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Behaviourology

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 does not contain any TIBI online course syllabus. In some future issues, new syllabi or updates of previous syllabi will appear. (See the *Syllabus Directory* near the back of each issue.)—Ed.

Volume 12 Number 1 Contents Plan

Here are some of the featured items planned for the next issue (Spring 2009) of *Behaviorology Today*, although these plans may change:

✧ *Natural Science, Superstition, &
Academic Institutions Part II (of II)*
(Lawrence E. Fraley).

✧ *Behaviorology Curricula in Higher Education*
(Stephen F. Ledoux).

✧ An article or two from among those that may be in process from various guest 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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AS PART OF THE ORGANIZATIONAL STRUCTURE OF THE INDEPENDENT NATURAL SCIENCE OF BEHAVIOR, *The International Behaviorology Institute* (TIBI), A NON-PROFIT PROFESSIONAL ORGANIZATION, EXISTS TO FOCUS BEHAVIOROLOGICAL PHILOSOPHY AND SCIENCE ON A BROAD RANGE OF CULTURAL PROBLEMS. TIBI SPONSORS AN ASSOCIATION (THE TIBI ASSOCIATION, OR TIBIA) FOR INTERESTED PEOPLE TO JOIN, SUPPORTING THE MISSION OF TIBI AND PARTICIPATING IN ITS ACTIVITIES. AND *Behaviorology Today* IS THE MAGAZINE/NEWSLETTER OF THE INSTITUTE. THE GUEST AND STAFF WRITERS OF *Behaviorology Today*

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

Origins, Status, and Mission of Behaviorology Chapters 6 & 7 (of 7)

Lawrence E. Fraley
Stephen F. Ledoux

Editor's Notes: 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.

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.

In early 1987 Ledoux began this paper to analyze the variables leading to the independent development of 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.—Ed.

Chapter 6:

Interdisciplinary Context: A Cultural Role for the New Discipline

After the introductory Chapter One, Chapter Two of this account of the emergence of behaviorology examined the nature and origins of the behaviorology concept. Chapter Three examined contingencies supporting individual commitments to a disciplinary independence movement. Chapter Four presented a comprehensive review of the activities to organize the behaviorology discipline and examined the cultural engineering by which the behaviorology discipline was formalized and installed in the community of natural sciences. Chapter Five reviewed the prevailing cultural milieu and analyzed the support for, and the opposition to, the behaviorology movement. This chapter, Chapter Six, the last of the five main parts of this account, examines 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 behavior-related natural science disciplines, and examines the cultural basis of resistance to behaviorology.

The early behaviorologists faced many questions about where their discipline fit with respect to other established disciplines and fields. This was only natural since they accepted the relationship of their discipline to other behavior-related fields as one of supplying an effective foundational science and technology of behavior.

The Cultural Context of Behaviorology

Early behaviorologists defined and formulated behaviorology in a way that allowed it to function well in a quality controlling capacity at the hub of a metaphorical wheel representing scientific contributions to global cultural development. At that hub are all existing basic behavior-related disciplines. They exhibit different philosophical approaches, some mutually incompatible and each contesting for control. That includes behaviorology (with its particular natural science philosophy) as well as its disciplinary competitors. The spokes are the various behavior-related fields, which share in defining and imparting identity to human culture. The lengthening of the spokes occurs as those fields develop through the effectiveness of their respective behavioral technologies. The expansion of the rim connotes the expansion of our culture in all of its diversity. The whole process functions only as well as the basic repertoires at the hub can support it. Behaviorologists asserted their independence in order to address that central mission better.

In the broad context of science, the place of behaviorology is determined in three ways: (a) by the qualities that make it a natural science (as opposed to a non-natural or pseudo-science), (b) by the kind of analyses that it features to best address the problems to which it is directed, and (c) by the nature of the subject matter under study. Being a *natural* science like chemistry, physics, or biology means that the epistemology and ontology of behaviorology respect a continuity in any functional chain of material events that define time. Natural science allows no breaks in that chain of events—that is, no discontinuities in the functional chain of material events that accumulate, link by link, in what is called a *natural history*. In a non-natural science, those linkages of material events are said to be broken on occasions of intervention by non-material, or metaphysical, events (e.g., the non-spatiotemporal activities criticized by Hayes & Brownstein, 1986).

Disciplinary repertoires that posit or tolerate non-physical *mentalist* entities, believed to intervene and play a causal role in determining behavior, classify as non-natural behavior sciences (if the term “science” is even deemed applicable in such cases). Hence they are frequently designated as “soft” sciences (generally understood as a polite euphemism for epistemologically substandard). The phrase “social sciences” was originally coined to describe sciences focused on interactive behaviors among people. But it has also come to denote multi-paradigmatic approaches as well, including some that entertain appeals to metaphysical phenomena (Skrtic, 1991). Not only has this issue yielded internal struggles in psychology, but also in other social sciences like anthropology and sociology (despite efforts to recast sociology as

a natural science, e.g., Burgess & Bushell, 1969; Hamblin & Kunkel, 1977; and Homans, 1961).

Culturology

The subsequent discussion of behaviorology among the life sciences features the term “culturology” which is used here to fill a gap in the labeling of the domains of concern across the life sciences from molecules to cultures. That term, like behaviorology, has had various origins (e.g., see White, 1949, pp. 115-117 & 409-415; Stephen Ledoux had also composed it independently in 1986). Culturology, like behaviorology, is etymologically appropriate: “the study of culture.” Just as the discipline of behaviorology has a scientifically informed philosophy of science, known as radical behaviorism, a similar philosophy of science is developing among certain schools within the broad field of anthropology, for example, the cultural materialism of Marvin Harris (Harris, 1979). While the people who represent those schools of thought will ultimately declare their philosophies and name their own discipline, *culturology* appears here as the interim name for that discipline for its convenience in avoiding long and possibly inaccurate labels such as “anthropology informed by cultural materialism.”

Behaviorology Among the Life Sciences

The natural sciences traditionally divide between physical sciences and life sciences. Behaviorology and other foundation life sciences rely heavily, though not exclusively, on the causal mode of selection in their explanatory frameworks. In contrast, foundation physical sciences, such as physics and chemistry, have depended more on mechanical causality. (See Skinner, 1987a, Ch. 4, for details on this distinction.)

The scientific study of life, especially human life, stretches across several levels of analysis. On one end is the discipline of biology, chiefly studying, across the entire history of each species, the physical and chemical activities of individuals from the sub-cellular level to the level of the organism. “Behavior” as subject matter in biology can be approached from those physiological foundations. But what can be learned about behavior on that basis tends to be insufficient for *practical* purposes in social and environmental contexts, and often needs to be supplemented by appeals to behavioral science at a different paradigmatic level. This happens, for example, when attention turns from *how* a body behaves to *why* an organism behaves. Behaviorological engineering is difficult to support when it is based on scientific principles induced from strictly biological investigations of behavior. However, some biologically informed animal behaviorists have found reason to expand their physiologically based studies of behavior to consider behavior/environment rela-

tions—thus contributing to a science of behavior from their side of the disciplinary overlap with behaviorology.

On the other end of the life science continuum is the discipline of culturology, chiefly studying the social behavioral/cultural activities, especially of verbal species, at the level of the group or population. “Behavior” as subject matter in culturology is essentially the study of group-produced effects, for example, the combined or synergistic effects of concerted individual behaviors. The shared practices of a people that give their group its cultural identity are of interest in culturology as well. Importantly, the group behaviors of interest to culturologists can endure beyond the range of individual lifetimes. Naturally, in conducting their studies culturologists concern themselves to some extent with the behavior of individuals. In doing so they share some concerns with behaviorologists.

Between biology and culturology is the discipline of behaviorology, chiefly studying the functional relations between the environmental milieu and the behavior of individuals. With this focus behaviorology overlaps many behavior-related concerns in both biology and culturology. See Figure 1.

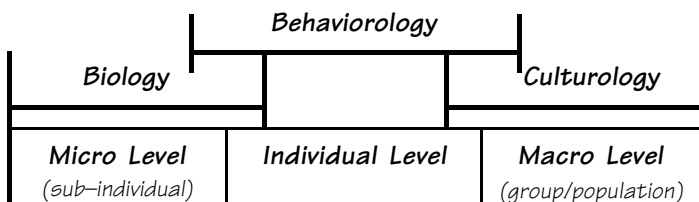


Figure 1. Disciplinary coverage for the three main levels of analysis in the life sciences.

Biology provides essentially a micro or sub-individual analysis of life, while culturology provides a macro or supra-individual analysis. Between them behaviorology provides an analysis chiefly focused on the environment/behavior relations of individuals within each individual’s lifetime. Behaviorology takes into account relevant determinants from (a) the biological history of the species, (b) the behavioral history of a given individual, (c) the current physiological state of the given individual, and (d) the current environmental context, including cultural factors that might share in the control of the individual’s behavior. Behaviorology is thus the study of all behavior-controlling functional relations between the environment and the organism, *as both environment and organism change*. Figure 1 illustrates these disciplinary relations. (The study of ecosystems, species evolution, and the behavior of animals in groups by some animal biologists implies that a disciplinary overlap also

exists between biology and culturology. So Figure 1 might be redrawn as a triangle with extended sides that cross each other. Each side would represent one of these domains and its associated discipline. The areas where the lines cross would then represent the overlap in the interests of the intersecting disciplines.)

Individual and Group Levels of Analysis

The disciplinary boundaries presented here remain somewhat flexible. The discreteness of any discipline is generally recognized in proportion to the quality of the products produced by its members. Valid disciplinary identity exists, not due to special sanctions or protections guaranteed by political, legal, or economic contrivances, but because others, acting upon the scientific foundations of alternative disciplines, cannot do the job better. The disciplinary regions mapped here are not construed as territorial claims staked or recognized. They are merely domains of phenomena, available for scientific study, with respect to which adequacy in scientific address has been demonstrated by the mentioned groups.

The play of this qualitative principle can be seen in the overlap between behaviorology and culturology. Consider the following example (Hayes, 1988a) which clarifies the difference between the behavior of individuals and a maintained cultural practice. Referring to the strikingly repulsive jokes that most everyone hears being passed among people, Hayes invited the reader to suppose

...that a situation emerges in which joke telling is expected. You may find to your dismay that the only joke you remember is one of these disgusting jokes. You may repeat it. Noting the reaction, you may never say it again. In the meantime, however, you have infected your audience with this terrible joke. They may go through the same cycle. Thus, we may have a wave of horrible jokes swiftly propagated across the country, even though this behavior may fail to be maintained, even for a short while, in each individual engaging in the practice. (p. 16)

The two levels of analysis are evident: At one level the behavior of an individual can be analyzed with respect to (a) why that person exhibited that behavior, (b) at what rate and to what end the behavior occurred to that individual, and (c) the fate of that behavior in the repertoire of that individual. Alternatively, the *cultural practice of repulsive joke telling* can be analyzed separately at a different level of analysis. Note, for example, that the joke telling, as a cultural practice, can continue (a) beyond the tenure of that particular kind of verbal behavior in the repertoire of any one individual and (b) beyond even the lifetime of any one of its mediating individuals. The strength of a

cultural practice also differs from the strength of the contributory behavior of any individual participant, and it is measured in different ways.

