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ABOUT BEHAVIOROLOGY

BEHAVIOROLOGY IS AN INDEPENDENTLY ORGANIZED DISCIPLINE FEATURING THE NATURAL SCIENCE OF BEHAVIOR. BEHAVIOROLOGISTS STUDY THE FUNCTIONAL RELATIONS BETWEEN BEHAVIOR AND ITS INDEPENDENT VARIABLES IN THE BEHAVIOR-DETERMINING ENVIRONMENT. BEHAVIOROLOGICAL ACCOUNTS ARE BASED ON THE BEHAVIORAL CAPACITY OF THE SPECIES, THE PERSONAL HISTORY OF THE BEHAVING ORGANISM, AND THE CURRENT PHYSICAL AND SOCIAL ENVIRONMENT IN WHICH BEHAVIOR OCCURS. BEHAVIOROLOGISTS DISCOVER THE NATURAL LAWS GOVERNING BEHAVIOR. THEY THEN DEVELOP BENEFICIAL BEHAVIOR-ENGINEERING TECHNOLOGIES APPLICABLE TO BEHAVIOR RELATED CONCERNS IN ALL FIELDS INCLUDING CHILD REARING, EDUCATION, EMPLOYMENT, ENTERTAINMENT, GOVERNMENT, LAW, MARKETING, MEDICINE, AND SELF-MANAGEMENT.

BEHAVIOROLOGY FEATURES STRICTLY NATURAL ACCOUNTS FOR BEHAVIORAL EVENTS. IN THIS WAY BEHAVIOROLOGY DIFFERS FROM DISCIPLINES THAT ENTERTAIN FUNDAMENTALLY SUPERSTITIOUS ASSUMPTIONS ABOUT HUMANS AND THEIR BEHAVIOR. BEHAVIOROLOGY EXCLUDES THE MYSTICAL NOTION OF A RATHER SPONTANEOUS ORIGINATION OF BEHAVIOR BY THE WILLFUL ACTION OF ETHEREAL, BODY-DWELLING AGENTS CONNOTED BY SUCH TERMS AS *mind*, *psyche*, *self*, *muse*, OR EVEN PRONOUNS LIKE *I*, *me*, and *you*.

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

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

Volume 10 Number 2 Contents Plan

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

- ⌘ *Personhood & Superstition Part IV (of IV)*
(Lawrence E. Fraley)
- ⌘ The Fourth (of seven) chapters of “Origins, Status, and Mission of Behaviorology” (Lawrence E. Fraley and 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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PROVIDE AT LEAST MINIMALLY PEER-REVIEWED ARTICLES AS WELL AS, ON OCCASION AND WITH EXPLICIT DESIGNATION, FULLY PEER-REVIEWED ARTICLES. THEY WRITE ON THE FULL RANGE OF DISCIPLINARY TOPICS INCLUDING HISTORICAL, PHILOSOPHICAL, CONCEPTUAL, EDUCATIONAL, EXPERIMENTAL, AND TECHNOLOGICAL (APPLIED) CONSIDERATIONS. PLEASE JOIN US—IF YOU HAVE NOT ALREADY DONE SO—AND SUPPORT BRINGING THE BENEFITS OF BEHAVIOROLOGY TO HUMANITY. (CONTRIBUTIONS TO TIBI OR TIBIA ARE TAX-DEDUCTIBLE.) ⌘

Personhood & Superstition Part III (of IV)

Lawrence E. Fraley

West Virginia University

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

Cultural Investment in Superstition

Superstition, according to the definition of that term in reputable dictionaries, commonly manifests in the form of an irrational assumption that an object, an action, or a circumstance that is logically unrelated to a course of events nevertheless influences its outcome. Superstitious behavior also often appears in the form of a practice or rite that is maintained irrationally in the apparent belief that it will have some measurable effect on real events, although that practice or rite has not been demonstrated to exert a relevant and measurable functional effect on those events. Thus, superstition may be defined in terms of an invalid assumption, or in terms of certain patterns of behavior that such an assumption may share in controlling. The practitioners of such superstition act in disregard of what are called the laws or principles of nature. The functionality that inheres in the kind of relations that qualify nature as such implies that, beyond coincidence, superstitious activity is ineffectual and, further, that explanatory recourse to it is redundant.

