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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.

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NOTE: This issue contains one *new* TIBI online course syllabus. In some future issues, other new syllabi or updates of previous syllabi will appear. (See the *Syllabus Directory* near the back of each issue.)—Ed.

Volume 10 Number 1 Contents Plan

Here are some of the featured items planned for the next issue (Spring 2007) of *Behaviorology Today*, although these plans may change:

- ✦ *Personhood & Superstition Part III (of IV)*
(Lawrence E. Fraley)
- ✦ The Third (of seven) chapters of “Origins, Status, and Mission of Behaviorology” (Lawrence E. Fraley & Stephen F. Ledoux).
- ✦ The TIBI course syllabus for BEHG 120:
Non-Coercive Companion Animal Behavior Training.
- ✦ An article or two from among those that are currently in process from several other authors. *When will YOUR article arrive?* (Staff writers can maintain the publication schedule with worthy contributions, but worthy articles from guest authors make even more valuable disciplinary literature contributions.)—Ed.☺

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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.)☺

Personhood & Superstition Part II (of IV)

Lawrence E. Fraley

West Virginia University

[Presented here is the Second of four related works. These works are (a) "The Nature of Personhood," (b) "More Implications of Misconstrued Personhood," (c) "Cultural Investment in Superstition," and (d) "Behavioral Engineering to Reduce Superstition." These four pieces are all excerpts from parts of "Person, Life, and Culture," a later chapter of the author's book, *General Behaviorology: The Natural Science of Human Behavior* (Fraley, in press). The relevance of these pieces to managing improvements in ongoing cultural concerns increases their interest to readers of this journal. The four pieces appear, one at a time, in consecutive issues beginning with the Spring 2006 issue (Volume 9, Number 1).—Ed.]

More Implications of Misconstrued Personhood

The continued interpretation of evidence on the basis of superstitious assumptions tends to lead ultimately to mistakes in dealing with practical matters and to the disappointing outcomes of those mistakes. Attempts to interpret practical situations from the perspective of superstitious assumptions can leave logic stretched to the breaking point. Concepts that are based on fundamentally superstitious assumptions are ultimately unreliable, and that remains true no matter how elaborate or gussied with scholarly affectations their supportive casuistry may become.

In the arena of practical affairs, the failure of superstition-based endeavors is almost inevitable. Only by improbable accident would that approach prove optimally effective. Those failures often transcend the adverse personal implications for the individuals who are directly involved insofar as they also portend more broadly encompassing difficulties at the cultural level.¹ Fur-

thermore, the disastrous implications of reliance on superstition can more rapidly become realized under the fast pace of change in modern times. Often those adverse results come as a surprise, because under the distractions of hewing to the superstitiously sanctioned course of action the adverse implications of those practices are often subject to early neglect by those who engage in them. But even when an adverse outcome is predictable the underlying superstitious ideology, however misguided, may prescribe that such adversity be endured as the cost of moral or ethical propriety.

In some cases the underlying natural contingencies prevail regardless of the control exerted by a person's superstitious verbal behavior. The person behaves rationally regardless of a verbal repertoire that would otherwise tend to evoke other kinds of behavior. However, given the typical socio-cultural respondent conditioning to which such a person is likely to have been subjected, on such occasions the person's automatic respondent emotional reactions match the behavior that would have occurred under the exclusive control of the superstitious verbal repertoire in the absence of the natural controls. The person behaves rationally but feels guilty, ashamed, or sinful about having done so. Although that effect is often called *self-punishment*, it is the behaviorally engineered product of those who arranged the respondent conditioning that made such an emotional effect inevitable on such occasions.

The Essence and Worth of Persons

Consider the totality of all of the behavioral manifestations of which the mediating body is capable when environmentally stimulated. One's unique personal identity is almost entirely established by the normally extensive operant aspect of that repertoire. The various aspects of a total operant person manifest selectively according to the prevailing contingencies under which the individual is currently behaving. When the capacity to behave operantly is entirely and permanently lost, the "person" is dead. The biological body that previously mediated the operant behavior that was the person may remain physiologically alive in other ways, but, in the permanent absence of the capacity for further person-defining behavior, the body is normally subject to discard even though some of its physiological maintenance functions and the capacity for various respondent behaviors may yet persist.

¹ An example pertains to the abortion of a human fetus in the case of an unwanted pregnancy. The superstitious presumption that the fetus is possessed and behaviorally operated by a sacrosanct soul may preclude actions to abort that pregnancy. The personal outcome for the mother may be a future of vastly diminished quality. But not only may her life be ruined, her child may be innately

defective, and whether physiologically defective or not, may be subject to inadequate or improper conditioning due to insufficient resources. If such cases arise often, the culture can become overburdened with the implications of too many such physiologically and/or behaviorally defective people. Symptoms at the cultural level include prisons filling, welfare costs soaring, and squalor expanding.

That discard may take the form of disposing of what is left of the body after some disassembly to salvage reusable parts. That such an operation may result in the biological death of the personless body may not be regarded as a deterrent. The disposal of biological remnants may be deemed unimportant and may occur as nothing more than commitment to a garbage container, or the occasion may be construed to be ceremonial and to feature an elaborate ritual surrounding some kind of a funeral, including burial, cremation, or other special form of relinquishment.

An occasional alternative is to commit the biologically vital but person-incapable body to medically supervised storage and maintenance under what is described as a continuing life-support arrangement. In that state, much of the internal integrity of the body is maintained, but such a generally alive body is progressively less likely ever to experience a restoration of its operant capabilities. Such a comatose state can, in some cases, be maintained for decades. Although recovery of the former capacity to exhibit the dormant operant repertoire seldom happens, its rarity brings to such preservative projects the special persistence that is endowed by the stretch of variable ratio schedules of reinforcement. In reality, such rare recoveries of operant behavioral capacity tend to be only partial—in most such cases, rather limited. Thus, across cases the cost-to-benefit ratio can range from favorable to unfavorable, and advances in the technology of neural physiological probing continue to improve the reliability of the predicted outcomes.

If a body is biologically dead, it may nevertheless be preserved, perhaps to be displayed as a mummified relic or symbol of the terminated person that it once supported. The potential value of a dead body for involvement in such a costly preservation project, perhaps for venerational purposes, is usually based on the importance of the behaviors that such a body formerly mediated.² However, its worth may eventually become more archeological and pertain to the clues it provides about the circumstances of its antiquity.

² The pairing of a body's nonbehavioral qualities with the behaviors that it mediates tends to result in the respondent conditioning of bodily properties to function as evocative stimuli for social behavior. When death occurs and the behaving stops, the pairing of stimuli that is essential to that conditioning process is terminated. The previously conditioned relations may persist for awhile insofar as people may react for a time to a dead body as if it were the person (speaking to it, for example). However, behavior is the medium of strong reinforcement for such responses, so in the absence of behavior the previously conditioned kinds of responding tend to extinguish. Thus, the features of a dead body tend rather quickly to lose their capacity to evoke such responses.

The fact that the concept of personhood inheres in the operant repertoire of an individual to a far greater extent than in the respondent repertoire has further implications that are worth exploring. We note, to cite an example, that the sociocultural quality of a person is determined more by the skillful and relevant speaking of six languages than by the knee jerks, eye blinks, salivation, and other automatically elicited responses that that individual exhibits. An individual's political behavior is more definitive of that *person* than is the shivering that that individual exhibits when chilled. It remains obvious that it is the particulars of the *operant* repertoire that most establish a person, and we tend to measure the worth of a person by gauging the quality of the outcomes of that individual's operant kind of behavior.

The operant repertoire of the typical human being is sufficiently extensive that nearly everyone exhibits at least some behavior that serves the interests of others and the interests of the group. Thus, from the general perspective of others, every individual has at least some worth as a person. Thus, the concept of individual worth is readily subject to abstraction, and people typically, if often unhelpfully, describe the result in terms of the "sanctity of human life." Such transitions to abstraction, rising into the realm of cultural practice, tend to be bolstered by the strong emotional conditioning that inheres in the wide ranging and intense reinforcement of any behavior that comports with that abstraction.

In particular cases, the practical implications of that abstraction often prove to be so impractical or costly that respect for life fails to manifest. In that case, the arena of respect for the basic proposition may undergo a convenient conceptual shift from the material world with which people must cope to an ethereal realm that they can control merely by metering their own awe in response to the idea of it. For example, if it is too bothersome or costly to insure that a troublesome individual meets the qualitative norms of personhood for the group, the sanctity of that individual may be abandoned to God's respect while the person's fate as a group member is left to judicial resolution under more practical and mundane social contingencies. Thus, condemned criminals may be assured that God will welcome them with mercy and compassion and are then executed.

During assessments of the relative worth of the individuals within a group, respect for a concept of sociocultural equality that relies exclusively on mere biological species membership is largely a luxury of surplus wealth. As the resource base of a culture shrinks, traditional rhetoric of equality may persist (e.g., public assertions that "*all citizens are equal*"). However, practices that comport in practical ways with such a pretended contributory equality tend to fade. Increasingly, the well-being of those who behave more effectively is disproportionately

protected, especially if their effective behavior benefits the group. As cultural resources diminish, the well-being of the more effective people tends to become progressively less compromised in support of an abstract notion of equality among all individuals, especially relative to the well-being of those individuals whose behavioral contributions remain unlikely ever to reach qualitative par.

For example, in resource-deficient cultures governmental decisions to allocate scarce resources are unlikely to favor programs of welfare for individuals whose bodies lack the potential to mediate behavior that would be effective in furthering the well-being of the group. These neglected persons may include those who are too elderly to exhibit much of their formerly effective repertoire, those who are innately defective or traumatized beyond the reach of low-cost repair, or those whose opportunities for the operant conditioning of a culturally valuable repertoire have been expended to little avail. It is no accident that government welfare programs that even modestly comport with the rhetoric of universal human equality tend to characterize only governments that have surplus wealth at their disposal. People who fashionably proclaim that all individuals are equal in the eyes of God may withhold arguments that all should be equal in the eyes of the state if those proclaimers must be taxed to make it so.

As an illustration, consider a somewhat impecunious government that can afford either (a) pavement on the main thoroughfare of the largest city or (b) free government-provided family assistance with the care of severely retarded children who, regardless of that assistance, could never be rendered capable of contributing productively to the physical or economic improvement of the cultural system. With the government able to afford only one of those expenditures, the prevailing sociocultural contingencies favor the paving, ...a kind of project that typically affects many more people and is replete with various potential benefits of kinds that imply the improved well-being of the group as a whole.

The worth of a person to the culture of which that person is a part is based on the effectiveness and efficiency of that part of an individual's behavior that has implications for the well-being of the group. It follows logically that individuals who cannot exhibit much behavior of that kind, or who exhibit counterproductive behavior, are generally regarded as worth less in the arena of practical affairs, and they are treated accordingly. Regardless of empty rhetoric about equality, they are the first to be sacrificed or eliminated when resources are scarce or their behavior becomes threatening (e.g., the unborn, the young, the elderly, the destitute, the physiologically impaired, and the criminal). As available resources shrink, the often strongly conditioned emotional predisposition to nurture such individuals seldom proves sufficient to

overcome indefinitely the expenditure of the costly resources that is typically required to maintain them. Once such low contributors exist, the potential for their salvation inheres in the economic prosperity of their culture.

Individuals who contribute negatively, and who cannot be rendered economically productive, create a kind of problem that can be eliminated either of two ways: Corrective interventions may end or at least mitigate the problem. Alternatively, certain practices may preclude such problems by avoiding the creation of individuals who are prone to cause them. Historically, such efforts of either kind include or have included (a) eliminating defective bodies through abortion prior to their birth or at birth, (b) the acceleration of education and training to insure and hasten the transition of the relatively ineffective young to productive citizenship, (c) practices that prolong the physiological capacity of bodies that are otherwise subject to the behavior-disrupting ravages of old age, (d) practices that hasten or precipitate the death of those who have become unproductive and dependent through illness, trauma, or aging, (e) practices of neglect with respect to those whose behavioral conditioning is slow, difficult, and costly (and, in extreme cases, subjecting them to termination), and (f) quickly executing criminals and other kinds of intolerable social disrupters as an economical alternative to the much greater costs of extended incarceration or to long costly programs of rehabilitative reconditioning.³

³ Examples of each class can be cited: (a) Currently, when imaging techniques reveal that a fetus is extremely microcephalic, it is typically aborted; (b) a current example is provided by the *Headstart* program, which renders preschool children more prepared for regular schooling, and by vocational programs that condition future workers to start exhibiting at an earlier age the job skills that are more characteristic of adult employment; (c) this is a principal goal within the field of geriatric medicine; (d) in cultures that have practiced slavery, the economic burden of caring for slaves who could no longer work was in some cases eased by killing them, the options being either conspicuously (to encourage other slaves to continue working as long as possible) or inconspicuously (to avoid fomenting rebellion); (e) through most of human cultural history educational resources were expended by governments only on individuals who were subject at least to normal conditioning while funds for the "special education" of those who were unlikely ever to contribute significantly to the group productivity were withheld; (f) during military campaigns, deserters and even ordinary prisoners have in some cases been executed immediately, typically because the exigencies of the ongoing campaign left few resources that could be devoted to their imprisonment, mainte-

The quality of an individual's personhood is based on the implications of that individual's behavior in relation to the interests of those who judge that quality. Thus it follows that, from the perspective of any individual or any group, no two people could be deemed to be of equal worth as persons by any specified measure of their behavior. This reality manifests in one way through the practices by which leaders are recognized and selected. A leader is rarely if ever selected randomly from among a qualitatively disparate population. At the same time, unanimous agreement on the worth of any individual as a potential leader is unlikely. Social chaos is avoided in one way through the social device of dictatorship whereby the candidate who is most able to do so seizes political power, and in another way through the social device of democracy whereby a leader is elected by a majority of those who will be led.