Those who study cultural practices at the descriptive level chart their spread among the members of a culture, measure their strengths, and record their durations. And they can, of course, do all of those things without concern about the specific controls on the behavior of the individuals who had roles in mediating those practices. With that implied division of scientific labor, behaviorologists and culturologists can work concurrently and maintain differentiated disciplinary identities.

However, when objectives advance from the levels of *description and prediction* to the level of *control*, scientists concerned with culture must then design and develop new cultures (or change existing ones) by producing practices not yet occurring. Throughout the history of their discipline, culturologists have traditionally eschewed intervention. Mainly, they have identified, described, analyzed, and traced. And they have produced some accurate predictions. But the production of new cultural behavior requires control over the behavior of the individuals who contribute to the cultural practices of concern. At that level of operation, the disciplinary distinctions can become blurred, because culturologists would need the intervention capabilities of behaviorology. (Fralely [1988c] elaborated on this point and pursued the disciplinary implications.)

Operating at the level of *control* represents a much more recent trend in culturology. Circumstances increasingly impose this trend in spite of traditional disciplinary ethics that oppose intervention. With respect to method, contingencies of reinforcement can be imposed simultaneously on all members of a group so that the individual responses occur concurrently and yield group effects. Something like this might be approximated by universally applied food rationing. Another class of group effects results when a given kind of contingency successively impinges on different individuals at different times. The illusion of motion known as the “wave,” which spectators at American football games sometimes generate in stadiums, is an example. The previous joke-telling example also represents a variation in this class of effects.

Not only is a predictive science of *group-produced* effects (as opposed to a science of individually produced effects) possible, but so is a *controlling* science. Such a science has to some extent developed in support of the activities of anthropologists and sociologists, and it could develop further. Although group effects are necessarily produced by the summation of the behavior of individuals, a science of group effects *can* support intervention technologies in which the analytical repertoire of the cultural engineers does *not* penetrate to the level of individuals. For instance, composers and conductors can reliably produce prescribed group effects without knowing the

details of how any particular orchestra member plays his or her instrument. That is because the audience-appreciated properties of the group effect are characteristics of the combined products or activities of the behaving performers. The contributing individual producers of that group effect are not each producing a small one-person version of the group effect appreciated by the audience. What an individual contributes is different—often extremely so—from the appreciated group effect.

The orchestra example, which is typical, shows how one cannot pursue the ontological status, or reality, of the behavioral group effect *intact* back to its stimulus-controlled behavioral origins. Similarly, you can try to approach a distant Olympic flag generated by a stadium section of card holders. But you ultimately arrive at any one of many persons each holding up a colored piece of cardboard. The flag, which is so clearly perceived from afar, can no longer be detected; a person holding a colored square does not evoke a flag-seeing response by an observer. Yet, the level of the behavior of those individual card holders is the only level at which interventions pertinent to the group effect can be *functionally* effective. Only when intervention attempts, intended to alter the properties of the flag-seeing response in remote observers, reach down to affect the behavior of all or some of the card holders can those group level interventions possibly work (e.g., card-change cues *producing* a change of cards that together shows a different flag). Insofar as any group behavioral intervention must have its ultimate effect on the behavior of those individuals whose combined activities yield the group effect, any capacity for intervention (i.e., control) that develops at the group level of analysis must functionally reach for its effect to a control over the behavior of individuals—a behavior technology province well-worked by behaviorologists.

In producing effects at the group level, behavior engineers must arrange to evoke the behavior of many individuals. But in many cases they give little attention to the resulting behavior of *particular individuals*. Instead, they attend to the resulting group effect, and deliver stimuli and consequences in a blanket fashion. Group level engineers, whether conductors, economists, parliamentarians, social revolutionaries, or general culturologists, can impose adjustments that yield changes at the group level. And, as has been illustrated, they can do so while treating the whole analytical level of the affected individuals as a scientific “black box.” Culturologists thus do not have to be behaviorologists to operate at the scientific level of control from the perspective of their group level of analysis. Yet that level of intervention lacks the sensitivity for fine-tuning the group effect, which requires changes to the behavior of *specific individuals*.

Behavior scientists have long recognized that efforts to affect the behavior of groups are more successful when

informed by an understanding of just how and why *individuals* behave under the imposed arrangements (see Skinner, 1953, Ch. 19). With that additional capacity at the behaviorological level, culturologists can fine-tune their engineering. They can trace many of the breakdowns or circumventions of group-level interventions to anomalies at the individual level as, for example, when a single card holder in the stadium raises a card of the wrong color. And then they can deal with those anomalies. If intervention technologies were limited only to group-level controls, imagine the plight of a social engineer whose plan for large scale waste management does not work well because one waste hauler, in spite of the engineered policies, regulations, and social ethics—all manipulated at the group level—is cutting costs by dumping his individual loads into a river from a remote bridge, loads so toxic that they nullify the whole engineering effort. That hypothetical cultural engineer, unenlightened as to the workings of events at the individual level, would not know in a technical sense how or why such anomalous dumping could occur. So he or she would not be able to down-focus the engineering effort to the individual level to fix that specific fault which is degrading the desired group effect. A culturologist, if really skilled *only* at group level engineering, could only continue to impose blanket contingencies in the hope that potentially errant individuals will share an appropriate response with others to at least some of those contingencies. Obviously, good cultural engineering requires skills at both the individual and group levels of analysis. And those responsible for cultural engineering must be prepared to operate, or cooperate, across the combined range of those levels of analysis as situations demand.

In the meantime, those behaviorologists who are additionally concerned with the engineering of cultural practices focus on controlling the behavior of the individuals whose behavior contributes to cultural practices. The behaviorological literature is rich in basic material applicable to that sort of science, for example, *Walden Two* (Skinner, 1948), and the culture-related chapters in *Science and Human Behavior* (Skinner, 1953) and *Beyond Freedom and Dignity* (Skinner, 1971). The Los Horcones community in Mexico has long provided a living laboratory. Ledoux (1985) has addressed some concerns of experimental communities. And Beach (1988), in an article suggesting that the design, construction, and operation of experimental communities might be called “sociocultural systems engineering,” provides a sample of the type of disciplinary blending endorsed above. (The relevance of this blending, for culture design in space settlements, was addressed in the previous chapter.)

A Niche in the Cultural Marketplace

The technological advances, especially of the past century, have left a disturbing discrepancy between the technical capacity to affect the environment and the control over the behavior with which people would do so (for typical examples see Fraley, 1981, 1987; Lamal, 1986; Skinner, 1987a, Section 1; Skinner, 1989b). For decades numerous and diverse fields, seeking basic scientific help in closing that gap, have turned to psychology and continually found its mainstream lacking in the technical foundations capable of supporting their work. As Skinner (1987b) put it, “unable to offer a useful conception of its subject matter, psychology has not formed good relations with other sciences” (p. 785). Most of those fields now ignore psychology. For example, the 1990–1992 *Graduate Catalog* at the University of West Virginia revealed that, outside of psychology-operated graduate programs, fewer than one in five behavior-related graduate programs required any coursework in psychology subject matters. One unfortunate effect of that otherwise rational disregard has been the neglect of the work of Skinner and his colleagues which, having been lumped indiscriminately with the rest of psychology, has undeservedly shared the neglect.

Yet dozens of non-psychology fields exist that are essentially applied behavioral areas if one considers their announced cultural missions and the behavior-related skills implicit in their training objectives. The early behaviorologists saw great potential for the cultural impact of their discipline in precisely these areas. These fields—many listed here with selected references to related articles or books, often authored from the behaviorological perspective—include advertising, applied anthropology (see Glenn, 1988; Harris, 1979; Lloyd, 1985; Malott, 1988; and E.A. Vargas, 1985), architecture, criminal justice (Fraley, 1988a, 1988b), economics, education (e.g., Barrett, 1991; Holland, 1960, 1967; Johnson & Layng, 1992; Keller, 1968; Skinner, 1968; E.A. Vargas, 1996; J. Vargas, 1977, 1988; West & Hamerlynck, 1992), environmental studies and ecology, ethics (Krapfl & Vargas, 1977; E.A. Vargas, 1975, 1982), entertainment, ethology, gerontology (Skinner & Vaughan, 1983), history, human factors engineering, industrial and labor relations, journalism, law (Fraley, 1981, 1983), management (Daniels, 1989), nursing (and other health related fields, e.g., pediatrics [Christophersen, 1988; Stewart & J. Vargas, 1990]), occupational health and safety engineering, organizational restructuring (Vargas & Fraley, 1976), peace studies, philosophy (Chiesa, 1994), physical education/sports/leisure studies, political economics, political science, public administration, religious studies (Burhoe, 1981; Schoenfield, 1993), social activism (Ulman, 1983, 1986), social work (Thyer, 1987) and all its sub-fields such as substance

abuse and rehabilitation, sociology, urban studies, women's studies, and others. Whether they face problems that require a revolution or a band-aid, practitioners in all of these fields would find the principles of behaviorology not merely relevant to their work but, in most cases, the essential scientific foundation for timely achievement of their behavior-related purposes.

The behaviorologists generally agreed that behavior-related fields were scientifically adrift with respect to foundation behavioral science. They also thought that their movement would benefit these fields by avoiding the legacy of a discipline that most of these fields had rationally rejected. Scientific integration with these fields seemed more facilitated by an independent behaviorology displaying its own academic, scientific, and professional integrity.

Belief and Intolerance in America

Though its name helps, accurate public perceptions of behaviorology developed slowly. Daniel Bjork, a scholar of cultural and intellectual movements, has hypothesized from a historian's perspective about the reflexive rejection of many behaviorological concepts within American culture (letter to Fraley, 14 February 1989). Speculating about why Proctor and Weeks (1988) called behaviorology an anachronism, Bjork posited that "eclectics have won out over the true believers throughout American history and have dominated our cultural scene since at least the early nineteenth century." Bjork elaborated as follows:

Belief and intolerance have been historically associated in America with the Old World. Mainline psychology, like mainline American culture, sells eclecticism and tolerance.... There is also a long history of mainline American culture dismantling or simply smashing any group or individual who believed to the point of intolerance. Witness the fate of the Puritans. Behaviorologists, if I read them correctly, are by their very scientific beliefs intolerant of the lingering mentalism in psychology.

The parallel, of course, is with any natural science. Behaviorologists' scientific beliefs make them intolerant of mentalism just as, for instance, modern astronomers' scientific beliefs make them intolerant of astrology, physicists of mysticism, biologists of creationism, and so forth. Bjork continues:

Mainline psychologists, reflecting the values of the larger American culture, simply have no tradition of belief. And when they meet real belief in behaviorologists they do the "American" thing and attempt to discount or eliminate it.

Eclecticism is especially American. The separation of behaviorology as a separate discipline is perceived not simply as non-academic and anti-intellectual, but as un-American...because it refuses to tolerate eclecticism as the base for the discipline. Behaviorology is dismissed as an Old World Cult—an anachronism more fitting in the Jesuit world of the late Middle Ages.