The Intrusion of Superstition into Academia

Within contemporary human culture, the promotion of superstition, considered collectively, ranks as the largest ongoing metaprofession, even though superstition, when explicitly labeled as such, is somewhat unfashionable throughout most of the culture. Only within limited subsets of the general culture do purveyors of explicit su-

perstition find open acceptance (e.g., among those who are fascinated by occult lore and practices).

Beyond that minority, whose members are explicit about the superstitious foundations that underlie the kind of activity that they promote, others cloak their advocacy of superstition behind facades that imply what seem to be more respectable intellectual approaches. Thus, what amounts to superstitious behavior may be described in more acceptable terms by both its promoters and its exhibitors.

A common example is provided by persons who purport to study and teach about what they call the *human mind* as a proactive and seminal generator of human behavior, and who do so with the secure and respectable status of the scientific and scholarly academician. Such an account for behavior typically invokes the services of a behavior generating, behavior initiating, and hence responsible mental self-agent. That broad class of familiar accounting typically posits a mysterious intrinsic force that is conceptually invested with the convenient endowment of whatever powers may be required to produce observed behavioral effects. A simple statement such as *I chose to leave* is implicitly accepted as having been correctly cast, and the scholarly challenge to account for the *I* and how it accomplished the choosing become subject matters of academic concern. However, the conjuring of spirits to explain effects is a qualitatively discredited intellectual alternative to the functional accounting that is presumed to underlie academic scholarship. Therefore, such recourse to superstition must be disguised elegantly if it is to occupy a reserved seat in academe.

In the case of respected academicians who assume the existence of the proactive mind, the general respect for science and scholarship that has been established by the traditional work of natural scientists is co-opted ...first, through the pretense that that mentalistic superstition falls within the purview of respectable academic scholarship, and second, through the extensive practice of good scientific method in pursuit of what those scholars regard as the practical implications of their fundamental fallacy. That basic fallacy can easily become obscured beneath a vast and rapidly accumulating literature even though that fundamental fallacy roots the prevailing discipline in superstition. Within the culture at large it is widely if unwisely assumed that a doctor of philosophy, working within a contemporary university, will be focusing scientific activity on the implications of philosophical assumptions that have been induced from objective data rather than merely accepted from a cultural menu of unobjective lore.

However, in some cases, especially outside of the academic arena, the superstitious nature of certain patterns of intellectual activity cannot be disguised so easily. If the obtrusively superstitious behavior would otherwise evoke social censure, programs of socio-cultural counter-con-

tol may be mounted to exempt those forms of superstition from social punishment and to render them socially respectable regardless of their obvious superstitious nature. Thus, the promoters of a particular class of superstition may cast it in euphemistic terms that make peoples' personal investments in such superstition seem virtuous and appropriate. An example is the general social demand for the public respect for religious devotion, which may be imposed throughout a culture. In addition, the superstitious activity may be protected with the sanctions of law and government. The agency of education may explicitly promote tolerance for such superstitious alternatives to more demanding exercises of the human intellectual capacity.

The vast scale of recourse to superstition within the general human culture has attracted the attention of some scholars who seek to account for its frequency and endurance by appealing to the evolutionary history of the species. They often regard the seemingly universal recourse to superstitious accounts as the manifestation of an innate human trait. That is, they assume that explanatory recourse to superstitious accounts is just another of the many kinds or patterns of universally observable behavior that are shared by the people of all cultures. In addition to the propensity for superstition, other behavioral examples that are touted as being driven by innate traits pertain to (a) the universally common grammatical forms that manifest across different linguistic communities, (b) universally common forms of humor, and (c) the universal social prohibition of unlimited access to sexual activity (to name but a few of the many that have been recorded). In such explanatory appeals to the species gene pool, universally common patterns of behavior are attributed to what are assumed to be genetically inherited behavior-driving traits that characterize the human species.

Such a miscasting of the issue ignores two basic principles. First, genes directly govern only body structure, not behavior, and genes can affect behavior only indirectly insofar as they determine the structures that must mediate any given behavior. Thus, to utter the word "*uncle*" one must have the kind of bodily sub-structures that support such a vocalization (those substructures are the genetic contribution). However, whether or not those structures will behave so as to produce the sound that we interpret as the word "*uncle*" depends on (a) a conditioning history that renders the necessary body parts capable of coming under stimulus control of specific kinds of environmental events and (b) the subsequent occurrence of such an environmental event in the presence of that body (a.k.a. contact with the necessary kind of evocative stimulus).