Other implications of this natural and inevitable inequality among behaviorally defined people are connoted by the terms *exemplar* and *model*. In informal situations, we are all accustomed to handing the reigns of temporary control to the person whose behavior has proven most effective in similar situations, a reflection of the relative value of that person (i.e., the relative value of that individual's *behavior*). We choose among candidates on the basis of their behaviors, and when it matters in any important way, we do not pretend that all are of equal worth with respect to the role that the person must play.

We typically adhere to fairness through how we establish the relative worth of various candidates to confront a particular challenge. We simply begin the comparative process with the blind assumption that all are of equal worth and then let the behavioral evidence shift the placement of each person on the qualitative scale. Thus, the comparative quality measurement based on exhibited behavior begins without anyone being burdened with an irrelevant disadvantage.

Presented with similar environments, a person's response to such an environment may advance a person's qualitative standing or reduce it, and one's qualitative status at any time is the net effect of those personal increases and decreases. Such tests of effectiveness and efficiency may be contrived (e.g., admission tests administered by a university or qualification tests given to prospective employees by a governmental agency). Alternatively, such tests may occur entirely under natural contingencies. The most effective soldier on the battlefield gets a field promotion; the person who during a flood was saved by behaving rationally and effectively is extolled as an exemplar. Such established differentials in status, if sufficiently extreme or contrasting among people, are often signified by

nance, and rehabilitation, and because their quick dispatch has been deemed a deterrent.

designating those who behaved more successfully as *smart* and those who behaved less effectively as *foolish* or *stupid*, but those attributions usually pertain to the erroneously presumed self-agent.

Such elevations in the worth of an individual often occur without regard to whether neural behavior was functionally involved in the control of the critical behavior. For example, effective behavior that occurs under direct stimulus control will often affect the socially determined worth of an individual to the same extent as behavior that occurs under the partial control of operant neural behavior.

For instance, the bodyguard who instantly leaned intuitively in front of the President and took an assassin's bullet may get the same favorable reaction as one whose similar action was the culmination of a carefully conceived plan. In other cases an individual's social worth as a person may increase as the result of a behavior-related accident as when a window washer's inadvertently dropped water bucket knocks unconscious a terrorist who is preparing to detonate a bomb on the sidewalk below. In cases such as these, it is the practical outcome that matters most to others (who arguably should be more discriminating), not how the critical behavior that produced the desirable outcome was controlled.

Because a person's operant behavior as well as certain aspects of one's respondent behavior is controlled through the functional relations (between environment and behavior) that have been conditioned during that person's lifetime, parenting is largely the business of constructing a new person by arranging an expansive and varied program of behavioral conditioning that extends across the first couple of decades of each new person's life and may continue in a less formal and less intensive manner through much of its remainder. That production of a new person is typically shared with close others who have an especially vested interest in the nature and quality of the behavioral product, such as relatives, friends, and neighbors. In this person-producing process, the interests of the state are reflected in the behavior-conditioning contributions by school teachers. This participatory model is reflected in the popular aphorism "*it takes a village to raise a child*," although in this sense the phrase "...raise a child" means "...condition an extensive, effective, and appropriately common pre-adult repertoire of operant and respondent behavior." In common terms, included are what the new person does on any given kind of occasion and the person's emotional feelings about the situation.

A somewhat isolated subcommunity within a larger culture may be producing people whose behavioral quality differs significantly from the cultural norm due to the atypical child rearing practices of that subcommunity. If the behavioral products of a subcommunity are substan-

dard or merely incompatible with the general behavior of others within that culture, such unfavorable disparity is typically regarded as a cultural flaw. The population at large cannot afford the implications of excessive numbers of insufficiently and disparately conditioned citizens. The community as a whole, acting through its organized cultural agencies of government and education, typically requires a regimen of formal schooling with a common curriculum, which insures the general kind of commonality in behavior to which the phrase *cultural integrity* alludes in the abstract.

In cultures that practice a strict separation of church and state, the involvement of the cultural agency of religion in the production of a new person differs somewhat from the role played by the agency of formal education. Unlike the cultural agency of education, the imposition of which is simply enforced through the agencies of government and law, the involvement of the church in the conditioning of an individual is initially a cooperative venture with the parents and eventually with the sufficiently matured individual.

While various individuals and agencies participate in the conditioning of each new person, the nature of such a progressively crafted self has been widely misunderstood. In the invalid common interpretation, the person-production process involves the education of a self-agent. However, a different and more worthwhile concept of a self has emerged that supports a more valid concept of the person-production process. In Chapter 18 of *Science and Human Behavior* (1953), B.F. Skinner treated the self as a conceptual device for representing a unified system of responses. That is, in response to different situations, an individual discriminatively comes to exhibit respective patterns of relevant and effective behavior. Each such set of coherent behaviors (or pattern of behaving) represents a different behaviorally defined self.

Thus, a given person typically consists of many such selves. The unity of any given self is determined by the integrity of the particular kind of environmental setting or situation that evokes the pattern of behavior that defines that self. That particular setting is said to represent the context in which that self was conditioned and in which it subsequently manifests (i.e., the kind of situation in which its behavioral elements tend to be evoked and in which they tend to be effective, where ...*be effective* means ...*be reinforced*).

Thus, the set of related responses that is definitive of a specific *self* inheres in the related set of contingencies that produce a given set of contextually relevant responses. For example, in reference to a given person, we may speak of that individual's "political self," "family self," "recreational self," "business self," "professional self," and "military self." Each such behavioral repertoire is typically construed to reflect one of the various facets of what is com-

monly called that person's *character* or *personality*. People who have known that person only as a professional acquaintance may be taken aback by the very different kind and style of behaving that characterizes that person's activity in a political, familial, or military context.⁴

As those respectively differing unified systems of responses (i.e., the person's various *selves*) become relatively numerous and respectively more disparate, the person (or the person's character) may be said to be getting more complex. To account validly for what is often misdescribed as a complex agential character, we note that the person's general behavior-controlling environment has become varied and complex. Rather than insisting that a mysterious inner person has willfully adjusted to the increasing complexity of that total environment, we say that the general behavior-controlling environment in which that individual has had to operate has imposed diverse contingencies that have resulted in the corresponding complexity in the person's overall behavioral reactions and has done so through numerous and diverse instances of the general operant and respondent conditioning processes. Such conditioning can be contrived by other people, in which case it is called *education* or *training*, or it can occur naturally, in which case it tends to be called *experience*.

Obviously, within a given culture or subculture, the various selves of a given person are not necessarily of equal general worth to the populations of the respective subcultures with which that individual interacts. The individual who is highly valued for the exemplary manner in which that individual conducts a small business or leads a family may prove to be of relatively little worth as a battlefield soldier or as a politician.

⁴ During my undergraduate years at the University of Colorado, I befriended a fellow geology student with whom I seemed to have much in common and with whom I enjoyed conversing. Our early discussions often centered on social and scientific issues. One day one of our conversations turned to the topic of death, and he began to describe enthusiastically and in some detail a variety of ways in which one person could efficiently kill another individual during a brief episode of very personal contact. I was startled at his entirely unrestrained yet quite thorough review of the various approaches to the dispatch of another person (some quite gruesome) with or without weapons during brief but very personal encounters. It was as if he was casually explaining different ways to build a birdhouse. Only then did I learn that he had long been a member of the Reserve Officers Training Corps (ROTC) at the university and that he was preparing for a military career in the United States Army. During that conversation he had merely been reiterating the curricular content of one of his recent ROTC courses. It was my abrupt introduction to one of his selves that I had not anticipated.

Effective behavior that was conditioned in one kind of situation is often evoked by similar elements in another kind of situation, but that behavior may not prove effective in the new situation. The correction of that problem often involves bringing the individual's behavior more tightly under stimulus control of features that are exclusively associated with the new situation, so that responses that are apropos of only the old situations will no longer be evoked in the new setting. Behavior that was relevant or appropriate in past situations may thus be kept from occurring in a similar yet importantly different current situation in which it would not fit. Alternatively, a current situation may be modified in peripheral ways until the old behavior that its more intrinsic features evoke begins to be effective. The resulting behavior changes are often described as the "refinements in the person's character traits," but character traits do not exist as causal entities, and the processes described here are not validly interpretable as tinkering with behavior-causing "traits."

The general worth of a person to a group is typically greater when that person's behavior comports effectively with the current situation even though that behavior may be quite inappropriate in a different situation. The critical difference in those situations may pertain to the presence or absence of certain function-altering stimuli, often a simple factor that "makes a great deal of difference," as they say. The individual, in continuing to respond effectively to such changes, perhaps of a subtle nature, is typically described as *adaptable*. Nevertheless, it is the environment that remains in control, not the person.⁵ The situation-specific patterns of behavior that are of special interest in this discussion result from the tightness and exclusiveness of the control that any given environment can exert on that individual's behavior-capable body parts.

The Nonbehavioral Qualities of Personhood

While a person is defined largely by behavioral qualities, a person's nonbehavioral qualities also share to a lim-

⁵ When we talk about the throwing of a rock by saying that the throw was initiated by the thrower to change the location of the rock, we could just as well say that the rock used the thrower to mediate a change in its location. *Neither* kind of explanatory recourse to an implicit spontaneous proactive initiation of activity is valid. Process (behavioral or otherwise) happens to structure when energy impinges on it, and the particulars of that process are jointly determined by (a) the structure from which the energy emanated, (b) the structure on which it impinges, and (c) the properties of the energy transmission between those structures. Items (a), (b), and (c) are the constituents of what we call a *functional relation*, and functional relations are always established naturally without the redundant intervention of a mystical agent.

ited degree in defining a person. Those nonbehavioral qualities of a person may evoke some social behavior by other people, and may also become conditioned reinforcers for some of their social behavior. Examples of such nonbehavioral qualities include the form of a person's body including its appearance and textural feels, ...and usually to a lesser extent, its odors, sounds, and tastes. Its warmth affords another example.

The presentation of one's nonbehavioral qualities is almost always paired with one's behavior.⁶ The conditioning of other peoples' social behavior in reaction to one's personal but nonbehavioral qualities typically implies a close association of those other people with one's behavior. As others are usually quick to explain, it's not just the physical warmth of the person's body, but the behavior of the person by way of which that warmth is shared. It is not only the person's appearance that is important, but the behaviors through which the person's features are exhibited.

An experimental separation of behavioral and nonbehavioral features can be used to reveal the independent contribution of nonbehavioral qualities to the appreciated worth of a person. Suppose, for example, that one has long maintained a strongly reinforcing social relation with another person with whom one is intimately close. It could be a spouse or similarly related partner or companion. Suppose, further, that a very lifelike mannequin is constructed to present the nonbehavioral qualities of that familiar person. The mannequin is not alive in the biological sense, and it does not exhibit behavior, but one finds that it looks, feels, smells, tastes, and sounds like the body of that other person with whom one is very familiar. Assume that it has also been built to maintain the temperature of a live human body. Perhaps it has even been constructed to exhibit some noncontingent movements of kinds that the other person occasionally behaves contingently.

One's reactions to such a mannequin would reveal the limited role that such nonbehavioral qualities play in establishing personhood, and expose the rather glaring deficiency in that process that follows from an absence of behavior. It also becomes obvious that if one had never had contact with the person's behavior and had been limited exclusively to contacts with that mannequin, the mannequin's nonbehavioral qualities, in their isolation from any directly or indirectly associated behavior, would tend not to have attained a conditioned reinforcing capacity that approaches what would have been acquired had those qualities been associated with behavior. Hence the traditional opine by magazine subscribers that, while it can be nice to look at peoples' pictures, a person's picture is no substitute for the real thing (wherein the essence of *real thing* is anchored mostly in behavioral qualities)...✧

⁶ An exception could occur with respect to a person whom one knows only via telephone communications.

References

- Fraley, L.E. (in press). *General Behaviorology: The Natural Science of Human Behavior*. Canton, NY: ABCs.
- Skinner, B.F. (1953). *Science and Human Behavior*. NY: The Free Press. ☺

TIBI Online Syllabus for BEHG 470: Advanced 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 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. 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, for free or through TIBI, may make taking the course for academic credit easier.

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 365: Advanced Behaviorology I. If you have not had this prerequisite course (or its academic-credit equivalent), then you need to take it before taking the current course.

Course Description

BEHG 470: Advanced Behaviorology II. "Advanced Behaviorology" is a two-course sequence, for majors in behaviorology or any other natural science, that covers *in detail* most of the major variables of which the behavior of humans and other animals is a function. This second course of this sequence continues coverage of not only the wide range of pertinent and accessible environment-behavior functional relations, but also the naturalistic philosophical foundations of the discipline as well as the research methodology involved in discovering the independent variables in these relations and engineering them into sophisticated applications and interventions beneficial to humanity. The emphasis is on the increasingly complex combinations of variables responsible for increasingly complex human behavior. Related course topics include (a) multi-term contingencies, (b) function-altering stimuli, (c) stimulus equivalences, (d) reinforcement schedules plus adjunctive behavior, (e) aversive controls plus more effective alternatives, (f) applied behavior research plus behavioral objectives, (g) gradual change in both stimuli (fading) and responses (shaping), (h) some complex cases (i.e., attitudes, values, rights, ethics, morals, and beliefs), and (i) verbal behavior. A preview of the more complex topics of consciousness, personhood, life,

culture, reality, and intellectual evolution (biological and cultural) is also part of this course.