When you embrace eclecticism, you dismiss disciplinary purity. Behaviorology becomes a contemporary reminder of Old World fanaticism.

Bjork also saw the behaviorology movement confronting an American public that was biased against many behaviorological concepts perhaps as part of a widespread disdain for the natural sciences in America. (Nevertheless, Americans are strongly attached to the *products* of the natural sciences. Having referred to America's current stage between theocracy and sociocracy as "vacillocracy," Beach [1991c] mentioned that the motto America actually follows at present could be stated as "In God we trust, but on Science we depend." Such a motto portends deficiencies in science support; see Sagan, 1995, about the dangers of those deficiencies.) The efforts of behaviorologists to protect and maintain the integrity of their disciplinary verbal community, so necessary to good science, thus accidentally precipitated some rejection. (Behaviorologists were not alone in experiencing such rejection; see Ratner's discussion of the earlier efforts to reject Darwin and evolution from biological science [Ratner, 1936/1984].)

Bjork's analysis also suggests why non-behaviorologists easily exploit the public to arouse disapproval of behaviorology while relevant issues such as scientific validity and effectiveness go ignored. Earlier sections of this work have provided several examples of language implying that behaviorologists exhibit this "un-American" intolerance and disrespect for the supposed virtues of eclecticism: Epstein's disapproval of allegiance to an "unattractive credo," Burns's accusation about "rejectionism," Proctor and Weeks's reference to the "arrogance" and "scientific elitism" of behaviorists, the theme of Wendt's assault on Keller's program at Columbia University, and Krantz's attribution of "conceptual imperialism" to behaviorists. One anonymous reviewer of a draft of this work claimed that behaviorologists have behaved in an "anti-intellectual fashion" that is "not academically defensible." Aside from the question of validity in these accusations, any of these sentiments, cast as culturally protective admonitions, function as general anti-science weapons. This was especially so when these weapons were aimed at an emerging natural science discipline in a culture (a) much preoccupied

with metaphysical alternatives that distract many of its members from issues that affect them, and (b) much infatuated with the popular pseudo-sciences that entertain them (Sagan, 1995).

A modern scientific discipline is a rare and elaborate verbal product requiring a long, careful, and invariably difficult course of development. It remains subject to easy mutation by extraneous contingencies of many kinds. Such a discipline can be protected and further refined only with the help of a stringent intolerance for uncondusive contingencies. "Belief" in the discipline is merely the strength of the control exerted by its elements over the behavior of its practitioners as they engage in technological behaviors to affect the environment (see Fraley, 1984, for an in-depth analysis of the concept of belief). Statements asserting belief are based upon tacts of the reliability in those controlling relations. In simple terms, if one notices that one's science works well and reliably to produce effective behavior in difficult situations, then one attains the state to which people refer as one's strong *belief* in that science.

The application of modern experimental science to the old questions about behavior has essentially dissociated behaviorology from any philosophically mentalistic lineage. This has made feasible a new focus on the practical *control* of behavior. The resulting natural science discipline has severed the simplistic reliance on faith in piously proffered explanations and substituted the experimentally derived data base. A data base functions as a special kind of controlling environment in which modern behaviorologists have sought order and described relations. Applying those relations, behaviorologists have extrapolated to accurate predictions and developed technologies affording control. (Some suggest that natural scientists like behaviorologists, rather than abandoning faith, have transferred it to the data base.)

The important concepts of how to shape and maintain a scientific verbal community are themselves behaviorological products. Those science-protecting concepts, invidiously likened by critics to excessive displays of faith, are *not* continuously derived from the tradition of Middle Age fanatical ideologies. Like modern physics and other basic natural sciences, organized behaviorology is a verbal community whose members necessarily eschew eclectic compromises with alternative paradigms. That tradition, while respecting the ancient principle of avoiding alien influence, is of more modern resurgence among the scientific communities where it has been a necessary strategy to preserve natural science in cultures steeped in metaphysical indulgence. The behaviorology of the 1990s has as yet had insufficient history to overcome such cultural biases against it. Even Darwinian biology, after more than a century, has not entirely solved this problem.

The tradition of American tolerance coupled with the suppression of overzealous believing developed for sound practical reasons. The Old World systems of belief were based on religious and abstract philosophical epistemologies, largely divorced from reality, nature, and practicality. Strong believing of those kinds might have had therapeutic value in the lives of the believers, and probably furthered the economic and other personal interests of the purveyors of faith who contrived and maintained those belief systems. But such strong beliefs contributed nothing to the coherence and integrity of the new American cultural amalgam. On the contrary, they proved divisive. American cultural development, having to depend upon such ideologically diverse human resources as were available, required that *those* kinds of strong personal beliefs be socially punished until they no longer prevented critical culture-building cooperation.

Unfortunately, American culture has *indiscriminately* generalized this special suppressive facet of Americana to certain highly valuable belief systems of an entirely different type for which the American culture has great need. Those, of course, are disciplines based on epistemologies of natural science. Those repertoires *do* reflect reality; they *are* natural; and they *do* share in the control of technological behaviors yielding practical and much needed results. The products of *those* disciplines *support* the cultural integrity. The commitment and intolerance exhibited by behaviorologists, often mistakenly regarded as excessive, were simply the care necessary to develop and maintain any modern scientific verbal community. Physicists, chemists, and other natural science communities exhibit the same care.

One problem that raises public bias against behaviorological concepts, principles, and technologies is that these represent the latest products from the sciences which remove humans ever further from a seemingly preferable though false pedestal. Earlier findings had already shown, for example, that the Earth is not the center of the universe (Copernicus and Galileo), and that our bodies are products of the laws of nature (Darwin). Now behaviorological science shows that our very being, our behavior, is lawfully related to the ways nature works. A public that is comfortable with the opposite views sees these facts as threatening and moves against the supporting sciences.

Another problem is that behaviorology is not as yet fully discriminated as a modern science by a public that has little understanding of the nature of science, especially with respect to behavior. For the time being, that public sees behaviorology merely as another facet of a skeptically regarded tradition most saliently represented by psychology and psychiatry. As Bjork put it (letter to Fraley, 14 February 1989):

The American public perceives psychology as a strange amalgam of science,

fad, and hocus–pocus. Its essence is mystery not fact.... At bottom, psychology may still be perceived as more religion than science.

Americans have never wasted much time on philosophical matters, and for the most part their eschewing of that whole domain has worked to their advantage. Ironically, in carrying that pattern to the excess of punishing defenders of behaviorological integrity, the American academic community suppresses the very discipline that is needed to understand, and gain more effective control of, philosophy in relation to both natural science and culture in general (see Fraley, 1990a). If the human species is to survive its interactions with its own environment, natural science and its philosophy must come to *characterize* the culture both to countercontrol abuses (e.g., see Gould, 1981) and to enhance further natural science advances. Progress remains limited as long as the steps necessary to protect natural science are misconstrued as harmfully divisive aspects of the culture and are punished to suppression.

Behaviorologists expect, however, that if effective results can gradually have an increasing impact on cultural survival, the misperceptions will slowly change; the suppression will decrease, even end. More appreciation for natural science in general and behaviorology in particular will become common. Individual behavior, cultural practice improvement, self control, and cultural survival will all be enhanced by the intensifying development of the now emerged discipline of behaviorology.

Summary of Chapter Six

Behaviorology serves the culture as a basic natural science discipline that can productively inform the work of practitioners in a wide variety of behavior–related fields. Many of those fields have little reliance on other basic behavior disciplines, especially psychology, and represent a needy market for behaviorological foundations. The behaviorological level of analysis puts that discipline between biology, which features a more micro–level of analysis, and culturology, which features a more macro–level of analysis—although behaviorology overlaps both biology and culturology. The bias against behaviorology within American culture reflects both the age–old conflict between faith and reason and the more recent American tradition of punishing pockets of apparently excessive faith, in the interest of forging a cultural integrity out of ideologically disparate human resources. The culture cannot be saved without massive interventions based on the products of the natural sciences—and most needed are the contributions of the natural science of behaviorology.

This chapter, Chapter Six, was the last of the five main parts of this account of the emergence of behaviorology. It accompanies Chapter Seven which provides a brief conclusion to this account and which is followed by endnotes and references. ✻

Chapter 7:

Conclusion

This account of the emergence of behaviorology had five main parts, Chapters Two through Six. Chapter Two examined the nature and origins of the behaviorology concept. Chapter Three examined contingencies supporting individual commitments to a disciplinary independence movement. Chapter Four presented a comprehensive review of the activities to organize the behaviorology discipline and examined the cultural engineering by which the behaviorology discipline was formalized and installed in the community of natural sciences. Chapter Five reviewed the prevailing cultural milieu and analyzed the support for, and the opposition to, the behaviorology movement. Chapter Six emphasized 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. This chapter, Chapter Seven, provides a conclusion for this account of the emergence of behaviorology; it is followed by the endnotes and the references for all the chapters in this account.

*T*his multi–part work has addressed the questions that naturally arise with respect to the emergence of a new discipline. It has described (a) the nature of behaviorology as a science, (b) the facts and circumstances of its origins as a concept, (c) its formal organization as a new and independent disciplinary verbal community, (d) the behavior of its leaders as they conducted a behaviorological development project to establish this discipline, (e) the place of this discipline within the scientific community at large and within the culture in general, and (f) the cultural bases of resistance to behaviorology. This work not only has included the *chronicle* of the emergence of this discipline, but also it has described the *nature* of its development.

Powerful technologies are developing from this behaviorology discipline. They can effectively support a wide variety of behavior–related fields. But enthusiasm about the effectiveness of these technologies is sometimes accompanied by disdain for their behavioristic origins. As one psychology student in an introductory behaviorology course recently asked in a hopeful vein, “May one simply adopt the behavioral technologies based upon this science without accepting the underlying science, as-

sumptions, and philosophy?” Addressing that kind of question, Eshleman and Vargas (1988) admonish that our . . . technology should not lose its behavioristic character. More explicitly, as practitioners of a behaviorological technology, we should not disguise its origins. Not only does such disavowal impart an apologetic air to our professional activities, which then denigrates those activities (along with us), but it also reinforces any tendency, on that part of a verbal community that is hostile, to continue punitive actions. At worst, others in the community join in on the condemnations—believing the arguments they make against a behaviorological technology without knowing why they make them. At best, the rest of the community remains ignorant as to where credit should accrue, with consequent effect on delivery of resources for professional work by behaviorologists. Such selling out in order to buy in leaves everyone holding the bag, including, eventually, the community we try to help. (p. 30)

Behaviorology is not the first discipline that has had to separate from another field in order to advance. Psychology itself is one example. Fraley (1987) notes:

Psychology was a revolution based on experimental methodology; behaviorology is one based on a science of philosophy. Today's behaviorologists have more valuable contributions to make to the culture than rehabilitating psychology. . . . Behaviorists should now move forward, . . . unburdened, toward the fulfillment of their own cultural destiny and adapt an effective behavioral science to the varied institutions and agencies of our culture. (p. 125-126)

Future readers, should their lives have unfolded within the context of a culture pervaded by behaviorology, might have difficulty appreciating a past era of antithesis to behaviorological science. That people would not have readily invested in a repertoire that effective—one that obvious and well demonstrated in its validity and implications, one that elegant in its parsimonious reduction of false complexities—could tax the comprehension of those who live in such a future. But behaviorology being taken for granted is not presently among our cultural assets.