Given such a conditioning history, an occasion to say the word *uncle* pertains to a contingency that features an appropriate contact with a stimulus that will then evoke precisely that vocal behavior. The term *contact* implies a transfer of energy from the environmental event (the

stimulus) to the appropriate behavior-capable body part. Thus, genes can only produce body structure that can then undergo the necessary conditioning for a particular kind of environment-behavior relation, but even an appropriately conditioned body must then await an environmental contact with an appropriate kind of stimulus before a response of that particular kind can occur.

As may be noted, a tall and well coordinated person may never have learned to play the game of basketball, and during a particular basketball game even an experienced player with the ball in hand may have failed to shoot, never having been presented with an unobstructed path to the basket. In the former case, a genetically well structured body had not been neurally microstructured to mediate the kind of behavior called "playing the game," and in the latter case, a body that, structurally, was both genetically prepared and behaviorally conditioned did not contact an evocative stimulus for shooting the ball. In common terms, the first person was not microstructurally ready, and the second person, although ready, had no opportunity.

The second basic principle ignored in explanatory reliance on genetically inherited behavior-determining traits is this: Given that, except for some basic unconditioned respondents, all behavior must be conditioned, universally exhibited patterns of operant behavior must necessarily represent universal contingencies of reinforcement that affect nearly everyone in a somewhat similar way. Universal patterns of behavior indicate that each individual, regardless of that person's culture, has become conditioned to exhibit common patterns of behavior when under given circumstances. If, on appropriate occasions, the members of every human culture express the past tense, inject humorous insults into conversation, and participate in restraining the unfettered pursuit of sexual gratification, such universal behavioral commonality, while enabled by the presence of the necessary body parts, occurs on appropriate occasions because the contingencies under which such behaviors are conditioned are universally imposed. To some degree such universal contingencies will have affected nearly everyone—hence, those functionally controlled similarities in almost every person's behavior.

The discovery of a universally similar pattern of behavior should evoke scholarly searches, but not for some ill-defined internal causal nexus called a trait (which results in the intellectual abortion of the appropriate line of inquiry). Instead, people should search for the underlying universal contingencies of reinforcement that produce the common behavior and then for the kinds of environmental conditions that subsequently tend to evoke the pattern of activity that is universally common. If the universal behavior manifests on appropriate occasions in social contexts and involves practices that must be taught to each individual, investigators should work to specify the contingen-

cies that compel people everywhere to condition others to behave in that common manner on such occasions.

In the absence of this distinction between false and valid kinds of accounting, many prominent analysts tend to invent what they argue are internal genetically determined sources of behavior, which are proffered to account for the occurrence of such universally common behaviors. They argue that such common patterns of behavior represent innate universal human "traits."¹ Ignoring the universality of some kinds of contingencies of reinforcement, they appeal instead to assumed genetic determinants to account for such universally similar behaviors. They may entertain the notion of what are called genetically determined "deep structures" that they presume to be characteristic of every human "mind" and which somehow originate and orchestrate the kind of behavioral manifestations that define universally common patterns of behavior. Such a so-called deep structure may represent a scholarly obfuscation of the mental self-agent. In other cases, physiological analyses of deep structures may carry to an erosion of all implications that deep structures pertain to the capacity of a mental self-spirit. Such inquiries may reduce deep structured traits to what is seemingly little or nothing more than genetically determined neural structure. That still leaves neural structure with the imposition of an impossible burden. Brain parts can only mediate behavior but not initiatively generate it.

Such analysts of common behaving often come to their studies with a predilection for concepts of an innate human behavioral nature, although common patterns of behaving actually manifest operantly. Such people too readily accept a widely exhibited pattern of behavior as evidence of a built-in predisposition somewhat analogous to the programming that characterizes the behavior of electronic devices. That kind of mistake has been enabled partly by training programs during which those now reputable analysts actually got little or no training in the natural philosophy and science of human behavior. Typically, by the time they may face challenges to their superstitious basic assumptions from the natural science community, they are already far too professionally invested in the alternatives to the natural science perspective to deviate from their established professional course.

¹ Recall that behavior is triggered by energy inputs to bodily structure. A resulting behavior then occurs as the automatic or inevitable response of such a structure to such an energy input. The structure that awaits such energy increments will have been arranged in two basic ways—first, genetically, which produces innate body structure, and second, operantly and respondently, which involve behavioral conditioning processes that alter certain neural microstructures during the lifetime of the individual organism.