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:

- ✧ Analyze all the many multi-term contingencies, including those containing function-altering stimuli;
- ✧ Explain stimulus equivalence and its relevance to education, verbal behavior, and other complex behaviors;
- ✧ Differentiate among the many schedules of reinforcement and specify their relevance to adjunctive behavior;
- ✧ Evaluate aversive controls and their side effects as well as their more effective alternatives;
- ✧ Apply the methodology of applied behavior research to engineer gradual change in both stimuli (fading) and responses (shaping);
- ✧ Provide the natural science explanations for the complex behavior relations of attitudes, values, rights, ethics, morals, and beliefs;
- ✧ Specify in detail the many classes of verbal operant and their multiple controlling variables.

Additional Objectives

- ✧ Successful, A earning students will use (at an accuracy level of 90% or better) advanced disciplinary terminology both when discussing behaviorological concepts, and when applying behaviorological skills, relevant to basic and applied research and interventions.
- ✧ 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)

- ✧ Fraley, L.E. (in press). *General Behaviorology: The Natural Science of Human Behavior*. Canton, NY: ABCs.
- ✧ Fraley, L.E. (manuscript). *Repertoire Builder for Chapters 14 through 26 of "General Behaviorology: The Natural Science of Human Behavior."*

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:

- ✧ Ledoux, S.F. (2002). *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs.
- ✧ Skinner, B.F. (1953). *Science and Human Behavior*. NY: The Free Press.
- ✧ Skinner, B.F. (1957). *Verbal Behavior*. NY: Appleton-Century-Crofts.
- ✧ Skinner, B.F. (1974). *About Behaviorism*. NY: Alfred A. Knopf.

Note #4: You can order the required books through the publisher, ABCs, at 315-386-2684. You may order the recommended materials through the online bookstore at www.behavior.org which is the web site of the Cambridge Center for Behavioral Studies, or at your local bookseller.

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. All but one of the 13 assignments (one on each of the chapters numbered 14-26) in the *General Behaviorology* book are worth 15 points each, for a total of 180 points. The assignment on Chapter 26 on verbal behavior, the longest chapter, is worth 20 points. This provides a grand total of 200 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.

About Using the Text & Repertoire Builder Book

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 General Behaviorology Book

The *General Behaviorology* textbook carefully and comprehensively examines and describes the natural science discipline of behaviorology. Always consistent with the naturalistic philosophical foundations of the discipline, the author not only covers in detail the major variables involved in the wide range of pertinent and accessible environment-behavior functional relations, with the emphasis on increasingly complex human behavior, but also covers the research methodology involved in discovering the independent variables in these relations and engineering them into sophisticated applications and interventions beneficial to humanity.

The Repertoire Builder Book

The *Repertoire Builder* book was prepared to help you master, and even become fluent in, the material from each of the chapters in the *General Behaviorology* text. You are to complete each text chapter's section of the *Repertoire Builder* book in the sequence assigned. Learning occurs when responses are made (like writing question answers) and reinforced, especially responses that automatically provide their own reinforcing consequences (like being right) as does writing out question answers correctly. You complete the assigned sections, *after reading the chapter through*, by *writing out* your responses when you come to the relevant part as you *reread* the chapter. You *write out* the responses right in the *Repertoire Builder* book. Write out your responses in full sentences that incorporate any questions (and preferably in your own words).

The *Repertoire Builder* book starts with a section titled To the Student and Teacher. *Read this section first!* It explains more on how to use the *Repertoire Builder* book successfully. *Repertoire Builder* book 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 responses directly in the *Repertoire Builder* book, you need to have your own *Repertoire Builder* 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 *Repertoire Builder* book.

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 *Repertoire Builder* book responses, which generally must be hand-written, you can scan and fax to your professor the pages that have your responses

for each assignment. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

For every assignment 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 the *Repertoire Builder* book responses, 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 *General Behaviorology* book, Ch. 14.
- Week 2: The *General Behaviorology* book, Ch. 15.
- Week 3: The *General Behaviorology* book, Ch. 16.
- Week 4: The *General Behaviorology* book, Ch. 17.
- Week 5: The *General Behaviorology* book, Ch. 18.
- Week 6: The *General Behaviorology* book, Ch. 19.
- Week 7: The *General Behaviorology* book, Ch. 20.
- Week 8: The *General Behaviorology* book, Ch. 21.
- Week 9: The *General Behaviorology* book, Ch. 22.
- Week 10: The *General Behaviorology* book, Ch. 23.
- Week 11: The *General Behaviorology* book, Ch. 24.
- Week 12: The *General Behaviorology* book, Ch. 25.
- Week 13 & 14: The *General Behaviorology* book, Ch. 26.
- Week 15: (This is a spare week to use to complete any unfinished work.)

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. ☺



Origins, Status, and Mission of Behaviorology Chapters 1 & 2 (of 7)¹

Lawrence E. Fraley
Stephen F. Ledoux

§

...either psychology must change its viewpoint so as to take in the facts of behavior...or else behavior must stand alone as a wholly separate and independent science. (John B. Watson, 1913)

...I think I am beginning to see the scope of a behavioral—or behavioristic—analysis. It does talk about the important things; it does point to conditions which can be changed; it does show what is wrong with other ways of talking about things. (B.F. Skinner, 1983a, p. 347, from a note written about 1972)

...[I've] been slow in throwing off the notion that a science of behavior is the future of psychology.... Now I think this is a world of our own. (B.F. Skinner, 1989a, declaring the disciplinary independence of the science he founded; from a transcript of his major address to close the convention of the Association for Behavior Analysis)

§

[Nearly 20 years have passed since the official organizing of behaviorology as a separate and independent natural science of behavior, and today the authors would phrase some of the points of this paper differently, or at least more clearly, as well as make additional points (see Fraley, L.E. [in press] *General Behaviorology: The Natural Science of Human Behavior*. Canton, NY: ABCs). Still, this multi-chapter paper, written early in this period by participant-observers of those events, reviews the contingencies compelling—both then and now—these organizational directions. The seven chapters of this work appear, one or two at a time, in consecutive issues beginning with the Fall 2006 issue (Volume 9, Number 2). Chapters 1–5 end with only the references cited, although these appear exactly as in the full reference set which follows Chapters 6–7.—Ed.]

¹ In early 1987 Ledoux began this paper to analyze the variables leading to the independent development of

Chapter 1: Introduction

This record is especially intended to facilitate analyses and interpretations by those who study the origins and emergence of the discipline of behaviorology. The manifestation of any new discipline evokes questions: What is the nature of the new discipline in terms of both subject matter and organization? What has been the course of its evolution both as a concept and as a formally organized verbal community? And why, along that course, did organizational independence become necessary? How does both the subject matter addressed by the new discipline and the organization of its people relate to those of other disciplines, especially to those with which it might share a common history? How should one prepare oneself to work within this discipline? And, importantly, what is the cultural mission of this organized discipline—what is it supposed to accomplish, and how does its mission relate to those of peripheral disciplines or fields?

In addressing these questions, this work describes the historical facts of the emergence. Additionally, beyond a description of the “facts” that answer such questions, a principal objective has been to describe contingencies under which the founders of this discipline operated when producing those facts. To that end, from this behaviorological perspective, this paper reports particular circumstances in which those leaders found themselves. This work includes some behavioral events not because the positions they reflect are likely to be of lasting import, but rather to sketch the behavioral milieu in which the founders operated at the time. Quotations appear from letters and other informal communication sources to reveal the nature of the verbal community in which the early leaders were enmeshed. *This paper thus takes the form of a behaviorologically analyzed record.* The authors hope that this report will have adequately described the functions of these many critical variables so that the subsequent course of this movement can be related to the behaviors of those working for or against it during the period described in this account.

The authors did not edit this work for conformance to current political strategies. Reviewers occasionally ob-

behaviorological science. As the necessity of the behaviorology movement, and the significance of behaviorology's contributions to the culture, became more apparent, Ledoux invited Fraley to collaborate. More than five years of countless exchanges produced this paper (originally: Fraley & Ledoux, 1997) with each exchange extending and improving the work, and with Fraley's contribution becoming the greater—hence his listing as primary author.

jected to what they saw as publicity for persons whose views on certain matters they disrespected or deemed unworthy. Editing on that basis has been resisted. The roles of such persons in the behaviorology movement, acting both for and against its interests, have been included in this account on the basis of the effects of their actions on the history of behaviorology. Nor have the authors tried to cast this work as a recruiting instrument for the gentle persuasion of uncommitted potential converts to a movement. Articles of that type frequently appear as authors, in support of their respective causes, strive to appeal convincingly to various elements in the at-large professional community. But in contrast, this article, presenting an analyzed description of the movement recorded near the time of the reported events, simply answers the kinds of questions that naturally arise through the study of any newly emerging discipline. (Except to add a few, more accessible sources officially presented or published a year or three later, writing this work occurred from early 1987 to 1993.)

This work is divided into five parts plus short introductory and concluding chapters. Among them some normal chronology is evident. Within parts, where appropriate, a chronological order has also been followed. However, in places, a strict historical chronology would have failed to capture the more episodic and thematic nature of the contingencies that affected the leaders and participants of movements. People become involved in important episodes, and each episode preoccupies them for a time while the currents of other events continue to swirl around them. Their behaviors are better understood in light of historical treatments that, while not losing contact with the calendar, nevertheless preserve and deal with that episodic and thematic integrity, even though doing so departs in places from a strictly chronological record.

The five main parts of this paper are Chapters Two through Six. Chapter Two (**The Evolution of the Concept of Behaviorology**) examines the nature and origins of the behaviorology concept worldwide—and its increasing ill fit within organized psychology where the incipient stages of its organizational coalescence occurred. Chapter Three (**Issues Driving the Independence Movement**) explores the increasing strength, in five different classes of contingencies, to incur the high costs of organizing a separate and independent discipline. Chapter Four (**The Transition Period: Organizing the Discipline and Developing its Infrastructure**) presents a comprehensive review of the subsequent activities to organize the behaviorology discipline and considers the cultural engineering by which the newly named discipline was formalized, rendered operational, and installed in the scientific community. Chapter Five (**The Continuing Debate: Reactions from the Behavioral Community at Large**) reviews the prevailing cultural milieu and analyzes the support for, and the opposition to, the behaviorology

movement, as well as some self-management problems facing those who were taking the lead in formalizing the behaviorology discipline. Chapter Six (**Interdisciplinary Context: A Cultural Role for the New Discipline**) emphasizes the prevailing views of the early behaviorologists on where their discipline fit both among the community of natural science disciplines extant in the culture and in the cultural marketplace. It also comparatively explores the different levels of analysis characteristic of the existing behavior-related natural science disciplines, and examines the cultural basis of resistance to behaviorology. ✻

Chapter 2: The Evolution of the Concept of Behaviorology

Before concrete actions were taken to launch a newly organized discipline, the concept of that discipline had to be shaped to maturity in the verbal repertoires of many people. This chapter, Chapter Two of this account of the emergence of behaviorology, examines the nature and origins of the behaviorology concept worldwide—and its increasing ill fit within organized psychology where the incipient stages of its organizational coalescence occurred.

*B*ehaviorology, broadly construed, is a comprehensive discipline including philosophical, analytical, experimental, and technological components. “Behaviorology” in a more limited context denotes *the science featured within that discipline*—a natural, life science of functional relations yielding change in the behavior of individuals, with emphasis on the causal mechanism of selection. Behaviorology takes into account determinants from the environment, both socio-cultural and physical, as well as determinants from the biological history of the species. While many behaviorologists focus on human behavior, the science is relevant to the behavior of all organisms. From such components, comprehensive definitions of behaviorology arose after its formal organization in the late 1980s. (For example, see Ledoux, 1997a, for two versions of a comprehensive definition.) These defining components of behaviorology owe their cogency to the evolution of the *concept* of behaviorology. The first section of this chapter qualifies the nature of some of these defining components.

The Concept of Behaviorology

Behaviorologists have provided natural science answers to perplexing questions that have endured since antiquity: Why do people do what they do? What, exactly, *is* behavior? What is sentience? What are such things as *knowing*,

feeling, and a *sense of importance*? What are the causes of behavior? How can knowing those causes help us to do more, act better, and behave effectively in all facets of life (for example, in child care, health care, education, daily living, work, leisure, art, entertainment, academic pursuits, and even science itself)? Can accurate descriptions of behavioral processes lead to practical behavioral technologies, especially ones conducive to cultural survival? To such questions behaviorology provides a kind of answer that is satisfying to scientists and professionals as well as engineers because it enables effective action.

Behaviorology emerged in the last quarter of the twentieth century from other disciplines through which its origins can be traced. This account compares and contrasts behaviorology with its disciplinary predecessors—explaining how it differs and why its people departed from those organized disciplines. It describes how the founders justified the existence of a separate discipline apart from others also focused, in their own ways, on behavior. E.A. Vargas (1988) wrote:

...our discipline is simply the verbal community that results from a scientific effort pursued in common. No [other] science covers the same subject matter, though many of the efforts of other science communities overlap with ours. (p. 2)

Different basic disciplines begin with different basic assumptions, ask different questions, and generate different methods and technologies. To a substantial degree behaviorologists do not use the same methods nor measure the same things as do practitioners based either in other disciplines or in applied fields informed by those disciplines—even those that are behavior-related. Nor do behaviorologists share the same philosophies of science and analytical paradigms prevailing in most of those disciplines.