The most effective behavioral science ever to emerge appeared among the behaviors of only a small number of people. A subset of these continued to work on the socio-cultural arrangements to protect, develop, and

share it. Its importance was enough to evoke the commitments of entire professional lives, but to different and sometimes incompatible courses of action.

The smaller group whose members called themselves behaviorologists confronted a wide world of people most of whom were drifting down culturally destructive paths because they lacked a science of behavior that was sufficiently effective and sufficiently relevant to help them avoid doing so. The behaviorologists also confronted other behaviorists who entertained elements of behaviorological science but who acted to invest their pieces of the intellectual treasure in other ways. While the outcome of the struggle to strengthen a discipline of behaviorology could not be predicted at that time from the data base of those circumstances, behaviorologists acted in part because they already knew that future. They knew it as a tenuously resolved vision, a vision that emerged as a product of many variables inhering in their particular special histories.

If the behaviorologists' judgment proves to have been correct, and if they shall have prevailed in the effort to make common the behaviorological repertoire, then the culture—and eventually the whole planetary biosystem—will have benefited, perhaps most importantly by surviving. The early behaviorologists believed, of course, that this was what was at stake, or they would not have incurred the costs of organizing the behaviorology movement.¹ ✻

Endnotes

Parts of this work were presented at the fourteenth Association for Behavior Analysis convention in Philadelphia, PA, May 1988, and at the first convention of The International behaviorology Association in Potsdam, NY, August 1988. The work was then published alone as a book (Fraley & Ledoux, 1993), and the present 1997 version of the work is based upon this book version. Stephen Ledoux included an earlier historically unique draft of the work in a 1992 book of readings. Ledoux had made extensive stylistic adjustments, such as reducing the use of the passive voice, to ease translation from English into some other languages. These changes have been retained

¹ Subsequent to the concerns described in the chapters of this paper, further organizational developments occurred in support of the disciplinary missions of behaviorology, including the founding of *Behaviorology Today* and TIBI (The International Behaviorology Institute). For details, see Ledoux, S.F. (2002). Afterword. In S.F. Ledoux. (2002). *Origins and Components of Behaviorology—Second Edition* (pp. 337-357). Canton, NY: ABCs.—Ed.

in the present version of the work in the 1997 revised and expanded version of that 1992 book of readings, now titled *Origins and Components of Behaviorology* (Canton, NY: ABCs). The paper received further minor content revisions before inclusion in *Origins and Components of Behaviorology* (see Fraley & Ledoux, 1997).

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Quoted

Both in the original publication (Fraley & Ledoux, 1997) and in *Behaviorology Today*¹, the seven-chapter paper by Lawrence Fraley and Stephen Ledoux—completed in this issue—began with these quotations from some early behavior scientists:

...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, 1983, 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, 1989, declaring the disciplinary independence of the science he founded; from a transcript of his major address to close the fifteenth annual convention of the Association for Behavior Analysis)

At various points in the book containing the original publication (Ledoux, 2002) other quotations followed the seven chapters of the paper, including these:

¹ Fraley, L.E. & Ledoux, S.F. Origins, status, and mission of behaviorology. In *Behaviorology Today*:

✂ Chapters 1 & 2: Volume 9, Number 2, Fall 2006, pages 13–32.

✂ Chapter 3: Volume 10, Number 1, Spring 2007, pages 15–25.

✂ Chapter 4: Volume 10, Number 2, Fall 2007, pages 9–33.

✂ Chapter 5: Volume II, Number 1, Spring 2008, pages 3–30.

✂ Chapters 6 & 7: Volume II, Number 2, Fall 2008, pages 3–17.

...Skinner and his followers never had a chance of making over psychology by demonstrating that practices informed by their natural science were more effective... Should accumulating evidence force a traditional psychologist to the brink of either abandoning mysticism or discounting valid and reliable evidence, the typical traditional psychologist treats the dilemma as a Hobson's choice—there is no real option. Any science that contradicts the fundamental mystical assumptions is abandoned. People who got into science in the first place in order to shed some scholarly light on the details of their deepest philosophical assumptions (including, especially, those of a religious nature) are not going to abandon those foundations if that science starts causing trouble. Instead, they abandon the science, which at that point is merely an intellectual tool that initially looked helpful, but has proven to cause more difficulties than it is worth. (Lawrence E. Fraley, from a talk at the 1996 ABA Convention [Fraley, 1996]; a part of a longer quote on pp. 128–129 of the original publication [Fraley & Ledoux, 1997].)

...I have tried too long to follow Watson in saying that psychology is the science of behavior. I am now convinced that is wrong. Psychology has always been concerned with internal explanations. To show how futile that is, let us imagine that it has been successful. Let us suppose that all those who examine mental processes introspectively now agree on what they see. Let us suppose that what they see confirms a set of theories upon which all cognitive psychologists now agree. And let us suppose that brain science, looking inside the behaving organism in a different way, has found what convincingly can be called the same thing. Shall they then have discovered the causes of human behavior or simply more about what is behaving? (B.F. Skinner, elaborating on p. 3 of the first issue of the TIBA journal *Behaviorology* on the disciplinary independence of the science he founded; see Skinner, 1993.)

...We have been accused of building our own ghetto.... Rather than break out of the ghetto, I think we should strengthen its walls. No field of science has ever been more clearly defined than this world of ours. In no other world are there more fascinating things to be explored. No world has a greater potential for solving the problems that face the world today, above all saving the planet Earth. (B.F. Skinner, elaborating on p. 5 of the first issue of the TIBA journal *Behaviorology* on the disciplinary independence of the science he founded; see Skinner, 1993.)

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...Cultural survival appeared to be at stake during the emergence of modern biological science and on other occasions in human history. And so again today. However, the technologies capable of destruction that characterize the present era (whether actively, as with nuclear weapons, or passively, as with unchecked population or pollution) are qualitatively greater than those of previous times. This puts not just cultural survival but the survival of life in general on this planet at risk (e.g., from a nuclear winter). The early behaviorologists believed... that that was what was at stake, and so they incurred the costs of organizing the behaviorology movement and discipline. (Stephen Ledoux & Lawrence Fraley, from Appendix 2 [Ch. 7 section] of Ledoux, 2002, p. 313)

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...Future readers, should their lives have unfolded within the context of a culture pervaded by behaviorology, might have difficulty appreciating a past era of antithesis to behaviorological science. That people would not have readily invested in a repertoire that effective—one that obvious and well demonstrated in its validity and implications, one that elegant in its parsimonious reduction of false complexities—could tax the comprehension of those who live in such a future.... (Lawrence Fraley & Stephen Ledoux, from Chapter 7 of Fraley & Ledoux, 1997, p. 158.)

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The connections and implications among these quotations prompts both attention and action.—Ed.

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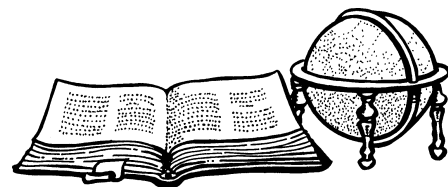
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Editor's Concern

Please note that there has been some risk for our readers involved in presenting these various parts of Lawrence Fraley's "Person, Life, and Culture" chapter of his *General Behaviorology* book (Fraley, 2008) in the venue of this journal (e.g., the two parts of "Natural Science, superstition, and Academic Institutions" of which part one begins after this note). The reason the "Person, Life, and Culture" chapter is a "later" chapter of the book (i.e., Chapter 28 of 30 chapters) is that covering the content of Chapters 1 through 27 most likely is needed to respond fully to this material. To the extent that this is true, the opportunity to respond appropriately may be diminished, and hence the concern about risk for our readers.

Can you report that your prior conditioning history (especially regarding what the natural science of behaviorology is all about, etc.) has fully resulted in your being up to this task? You may find it helpful to contact the editor or the author with questions or comments either way, before or after reading further.✻

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Natural Science, Superstition, & Academic Institutions Part I (of II)

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[This is part I of another topical excerpt from "Person, Life, and Culture," a later chapter of the author's book, *General Behaviorology: The Natural Science of Human Behavior* (Fraley, 2008). Given its relevance to improvements in cultural concerns, readers of this journal may find it pertinent. The second part is presented in the Spring 2009 issue (Volume 12, Number 1).—Ed.]

Recourse to a superstitious account for an important event leads to a plethora of related pseudo-explanations as the implications of that basic fallacy continue to compound, often under community pressure for elaboration.

However, those kinds of invalid accounts, in contests of efficacy with natural science accountings, have ultimately fallen short of equal practical worth.

Scientific Behavior versus Superstitious Behavior

Within human culture, practical matters are typically well purged of control by superstitious verbal behavior even when the involved parties are heavily invested in certain other forms or patterns of superstition.¹ To argue persuasively that superstition and natural science represent equally worthy branches of intellectual activity poses an arduous challenge when the arguments pertain to specific instances that involve real variables. The inherent inequality in effectiveness of those approaches suggests that scientific and superstitious behavior should never be presented to students as if they represent equally worthwhile intellectual options.

The preceding argument pertains to the thematic objectivity of the kinds of intellectual activity that are being compared. On the other hand, superstitious behavior may win contests of efficacy when the objective is to foster superstition per se. For instance, consider a person whose well-being is based on financial support contributed by followers who believe that they are paying for contact with one who has special access to an appealing but mysterious and powerful supernatural realm. If the richness of that personal economy is to be maintained, that person must promote that belief among the general populace. In most cases that promotion is most effective

¹ For example, suppose that the High Priestess is on her way to perform an important mystical ritual at the Temple of Ogillian, the God of All Things. The ritual is in behalf of followers whose parched crops need rain. Suppose, too, that her trip is curtailed when the engine of her automobile begins to make odd noises, loses power, and abruptly comes to a stop in a cloud of exuded blue smoke. She can have her car towed either (a) to her own Temple of Ogillian where her ritualized prayer for rain can be modified to include a plea for divine repairs to her broken car engine, or (b) to the nearby garage of an automobile mechanic who is known for speedy repairs to failed engines. We predict that she will dispatch her car to the nearby garage, although she may accompany that action with what appear to be redundant appeals for the supplementary intervention of her favored deity. If she opts instead merely to leave her ailing car exclusively to the mercy of Ogillian whose help has been solicited through her ritualistic praying, we predict that her car will remain inoperable. Even members of her own sect, who routinely take their own broken cars to their favorite mechanics, may chide her too fervent expectation of a miraculous car repair at the temple altar.

when that person personally displays, models, and endorses extensive indulgences in the appropriate kinds of superstitious behavior. With respect to the prevailing economic contingencies, that person's own belief in the theme of that activity is but a sometimes helpful although theoretically unnecessary artifact.

A career that is supported by the promotion of superstition may be pursued independently by an individual. However, such practitioners often band together and organize in ways that more strongly imply the propriety and necessity of their proffered kind of approach to whatever awesome and mysterious power they claim to represent. Being part of such an organizational structure tends to be more convincing to the contributors and hence increases both the reliability and the quantity of their various kinds of supportive contributions.