The invalid implications of such false origins of common behavior are currently pursued with sufficient extensity to generate the subject matters of formally organized disciplines. Currently, far more doctorates are now being awarded to those who pursue the fallacy of innate causal traits than to those who analyze the phenomenon of universal behavioral commonality in terms of the universal contingencies under which such commonality is inevitable.

The Cultural Cost of Superstition

The extensive and intense investment in superstition within contemporary human culture is costly, because any sequence of behavior that is informed by events divorced from reality may have to be reconciled eventually with events that comport with reality. Typically, the divorce becomes increasingly difficult to maintain in the presence of the general kind of sociocultural progress that is called *enlightenment*.

Nevertheless, one may delay or avoid that reunion with reality by behaving in ways that avoid potential conflicts. One common approach is the self-management practice known as *compartmentalization*. That term refers to conditioned behavior by which each encountered event is interpreted either superstitiously or objectively, depending upon the class in which that event can be categorized most conveniently.

Thus, on the one hand a farmer may engage exclusively in strict scientific agricultural practices while engaging in superstitious rituals pertinent to the weather. A chemist who is employed in a laboratory to develop a faster working drug and does so with strict scientific objectivity may account for the diversity of species in the woodlands behind his domicile with the assumption that those representatives are the descendants of ancestors who were fortunate enough to have found a place on Noah's Ark. Such compartmentalization tends to rely heavily on ignorance of the natural phenomena that are regarded superstitiously. That farmer is probably unschooled in meteorology as is likely the chemist in both evolutionary biology and geology. In these examples, the implications pertinent to the nature of the formal curriculum that prevailed during such peoples' general education are obvious.

Unfortunately, superstitious assumptions tend to keep one from objective contact with any aspect of reality about which one cannot afford to get scientific as a result of the implications of that indulgence. That is, given some natural phenomenon, suppose that a person is conditioned to react superstitiously to its characteristics and is deeply involved in the compounding implications of that superstitious behavior. In that case, usually due to a course of punitive suppression, the superstitious behavior typically tends to occur without any accompanying practical behavior that would be incompatible with the ongoing superstitious reactions. That fact is acknowledged in

common wisdom by the observation that the person who seriously entertains superstitious assumptions and who is heavily invested in their implications, *beyond not knowing any better, doesn't dare to know any better*. When considering the potential introduction of a more objective approach to superstitious people it must be taken into account that many of them have far more to lose than some invalid ideas. Among cures for such a predicament, the approach that is least fraught with troublesome implications is preclusive in nature. That is, the intervention should come antecedently by not permitting superstitious indoctrination in the first place.

Thus, an important aspect of the analysis of an individual's superstition is the delineation of the range of reality to which that superstitious person cannot readily afford to respond with scientific objectivity. Such objective responding, being incompatible with that person's superstitious assumptions, would threaten that person's personal investment in the implications of the superstitious behavior, ...a personal investment that in many cases will have become substantial.

Consider, for instance, a person who has a well matured personal investment in the presumed efficacy of chanting. That individual may believe that chanting a particular mantra each morning will prevent one's infection with the AIDS virus with no need for additional precautions. Let us further suppose that this individual's comfortable livelihood is earned by teaching classes in the proper chanting technique to large numbers of tuition paying students who need protection from the AIDS virus. This person's public credibility stems from his or her exhibition of a wide variety of behaviors that imply a strong personal belief in the efficacy of such chanting, a belief that would be threatened by the relevant medical and social principles of viral infection.

Thus, such an individual benefits professionally by remaining largely ignorant of the mechanisms of viral infection and the relation between certain social practices and the transmission of the live disease-producing viruses from one body to another. To behave as if such facts were valid would pose an indirect threat to that individual's personal investment in the general superstitious activity of chanting. To the extent that such facts have become conditioned aversers, a contact with the stimuli definitive of such facts evokes (i.e., is reliably followed by) avoidance behavior. In common but invalid agential terms, the person is said to ignore such facts.

Another example is provided by an individual who invents traits as needed to explain behavior and who is personally much invested in assumptions about traits and in the pursuit of their implications. Such a person may believe that one who donates regularly to charity does so because of an innate causal trait called *generosity*. To protect the personal investment in that easy kind of explanation, that person

must then remain ignorant of the usually more compelling behavioral history that conditioned and shaped the kind of behavior described as generous and rendered that behavior inevitably susceptible to control by certain environmental stimuli. Such a correction of any particular trait-related fallacy can threaten the person's much broader investment in that general kind of superstition. Suppose, for instance, that the person is an academician whose professional reputation is based on extensive scholarly publications that posit intrinsic causal traits and purport to explain how such traits proactively initiate relevant patterns of behavior from within the individual.