On the Nature of the Disunity

The natural science *discipline* of behaviorology and the behaviorology *movement* are different concepts. The *emergence* of an independently organized verbal community of behaviorology was an early product of an independence movement. That movement, while acknowledging the shared, early history with psychology (Ledoux, 1997a), took this scientific discipline from under the organizational umbrella of psychology where behaviorological science and philosophy could not be made to fit. The behaviorology movement resolved an issue of intellectual property rights.

A study of any separatist movement logically begins with the question of why people would have borne the substantial costs of the undertaking. Two domains of variables suggest themselves: (a) the aversive reactions to one another among proximal groups as their differences become extreme, and (b) the contrasting natures and im-

plications of their respective paradigms. The former domain is predictable and can be expected to emerge in whatever forms circumstances facilitate. Early behaviorologists, most of whom were formally affiliated in some way with psychology, represented a tiny minority there. Limited in their capacities for countercontrol as is typical with minorities, they faced pervasive difficulties from which they could escape only by taking their discipline elsewhere. But reiterations of specific wrongs done to individuals as revealed in examination of the former domain, although necessary to make the point and while perhaps therapeutic for those individuals, are less important than examining the latter domain, the *nature* of the disciplinary differences and the implications of those differences for the culture. That is where secessionists seek and find more fundamental and broadly relevant justifications. This work now turns to those issues.

The Early History of Behaviorology

The discipline *now* called behaviorology traces back over three quarters of a century before this writing, having evolved continuously at least over that period. Moments such as its formal organization and naming are simply steps in that longer history. Tracing the branch that became behaviorology takes us back in time along limbs, and down an historical trunk, through periods shared with other contemporary movements.

Those shared evolutionary paths are pieces of the history of each discipline involved. Many observers of that history mark Watson's conception of behaviorism, in the early 1900s, as a starting point for behaviorology (Watson, 1913; also see Drash & Freeman, 1973, for a detailed historical account). While Thorndike's (1911) emphasis on the consequences of behavior and Watson's emphasis on behavior as the proper subject matter for a science of behavior both preceded B.F. Skinner's research, other observers, including the authors, mark the beginning of behaviorology with Skinner's early experimental work and the publication of his book *The Behavior of Organisms* in 1938.

The focus on behavior by both Thorndike and Watson represented one evolutionary trend in traditional psychology—a minority movement that focused more on behavior itself as the phenomenon of primary concern though still approached with many traditional psychological assumptions and perspectives. But behavior remained a minority interest in traditional psychology. Later, when B.F. Skinner came on the psychology scene in the early 1930s, many saw his work as a continuation of that minority interest based in psychology. But Skinner, as we will review in more detail, had been trained primarily in biology-based natural science. When historical accidents pertaining to early training opportunities diverted Skinner into organized psychology, he came not

only as a natural scientist (and stayed that way) but also with a repertoire of scientific principles derived from biology, some of which had been neglected in psychology and, Skinner's efforts notwithstanding, would remain largely unappreciated there.

The history of behaviorology tracks only temporarily through the historical turf of psychology—an historical thread inserted from the natural sciences, especially biology, into the psychology domain by way of Skinner (and the accident of his being in psychology)—and subsequently departing psychology by way of the newly organized and independent behaviorology discipline (for example, see E.A. Vargas, 1993).

Skinner's conceptual contrast with traditional psychology, first saliently posited in *The Behavior of Organisms*, relied strongly on the causal mode of selection in analyzing the production of behavior, and set forth the radical behaviorist perspective. (Selection, which addresses the postcedent effects of behavior and thus focuses analyses on its consequences, differs from the more purely methodological behaviorism of the early behaviorists who pursued studies of behavior in the stimulus-response [S-R] mechanical causal mode). Skinner extended the selectionist causal mode from biological phenomena to behavioral events. That selectionist causal mode, along with the radical behaviorist natural science philosophy, differentiated behaviorology, the science of behavior relations, from other approaches to behavior. (For an introduction to the philosophy of radical behaviorism, see Ledoux, 1997b.)

Skinner wrote *The Behavior of Organisms* long before his ultimate ambivalence about considering himself to be any kind of psychologist. Yet in it he noted that his extensive experimental work had contributed little to reducing psychology to physiology, a trend in some approaches to studying behavior to which he explicitly objected. He recognized very early that, while he had adapted biology-based selectionist concepts to behavior, the analysis of behavior that that adaptation afforded represented its own unique level of analysis—a discipline of its own apart from both biology and psychology. Skinner stated (1938) that:

...there are two independent subject matters (behavior and the nervous system) which must have their own techniques and methods and yield their own respective data...

I am asserting, then, not only that a science of behavior is independent of neurology, but that it must be established as a separate discipline... (p. 423)

As behaviorologists now construe the origins of the discipline, scientific problems to be solved and subject matter issues to be addressed came from pre-1930 psychology. But the philosophy of modern behaviorological

science stemmed from the natural sciences. And biology, in particular, supplied the essential selectionist causal modalities that behaviorological scientists adopted for application to the new level of analysis required for the study of behavior.

The philosophical and scientific foundations of behaviorology were well established by the time Skinner published *Science and Human Behavior* (1953). That book detailed the discoveries of the science up to that time, delineated its philosophy of science, and extrapolated its applications to broad sectors of the culture. Of *Science and Human Behavior* Skinner wrote, "It is still, I think, the best introduction to my position" (letter to Ledoux, 14 April 1987). But through all of those years two things had been missing—a discrete disciplinary identity for the separate discipline to which Skinner referred and an appropriate name to connote emphatically its independent status.

Skinner's Philosophy of Science and the Behaviorology Movement

The philosophical foundation that informs behaviorological science is the philosophy of science that Skinner called radical behaviorism. This philosophy is also at the core of the movement that brought forth the organized behaviorology discipline. Four of the components of radical behaviorism were especially important in the emergence of behaviorology (and receive due attention in relevant contexts in this work). These four are: (a) Radical behaviorists respect behavior as a *natural* phenomenon as part of respecting, along with all other natural scientists, the continuities of events in space and time which, in natural sciences, accumulate as a researchable natural history. (b) Radical behaviorists emphasize experimental control over behavioral 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 laws discovered to involve overt behavior. (d) Radical behaviorists acknowledge that scientists are also behaving organisms whose behavior, scientific or not, is affected by the same variables that affect other behavior, and that those variables include scientists' philosophy of science (see Hake, 1982; Ledoux, 1997b; also see Skinner, 1953 or 1974, or Chiesa, 1994, for more thorough treatment).

Radical Behaviorism plus the Causal Mode of Selection

Long before the behaviorology movement became organized (and even afterward) ambivalence about disciplinary identity plagued many of those who operated under Skinner's radical behaviorism. That philosophy, together with its experimental analysis of behavior and the resultant practical technologies, connotes a comprehensive natural scientific discipline that some have

thought more aligned with biology than with any previously established discipline (Ator, 1986; Logue, 1988; Michael, 1985; Skinner, 1953, 1974). Skinner was the first to describe many of the basic principles of behaviorological science. However, although earning his doctorate through the psychology department at Harvard University, he conducted much of his pre-graduation work under W.J. Crozier, head of the physiology branch of Harvard's biology department (Skinner, 1979, p. 16). Crozier had been a student of biologist Jacques Loeb, and both Crozier and Loeb emphasized studying the behavior of an organism as a whole as well as the causal mechanism of natural selection. Skinner, while also emphasizing the behavior of an organism as a whole, transferred the concept of natural selection from genetics to behavior, a context in which *selection* refers to the lasting effects of the consequences of an individual's behavior. Behaviorologists retain that departure and it serves as a *major* point of difference with psychologists. It also puts behaviorology on the life science continuum near biology, although the abstract selectionist concept that they share supports a relation only at the level of analogy—leaving behaviorology as an independent discipline.

Psychologists of the 1930s construed Skinner's adaptation of biological selection to behavior as just another small conceptual step on the broad scientific frontier of psychology. Its implications for a separate discipline passed unnoticed. Among those psychologists, selection represented an unfamiliar and subtle concept not readily incorporated into traditional repertoires. Nor were its implications obvious. Skinner began researching the implications of his conceptual breakthrough and developed a small school of operant behaviorists within psychology. But, increasingly, to understand and appreciate his movement required particular scientific training that only his students were getting. Over time his work impressed the psychology community, which toyed with behaviorism especially in the 1940s, 1950s, and into the 1960s. But the philosophical and scientific divergence was never eliminated or even significantly reduced.

The occasionally reported *dominance* of behaviorism in psychology through the 1940s and 1950s has been disputed by Lovie (1987) who argued that it was an exaggerated propagandistic myth. Furthermore, by the 1950s, many psychologists were beginning to sense the profoundness of the departure of the behavioral movement, especially the operant school, from the original assumptions underlying the psychological paradigm. The shift in psychology during the 1960s toward the information processing and computer simulation models of cognitive psychology was perhaps partly a counter reaction because it preserved a role for the internal agent while probing continued for the mental mechanisms by which that agent affected behavior. Lovie (1987) suggested that cog-

nitive psychologists had, in fact, over-*implied* the earlier influence of behaviorism to create a straw man over which their so-called "cognitive revolution" could be seen to have triumphed.

As Skinner forged ahead, he pursued a consequence-driven mode of inquiry rather than the theory/method-biased investigations prevailing in psychology (Skinner, 1956). The expanding implications, of what he subsequently discovered to have been his novel adaptation of a *selectionist* paradigm, opened paths to solving fundamental problems traditionally definitive of psychology as a field. Across the widening scientific gulf created by his movement, Skinner's experimental analysis of behavior solved old problems in psychology in ways that ran counter to psychology's dominant internal *transformation* paradigm. Furthermore, in disposing of the mystery in problems that had always intrigued psychologists, the new analytical approach destroyed a kind of allure to which some have always appeared particularly responsive. But Skinner's solutions were resisted and ignored by most psychologists, partly because they were little trained in the science and philosophy upon which Skinner's perspective was based (see Ledoux, 1997c).

E.A. Vargas (1991a) compared the paradigms of disciplines concerned with behavior. He examined and named both the selection paradigm of behaviorology and the transformation paradigm of the other behavior-related disciplines, most notably psychology. E.A. Vargas (1991a) described the transformation paradigm as follows:

An event occurs, described in any number of ways. The meaning of that event inheres in the action of the organism. The organism perceives, interprets, assesses, integrates, and processes its perceptions and cognitions, and then stores the results of its own actions. It then (or later) engages in a performance with respect to that event—or, rather, the transformed nature of that event. In psychology's paradigm, some aspect of the world incites the organism to take action; but before that action occurs, the organism engages in a series of operations, typically called mental or cognitive, that determines the significance of the event and thus determines the nature of the action. In the transformation paradigm, the organism itself, through structures and processes inherent in it, is the agency of its action. (p. 141)

Psychology as a whole has always left open the question of whether the internal cognitive operations and transformations required the guidance of an implicitly metaphysical self, a characteristic of the mentalistic tradition that has always flourished within psychology. Im-

PLICIT reliance on some kind of an internal agent–manager can be seen in most general psychology–related textbooks (e.g., the currently popular Biehler & Snowman, 1990, p. 389). Skinner’s detailed exploration of this issue in Chapter One of *Beyond Freedom and Dignity* (Skinner, 1971) included Karl Popper’s illustrative question, posed in the mid 1960s: “What we want is to understand how such nonphysical things as *purposes, deliberations, plans, decisions, theories, tensions, and values* can play a part in bringing about physical changes in the physical world” (p. 8). Seeing no physical bases for such events, and with concepts of those events that leave their definitions vague, many psychologists have been content to accept them as non–physical.

In the selection paradigm of behaviorology, behavior is not forced out of the organism by transformed events, nor does an internal creative agent originate or manage such events. The body simply behaves in the natural and functional way determined both by its immediate structural condition and the environmental milieu in which it exists. The body is then altered by the consequences of its behavior so that the changed body that confronts future occasions behaves more in accordance with the implications of those past consequences. The consequences of the past behaviors are said to have *selected* the behaviors that now occur, and the selection paradigm takes its name from that interpretation. But in each instance of behavior, the body is assumed to behave *in the only way that it can behave* under the existing circumstances—an assumption that respects the deterministic natural science philosophy that informs behaviorology. No explanatory appeal is made to a redundant psychological self that would decide or choose the behavior to be exhibited by the body. E.A. Vargus (1991a) continues:

The essential characteristic of behavior is that it affects its immediate milieu. The results of these effects determine the degree to which that milieu shapes adaptive and maladaptive behavior. Whether the organism eats or runs, for example, is determined by the consequences of its prior actions, or the consequences of prior actions of the biological and cultural communities to which it belongs. What follows behavior selects the future forms it will have and that will be maintained. Changes that occur do so through the “agency” of the particular properties of the environment as these interact with the specific characteristics of the organism operating upon that environment. (p. 142)

The paradigm difference between behaviorology and psychology provided a theoretical and philosophical basis for

acknowledging the existence of different, separate and independent disciplines.