Where a scientific alternative to a superstitious account is not available, it would be incorrect to assume that no scientific accounting can be produced, although that has often been argued as a way of justifying the promulgation of as yet unchallenged superstition. In the traditional absence of a well established natural science of behavior, that kind of argument has often been advanced vigorously with respect to certain behavior-related phenomena. For instance, proponents of superstition have often insisted that no scientific approach could ever yield an adequate and coherent accounting for something as complex and awesome as a human being and its behavior, especially its private verbal and other neural behaviors. They typically misconstrue private neural behavior, treating it as though it represents the proactive initiatives of a miraculous machine called a *mind* and describing what is natural reactive neural behavior as *willful cognition*. However, the entirety of human behavior is precisely the subject matter of the natural science of behaviorology, and the kinds of behavioral phenomena that define a human being are no more intellectually impenetrable to behaviorologists than are the intricacies of molecules to physicists and chemists.

From both scientific and historical perspectives, explanatory and prescriptive recourse to superstition is a somewhat primitive and less intellectually mature approach than is reliance on theoretically measurable evidence in a manner that is informed by a philosophy of scientific naturalism. In the course of the evolution of the human intellect, recourse to superstitious verbal behavior predates recourse to objectively informed verbal behavior. However, regardless of that historical lead, for every outcome that would benefit human welfare, superstition-based efforts to attain it can be supplanted by scientific approaches. Not only is that possible, but case by case, the lessons of history have demonstrated the practical advantages of the scientific approach.

However, in many pending contests between scientific and superstitious approaches, the particular kind of science that is needed to complete such a demonstration is the natural science of *human behavior*. Its historical absence from the roundtable of the more established natural sciences has allowed the organized proponents of superstition within the culture to argue, often with seeming verisimilitude, that many stubborn behavior-related problems that plague humanity are soluble only through a surrender to the prescriptions of organized superstition. That contention is similar to those that prevailed with respect to other classes of natural phenomena during the historical era that preceded modern physics, chemistry, and biology.

Cultural Implications of the Absence of a Natural Science of Behavior

The extensive contemporary cultural investment in superstition is of vast proportion. Various kinds of organizations, formed to defend and promote superstitious ideologies, now enforce behavioral conformity with those assumptions in both formal and informal ways. Typically, the often informal enforcement is so effectively imposed that personal acquiescence to those demands has become a general criterion for the worthiness of a person within our culture. For example, currently, potential public leaders from the local to the national, in general, must demonstrate a requisite susceptibility to religious superstition to rise to viable candidacy for elective office. More formally, conformity to the assumption that operant behavior is driven by a responsible self-agent is a foundation of the legal system, and that assumption is evoked in behalf of law enforcement.

Nevertheless, compelling counter-arguments suggest that behaving in ways that serve the best practical interests of one's self, one's community, and one's culture never requires personal recourse to superstitious methods of analysis. In a given person's case, an efficacious alternative to superstition may require behavioral conditioning that has not yet occurred, a deficiency often described in general terms as "the need for a more appropriate education." If the general population were as well schooled in the natural science of human behavior as it is in the rudiments of physics, chemistry, and biology, people would be much less prone to the general assumption that superstitious behavior is necessary to human well being. At least in far fewer specific cases would it seem so.

Before a natural science of human behavior can have its cultural effect on a scale comparable to that of the other basic natural sciences, it must be divorced conceptually and organizationally from the existing social sciences, which are well rooted in fundamentally superstitious assumptions about the nature of human beings and their behavior. According to many such assumptions, the es-

sence of a human being resides in a spiritual entity, whether the secular self or a religiously invested body-dwelling ethereality, with all or part of a person's behavior reflecting the will of that somewhat autonomous and quite mysterious manager of behavior.

As people become more educated with respect to the potentially adverse implications of superstition per se, and as they are introduced to the advantages of its more objective alternatives, they may rather readily cease exhibiting salient forms of superstition. For instance, they may abandon blatantly superstitious forms of religion and follow a more secular course. However, even a firm private or public commitment to secularism does not necessarily immunize one from superstition. Many people whose intellectual posture may be regarded as quite secular, nevertheless exhibit an explanatory reliance on a proactive self that initiatively designs and then willfully directs the behavior that the body then executes.

Furthermore, because their doing so is fashionable, common, and generally anticipated, they often do so without recognizing the superstitious nature of their own perspective on behavior. To accept uncritically that a person can "make a decision" or "choose a course of action" is usually to accept the implicit notion of an internal agent that can perform such impossible feats of initiation and which can then be held responsible for the implications of having done so. Attention that is focused on the unreal qualities of the presumed but actually nonexistent self-agent is attention diverted from the real contingencies under which the behavior of concern manifests inevitably.²

² Consider two options: (a) to alter the contingencies under which certain undesirable patterns of behavior occur and (b) to blame a putative agent for the bad outcomes of the behavior that it has chosen. Note that (a) and (b) are informed by two entirely different kinds of assumptions about the fundamental nature of human behavior. As revealed in the more detailed analyses presented in earlier chapters, option (a) pertains to the manipulation of real and relevant variables and can be pursued to practical outcomes via a scientifically established behavioral technology. In contrast, option (b) is cast in terms of unreal variables so that one is left with no implications for direct practical intervention. Under option (b) what one supposes that one is doing is largely nonsense, but some of what may be done presumably to "persuade or compel an errant self-agent to mend its ways"—practices that have been selectively conditioned over long periods of time by their practical outcomes—may prove more or less effective, not because they have influenced a bad self-agent to start making better choices, but because those practices have, for what remain largely unknown reasons, had beneficial effects on the variables in the prevailing

In earlier sections of this book we have noted that people are often rendered superstitious merely by thinking and speaking in the normal linguistic manner that is taught within their culture. Human linguistic practices have evolved within the behavioral repertoire of a species that, historically, has reacted to its own behavior from a predominantly superstitious perspective, and that superstitious perspective is now widely reflected in the syntax of contemporary human languages. The active form of verbs provide a salient kind of example (i.e., a person *does* something). Thus, the proper manner of speaking casts the person as an implicitly proactive initiator and doer of the specified action.

For instance, if you simply report that "each morning, Ms. Jones *runs* to the bus stop," then absent some behaviorological counterconditioning, members of the audience tend to infer that the person-agent that is assumed to inhabit the body of Ms. Jones (i.e., the implicit *she*) is somehow the proactive initiator of that running behavior. That is, the *she* within her body *does* it in the sense of making it occur discretionarily. Few contemporary listeners infer from that statement that the running merely happened inevitably to her body as a result of functional antecedent control having been acquired through an energy transfer from some natural variables in her environment.

Regardless of the presumed autonomy of the self-agent, some presumed role for the environment is usually acknowledged insofar as the relevant aspects of the environment are allowedly considered or somehow taken into account by the mystical self-agent. After having accepted some measure of environmental influence, the self is thought to *decide* what is then to be done and to issue the orders for the ensuing behavior that the body is subsequently observed to execute. In so doing, that implicit self-agent presumably becomes *responsible for* that behavior and for its practical implications.³

contingencies that are determining the behavior of concern. However, bad mistakes can and often do result when the interventional practices are crafted in stricter conformity with the invalid ideology than to their resultant consequences—that is, when practicality is sacrificed in stringent respect of invalid ideology.

³ A language need not have a syntax that reflects mysticism. That is merely an artifact of historical linguistic development within the universally superstitious cultures of this planet. Thus, existing languages, such as the English in which this text is written, are endowed with such properties. That makes difficult the writing of a text such as this one, which is thematically antithetical to the inherent superstitious implications that are intrinsic to the only practical medium that is available for its textual expression.

Too often, in the established social sciences, scientific practice pertains only to the pursuit of the implications of the common but fundamentally mystical basic assumptions about behavior. Those superstitious basic assumptions themselves go unchallenged. Absent the quality-controlling effects of natural philosophy and the products of the science of behaviorology, the scientific practices of most who are called *social scientists* adjust as necessary to avoid outcomes that would require interpretations challenging the basic mystical assumptions that often underlie their professional activities.

Some Cultural Implications of Traditional Social Science

The behaviorological kind of analysis by which functional relations between behavior and environment are discovered has tended to be aborted midway by most followers of the traditional socio-behavioral disciplines. While they too begin with observed behavior, they have tended to assume, often uncritically, the existence of an internal proactive self-agent, and their trace of natural antecedent events often stops there. They are then left with the task of analyzing that mystical self-agent. Their investigations may become scientific with respect to the methods by which they probe what they assume to be the nature and behavior-related implications of that basically mystical construct as well as its various facets considered separately.

In addition to the traditional social science fields, such assumptions typically compose the foundations that inform the kind of interpretative activity prevailing in other behavior-related fields such as communications, linguistics, political science, and law. The legal system is predicated on the assumption of the responsible self. The methods that are prescribed for dealing legally with intolerable behavior, while typically relevant to practical contingencies, are kept respectful of the superstitious notion of a responsible self that can exercise some bad discretion. Corrective stimuli delivered to the body are presumed somehow to bridge the gap between the corporal and ethereal realms and thus reach and affect the spiritual self-agent.

Such a bad self, if it remains unaffected both by persuasive external displays and by aversive assaults upon the host body, tends to be regarded as intrinsically evil. Keeping the host body confined in a cage presumably precludes most or all of the adverse implications of any continuing bad behavior that the evil self may prescribe. Alternatively killing the host body presumably deprives the evil self of the behavioral means by which to mediate its bad intentions. Whether the evil self is presumed to share termination of vitality with the body or is presumed to escape the dying body via some sort of ethereal departure is largely irrelevant within the criminal justice system.

In attempting to account for behavior through an explanatory reliance on an impossible proactive capability, those who believe in behavior-controlling selves tend to ignore the functional chaining of events that leads back to the independent environmental variables—variables that denote potential points of technological intervention. Instead, the scientific activity consists of attempts to reveal any real characteristics of whatever marvelous intrinsic entity can presumably accomplish miraculous acts of spontaneous initiation (in this case, of behavior).

To aid in unraveling the mysteries of the mystical “mind” (as proponents usually refer either to that agent or to its putative dwelling place) contemporary social scientists have often enlisted the help of brain scientists. As noted throughout this book, internal neural activity is always associated with observed behavior. While brain scientists are usually natural scientists whose specialty is a branch of physiology, they have in some cases practiced good physiological science in service to the forces of organized superstition. That occurs when brain scientists interpret and publicize their valid physiological results as if those results pertain to the corporeal aspects of some mental activity of the kind that self-agents presumably initiate. Such findings may be relevant to some of the behavior-mediating operations of the nervous system, but with the carefully qualified exception of structures such as the sinoatrial node, nervous systems have no spontaneous initiatory capacity with respect to behavior.⁴

An example may occur when brain scientists explore the neural activity that is occurring while a person “makes a decision.” If they then report their physiological findings carelessly in terms of “what one’s brain is doing when the person is deciding an issue,” those findings are widely subject to interpretation as corroborating the existence of agential selves.

