend a meeting in Iceland, arrangements for an additional planning meeting, perhaps near Indianapolis, Indiana, in the middle of July, 2005, are also underway.)

If you find a project among all these suggestions which interests you, or another which you might help to make happen, then please let someone know. Some TIBI contacts are on the last page of each issue of *Behaviorology Today*.

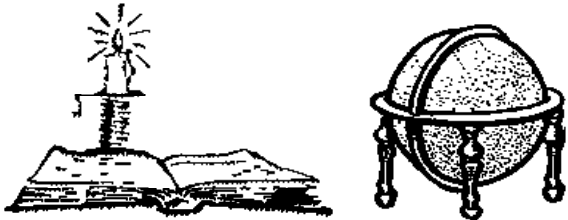
The attendees at this planning meeting thoroughly enjoyed getting to know each other better as they pondered some interesting and complex considerations. They reviewed TIBI's history and mission, and entertained a diverse array of views and considerations regarding the short and long range goals—and some activities to help achieve these goals—of behaviorology in general and TIBI in particular.

Of course, in a report like this, capturing and conveying the fun and excitement inherent in the company and discussions at these meetings is quite difficult. However, I am sure these experiences will recur at our future meetings. I hope you can attend and share these experiences along with you ideas and contributions. ☺



Web Site Content Notice

Several administrative items are expected to appear on the behaviorology.org web site, before the end of the year, in updated versions. (For dating purposes, these items may carry headers indicating Volume 7, Number 2, of this magazine as their source. However, due to recent actions by the TIBI Board of Directors, these items will appear only on the web site at this time rather than take space here in the pages of *Behaviorology Today*.) A list of these items will likely include (a) the TIBI By-Laws, (b) the TIBI Policies and Procedures, and (c) the descriptions of the TIBI courses and certificates. ☺



Volume 8 Number 1 Contents Plan

Here are some of the featured items planned for the next issue (Spring 2005) of *Behaviorology Today*, although these plans may change:

- ☞ On Verbal Behavior: The Third of Four Parts (Lawrence E. Fraley).
- ☞ The first three (of seven) chapters of "Origins, Status, and Mission of Behaviorology" (Lawrence E. Fraley & Stephen F. Ledoux).
- ☞ The TIBI course syllabus for BEHG 400: *Behaviorological Rehabilitation*.
- ☞ The TIBI course syllabus for BEHG 415: *Basic Autism Intervention Methods*.
- ☞ The TIBI course syllabus for BEHG 420: *Performance Management and Preventing Workplace Violence*.
- ☞ The TIBI course syllabus for BEHG 425: *Non-Coercive Classroom Management and Preventing School Violence*.
- ☞ The TIBI course syllabus for BEHG 475: *Verbal Behavior II*. ☺

TIBI Donors & Levels

As contributions to the Institute are tax deductible, TIBI has adopted these policies for donors:

Donors' Benefits, and Amounts and Titles

Benefits: All donors (a) receive at least the benefits of the Affiliate member level (as described in *TIBIA Memberships & Benefits* in this issue) and (b) have their name listed (unless they wish otherwise) under their donor title in at least one issue of *Behaviorology Today* per year.

Per Year Donors

\$50 (to \$99):	Contributor
\$100 (to \$249):	Supporter
\$250 (to \$499):	Patron
\$500 (to \$999):	Sponsor
\$1,000 (to \$1,999):	Benefactor

Lifetime Donors

\$2,000 (to \$4,999):	Lifetime Contributor
\$5,000 (to \$9,999):	Lifetime Supporter
\$10,000 (to \$19,999):	Lifetime Patron
\$20,000 (to \$49,999):	Lifetime Sponsor
\$50,000 or more:	Lifetime Benefactor

For the Past or Current Year

[See the listing in the last spring issue.—Ed.] ☺



Syllabus Directory

Each issue of *Behaviorology Today* contains three lists. These lists show where to find only the most up-to-date versions (in title and content) of TIBI's course syllabi. The first list shows syllabi located in the current issue or past issues. The second list shows the schedule (which may change) of syllabi to appear in some future issues. The third list repeats the syllabi locations (actual or planned) but by course number rather than by issue.

Up-To-Date Syllabi in Current or Past Issues

- 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.**

Syllabi Planned for Future Issues

- 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.
- Volume 10, Number 2 (Fall 2007): BEHG 250:
Educational Behaviorology for Education Consumers.
- Volume 11, Number 1 (Spring 2008): BEHG 340:
Educational Behaviorology for Education Providers.
- Volume 11, Number 2 (Fall 2008): BEHG 405:
Introduction to Instructional Practices in Educational Behaviorology.