Organized psychology resisted the implications of both the selection mechanism and the deterministic natural science philosophy ever since Skinner’s scientific departure based upon them. Catania (1987), reviewing Bowler’s (1983) *The Eclipse of Darwinism*, suggested a parallel between (a) opposition to selection as a principle of behavior, and (b) opposition to selection as the mechanism of Darwinian evolution. Darwinism in biology survived its opponents. Similarly, having answered the criticisms leveled at earlier forms (Skinner, 1974), and having survived premature claims of its demise, radical behaviorism has survived and continues to expand and evolve, even amidst widespread resistance (see Wyatt, Hawkins, & Davis, 1986, for more detail; see Thyer, 1991, for data; and see Catania, 1991, p. 62, for additional references).

The David Krantz Assessment

The behavioral movement, arising historically in a confluence of intellectual traditions from biology and psychology, enjoyed the innocence of its youth from Watson, through Skinner’s *The Behavior of Organisms* (1938), and into the 1940s. During that interval the psychology community debated behaviorism on merit, generally regarded it as interesting, and mostly remained oblivious to many of its implications. When, in the late 1940s, bands of enthusiastic advocates began to develop programmatic emphases around operant behaviorist studies, the contingencies driving the debates began shifting from the scientific to the political (e.g., see Keller, 1986).

The issues around which mentalistic psychologists focused their attacks on the behaviorists, and which seemed safe to debate in public, increasingly dealt not with the scientific evidence but with the nature and quality of organized scientific disciplines. A typical suggestion held that the behavioral movement, in spite of obvious scientific successes and benefits, ultimately portended adverse effects on scientific progress. Questions were raised: How should people who thought themselves in possession of powerful new principles and practices conduct themselves as citizens of the long established disciplinary community in which their careers had developed but in which their work did not fit? How should the remainder of the community behave toward them? Does an emerging philosophical and scientific faction within a field of study help or hinder the ultimate effectiveness of that field?

Within psychology a local eruption of the broader philosophical clash of social science and natural science was occurring, though few protagonists of those times appear to have viewed their squabbles in that way. Calling behaviorology a natural science raises questions about other types of science. Since the coverage of behaviorology includes, even emphasizes, human behavior, is it, for

instance, a social science? The answer involves the distinction between natural science and social science. Social sciences not only have an interest in people but also easily reach contradictory conclusions after following the same scientific procedures. This is partly because social sciences allow untestable and metaphysical events to enter their explanatory accounts (also, see Skrtic, 1991). Natural sciences like behaviorology often have an interest in people also. More importantly, however, natural sciences, including behaviorology, more easily reach consistent conclusions after following the same scientific procedures. This is partly because natural sciences disallow the inclusion of untestable or metaphysical events in their explanatory accounts (see Ledoux, 1997a).

A *separate* discipline of behaviorology was not yet in view. The movement was evident within the psychology community only as certain facets of today's more comprehensively defined behaviorology. A manifestation called "operant psychology" had been identified as the salient aspect upon which attention focused. A dichotomy between operant and non-operant psychology was increasingly mentioned in the literature. Perhaps the most influential treatment of that split appeared in 1971 when David Krantz published "The Separate Worlds of Operant and Non-Operant Psychology," a special featured article in the *Journal of Applied Behavior Analysis*, a publication normally devoted to applied experimental work, but which made an exception for that article.

Krantz's treatment was scholarly and sophisticated. Though not thoroughly trained in operant psychology, Krantz had familiarized himself with critical elements of its science and philosophy so that he might address the rift as an informed historian and philosopher of science. His main data base for that article consisted of tape recorded interviews with 35 "key researchers" prominent in "operant" circles, at least a few of whom were critical of the operant movement. Krantz referred to "encapsulated schools of thought," or "movements," occurring *in* established sciences. Thus his perspective subtended a divergence between factions only *within* a discipline; the emergence of a separate discipline entered his considerations only as a somewhat remote implication.

Krantz first documented the extent of the mutual isolation by using data obtained from journals. The paucity of cross-referencing between operant and non-operant journals offered convincing evidence of the increasing differentiation of the operant school from others within psychology. Next addressing the "incommensurability" question, Krantz acknowledged that if operant and non-operant psychologists were really measuring and talking about different things, the mutual failure to cite would be justified. Two disciplines would exist, not one. But Krantz let stand a quoted phrase from one of his interviewees that described this as an "extreme" view. He

did, however, elaborate on it descriptively so that readers might better understand the nature of what some operant psychologists argued *was* a fundamental disciplinary difference between operant and cognitive/mentalist views of behavior. Krantz referred to Sidman (1960) for the central point: As Krantz phrased Sidman's view,

...between-groups designs [*avored in traditional psychology*] assume that variability is intrinsic to the organism, thus the need for its statistical control; the within-groups design [*avored by the behavioral people*] assumes an imposed variability, thus the need for experimental, not statistical, control. (p. 63)

Underlying this difference is a major philosophical assumption that Krantz did not pursue: The operant people in general have always assumed that behavior is a *natural* phenomenon, and that behavior of any kind therefore occurs only in *total* functional relation with the controlling environmental milieu (including genes). However, among those in the non-operant majority, acceptance of intrinsic variability in many cases meant more than variability stemming merely from natural but unknown events occurring within the behaving organism. The *operant* analytical scheme easily accommodated those cases because, in the operant paradigm, part of the total controlling environment pervades the body. Therefore, independent variables of a valid and functional nature can exist on *either* side of the skin, although many of them—especially those inside the skin—resist accurate detection and analysis, and remain beyond the practical reach of intervention technologies. But for many non-operant researchers, the unexplained variation due to internal causes left operating room not only for thus-far unexplained natural causes but for *non-natural* internal causal events as well. For those scholars the internal variations could still be due to spiritual or mystical entities of non-natural origin (e.g., see Scoresby & Price, 1991). The way remained open for intervention by deities, spiritual selves, or similar non-natural entities, a belief in which is strongly shaped by various traditional cultural agencies. Unexplained internal variation also preserved the domain of mystery important to some scholars whose reinforcers are attached to an unending pursuit of the unattainable (one of academia's most venerated facades from behind which misdirected scholars have attacked the views of others as well as protected their own through the ages).

Krantz (1971) pursued the question of whether the operant/non-operant division represented a true disciplinary divergence or merely differences in procedures, terminology, and concepts inhering in the pursuit of investigations that could, and perhaps should, be conducted more in common. Could the differences between the factions be products of their isolation, or are those

differences the fundamental reasons for the isolation in the first place? The *majority* of the operant researchers interviewed by Krantz made clear that they preferred the latter interpretation as well as the benefits of continued exclusiveness. They saw little reason to modify the direction and nature of their work to mesh more closely with traditional psychology.

Then, in a section on “conceptual imperialism” (a phrase which Krantz credited to Don Baer), Krantz (1971, pp. 66–67) described the confident attitude exhibited by many operant psychologists who insisted “the operant strategy can deal successfully not only with its own domain of problems but handle, as well, if not better, many diverse issues in psychology” (p. 66). Krantz described as “brusque” those operant researchers who, in providing what they deemed better approaches, did not cite or give much credit to the more traditional strategies that the putatively more effective science and technology was displacing. Krantz chided such “imperialists” for their failure to accommodate, and assimilate with, the traditionalists whom he assumed *had to be persuaded*. This was in spite of the fact that, in the history of most fields including psychology, as a matter of economy, disciplinary traditionalists have often been circumvented and left behind rather than confronted and changed. To the behavioral researchers who thought it pointless to cite or dwell upon ineffective approaches when in possession of a more powerful one, Krantz (1971) wrote:

To maintain militantly such a position is to make the philosophically naive and inter-personally insensitive assumption that one can change the science without the consent of the scientists. To act in contradiction to this truism, that scientific ideas are produced, evaluated, and changed by scientists, is to invite conflict, lack of success and very likely, rejection and other’s isolation of the imperialist’s position. (p. 66)

But science is *supposed* to change in response to demonstrations of greater effectiveness. So perhaps Krantz here alluded to additional non-scientific controls on the behavior of scientists. Most such controls remain unaffected by improvements in science. They also retard the change that those improvements should produce. Also, the implicit consensus of the behavioral subcommunity was that Krantz was wrong: Science, if not scientists, *could* be changed without the consent of the scientists. It would simply be done by *other* scientists. Insofar as science is merely behavior in the first place, to change it is only to start behaving differently; the operant behaviorists had already been doing that for some time. They did not see progress in their own scientific discipline as requiring the persuasion of those in another discipline—especially a discipline with a

paradigm so antithetical to their own. And they thought that their neglect of that questionable task should not be charged against them as a breach of propriety.

To exemplify the kind of attacks that the offended traditionalists might mount, Krantz referred in detail to Wendt’s (1949) criticism of the pure operant program developed by Fred Keller (Keller & Schoenfeld, 1949) at Columbia University. Wendt had argued that although the Columbia program successfully attracted students from engineering and other natural sciences and was enthusiastically received by students, the program was academically unhealthy because its rejection of eclecticism promoted a “behavioral cult,” a kind of isolationist movement that no good academic discipline can afford. Obviously, Wendt did not view those events as the loyalty and enthusiasm that students in most natural sciences give their disciplines. He ignored the effectiveness of the behavioral science taught in the program as the basis of its success. Instead Wendt attributed the popularity of the Columbia program to a supposedly *propagandistic* tactic of introducing implicitly invalid simplification into what was justifiable confusion. He implied that an allegedly more balanced, long term search for truth would eventually reveal the purported inadequacies in any such narrow approach that a small enthusiastic band might develop and impose on an institution. (Keller, 1986, reported that he “ignored Professor Wendt’s assault,” [p. 144] and that, upon reflection, so had Skinner. See Ledoux, 1997a, on the role of eclecticism in these debates.)

Krantz also quoted an anonymous critic of the behavioral isolationists who spoke of the operant psychologists’ “self-maintenance of true conceptual imperialism, at the expense of actually succeeding in practical imperialism or conceptual assimilation by others.” Again, neither Krantz, Wendt, nor the anonymous critic construed that a separate discipline was gaining prominence. Thus they did not consider applicable the principle that scholars of one discipline need not expend themselves, to the detriment of their contributions, by trying to win over, or to resolve their differences with, scholars of another. The unnamed critic was also wrong. The operant people *were* succeeding at the practical level. They tacted (Skinner, 1957, Ch. 5) carefully, having acquired that skill through its important consequences. They strived for accurate descriptions of relevant behavioral and environmental events. The resulting scientific principles reliably related environmental and behavioral events—yielding in the process the power of prediction. When subsequently they altered independent variables to produce prescribed behavioral outcomes (i.e., control), they were so effective that a new discipline, though not inferred by many, was nevertheless implied. The operant people had done nothing less than discover the conceptual key or approach to practical behavior

technology, and they were beginning to appreciate the vast enabling power inhering in that discovery.

Krantz (1971) was apparently unprepared to describe effectively the concept and function of scientific (event-shaped) verbal communities. But he appeared alert to some implications of isolating both verbal and nonverbal event-shaped communities when he provided the following cognitive approximation:

Graduate education can be viewed as the main socializing force in communicating the norms of being a scientist and in training for particular orientations and strategies within a scientific field. ...the learning of a scientific approach occurs not only through a verbalizable, didactic strategy but also through ostension via relevant "doing." Such resultant knowledge is tacit, implicit, and not immediately accessible to awareness. The failure to teach other systematic options, or the consistent devaluation of other approaches, coupled with ostension experience in only one systematic option, can lead to a non-critical acquisition of a scientific approach and perpetuation of a modeled style of conceptual and practical imperialism in evaluating others' research strategies. (p. 67)

Krantz did not appear equally bothered by a *cognitive imperialism*. He ended his discussion of "imperialism" by suggesting that behaviorists either can be "rude" and aggressive or can opt for a "softer sell" aimed both at converting cognitivists to the behavioral view and at assimilating the two schools, again as if that were necessary. He said nothing about whether time exists for the slow progress characteristic of the latter approach. Nor did he appear to take seriously that criteria for separate disciplines were relevant in this case, though his article did mention these criteria.

In his discussion section Krantz said some typically erroneous things about the operant position: He spoke of establishing validity on the basis of correctness of prediction, but it is to the more rigorous level of *control*, not merely prediction, that radical behaviorists carry that test. He stated, from a modest analytical perspective, that inferences or statements about consciousness are not valuable to operant people in a science of psychology. But that idea was entertained only by the methodological behaviorists. Even before Krantz wrote his article, the radical behaviorists, operating at a more complex level of analysis, had already developed a useful science of private (singly observed) events including those behaviors of the kind known as "consciousness" or "awareness" (e.g., see Skinner, 1953, Ch. 17; 1957; also, see Ledoux, 1973).

Nevertheless, Krantz's basic conclusions, though endowed with shortcomings for other reasons, were little damaged by such inaccuracies. He reiterated his warnings about allowing truth to be defined by fiat as one school politically displaces another. Ironically, much of what he seemed to fear along those lines has occurred because of a suppression of the behavioral minority, that is, because of a cognitive imperialism, not a behavioral one. Krantz did not, however, explicitly reject the argument that "operant psychology" represented "revolutionary" differences yielding "incommensurability" between the conflicting systems. At one point he referred to the settlement of that fundamental issue as "unclear." Many readers, however, reacting to the overall tone and style of Krantz's article, inferred that the rift might *not* be justified on the basis of incommensurability. As Coleman and Mehlman (1992) noted:

...Krantz's investigation—and the widely held interpretation of its findings, to the effect EAB [Experimental Analysis of Behavior] is in an unhealthy state—came out of an historically situated 'ideology' regarding scientific progress in general and the progress of psychology in particular. (p. 48)

Coleman and Mehlman (1992, p. 48) attributed that ideology, and its influence on Krantz, mainly to the reports published in the 1960s by the American Psychological Association's *Project on Scientific Information Exchange in Psychology*.