Among those who are entertaining that misinterpretation may be some of those brain scientists themselves. In other cases, those scientists may simply be reporting their findings in terms of common agential assumptions in an effort to be understood within the general public, at least at some level. Thus, misinterpretations of the findings that are produced by natural scientists do not necessarily imply that those natural scientists also subscribe to those misinterpretations of their own findings. Still, the reporting of valid physiological findings in lan-

⁴ A sinoatrial node is sometimes cited as an exception insofar as it seems to generate the periodic electric impulses that in turn stimulate regular heart beats. In that case the incoming energy from the environment may arrive nutritionally rather than as a direct nervous transmission, but the output of regular electrical impulses remains an inevitable product of energy-affected structure, and, as in all natural processes, spontaneity is not involved.

guage that panders to such common superstition, whether (a) mistakenly presumed valid, (b) dismissed as a harmless irrelevance, or (c) carefully crafted as a tactical deception, may buy some personal accommodation. However, that kind of accommodation comes at the expense of another natural science field (specifically, the natural science of behavior) and thus erodes the integrity of the natural science community as a whole.

In nature, as natural scientists define it, there are no spontaneous beginnings. Natural events chain functionally back through the time that they have shared in defining. The linkages consist of energy transmissions. The continuity of that chain of historical functions is not only presumed to extend backward from the present but presumably will establish forward as well—an unbroken chain of function, the links of which may be said to be converted from potential to real upon their overtake by the advancing present.

The realm of nature is assumed to retain its definitive functional characteristics beyond the limited range about which we can render accurate descriptions at any given time. That assumption is derived inductively from the history of formal scientific activity and from practical objective experience in general, and it is critical in maintaining the general contingency to persist in scientific pursuits—activity that may then correct our accounts and extend the range of our descriptions of function. We bother to explicate nature through the pursuit of scientific activity, because we assume that function is always the only way by which things can happen and thus exists to be discovered as the underlying cause of any encountered event. And in that regard nature in general, though often challenging, has not been disappointing.

In contrast with a natural sequence of events, which includes no spontaneous origins, a traditional social science account would perhaps posit an interruption of that functional continuity with the imposition of a spontaneous origin. A typical example occurs during the account of a behavioral event when its initiation is attributed to a *person* (in the sense of implicit self-agent). In deviating in that way from the tenets of naturalism, analytical attention that should be focused on the *functional environmental antecedents* of the behavior of concern is kept focused on whatever fictitious body-inhabiting constructs have been invented to provide an unnatural intrinsic causal origin for such behavior. During investigations of behavioral phenomena by those who rely on such unnatural contrivances, attention tends to be fixated on the nervous system, the body part in which such important but fictitious behavioral initiatives supposedly arise.

Typically, from that perspective, the body of a person is operated by some kind of mini-person (the self-agent) that dwells within the nervous system of the outer person. It may be thought to have an entirely corporeal na-

ture, but instead in most cases it is regarded as an ethereal or spiritual entity. In common practice, attention is focused more on what are believed to be the proactive behavioral accomplishments of that agent than on how such an agential self could operate. If contingencies arise that compel explanatory attention to that self-agent *per se*, a common result is recourse to a still more powerful fictional agent that, in turn, may be said to install and manage body-dwelling self-agents from an ill-defined but usually remote external location. A spiritual bureaucracy may be conceptualized that features lesser and greater Gods or a single God who is served by a subordinate class of spirits. One common version features a hierarchy of variously ranked angels in service to a single deity that serves as a kind of chief operating officer. The usual practice of conveniently endowing a paramount super-agent with omnipotence terminates the tendency to extend the accounting indefinitely by conceptually extending the sequence of ever more powerful creators and overseers, each of which is deemed responsible for the existence and oversight of the preceding one.⁵

When human behavior is studied in the traditional social sciences, the preoccupation with the putatively responsible self can diminish the importance of outwardly exhibited behavior. With analytical attention directed toward the putative behavior-initiating self, observable behavior is often studied mainly for its implications about the qualities of that presumed intrinsic agent. Presumably students are tested for evidence of what their internal agents have learned, with *learning* regarded as a vague process that enhances the behavioral archives to which a self-agent has recourse when designing a unit of activity that it will subsequently will the body to behave. Thus, with respect to what is of interest under the assumptions that have traditionally prevailed in the social sciences, observed behavior may be relegated to a class of indirect evidence. The nonexistent internal self-entity is mistakenly accepted as what is most impor-

⁵ With in the general human culture such super-agents are usually specified as deities. Within some subcultures the designation is “God” or “the Gods,” depending on whether one deity alone is assumed to do the whole job or whether a team of specialists is required. One popular subcultural variation of an individual’s agential self posits certain important classes of human behavior manifesting in accordance with the will of a resident self-agent but under the oversight of one or the other of a pair of remote super-agents that are known respectively as *God* and the *Devil*. In that case, one of those super-agents tends to be held responsible for a particular behavior according to whether that behavior comports with, or does not comport with, the values of those individuals who are rendering the attribution.

tant about a person, and regardless of its lack of being, it often becomes the focus of investigations and the ever elusive target of interventions.

Regardless of the substantial mislead that has often driven the activity within organized social science fields, social scientists have remained under academic contingencies to seem scientific or objective. Explicit references to mysterious behavior-generating selves have often been avoided by instead referring more vaguely to behavior-causing *traits*. However, such traits are invented and invoked with the same disregard of objectivity as are behavior motivating selves or spirits. In most contexts the attribution of a displayed behavior to (a) a given *trait* or (b) the will of a body-managing self or other spirit are interchangeable, because, whether the tact be *trait*, *self*, or *spirit*, the stimuli that evoke those respective tacts cannot be distinguished. And importantly, all of them are invalid independent variables that have been conjured to account for behavior while the real independent variables in the functional relations between environment and behavior have tended to go neglected.

The philosophical assumptions of scientists in general, and in this case of social scientists, necessarily affect their scientific activity in profound ways. Consider, for example, what social scientists purport to gain from their appeals to brain science. Just as the Austrian monk Johann Gregor Mendel assumed that his experiments with the genetics of peas were providing some further explication of how God performs the miracle of life, many social scientists presume that physiological brain science similarly provides some further explication of how a self-agent performs the miracle of behavior. Under such assumptions an ultimate misinterpretation of the physiological data is inevitable regardless of how objectively those physiological data have been produced.

Organizing Behaviorology for its Role as a Natural Science Alternative

Behaviorology and its various applied behavioral technologies afford a natural science alternative for the behavior-related studies in each of the traditional social science fields. In behaviorology, the proactive decision-making and hence responsible self of traditional psychology and other social sciences becomes the structural result of conditioning, which leaves the body susceptible to certain kinds of control by specific features of its environment. No personal agency is involved. With body and environment related by way of an appropriate kind of contact, function will thereby have been established via transmitted energy, and the dependent behavioral events are inevitable.

Behavior remains subject to intervention, but the target variables of practical intervention shift from the presumably definitive properties of a fictional agent to

aspects of body structure, aspects of environmental structure, and the energy-based functional relations of one to the other. The often subtle intricacies of complex, ongoing human behavior merely reflect the many variables that share, often transiently, in its antecedent control. That ever changing stream of antecedent stimuli, with the respective transient functionality of each constituent stimulus inconsistently overlapping the duration of others, yields the smooth integrity that characterizes well refined behavior.

Thus, an extensive behaviorological repertoire is usually required for the comfortable appreciation of an entirely natural account for the smooth integrity of complex behavior. Such refined behavior requires a shared control involving many concurrent functional relations, the nonuniform durations of which respectively start at different times with each overlapping others. Absent the scientific repertoire to appreciate such an elaborate account, it is hardly surprising that people resort to interventions by custom-designed spirits to restart their stalled explanations. Given the importance of behavior, it merits careful study from a valid perspective, and arguably the culture would be well served if an appropriate discipline for doing so were to become as securely installed in the curricula of the schools as are those for the study of energy, matter, and life functions.

The organizational and conceptual integrity of the discipline of behaviorology merits the same cultural protections that maintain the organizational integrity of physics, chemistry, and biology—and for similar reasons. The history of modern science suggests that any integral natural science discipline must be organized independently if it is to mature as a discipline and if its contribution to the culture that it serves is to be optimized.

Some natural scientists of human behavior do not endorse organizational independence for their discipline and instead propose to infiltrate predominantly superstitious social science communities in attempts to persuade the members of those communities to behave in less superstitious ways. Those social science communities are so well established within the culture that some natural scientists of behavior are convinced that those entrenched forces of organized superstition cannot be circumvented and instead must be changed from within. However, that approach often proves ineffective for natural scientists, because their way of persuasion is to demonstrate the superior qualities of practical outcomes that follow from science that is informed by the philosophy of naturalism. However, that represents a kind of evidentiary display that affects their superstitious counterparts only at the more superficial level of practical activity. Unfortunately, fundamentally superstitious people tend to interpret scientific practice and its outcomes in ways that comport with their

own philosophical assumptions, and they tend to adjust those practices as necessary to insure that compatibility.

Thus, good results produced by the natural scientists have little or no effect on the basic superstitious assumptions with which those outcomes are being interpreted by a superstitious audience. With their superstitious basic assumptions intact, those assumptions continue to share in the control of those peoples' scientific practices, even when they start to copy practices that have been displayed by the natural scientists. Those copied practices are then subject to drift, because the scientific quality-control afforded by a philosophy of naturalism is absent from the kind of quality-control that is exerted verbally via those peoples' superstitious philosophical fundamentals.

That is, if natural scientists seem to have a better procedure for attaining a particular practical outcome, a strongly superstitious person may adopt that practice in certain narrow or specific contexts, but that person's superstitious philosophy, through which the data pertaining to that practice are interpreted, will have gone unaffected. Demonstrations of scientific methods (procedures) that are of purportedly greater efficacy are interpreted in that regard according to philosophical criteria that remain immune to the outcomes of those methods.

Thus, the philosophy-based quality-controlling functions that keep practice optimally effective in natural science fields seldom appear along with the adopted science in the repertoire of deeply superstitious people. They have merely become persuaded to engage in certain scientifically derived procedures that yield effective results in certain practical situations. Absent the kind of philosophical repertoire that rationalizes and justifies adherence to those methods, across occasions on which those practices would be appropriate, those practices may nevertheless occur only intermittently, and they tend to remain narrowly applied. Also, without the quality-controlling philosophy, the copied practices are subject to seemingly harmless changes that may diminish their effectiveness. When the effectiveness of an unwittingly altered practice diminishes, that practice tends to be abandoned—an abandonment that is often accompanied by diminutional qualitative assessments that may generalize to the kind of natural science through which that now bungled practice originated.

For example, consider deeply superstitious people whose subsistence depends on agriculture in an arid climate. Suppose that irrigation is not feasible, and the agriculture depends on rainfall that is generally unreliable. Let us further suppose that the people routinely engage in elaborate dancing rituals meant to make a favorable impression on a deity that is superstitiously assumed to control the local rainfall. Suppose, however, that presentations made by meteorologists convincingly demonstrate to those people that, on the occasions of particular and discriminable local weather conditions, precise cloud

seeding is followed more reliably by rain than generally occurs following their traditional rituals. They may then forgo dancing and invest in an assortment of appropriate weather measuring instruments and a suitable aircraft along with quantities of the chemical substance that is used to seed appropriately pregnant clouds.