- Volume 12, Number 1 (Spring 2009): BEHG 455:
Advanced Instructional Practices in Educational Behaviorology.
- Volume 12, Number 2 (Fall 2009): BEHG 445:
Advanced Experimental Behaviorology.

Syllabi Locations Listed 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 250: *Educational Behaviorology for Education Consumers:*
Volume 10, Number 2 (Fall 2007).
- BEHG 340: *Educational Behaviorology for Education Providers:*
Volume 11, Number 1 (Spring 2008).
- BEHG 355: *Verbal Behavior I:*
Volume 7, Number 2 (Fall 2004).
- BEHG 365: *Advanced Behaviorology I:*
Volume 9, Number 1 (Spring 2006).
- BEHG 400: *Behaviorological Rehabilitation:*
Volume 8, Number 1 (Spring 2005).
- BEHG 405: *Introduction to Instructional Practices in Educational Behaviorology:*
Volume 11, Number 2 (Fall 2008).
- BEHG 410: *Behaviorological Thanatology and Dignified Dying:*
Volume 8, Number 2 (Fall 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 445: *Advanced Experimental Behaviorology:*
Volume 12, Number 2 (Fall 2009).
- BEHG 455: *Advanced Instructional Practices in Educational Behaviorology:*
Volume 12, Number 1 (Spring 2009).
- 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.

Always More at behaviorology.org

Visit TIBI's web site (www.behaviorology.org) regularly. We are always adding and updating material.

From the *Welcome* screen, you can select the *Sample* page of our *Behaviorology Community Resources* (designed especially for first-time visitors). This page provides a wide selection of useful articles, many from *Behaviorology Today*, in Adobe PDF format (with a button to click for a free download of Adobe's Acrobat Reader software, although most computers already have it). The articles are organized on several topical category pages (e.g., contributions to parenting and education, book reviews, and behaviorology around the world). Other selections on the *Sample Community Resources* page feature descriptions of TIBI's certificate programs and course syllabi, and links to some very helpful related web sites.

From the *Welcome* screen or the *Sample Community Resources* page, you can also select the main page of the web site, the *Complete Behaviorology Community Resources* page. This page contains a more complete set of materials, including (a) more articles under the same selection categories as on the *Sample* page, (b) additional article selection categories (e.g., contributions to autism, natural science, outreach, and verbal behavior) each with its own range of pages and PDF materials, (c) many more links to related behavior science web sites, and (d) several new types of selections (e.g., books and magazines pages and PDFs, and upcoming activities).

Visit the web site regularly. After each new issue of *Behaviorology Today*, we link the issue's articles to the relevant selections and categories on the web site.

Explore what interests you. And tell us about your site-visit experience. Your input is welcome, and will help us make further improvements.

As with any category of regular membership or Donor level, a paid online membership (US\$5) earns and supports access to the greater amount of online material included on the *Complete Behaviorology Community Resources* page. (See *TIBIA Memberships & Benefits* in this issue.)



Subscriptions & Back Issues

People can receive copies of *Behaviorology Today* in ways other than as a member. People can subscribe without membership for US\$20, and people can obtain back issues for US\$10 each. Photocopy, fill out, and send in the "membership" form on a later page. As applicable, check the "subscription" box, and/or list which back issues you are ordering. *Donations/Contributions* are also welcome, and are tax-deductible as TIBI is non-profit (under 501-C-3).

While supplies last, new subscriptions—with or without a regular membership—will include a copy of each past issue of *Behaviorology Today*, beginning with Volume 5, Number 1, (Spring 2002).

TIBIA Memberships & Benefits

The levels of TIBIA membership include increasing amounts of basic benefits. Here are all the membership levels and their associated, basic benefits:

Free-online membership. Online visitors (who may or may not elect to register online as a free member) receive benefits that include these: (a) access to selected, general interest *Behaviorology Today* articles and links, (b) access to Institute information regarding TIBI Certificates and course syllabi, and (c) access to previews of the benefits of other membership levels.

\$5 (to \$19) Basic-online membership. Online visitors who pay the \$5 online dues earn benefits that include these: *All* the benefits from the previous membership level plus (a) access to all *Behaviorology Today* articles and links online, (b) access to TIBIA member contact information online, and (c) access to special organizational activities (e.g., invitations to attend TIBI conferences, conventions, workshops, etc.).

\$20 (to \$39) Subscription membership. Those who mail in (by regular post) the \$20 subscription fee and form receive benefits that include these: *All* the benefits from the previous levels plus a subscription to the paper-printed issues of *Behaviorology Today* (ISSN 1536-6669).