The Krantz article was well reasoned and rather sophisticated in the development of its arguments (though not without its own propagandistic slant). As an exceptionally featured piece in a highly respected journal, it undoubtedly had a moderating effect on the operant separatist movement within psychology. Krantz's article exerted pressure on operant psychologists to move back toward the path of reconciliation and gentle persuasion, a path which, in the view of behaviorologists, has since proven costly to the integrity of the science as well as strategically ineffective. Unfortunately, at a practical level, for many behaviorists that togetherness amounted to little more than compromising their philosophical probity. They found themselves continually acquiescing and maintaining pretenses that eclecticism connotes respect for some academic procedural ideal instead of merely lack of resolution on the question of how best, scientifically, to proceed (see Ledoux, 1997a).

Krantz's (1971) article appeared in the middle of the eight years of discussions that ultimately led to the founding of the Midwestern Association of Behavior Analysis (MABA, later known as the Association for Behavior Analysis [ABA]). The extended time required to establish an independent MABA, and the very gradual recognition of the significance of the revolution represented by that

movement, may both be due in part to Krantz's article. Even as this is written, in 1991, 20 years after Krantz's article, some who might otherwise join readily with the behaviorology movement, linger hesitantly and plead for yet another inquiry into Krantzian wisdom on the merits of togetherness as opposed to separation.

Like many who reviewed the rift, Krantz implicitly framed his research question to test the hypothesis that the "operant movement" represented just one of any number of "sciences" or "perspectives" in an eclectic social science mix denoted by the psychology label. But increasingly, the followers of Skinner's movement were reacting to the rift as if it were fundamentally of a more simple *dualistic* nature: On one side was natural science, represented in this instance by themselves, and featuring a predominantly selectionist mode of causality. On the other side was social science, represented by traditional psychology, and featuring a theory-based paradigm, laced with metaphysically inspired assumptions and dwelling on presumed transformations of experience into behavior by way of cognitive mental mediations.

Krantz (1971) both described and contributed to the attitudes prevailing during a critical period of discontent that preceded the formal emergence of behaviorology. His assessments have been reviewed here because, as an influential and respected analyst of science history, Krantz seemed to lend scientific validation to then-prevailing biases and arguments favoring abandonment of the "behavioral" revolution.

Recent History: Disciplinary Identity, Name, and Support

In the 1970s radical behaviorists in psychology established a professional organization (discussed later in detail) outside of the American Psychological Association (APA). It became the Association for Behavior Analysis (ABA). It evolved, however, more as a scientific and professional interest group than as the anchor point for an independent discipline. Most ABA members who began as psychologists continued to give themselves that disciplinary identification. By also calling themselves "behavior analysts" they implicitly classified behavior analysts as psychologists. Since the 1980s, with the emergence of an independent behaviorology discipline, some behavior analysts, anxious to preserve organizational ties with a well-entrenched and endowed organized psychology, have grown more explicit, as will be seen, in proclaiming behavior analysis to be a kind of psychology.

ABA has continued to focus, not on establishing an independently organized discipline, but on how most effectively to endow psychology with a more worthwhile science. Along these lines the ABA leadership has remained consistently critical of the science pursued in mainline psychology. For instance, Philip Himeline, who

would later serve as president of ABA, noted that psychology is pursued with verbal repertoires based on often inconsistent terminology adopted with few restrictions from everyday language (Himeline, 1984). In his 1990 ABA presidential address, and again in a later article (Himeline, 1991), he thematically reiterated that view and counseled renewed efforts to change psychology. But by then the behaviorologists had abandoned that strategy and organized an independent discipline.

The separation debate. The years between 1984 and 1987 were a time of extensive debate about disciplinary status as numerous authors discussed, pro and con, the disciplinary separation from psychology of what is now called behaviorology (see Ator, 1986; Barry, 1986; Comunidad Los Horcones, 1986; Deitz, 1986; Epstein, 1984, 1985, 1987a, 1987b; Fraley, 1987; Fraley & Vargas, 1986; Gaydos, 1986; Lee, 1987a; Leigland, 1985; Malagodi & Branch, 1985; Staats, 1986; and E.A. Vargas, 1987).

Epstein (1984) began this debate with a proposal for a new discipline under the name "praxics." Leigland (1985) and Malagodi and Branch (1985) disagreed both with some of Epstein's arguments (though not with the possibility of separation) and with his proposed name; Epstein (1985) rejoined. Fraley and Vargas (1986) summarized the issues, disagreed with Epstein's disregard for the philosophy of the science, and spoke for separation under the name "behaviorology." Barry (1986) subsequently objected to both "praxics" and "behaviorology," preferring "anthroponomy," a name proposed much earlier by Hunter (1925). Gaydos (1986) objected only to the name "praxics." Comunidad Los Horcones (1986) supported "behaviorology."

Staats (1986) objected to separation from psychology, arguing instead for unification under a philosophy called *paradigmatic behaviorism* which "characterizes psychology as a disunified science" (p. 232) and which tolerates that disunity. Many contemporary psychologists welcomed such attempts to make a virtue of the paradigmatic differences within psychology (e.g., Hishinuma, 1989). The troublesome problem of how incompatible philosophies and sciences can all represent a single discipline was made to vanish by redefining "discipline."

Catania (1973) had earlier taken a different approach. He insisted "psychology is not in the midst of a paradigm clash" because points of contact cannot be found. By that he meant that the "different schools of psychology, ... have been concerned with different problems" (p. 442). But if they *did* ask different questions, in what way were they different? Was it merely interest in different aspects of the complex problems being addressed by psychologists (subject matter differences), or would the different schools not find each other's questions valid because those questions arose out of analytical paradigms too different to garner respect across those schools? Or, to cast the issue in another light, if those schools were to trade

problems for awhile, would the paradigmatic treatments of those problems remain unchanged? That is, did cognitive and behavioral psychologies represent only *problem-imposed* differences in work informed by a *common* paradigm? Or, in contrast, are different kinds of problems, arising out of different subject matters, addressed with fundamentally *different* paradigmatic approaches? If so, different disciplines are implied. In the prevailing view among behaviorologists, when common problems had been addressed by the different schools in psychology, real Kuhnian paradigm clashes (Kuhn, 1970) did appear. Those differences manifested in very different technological implications. A typical example was described in the article "Cognitive Analysis of Language and Verbal Behavior: Two Separate Fields" (J. Vargas, 1990).

Epstein returned to the debate with an appeal targeted mainly to students (1987a). He argued again for the emergence of "*an independent, multi-disciplinary, biologically-based science of behavior.*" He criticized the fragmentation of behavior-related studies across a broad spectrum of separate disciplines and called for their unification:

A true science of behavior must be *multi-disciplinary*, ...because behavior is a complex subject matter that requires the *joint efforts* of individuals in many specialties, both to advance our understanding and to devise effective treatments. Behavior is affected profoundly by nutrition, physiology, sleep deprivation, ...sexual deprivation and trauma, chemical interventions, social phenomena, surgical interventions, physical trauma, anatomical variables, organic disease, hormonal cycles, air temperature, humidity, illumination, airborne chemicals, radiation, electrical stimulation, genes—and, of course, learning history. It is not folly to think that individuals with different specialties can be brought together to build a new science; it is folly to think that a handful of scientists who now study behavior in almost complete isolation from each other in a dozen different disciplines can advance our understanding significantly. (p. 128).

Epstein reminded us that no comprehensive behavioral science can afford to treat the behaving body as a constant while focusing exclusively on contingencies of reinforcement. And behaviorologists, while emphasizing the importance of contingency relations, do respect a far broader range of concerns and principles than those implicit in an overly simplistic understanding of the phrase "contingencies of reinforcement," as did Skinner.

But Epstein continued to insist that the work of a collection of scientists with diverse behavior-related spe-

cialties can be coordinated under control of natural contingencies without their sharing a common supplementary verbal repertoire of the kind known as a philosophy of science. He envisioned praxics as a "pure science, driving real and promised applications, and uncluttered by an irrelevant and unattractive credo..." (p. 128). (Also see Epstein, 1987b.) Behaviorologists, among others, disagreed with Epstein. One's philosophy of science *does* share in the control of one's scientific responses to data—a general principle recognized far beyond the bounds of behaviorology (e.g., see Hake, 1982). And, importantly, people doing scientific work inevitably bring *some* philosophy to that work. That philosophy shares in controlling the person's behavior regardless of the intensity of the *natural* consequences of the work upon which Epstein seemed to be counting for a rather exclusive control.

For other authors, the issue of an independent and comprehensive scientific discipline of behavior arises implicitly and without expressed concern about its name or organizational status. For instance, Lee (1987b) stated that:

...behavior analysis is outside the mainstream of psychology, and its foundation in assumptions that depart markedly from those of the mainstream let most psychologists ignore it with impunity. (p. 145)

But on another occasion, and apparently concerned about reversals in progress toward a distinct identity, Lee (1987a) asked in a published book review if we should "expect a commitment to radical behaviorism in a book on behavior analysis" (p. 95), observing that:

...the less-than-full commitment of many of us is apparent in the conceptual poverty of applied behavior analysis, in the infiltration of cognitive terminology, in the re-appearance of traditional group designs, and in the reduced interest in behavioral control techniques, among other things. (p. 95)

Fraley (1987) described the difficulties with unification, the reasons for separation, and the cultural mission of the independent discipline of behaviorology, especially as it affects many other fields that deal with human behavior. Concurrently, E.A. Vargas (1987) linked the survival of effective behavioral science to disciplinary independence. He argued that departure from psychology can be supported not only on the basis of differing subject matters, but also on the basis of the sociological considerations relevant in the development and governing of professional disciplines. Vargas noted that psychologists whose actions suppress behaviorology within organized psychology act rationally in defense of their own self-interests.

Then, on 17 October 1987 in a general session for all in attendance, the annual meeting of the Southeastern

Association for Behavior Analysis concluded with a formal debate chaired by Fred Keller. Lawrence Fraley and Ernest Vargas (pro) debated Mark Branch and Peter Harzem (con) on the establishment of behaviorology as a separate discipline. (The debated issues are addressed throughout this paper.)

Debate, however, was rapidly being rendered moot by independent actions establishing behaviorology as a comprehensive natural science of the behavior of organisms. In the name of behaviorology, its adherents were pursuing applications to, and interpretations of, a broad range of human affairs (Barry, 1986; Fraley & Vargas, 1986). For example, in May 1988 Guy Steven Bruce produced the first master's thesis to reflect its behaviorological content in its title (NTSU, 1988), "Problem Solving: A Behaviorological Analysis with Implications for Instruction." His thesis committee at North Texas State University, chaired by Sigrid Glenn, included Ernest Vargas, of West Virginia University, under whom Bruce subsequently earned his doctorate.

Debate continues anyway. Some behaviorists who were opting to remain within organized psychology continued publicly to draw distinctions between mainline psychology and the behavioral science and philosophy that they believed should supplant it. These distinctions paralleled the points raised by behaviorologists. The presidential address of Steven Hayes (1988a) to the behaviorally oriented Division 25 of the APA, is one example. The distinctions to which Hayes and others pointed were often the same ones to which behaviorologists were pointing. Philosophically and scientifically, the discipline advocated by Hayes and others is fundamentally different from mainline psychology. The residual issue pertained only to how best to act upon this difference.

Burns (1988) reiterated Staats's attempt to link together the verbal subcommunities within psychology by ascribing to each its own level of analysis (i.e., its own approach to theory construction) and arranging them hierarchically from "basic" to "less basic." The whole assemblage is then said to be the unified "discipline" of psychology. Jerome Ulman (1990a) rejected that concept, referring to it as "hierarchically schematicized eclecticism." Burns also accused radical behaviorists of "rejectionism" which, he argued, "does not foster harmony" within psychology. On the latter point, Burns was correct. Behaviorologists saw no long-range cultural benefit from elaborate reinterpretations intended to make psychology seem like a coherent discipline. Nor were behaviorologists, as natural scientists, sanguine about the political, social, and economic negotiations that inevitably replace scientific persuasion in academic alliances that, scientifically, are too disparate to bind in that way. Harmony in psychology was simply not the goal of the behaviorologists.

Psychology, in the broadest concept, had not evolved as a single discipline. Even authors of articles in publications

sponsored by the APA had occasionally reiterated this point. For example, Nessel (1982), in an article on the state of psychology, had referred to "the *various disciplines* of psychology" (emphasis added). The disunity of psychology was also evident in the other competing and often mutually contradictory perspectives that long comprised the area—others besides the behaviorological/psychological rift. Evidence for this could be seen in Nessel's article (1982). The majority of psychologists had long agreed on a broadly encompassing paradigm respecting internal transformations as the essence of behavior. Yet, as Nessel's article revealed, in spite of that paradigmatic commonality, eleven distinguished psychologists showed little agreement in their perceptions even about the most important developments in psychology over the preceding fifteen years.