If their new practice then reliably yields more rain than their old ritualistic practices, *their conclusion may be that the god of rain is more pleased by offerings of that chemical substance than by the performances of the dancers.* Explanations of how raindrops form by water condensation on the dispersed chemical particles may even be accepted, with the interpretation being that that is how the rain god accomplishes the rain-making (when and if that god decides to bestow some rain on the parched lands of that tribe). Among those community members, the occasional cloud seeding failures, like failures of the former dancers, are attributed to their having evoked the rain god's disfavor or perhaps to the failure of their performances to bring their plight effectively to the attention of that god. The tribe may then abandon its offerings of the cloud seeding chemical as it had abandoned the ritualistic dancing, perhaps opting instead for something more attention grabbing.

For instance, the tribe may resort to aerial fireworks displays, which theoretically should better attract the deity's attention and may prove to be more pleasing than a mere dance or a dose of chemicals. Likewise, when social scientists maintain their assumption that the social behavior of individuals is dictated by the self-agent of those persons, they may unwittingly abandon or corrupt practices that are of some functional validity during their misguided theory-based efforts to appeal more influentially to those unreal intrinsic agents. That same kind of disrespectful fate can await a contribution from embedded natural scientists when they proffer a more effective practice, especially when the discipline from which that practice originated threatens the community's superstitious philosophical foundation by implicitly revealing its redundancy.

While the redundancy of the deity may eventually be recognized by some of the least superstitiously indoctrinated people, most community members will probably continue to interpret all relevant data in terms of their superstitious basic assumptions. The expulsion of the deity from any one operation threatens the presumed role of the deity in all operations. Thus, even when it seems to outsiders that the elimination of a role for the deity could occur without adverse implications, such a seemingly harmless conceptual displacement of the deity from a particular practical operation may be resisted tenaciously because of its far reaching implications for the place of that deity in other operations where it affords a comfortable explanatory option. Stubborn reaffirmation of faith in the

deity thus holds at bay the troublesome basic question—namely, if the deity is no longer regarded as essential in one operation where it was previously assumed to play a necessary role, is it really essential in other operations?

Recall the old kernel of scientific wisdom that says “when science advances, superstition retreats.” That is not always true, especially when the science and the superstition manifest in the behaviors of different people. In that case, the abandonment of superstition, with its lingering threat of generalization, may be greatly resisted. If in some cases the advance of science renders superstition entirely redundant, why not assume that that is going to be true in all similar cases? Faced with a threat of that scope, those who are invested in superstition tend to protect that investment by resisting the abandonment of superstition in any instance of scientific intrusion, even if powerful contingencies of practicality force them to adopt in some narrow way certain technical practices the prescriptions for which have been derived via naturalistically informed objective science.

Here we are considering two classes of people: (a) scientifically objective people who exhibit a naturalistic philosophy and (b) other people whose philosophy is rooted in superstition. In the course of their lives both types of people tend to become heavily invested in the implications of their respective way of thinking, and those various investments tend to become progressively less reversible as they become larger. That is, the well being of those whose basic assumptions support impractical actions may come to rely indirectly on their pursuit of the misguided implications of those invalid assumptions to the extent that they find themselves unable to contend with the adverse implications of coming to know better.

Harking back to the previous example, during a cloud seeding operation the role reserved for the rain god in controlling rainfall may get shifted to the operational periphery where it has little if any impact on the practical procedure of rainmaking. However, the revered deity remains conceptually extant. Defenses of that divine concept can have various implications, perhaps indirect, that may still intrude on the practice of cloud seeding. For instance, a pious devotee may advance the general argument that scientific probes of how the deity operates are both presumptuous and disrespectful, especially if those probes seem like human intrusions into the sacred operations by which the deity produces manifestations of its existence and power.⁶ It may then be argued that offending the deity by prying into its methods is not worth the small and perhaps temporary increases in rain that such intrusions may afford.

Deities have often been constructed conceptually to account for natural complexities by those who are unprepared to appreciate the awesome power of mechanical and selectional causal mechanisms. However, from our naturalistic perspective, unreal things presumably can play no functional role in any natural phenomenon, which includes the formation and fall of rain. When accounting for rain, that exclusion of unreal variables maintains the quality of scientific behavior by keeping the focus on real events during attempts to discover independent variables. That is, it is the philosophy of natural science that maintains the critical economy of effort whereby scientific activity is kept pertinent to measurable variables.

Within our culture the prevailing essential concept of a person will continue to overlap aspects of the mystical realm until the natural science of behavior becomes the predominant intellectual approach in people’s efforts to analyze human activity and to gain technological control of behavioral qualities. The theme of this section is how organizationally to best bring naturalism to that prominence.

People generally regard as desirable the educational production of ever more effective behavior. However, the forces of superstition are well organized, and within the culture they enjoy a near monopoly in controlling the practices by which new behaviorally defined persons are produced (i.e., conditioned). For example, teacher training programs are operated and administered almost exclusively by people whose professional activity is informed by traditional social science. Widespread change to a natural perspective at the philosophical and scientific levels would tend to result in some new and different instructional practices. The behavioral products of such instruction would be more effective to the extent that practices that are informed by natural science are more effective than practices that are informed by superstitious assumptions. Furthermore, the associated respondent conditioning would tend to insure that those new teaching methods and the behavioral repertoires that they produced would be accompanied by appropriately compatible emotional reactions.

Although teachers are putatively being trained to produce people who can behave effectively, very few teachers receive any instruction in the real nature of human beings and their behavior, so in terms of real functional variables, teachers seldom know precisely what they are trying to accomplish. Unable to define their general objective in terms of real variables, they remain unable to focus their methods. Members of the general public remain con-

who were conducting similar studies, his voluminous personal research notes were destroyed, reportedly because such detailed probes into the intricacies of God’s methods could seem sacrilegious.

⁶ When Johann Gregor Mendel died in 1884, although his previously published works on genetic theory survived in archival obscurity until discovered decades later by others

fused by the widespread failure of the schools to teach effectively. They clamor for a variety of peripheral and in some cases helpful but imprecise corrections such as longer school days or terms, better facilities, more equipment, smaller classes, curricular reshuffling, et cetera. Members of the general public, however, are ill-prepared to demand a purge of superstitious assumptions from teacher training programs when they share those assumptions.

In fair contests of efficacy, organized natural science has seldom if ever failed to prevail against the forces of organized superstition. However, before the natural science establishment can participate effectively in the contest to produce persons of the highest intellectual quality, it must, as they say, *get its act together*. Along with the independently organized natural sciences of energy, matter, and life functions, the natural science of human behavior must become independently organized as the natural science of behavior-environment functional relations. Such organizational independence implies an integrity that is defined in terms of professional organizations, academic departments for the training of its professional scientists and practitioners, a comprehensive literature, and an electronically mediated network linking its community members.

The presence of such an organized natural science discipline among the other basic natural sciences would enrich the natural science community as a whole, mainly by completing what heretofore has been characterized by a rather glaring gap in its disciplinary profile. The natural science community, in seeing to its own completion, can in various ways contribute to the establishment of organized behaviorology, which by taking its place at the roundtable of the natural sciences could render unnecessary that community's abandonment of nearly all important behavioral phenomena to the various agencies of organized superstition.

Both the scientific and philosophical practices of the entire natural science community manifest as dependent scientific behavioral variables in functional relations between (a) independent environmental variables and (b) the relevant behavior-capable body parts. At present the natural science community includes several organized natural science disciplines yet includes no well installed natural science field pertinent to the nature of human behavior, including the very scientific and philosophical behavior that endows the natural sciences with their special naturalistic integrity.⁷ Without the science of science

⁷ Recall that while biology-based science can provide a natural physiological account of *how* a behavioral response occurred, it is only at the differing behaviorological level of analysis that an account of *why* (in terms of "reasons") that response occurred can be rendered with equal objectivity.

and the science of philosophy as part of its own establishment the natural science community remains ill-prepared to deal effectively with the challenge of widespread superstition, both in the culture at large and among its own ranks.

Arguably, it is the natural science community per se that should play the leading role in establishing behaviorology within the culture. Perhaps the best first step would be the initiation of behaviorology research and training programs within academic subdivisions that are controlled by the natural science community. The natural science community is where that organized discipline would logically reside, because behaviorology serves that community in a foundational way.

In facilitating the organization and establishment of behaviorology as a cultural entity, the natural science community would seem to be taking an important further step in its own development. The indefinite forfeiture of the whole realm of behavioral phenomena to the province of organized superstition seems culturally counterproductive as does leaving the field of behavior, especially human behavior, to peripheral skirting by the physiologists.⁸ ✦

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⁸ A comparison of the discipline featured in this book with that found in comprehensive physiology books reveals two readily distinguishable disciplines. While the answers to some questions in the field of behavior may be improved by contributions from both disciplinary perspectives, many other questions require the unique perspective of just one of those disciplines. Because their respective levels of analysis differ, neither of those disciplines can be regarded logically as a subclass of the other.

Coercion: The Real Parent Trap Part 2 (of 2)

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[This is the second part of the first article in the first issue of Glenn Latham’s *Parenting Prescriptions* magazine. As one of the four Founders of TIBI and a *Behaviorology Today* staff writer whose work has appeared in the pages of this journal before, Glenn had planned other submissions (before his unexpected death). So we are thankful to have received permission to occasionally reprint one of his helpful, science-based practical articles for parents and other child caregivers. (Readers can obtain all four issues of *Parenting Prescriptions* magazine through the “Products” section of www.parentingprescriptions.com which is the web site that Glenn established as an information resource.) The first part of this article (Part 1) appeared in the last issue (Volume 11, Number 1, Spring 2008).—Ed.]

§

Coercion makes a person want to escape (run away), avoid (stay away), and counter-coerce (get even).... (Murray Sidman, 2001)

§

As mentioned earlier [See Part 1.—Ed.] coercion makes people want to counter-coerce.

Counter-coercion: The Destructive Results of Coercion

The tragic evidence of counter-coercion is everywhere:

- ✧ A father murders his infant son to get even with his wife.
- ✧ Angry students murder teachers and classmates to get revenge for a perceived wrong done to them.
- ✧ Ethnic Albanians burn and loot the homes of Serbs because the Serbs burned and looted the Albanians’ homes.

- ✧ People driving in traffic shout obscenities to other drivers, offend them with obscene gestures, and even shoot them to get even with them for “getting in their way.”
- ✧ Children do exactly what their parents don’t want them to do. For example, a 17-year-old girl told her mother, “I know I’m not supposed to do what I’m doing. I don’t even like what I’m doing. But if I behave as I am supposed to, Daddy wins, and I can’t let that happen.” A 19-year-old girl recently told me she got pregnant twice out of wedlock, got her tongue pierced, and got a tattoo on her back “just to [annoy] my parents.”