Contribution amounts beyond these first three levels are *Donor* levels, which are described in *TIBI Donors & Levels* in this issue. All memberships are per year. The next four membership levels (Student, Affiliate, Associate, and Advocate) were the Institute's original membership categories, and so are sometimes designated the "regular" membership levels. Here are these regular membership levels and their basic benefits:

\$20 Behaviorology Student membership (requires paper membership application co-signed by advisor or department

chair, and dues payment—see *TIBIA Membership Criteria & Costs* in this issue). Benefits include *all* those from the previous levels plus these: Access to all organizational activities (e.g., invitations to attend and *participate* in meetings conferences, conventions, workshops, etc.).

\$40 *Affiliate membership* (requires paper membership application, and dues payment—see *TIBIA Membership Criteria & Costs* in this issue). Benefits include *all* those from the previous levels plus these: Access to advanced levels for those acquiring the additional qualifications that come from pursuing a professional behaviorology track.

\$60 *Associate membership* (requires paper membership application, and dues payment, and is only available to qualifying individuals—see *TIBIA Membership Criteria & Costs* in this issue). Benefits include *all* those from the previous levels plus these: TIBIA voting rights.

\$80 *Advocate membership* (requires paper membership application, and dues payment, and is only available to qualifying individuals—see *TIBIA Membership Criteria & Costs* in this issue). Benefits include *all* those from the previous levels plus these: May be elected to hold TIBIA or TIBI office.

Other Benefits

Beyond the intrinsic value that TIBIA membership bestows by virtue of making the member a contributing part of an organization helping to extend and disseminate the findings and applications of the natural science of behavior for the benefit of humanity, and beyond the benefit of receiving the organization's publications, TIBIA membership benefits include the following:

- ❧ Members will have opportunities to present papers, posters, and demonstrations, etc., at the organization's meetings;
- ❧ Members paying regular dues in the last third of the calendar year will be considered as members through the end of the following calendar year;
- ❧ Members paying regular dues in the middle third of the calendar year will be allowed to pay one-half the regular dues for the following calendar year;
- ❧ A TIBIA member may request the Institute to evaluate his or her credentials to ascertain which TIBI certificate level most accurately reflects the work (and so, by implication, the repertoire) behind those credentials. The Institute will then grant that certificate to the member; as part of this evaluation, the Institute will also describe what work needs to be accomplished to reach the next certificate level. The normal processing fee for this service (US\$20) will be waived for members. For the processing fee of US\$20, a non-member may also request this evaluation and, should she or he

ever join TIBIA, the US\$20 already paid will be applied to the initial membership dues owed. (Faculty teaching behaviorology courses can encourage their students to request this evaluation.)

TIBIA continuously considers additional membership benefits. Future iterations of this column will report all new benefits upon their approval.❧

TIBIA Membership Criteria & Costs

TIBIA has four categories of regular membership, of which two are non-voting and two are voting. The two non-voting categories are Student and Affiliate. The two voting categories are Associate and Advocate. 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.

Admission to TIBIA in the Student membership category shall remain open to all persons who are undergraduate or graduate students who have not yet attained a doctoral level degree in behaviorology or in an acceptably appropriate area.

Admission to TIBIA in the Affiliate membership category shall remain open to all persons who wish to maintain contact with the organization, receive its publications, and go to its meetings, but who are not students and who may not have attained any graduate degree in behaviorology or in an acceptably appropriate area. On the basis of having earned TIBI Certificates, Affiliate members may nominate themselves, or may be invited by the TIBI Board of Directors or Faculty, to apply for an Associate membership.

Admission to TIBIA in the Associate membership category shall remain open to all persons who are not students, who document a behaviorological repertoire at or above the masters level or who have attained at least a masters level degree in behaviorology or in an acceptably appropriate area, and who maintain the good record—typical of “early-career” professionals—of professional accomplishments of a behaviorological nature that support the integrity of the organized, independent discipline of behaviorology including its organizational manifestations such as TIBI and TIBIA. On the basis either of documenting a behaviorological repertoire at the doctoral level or of completing a doctoral level degree in behaviorology or in an acceptably appropriate area, an Associate member may apply for membership as an Advocate.

Admission to TIBIA in the Advocate membership category shall remain open to all persons who are not stu-

dents, who document a behaviorological repertoire at the doctoral level or who have attained a doctoral level degree in behaviorology or in an acceptably appropriate area, who maintain a good record of professional accomplishments of a behaviorological nature, and who demonstrate a significant history—typical of experienced professionals—of work supporting the integrity of the organized, independent discipline of behaviorology including its organizational manifestations such as TIBI and TIBIA.