In her book *Beyond Behaviorism* (1988), Vicki Lee presented a comprehensive analysis of both the recent and historical differences characterizing the disciplinary fragmentation in psychology. Lee's book offers a compelling argument for psychologists to "make over" their field by bringing themselves less under control of economic and political contingencies and more under control of scientific ones. But over the decades attempts to do that have fallen short. Organized psychology does not seem amenable to overhaul merely by demonstrations of better science. The frustration of those who have proffered a more effective science only to have it ignored as if irrelevant can be seen in Lee's (Lee, 1989) quote of Murray Sidman (1986b, p. 44), that:

...the reluctance of some psychologists to use the body of knowledge that has accumulated in behavior analysis suggests 'a kind of scientific malpractice.' (p. 86)

In September 1990 Lee herself would send an open letter to her behavioral colleagues worldwide describing and lamenting the scientific isolation she experiences as a behaviorist within her Australian psychology verbal community:

I have given up talking about radical behaviorism and behavior analysis unless "invited" to do so in a conversation with an interested listener. It is simply hopeless to do so otherwise. Even if the misconceptions can be cut through in the presence of an audience, ...there is the impossibility of getting over the hurdle that requires the listener to see the insanity of much that passes as psychological research and theory.

The name. The *science and philosophy* of behaviorology can be traced at least to the early decades of the twentieth century along certain historical paths, and even further back to early recognition in biology of the selection mechanism. But the *name* "behaviorology" followed different historical routes from multiple origins. A De-

ember 1986 computer database search for references to behaviorology (or behaviourology, the British spelling) revealed only two references. But that search, of Dialindex's Biosci and Socsci databases, proved not to be exhaustive for it did not reveal some known cross-references to, or uses of, the term.

The earliest discovered author using the name behaviorology *consistent with the present usage* was Makram Samaan (1973). Samaan's description of behaviorology focused on the behavior modification technologies of the 1970s and did not dwell on radical behaviorist philosophy. Others had used the term before him, though differently. In a one paragraph article, Vitulli (1969) suggested changing the name of psychology to behaviorology because people rely more on behavior than on the psyche. Even *Time* magazine, he noted, had begun a "Behavior" section in 1969. But Vitulli's usage implied no change in mainstream psychology other than its name, and nothing came of his suggestion.

On the other hand, Samaan's (1973) opening statement, from his university-published book (English was not his native language) advocated a more sweeping change:

With the discovery of the functional relations of human behavior and its contingencies, and the successful technology of behavior for effecting behavior change, a call for the independence of behaviorology from psychology which was conceived as a study of the "self," "mind," and "soul," is in order....

It is time now for the scientific analysis of behavior to call for its own scientific discipline. It is contradictory to its function, objective, methods and content to stay within the realm of psychology. The discipline of "Psychology" is originally derived from the Greek term "psyche," which means "soul," "mind," or "self." ...psychology was conceived as the science of the soul, mind, or self. ...behavior was assumed a function of the "mind," the "psyche," or the "self." (p. 5)

Samaan noted that in 75 years of searching, psychologists had not found the autonomous behavior-controlling mind. But scientists of the kind who were to become behaviorologists *had* discovered the basic controlling relations between environment and organism that account for behavior. Samaan continues:

It is a contradiction to carry a name of a so-called science of inner process, souls, and minds for a discipline of operationally defined behavior. ...independence of Behaviorology is a necessary and significant step to abolish the confusion of in-

congruence between the name of the discipline and its methodology and subject matter. (pp. 5-6)

Samaan is historically important for his early explicit call for an independent discipline of behaviorology. However, he contrasted behaviorology with only one concept of psychology, which might be classified as non-natural science wherein mind is viewed as the locus of a behavior-controlling ethereal essence.

In the years since Samaan, others, acting independently, coined or adopted the name behaviorology to tact the same discipline, although with radical behaviorist philosophy more clearly included. In 1974, cultural engineers within the Los Horcones Community in Mexico coined the name behaviorology. They defined it as "the natural science that studies the behavior of organisms" (Comunidad Los Horcones, 1986). To them behaviorology encompassed "basic research, applied research, and a philosophy" (p. 227). While teaching in Australia, Stephen Ledoux (1977) coined and similarly used the term to describe the position of radical behaviorists who would separate from mainstream psychology. Like others, he was unaware of Samaan. After Joseph Morrow, at California State University, Sacramento, mentioned Samaan's work (letter to Ledoux, August 1977), Samaan was discovered to have been writing his 1973 book in a different department at that same university where Ledoux was then studying. Although Ledoux had commented in his paper that his usage would likely be unrelated to any previous appearances of the term, Samaan and others were later discovered to have used the term in much the same way.

Communications with colleague and library searches revealed two examples of the use of "behaviorology" by mainline psychologists. Dr. A. Ph. Paschalis, a behaviorally oriented counseling psychologist in Greece, reported to Jerome Ulman (letter to Ulman, 6 July 1989) that cognitivists and social learning theorists in Greece had used that name "a number of years back" to distance themselves from those reflecting a radical behavioristic approach to which these theorists were opposed. However, such counter-use of the name did not spread among members of the world-wide cognitive verbal community. Much earlier, David Sherbowsky, in his apparently self-published book *An Outline of Behaviorology—The Psychology* (Sherbowsky, 1935) used "behaviorology" as the name for what he viewed as his correction of Watson's behaviorism. Preferring to call Watson's behaviorism "Watsonism," he stated "Behaviorology is not Behaviorism (Watsonism)" (p. 3). This usage also did not spread.

After E.A. Vargas's coining of the term anew, Fraley and Vargas (1986) gave their reasons why behaviorology should be the name of a discipline (including its experimental, applied, and philosophical aspects) that would be

independent of other behavior-related disciplines. Comunidad Los Horcones (1986), based on their own longer history with the name, endorsed the attendant philosophy and offered this support:

First, [the name behaviorology] is etymologically appropriate. The word “behaviorology” is a combination of the English word “behavior” and the Greek word “logos.”

Second, “behaviorology” does not eliminate the experimental analysis of behavior, applied behavior analysis, or behaviorism. Instead, this new term includes them as sub-fields of the same science. It is an integrative name.

Third, “behaviorology”...does not imply that behavior analysis pertains only to experimental analysis. Once, perhaps, the inclusion of “experimental” in the name of the science was necessary in order to emphasize its empirical basis, but...no longer....

Fourth, by using the term “behaviorology,” the length of the name for the science is shortened considerably [from “The Experimental Analysis of Behavior”], which is an obvious advantage when talking and writing. (p. 227)

The repeated coining of the term *behaviorology* to name this discipline presumably occurred because of similarities in the contingencies under which its professionals operated. But some behaviorists remaining within organized psychology were not similarly affected. Lamal (1988) objected that behaviorology is “unfelicitous.” Hayes (1988a) also criticized the term, saying “...‘Behavior’ is too readily viewed as the act separated from the context,” adding “this is one reason that the call by some for a field of ‘behaviorology’ is misguided” (p. 14). But behaviorologists, like other scientists, take for granted that they must study their subject matter in its functional context. On appropriate occasions behaviorologists explain that theirs is the science of behavior *relations*, not behavior in isolation. This distinguishes them from those said by Skinner (1972) to endow behavior with a curious ontological status, to explain it with “appeals to events taking place somewhere else, at some other level of observation, described in different terms, and measured, if at all, in different dimensions” (p. 69).

Different names will serve a movement in different ways, each affording some gain from one perspective while costing with respect to others. Before deciding on a name, it is important to determine precisely which problem the name is to help solve. Followers of a discipline quickly adapt to whatever name is used. But how

the general population responds to the name is more important for a discipline that would contribute scientific underpinnings to inform all behavior-related fields. The founders of the behaviorology movement wanted a term that worked in the culture at large. The multiple coinages of “behaviorology” suggested that they had found it.

Such an intuitively obvious name was deemed more important than a less useful though etymologically pure term based on ancient languages. Skinner, during a 1987 ABA symposium, expressed displeasure with the name “behaviorology” for its polyglot etymology featuring English, French, and Greek derivatives. But Skinner’s objection to the ancient history of the term seemed irrelevant to many of those who appreciated its appropriate functional control over the behavior of most contemporary listeners, lay as well as professional. At that same symposium, Robert Epstein was also critical of the name “behaviorology.” He had earlier, and without documentation, speculated in print that the term had probably been considered and rejected by others half a century ago (Epstein, 1987a, p. 129). But he had not said why such a history, even if documented, should reduce interest in the current usage.

As the behaviorologists pondered the question of whether members of the general public would respond appropriately to the stimulus “behaviorology,” historian Daniel Bjork (letter to Fraley, 14 February 1989) offered a historian’s perspective: Bjork speculated that many lay people associate “psychology” with “intellectual”—which might imply arrogance or elitism plus an impractical science. Because “behaviorology” has a more practical ring, it sounds more useful, and certainly less mysterious. People might be more comfortable associating with its practitioners. The founders, guessing that that name would tact the activities of behaviorologists without inducing confusion, began informal testing of the term with a variety of people. Confirming reports came trickling back. Most were of this kind: When Ernest Vargas (personal communication, 28 December 1987) responded “I’m a behaviorologist” to his dental hygienist’s query about his occupation, she paused very briefly and then said, “Oh, that’s different from psychology; you study behavior.” Similar responses came from his barber and from his cat’s veterinarian. Through many such simple probes, the founders gained confidence in their choice of “behaviorology”—an informal mode of confirmation that has continued with virtually unchanged results.

European support. The behaviorology movement was not exclusively of American origin. Support arose in different parts of the world. European activity was easy to document, and early reports about it bolstered the importance of organizing the movement internationally.

After a conference in West Germany in 1986, Julie S. Vargas reported having encountered a Belgian, Werner

Matthijs, who had told her that the Dutch equivalent of “behaviorology” was sometimes used in his country. This suggested the possibility of a European movement toward separate disciplines. Lawrence Fraley accepted the task of directing inquiries to some Europeans who might be involved.

Claus Thiermann of the German Behavior Academy in Stuttgart, West Germany, responded (25 September 1987) that he and his colleagues had started their work in 1976 “on the straight behaviorology line you are favoring.” He described the Academy as a private institution existing to “distribute the application of Behavior Analysis and nothing else.” He reported that his group had given training to about 500 people in the past ten years; he said about 50 had become recognizable as “behavior analysts.”

Thiermann provided a brief history of the movement in Germany: A German translation of Skinner’s *Science and Human Behavior* (1953) had appeared in the late 1960s. But the translation had been poor and its philosophy seemed unconventional to continental Europeans. So few read it and even fewer understood it. In 1971 Holland and Skinner’s *The Analysis of Behavior* (1961) was published in German. It was easier to read, and a few thousand people apparently did so. According to Thiermann, that book spawned a short-lived German behavior therapy movement in the early 1970s. But he called that movement “superficial”—practiced mainly by persons who did not comprehend the underlying science and philosophy. Thiermann concluded his historical report as follows:

Behavior therapy soon gained a very bad reputation. Some who did it got punished, and, though reinforced by therapeutic success, had their behavior suppressed and emitted avoidance behavior by developing cognitive behavior therapy, following Mahoney. By the end of the 1970s pure and clean behavior modification/behavior therapy was out. A combination of cognitive methods and behavior therapy is fashionable today. Hard core evaluation methods, of course, have no chance under those circumstances. (Thiermann to Fraley, 25 September 1987)

As among Americans, some European behavioral practitioners doubted the efficacy of a separatist movement, preferring instead continued operations within organized psychology. As the European psychologist Marc Richelle wrote (letter to Fraley, 22 October 1987), they feared that “leaving psychology to opposite trends, essentially cognitivism, ... might give them [the cognitivists] an easy victory on an abandoned territory.” Richelle reported that he thought he detected a reaction against the most extreme forms of cognitivism, and that he looked

forward to a better future for behaviorists in European psychology “within a few years.”

Werner Matthijs, the Dutch speaking behaviorist in Belgium, answered a further inquiry with two more letters to Fraley (8 & 29 July 1987) In these he described his own commitment to behaviorology and his efforts to promote a separate discipline.

Matthijs reported that almost all European psychologists were mentalists who regard behavior only as a symptom of important events in the mind. He also mentioned some interest in cognitive behavior modification among European psychologists. But he regarded this trend as a further indulgence in mentalism.

Matthijs described his own antithetical reaction to all of this as follows:

The more psychological theories about the “psyche” that I had to absorb during my graduate studies, the more carefully I began to read Skinner’s work, and the more obstinate and uncompromising I became in my verbal resistance to the full-fledged mentalism to which I was daily exposed. This, in turn, only served to increase the opposition I experienced, even up to the point that one of my professors, whom I had criticized because of his constant misrepresentations of Skinner’s views, no longer allowed me to take his courses on psycholinguistics.

The contrast between his own behavior-focused science and the mainstream psychology featured in his formal training led Matthijs to seek a better disciplinary name:

Finding such a term was especially reinforcing.... The Dutch translation of “behavior” is “gedrag”; *gedragsologie* is a term which in the most direct way refers to the study of “gedrag.” “Gedragsologie” is thus the Dutch equivalent of behaviorology. For people whose verbal behavior has been shaped by a Dutch speaking verbal community, *gedragsologie* is easier to pronounce than *psychologie* (the Dutch term for psychology). For those of us whose verbal behavior has...been shaped by the behaviorological community, the term *gedragsologie* has not the aversive connotations associated with the term psychology. In fact, reading, hearing, and speaking about *gedragsologie* is...automatically reinforcing.

Matthijs reported first using the term *gedragsologie* in print when in 1980 he surveyed reactions to that name by

colleagues. He said that he found increasing comfort with the term as people used and encountered it more frequently.