Counter-coercion is everywhere—in fact, it’s always been everywhere. The real tragedy is that since society knows so little about human behavior—how to mold it correctly in the first place and how to fix it when it isn’t right—society tends to respond to inappropriate behavior with more of the same. I am reminded of a sign I saw on the wall in a workplace: “The flogging will continue until the behavior improves.”

Drs. Walker, Colvin, and Ramsey (1995) explain this problem: “Parents of [misbehaving] children have a firm belief that the harsher the punishments they mete out, the more likely it is the child will remember it and that will be effective. Such parents were often exposed to harsh punishments themselves and tend to replicate it with their own children.” (p. 363)

Coercion breeds coercion. It is passed along from parent to child to parent. You should do and say to your children only what you want said and done to your grandchildren.

Counter-coercion is in-kind responding of the worst kind, and it virtually never makes anything better. The Serbs and the ethnic Albanians have been counter-coercing for 600 years! And so it is with the Protestants and the Catholics in Northern Ireland, the Arabs and the Israelis in the Middle East, and the Hatfields and the McCoys. Counter-coercion tears whole societies and cultures apart. Worst of all, counter-coercion tears families apart.

Responding Noncoercively

There is a better way to mold human behavior, and we know what it is. It isn’t metal detectors in schools, it isn’t making parents legally responsible for the misbehavior of their children, it isn’t more police, prisons, and punishment. The better way to mold human behavior is to respond noncoercively.

I recently completed a 20-year study that focused on the public and private schools of America (and beyond). Based on this study, I have written a book entitled *Behind the Schoolhouse Door—Managing Chaos with Science, Skills, and Strategies* (Latham, 2002). On of these skills is

the ability to respond noncoercively to the inappropriate behavior of students.

I had the following experience when I was doing some research in an alternative high school. This experience illustrates the power of responding noncoercively.

While I was observing a math class, a student leaped to her feet without any warning and began wildly cursing another student she accused of “tormenting” her. As I typically do when assessing the effects of treating such behaviors, I quickly set my stopwatch to record how long the disruptive behavior continued, given the teacher’s response to it.

To my delight, the teacher retained his professional dignity. His face registered not the slightest annoyance. In complete control, the teacher approached the enraged and quietly said, calling her by name, “It seems that you are upset about something. Would you care to tell me about it?”

All eyes were glued on these two disparate figures standing before them—one with a flushed face, trembling, loud, profane, and out of control, and the other serene, composed, calm, and quiet. In the presence of such a teacher, the girl, though trembling and very angry, grew slightly calmer.

“I hate this [expletive],” she said loudly, pointing to the boy in the seat beside her. “All he does is make my life miserable. He doesn’t know nothin’ ’cept how to make my life miserable. I wish that [expletive] would die—right now. Right where he’s sitting!”

The teacher replied empathetically and quietly, “I can understand you’d be upset. No one likes to be tormented. I’m sorry this happened.” In a room so quiet you could hear a pin drop, the teacher and the student just stood there looking at each other. The anger drained from the girl’s face.

Quietly, almost pleadingly, she asked, “Mr. Porter, would you ask him to leave me alone?” She sat down, put her head on her arms which were folded across her desk, and quietly cried.

The teacher turned to the other student and gently, softly said, “I know that sometimes it’s fun to provoke people and to get a rise out of them, but what is the appropriate, mature thing for a young man your age to do?”

The second student, hardly able to make eye-to-eye contact with the teacher, replied, “I know, Mr. Porter. I’m sorry. It won’t happen again. Honest.”

The teacher, as he said thanks, patted the boy on the back. Turning to walk away, he gently tapped the girl’s elbow. I looked at my watch. Fifty-seven seconds. The episode was over in 57 seconds!

Furthermore, the entire class remained composed, and all the students returned without incident to their schoolwork. No one was hustled off to the principal’s office for disciplinary measures, no school psychologists

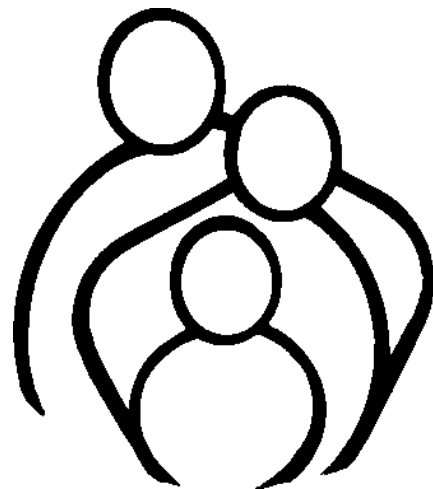
were called in to conduct endless testing to find out what went haywire in the girl’s psyche, no parents were called in for meetings “to get to the bottom of things,” no psychiatric exams were conducted to determine which medication the girl should be taking, and no bad-conduct reports were filed with the school district. None of these actions were necessary, thousands of dollars were saved, and the school remained orderly. Why? Because a teacher had the ability [skill] to respond noncoercively to the spontaneous outburst of an angry student.

Conclusion

Coercive behaviors poison parent–children relationships. To improve your relationship with your children and to help them be happy and behave appropriately, you must eliminate these poisons from your home. *Parenting Prescriptions* will provide you with the antidotes to these poisons. That is, *Parenting Prescriptions* will explain how noncoercive parenting can help you mend your relationship with your children and positively influence your children’s behavior. I’ll see you next issue with just what the doctor ordered!✦

References

- Latham, G.I. (2002). *Behind the Schoolhouse Door—Managing Chaos with Science, Skills, and Strategies*. Logan, UT: P&T ink.
- Sidman, M. (2001). *Coercion and Its Fallout—Revised Edition*. Boston, MA: Authors Cooperative. (Originally published in 1989.)
- Walker, H., Colvin, G., and Ramsey, E. (1995). *Antisocial Behavior in Schools: Strategies and Best Practices*. Pacific Grove, CA: Brooks/Cole.✦



Syllabus Directory

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

Up-To-Date Syllabi in Current or Past Issues

- Volume 7, Number 2 (Fall 2004): BEHG 101:
*Introduction to Behaviorology I.**
- Volume 7, Number 2 (Fall 2004): BEHG 102:
*Introduction to Behaviorology II.**
- Volume 7, Number 2 (Fall 2004): BEHG 201:
*Non-Coercive Child Rearing Principles and Practices.**
- Volume 7, Number 2 (Fall 2004): BEHG 355:
*Verbal Behavior I.**
- Volume 8, Number 1 (Spring 2005): BEHG 400:
Behaviorological Rehabilitation.
- Volume 8, Number 1 (Spring 2005): BEHG 415:
*Basic Autism Intervention Methods.**
- Volume 8, Number 1 (Spring 2005): BEHG 420:
*Performance Management and Preventing Workplace Violence.**
- Volume 8, Number 1 (Spring 2005): BEHG 425:
*Non-Coercive Classroom Management and Preventing School Violence.**
- Volume 8, Number 1 (Spring 2005): BEHG 475:
*Verbal Behavior II.**
- Volume 8, Number 2 (Fall 2005): BEHG 410:
Behaviorological Thanatology and Dignified Dying.
- Volume 9, Number 1 (Spring 2006): BEHG 365:
Advanced Behaviorology I.
- Volume 9, Number 2 (Fall 2006): BEHG 470:
Advanced Behaviorology II.
- Volume 10, Number 1 (Spring 2007): BEHG 120:
Non-Coercive Companion Animal Behavior Training.

Syllabi Planned for Future Issues

- Volume ?, Number ? (Spring/Fall 20??): BEHG 250:
Educational Behaviorology for Education Consumers.
- Volume ?, Number ? (Spring/Fall 20??): BEHG 340:
Educational Behaviorology for Education Providers.
- Volume ?, Number ? (Spring/Fall 20??): BEHG 405:
Introduction to Instructional Practices in Educational Behaviorology.

- Volume ?, Number ? (Spring/Fall 20??): BEHG 455:
Advanced Instructional Practices in Educational Behaviorology.
- Volume ?, Number ? (Spring/Fall 20??): 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 ?, Number ? (Spring/Fall 20??)
- BEHG 340: *Educational Behaviorology for Education Providers:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 355: *Verbal Behavior I:*
Volume 7, Number 2 (Fall 2004).
- BEHG 365: *Advanced Behaviorology I:*
Volume 9, Number 1 (Spring 2006).
- BEHG 400: *Behaviorological Rehabilitation:*
Volume 8, Number 1 (Spring 2005).
- BEHG 405: *Introduction to Instructional Practices in Educational Behaviorology:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 410: *Behaviorological Thanatology and Dignified Dying:*
Volume 8, Number 2 (Fall 2005).
- BEHG 415: *Basic Autism Intervention Methods:*
Volume 8, Number 1 (Spring 2005).
- BEHG 420: *Performance Management and Preventing Workplace Violence:*
Volume 8, Number 1 (Spring 2005).
- BEHG 425: *Non-Coercive Classroom Management and Preventing School Violence:*
Volume 8, Number 1 (Spring 2005).
- BEHG 445: *Advanced Experimental Behaviorology:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 455: *Advanced Instructional Practices in Educational Behaviorology:*
Volume ?, Number ? (Spring/Fall 20??)
- BEHG 470: *Advanced Behaviorology II:*
Volume 9, Number 2 (Fall 2006).
- BEHG 475: *Verbal Behavior II:*
Volume 8, Number 1 (Spring 2005).☺

*An older version appeared in an earlier issue.

Always More at behaviorology.org

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

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

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

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

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

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



Subscriptions & Back Issues

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

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

TIBIA Memberships & Benefits

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

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

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

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

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

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

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

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

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

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

Other Benefits

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

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

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

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

TIBIA Membership Criteria & Costs

TIBIA has four categories of regular membership, of which two are non-voting and two are voting. The two non-voting categories are Student and Affiliate. The two voting categories are Associate and Advocate. All new members are admitted provisionally to TIBIA at the appropriate membership level. Advocate members consider each provisional member and then vote on whether to elect each provisional member to the full status of her or his membership level or to accept the provisional member at a different membership level.

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

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

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

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

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

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

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

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

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

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(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:

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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:

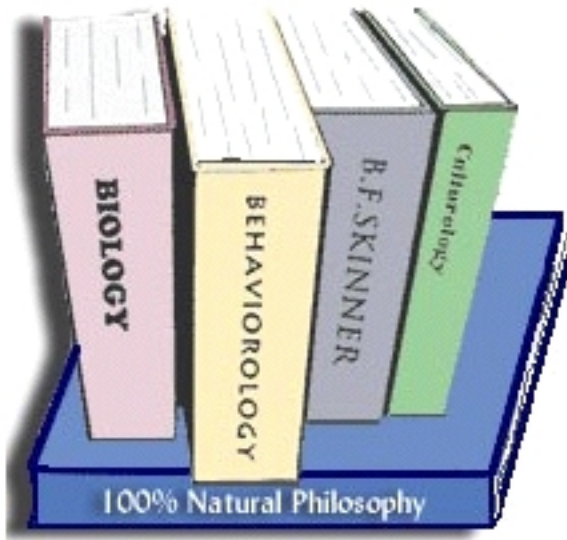
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To submit items for publication, contact the editor. Send items initially to the editor both by email (or disk) and by hard copy.

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*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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