For all regular membership levels, prospective members need to complete the membership application form and pay the appropriate annual dues.

Establishing the annual dues structure for the different membership categories takes partially into account, by means of percentages of annual income, the differences in income levels and currency values among the world's various countries. Thus, the annual dues for each membership (or other) category are:

<u>Category</u>	<u>Dues (in US dollars)*</u>
Board of Directors member	The lesser of 0.6% of annual income, or \$120.00
Faculty member	The lesser of 0.5% of annual income, or \$100.00
Advocate member	The lesser of 0.4% of annual income, or \$80.00
Associate member	The lesser of 0.3% of annual income, or \$60.00
Affiliate member	The lesser of 0.2% of annual income, or \$40.00
Student member	The lesser of 0.1% of annual income, or \$20.00

*Minimums: \$20 director or faculty; \$10 others

TIBIA MEMBERSHIP APPLICATION FORM

(SEE THE NEXT PAGE FOR THE TIBI / TIBIA PURPOSES.)

Copy and complete this form (please type or print)—for membership or contributions or subscriptions or back issues—then send it with your check (made payable to TIBIA) to the TIBIA treasurer at this address:

Dr. Stephen Ledoux
TIBIA Treasurer
SUNY-CTC
34 Cornell Drive
Canton NY 13617 USA

Check if applies:

- Contribution:
- Subscription:*
- Back issues:*
- & Vol. ____, # __
- & Vol. ____, # __

Name: _____

Member Category: _____

Office Address: _____

Amount enclosed: us\$ _____

Home Address: _____

Office Phone #: _____

Home Phone #: _____

FAX #: _____

CHECK PREFERRED MAILING ADDRESS:

E-mail: _____

Office: Home:

Degree/Institution:** _____

Sign & Date: _____

*Subscriptions: us\$20/year; back issues: us\$10 each.

**For Student Membership:

I verify that the above person is enrolled as a student at: _____

Name & Signature of Advisor or Dept. Chair: _____

TIBI / TIBIA Purposes*

TIBI, as a non-profit educational corporation, is dedicated to many concerns. TIBI is dedicated to teaching behaviorology, especially to those who do not have university behaviorology departments or programs available to them; TIBI is a professional organization also dedicated to expanding the behaviorological literature at least through the magazine/newsletter *Behaviorology Today* (originally called *TIBI News Time*) and the *Behaviorology and Radical Behaviorism* journal;** TIBI is a professional organization also dedicated to organizing behaviorological scientists and practitioners into an association (The International Behaviorology Institute Association—TIBIA) so they can engage in coordinated activities that carry out their shared purposes. These activities include (a) encouraging and assisting members to host visiting scholars who are studying behaviorology; (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 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 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 the 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.☺

Periodical Information

Behaviorology Today [known as *TIBI News Time* for the first 4 volumes / 8 issues], is the magazine/newsletter of *The International Behaviorology Institute* (a non-profit educational corporation) and is published in the spring and fall each year.

Behaviorology Today and TIBI can be contacted through the Editor at these addresses and web site:

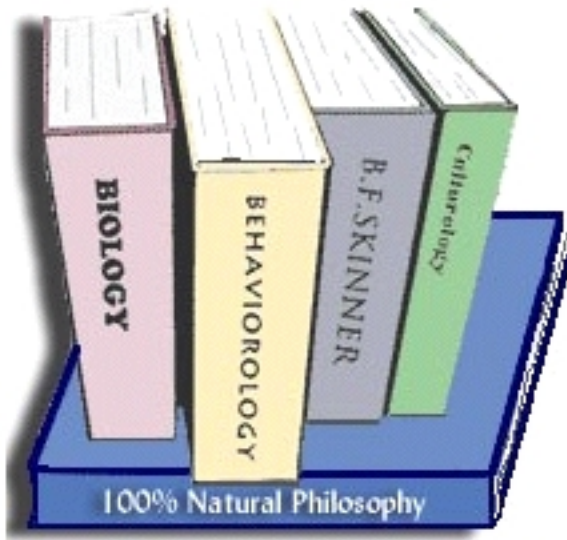
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To submit items for publication, contact the editor. Preferred contact: Send items on a 3.5 inch disk (Mac preferred) in a format that can be placed in PageMaker, along with a hard copy, to the editor.

Authors' views need not coincide with official positions of TIBI. (Authors retain copyrights.)

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

**This journal (BARB) is under development at this time and will appear only when its implementation can be fully and properly supported.—Ed.



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