Matthijs also added this anecdote to the history of the “behaviorology” name:

By the time R. Epstein published his praxics article [Epstein, 1984], I and a few colleagues of mine had already grown accustomed to the term *gedragsologie*. In our own teaching and seminars we found it quite natural to speak about “*gedragsologie*.” I wrote a letter to Epstein asking him whether he had... considered using “behaviorology” as a new term for our science. I also explained to him that I would greatly appreciate knowing whether he had other objections to the term behaviorology besides, perhaps, stylistic ones. In a very short letter, he said that the term behaviorology is “a bit silly” and that in English, the term wouldn’t have “any chance to be accepted.” I believed him and gave up the idea of writing a short article (for the “On Terms” section of *The Behavior Analyst*) in which I would have proposed behaviorology....

Matthijs also disagreed with Epstein’s argument that the study of behavior should be separated from radical behaviorism, writing that:

...without radical behaviorism, you can only pay lip service to the study of behavior. That seems to be an extreme and intolerant view, but one function of radical behaviorism is precisely to be intolerant... of mentalism... The problem is not that we are radical behaviorists, but that we are not radical behavioristic enough...

Echoing a sentiment also expressed by E.A. Vargas, Matthijs observed that:

...psychologists are right when they do not allow us in their mentalistic departments (just as behaviorologists would be right not to allow psychologists in their future behavioristic departments). I... was... pleased with Epstein proposing to separate from psychology, but I don’t see how you can successfully separate from psychology without also radically separating from mentalism, which has always dominated each kind of psychology.

Contact with China. The behaviorology movement also discovered supporting information on the other side of the world from Europe. During the 1990–1991 academic year, Stephen Ledoux taught behaviorology courses in the People’s Republic of China as an exchange professor at

the Xi’an Foreign Languages University in Xi’an, Shaanxi. While there he held discussions about behaviorology with locally based senior members of the behavior science disciplines (see Ledoux, 1997d, for details).

Ledoux found that the Chinese define psychology to encompass more than what the term implies in English. In Chinese, “psychology” connotes a broad discipline drawing upon three sources. The first features traditional Chinese perspectives. The second stems from the discipline as pursued in the Soviet Union (especially the work originating with Pavlov on respondent behavior). The third is a mix of Western perspectives. The Chinese have included three parts in the Western component: (a) psychoanalysis (i.e., Freud), (b) traditional cognitive/mentalistic psychology (e.g., Maslow and Piaget), and (c) a behavioral approach based largely on Skinner’s science.

The Chinese, strongly oriented toward practical results, reportedly liked the natural science approach and experimental methods in the work of Pavlov and Skinner. And unlike Western philosophical thought, the Chinese seemed to have avoided much of the Western extremes in separating phenomena into mental and physical realms (soul/body, spiritual/material, mind/reality). The Chinese language, while it has a rich variety of terms for most of the varied Western usages of the term *mind*, actually lacks a direct translation of “mind” as Western psychologists use that term, with “mind” implying a metaphysical locus from which mysterious variables exert controls over behavior. Instead, for that usage, Chinese professionals generally use a word that better retranslates back into English as “brain.”

Interestingly, the term Chinese professionals use for their “behavioral” component is *Xingwei Xue*. This term translates accurately, if generally, as behaviorology, behavior analysis, behavior science, or science of behavior. But they have no current specific term with *organizational* connotations to which they respond as we respond to the term behaviorology in the sense of a separate and independently organized discipline.

However, the Chinese were out of date, having lost contact with Western developments since the mid 1950s. They had been operating with a behavioral component that was 30 years old. Certain dissatisfactions with the behavioral approach stemmed from the antiquity and superficiality of the version that they knew. It often seemed inadequate to account for the complexities of human behavior. Ledoux found that the Chinese had spent the decade of the 1980s trying to update their 30 year gap in knowledge of Western developments. But accidentally their update had pertained only to the psychoanalytic and traditional cognitive approaches. They had not realized that the mainstream psychology sources for their update lacked information on the continuing disciplinary evolution and developments of the behavioral

component. From their studies of recent cognitive/mentalistic literature, the Chinese professionals had learned little about the advances in behavior science or about the movement that culminated in establishing behaviorology as an independent discipline.

In addition, Chinese professionals had noted that their update of traditional Western psychology yielded little of practical use in dealing with the cultural, social, or personal problems to be addressed. But some Chinese scholars subsequently discovered that reports of more practical and wide ranging research and applications do exist in *behavioral* journals like the *Journal of the Experimental Analysis of Behavior* and the *Journal of Applied Behavior Analysis*. That discovery prepared them to attend more closely to the behaviorology that Ledoux had been invited to teach.

Establishing behaviorology in China, however, presents its own set of challenges. The higher education system of China is small relative to the size of the population. The American concept of general education is not widely known. Most Chinese higher education institutions feature a targeted curriculum. Before an academic discipline receives institutional attention, it must meet a requirement for demonstrated applicability. Furthermore, some of China's senior education leaders have long held outmoded opinions about behavior science in general, and some of these opinions are now thoroughly incorporated into the system. For example, everyone in China who is involved in language training knows Chomsky's theories. But since applying them effectively in language training is not feasible, few people show much interest in them; they are just something that everyone is expected to know. Unfortunately, the urgent preoccupation with immediately applicable techniques, and the concomitant reluctance to invest in basic science training, leaves the Chinese with little maneuvering room in which to get themselves well trained in the kind of basic behaviorological science that *can* readily spawn the practical and workable behavioral technologies that they seek.

Historical summary. Behaviorological science and its philosophy originated earlier than the formally organized discipline that coalesced during the 1980s to accommodate them (see Ledoux, 1997a). E.A. Vargas set priorities, which were included in Fraley and Vargas (1986): "...developing an academic home to reproduce our scientific culture is the larger problem. The middle-sized problem is the organization to foster our radical behaviorism. ...The smaller problem is what we call ourselves" (p. 54). The smaller problem was solved, and a long term solution for the middle-sized problem was established—steps that will facilitate solving the larger problem.

As the decade of the 1990s began, the culture was still in the grip of psychology (whose mainstream advocates are devoted to understanding a mysterious *internal* locus

of behavioral determinants) and theology (whose disciples are devoted to understanding a mysterious *external* locus of behavioral determinants). But an organized behaviorology movement was present as well, a movement providing a natural science alternative based largely on the selection paradigm. Here was a discipline that treated behavior as a *naturally* occurring phenomenon. Behavior occurs as dependent variables in functional relations featuring environmental properties as independent variables. Behaviorologists define behavior to include not only mechanical movements of body parts, but also all emotional reactions, and all verbal behaviors (the latter being a large class that incorporates speaking, thinking, awareness, consciousness, knowing about, and similar phenomena). Behaviorologists view all of these as kinds of behaviors, each occurring in accordance with well understood basic principles that often recombine in ways accommodating greater complexity. This brings behavioral outcomes (including the behaviors of affect and intellect) within reach of an appropriate behavioral technology for any applied field. The discipline of behaviorology could provide scientific support for a behavioral engineer addressing behavior-related problems in *any* applied area.

Summary of Chapter Two

Before concrete actions were taken to launch a newly organized discipline, the concept of that discipline had to be shaped to maturity in the verbal repertoires of many people. Chapter Two described both how that concept arose and the variables that shaped people's responses to it. This chapter also discussed the nature and origins of the behaviorology concept, and its increasingly ill fit within organized psychology, even though much of its origin can be traced in the history shared with that discipline. Disunity in psychology stimulated reconsideration of the place of the *behavioral* science that had begun early in the century—in part with the work of Watson and Thorndike, and subsequently with Skinner's definitive biology-inspired departure from both a strict stimulus-response (S-R) psychology and its attendant preoccupations with the nervous system.

Skinner's paradigmatic revolution brought to the study of behavior a line of biology-based scientific thought for dealing with behavior-related subject matter. It emphasized selection causality and produced an increasingly isolated behavioral scientific community within organized psychology. A continuing question was whether or not psychology would change by adopting that behavior-focused paradigm and its attendant natural science philosophy. The rift eventually attracted the attention of scholars of science including David Krantz who, while apparently somewhat offended by the behaviorists' adamant defense of their scientific integrity, discovered substantial evidence for that integrity.

Nevertheless, Krantz's prominent article (1971) emphasized what he implied were rebellious social improprieties. The chided behaviorists were perhaps slowed in their turn away from psychology, and many might have been influenced toward accommodations with traditional psychologists—a trend that certainly became evident.

In the two decades that followed, the behavioral psychologists and semi-independent behavior analysts toyed with the concept of a separate discipline. By the late 1980s this issue was under intense debate, especially within ABA. When a name (behaviorology) was proposed for a separate discipline, an historical search revealed several different origins for it and for some earlier flirtations with concepts of disciplinary independence. Reviews of the status of behavior science around the world revealed that significant potential for an organized behaviorology movement existed, especially among a subset of the radical behaviorists on the North American continent.

The next chapter, Chapter Three ("Issues Driving the Independence Movement") will review and analyze five kinds of reasons to incur the high costs of organizing a separate and independent discipline. ✻

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Five-Year Index: Volumes 5-9

This is the first five-year index for *Behaviorology Today*. It lists the references to the main articles that appeared in volumes 5 through 9 as these were the first five volumes under this name. (All issues have been on time, with some actually having been a little early—a practice that continues.) Most of the references are listed by volume in their order of inclusion in each issue. Where content is not clear from the title, an annotation is provided.

Since the eight issues of volumes 1 through 4 (Spring and Fall, 1998-2001) appeared under the title *TIBI News Time (TNT)*, most of the main articles of those eight issues were reprinted in the two abnormally long issues of Volume 5. As a result, those two issues each contain many more articles than the issues of later volumes. (Also, only selected editorials are listed in this index.)

Some issues in later volumes only show one or two articles in this index. However, these issues also contain several TIBI course syllabi. These syllabi are not included in this index because the list of syllabi (the *Syllabus Directory*) is printed at the back of each issue, with the most up-to-date *Syllabus Directory* at the back of the latest issue (e.g., see p. 35 of this issue).✻

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Volume 8 Number 1 (Spring 2005)

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Fraley, L.E. (2005). On verbal behavior: The fourth of four parts. *Behaviorology Today*, 8 (2), 3-18.

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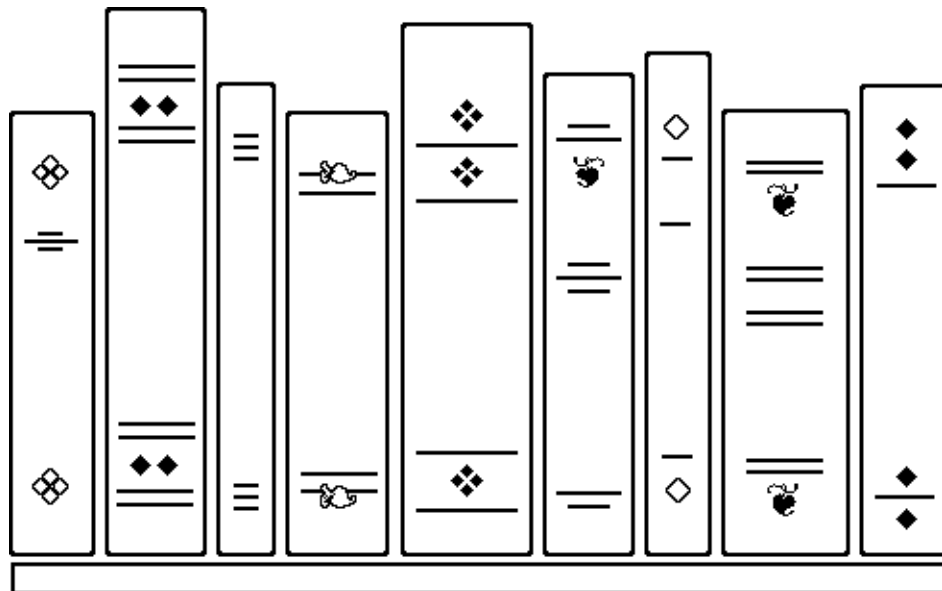
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[See the listing in the last issue.—Ed.] ☺



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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.**
- 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.

Syllabi Planned for Future Issues

- 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:*
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- BEHG 405: *Introduction to Instructional Practices in Educational Behaviorology:*
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*An older version appeared in an earlier issue.

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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 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:

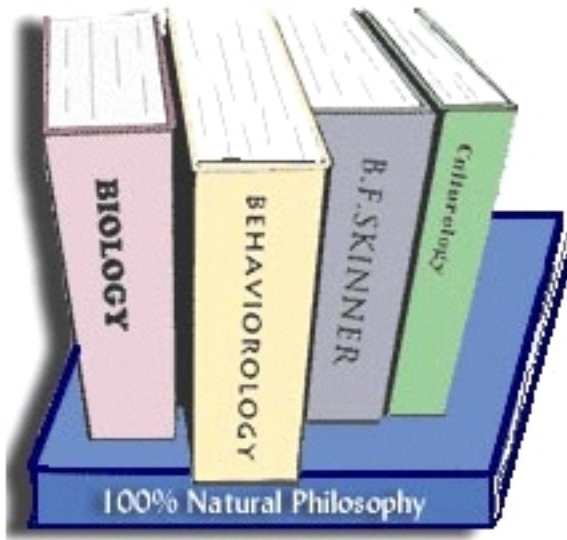
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To submit items for publication, contact the editor. Send items initially to the editor both by email (or disk) and by hard copy.

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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