A fine distinction exists between behaving superstitiously and behaving mistakenly. Superstitious behavior is a subclass of mistaken behavior. It is the irrationality that qualifies behavior for the superstition category, and irrationality is a term of perceived neglect of prevailing function. If a perceived neglect of function is the obvious result of insufficient data, the behavior tends to be classified as a mere *mistake*. On the other hand, If that perceived neglect of function persists in the presence of ample objective data pertinent to the relevant relations, the reactive behavior tends to be classed as *superstitious*.

For example, the sudden emergence of the solution to a problem after a period of neglect may be attributed to the interim workings of a subconscious mind that in some latent way has been thinking proactively about the problem. The privacy of such presumed subconscious thinking remains impenetrable to the otherwise preoccupied individual in whom it putatively is occurring. Given only the sudden emergence of the solution via publicly evident behavior and absent the behaviorological science by which to construct a more parsimonious account, we may refer to the assumption of a latently churning subconscious mind as a potential mistake. That classification may be supported by the magnitude and complexity to which a natural account of such a speculative phenomenon would seemingly have to be carried.

However, in the ample presence of such a relevant natural science and its common application to such issues, we begin to describe continued adherence to the mistaken account as stubborn, and then as irrational, and eventually as superstitious. By that time, in the view of those who apply such labels, the practices in question are irrationally maintained even though the basis for a natural and alternative account stands revealed. That progressive categorization is a function of the accumulating counterevidence that must be having no effect while the original mistaken explanation continues to prevail.

The superstitious label tends to be favored when the irrational neglect of available evidence is maintained by threats that are implicit in ideology. Thus, opposition to a simple medical procedure to remove a dangerously inflamed appendix on the grounds that that operation

would interfere effectively with a fate that was preordained by God is more readily regarded as superstitious than if the opposition is mounted by a person who merely has no conditioning history with modern medical practices and hence cannot confidently predict a favorable outcome from such a procedure. The former stance is likely to be regarded as a superstitious argument; the latter, merely as the ill-informed kind that is commonly attributed to ignorance (*viz.*, a mistake).

The various implications of superstitious activity may pertain to important personal issues that range across a person's total experience far beyond a more narrow issue to which a current debate may pertain. For that reason people who are heavily invested in a general class of superstition may be unable to afford the loss of the investment that is implicitly threatened by the kind of alternative accounting that natural science affords in any single case even when the issue is narrowly focused. For instance, the person who would continue to insist on the reality of the Noah's Ark myth must remain unaffected by substantial aspects of geology, meteorology, and evolutionary biology with which various aspects of that particular myth are respectively incompatible. Typically, any exhibit of scientific logic that implicitly impugns the reality of the Ark story may generalize to other issues with respect to which equally superstitious accounts justify various important activities.

The person's general investment in superstition and its far ranging personal implications are protected as long as that individual's behavior is free of control by the alternative natural science—especially behaviorological science, which is the science that accounts for superstitious behavior *per se* and for the relation of superstition to all other classes of behavior. The kind of accounting that characterizes the natural sciences may be met with extreme resistance even on a minor issue, lest any indulgence in naturalism represent a breach through which the continued flow of scientific logic cannot be stanchd. Even when superstitious people are occasionally compelled to adopt a selected scientific practice as may be necessary for an important practical result, they typically eschew the philosophy of naturalism by which that outcome is subject to valid interpretation and through which the particular scientific practice that produced it is subject to quality-controlling maintenance. Included in what must then be avoided is training in the relevant natural sciences and in the philosophical foundation called naturalism that has emerged inductively through formal scientific activity and through behaving objectively in general.

When superstition prevails it often tends to preclude effective practical action, because effective action involves interventions among the variables in the functional relations that are neglected in superstitious accounting. More specifically, superstitious accounting, in providing an easy

fictitious account, precludes searches for real functional independent variables, and if one has not identified a functional independent variable, then one is not in a position to effect changes in it that will produce a specified and desired change in the dependent variable of concern.² When contingencies that favor effective practical action become strong, and the effective action must necessarily respect the relevant prevailing functional relations in rather conspicuous ways, important counterproductive superstitious assumptions about the relevant events may tend increasingly to be maintained with discomfort. Thus, many superstitious assumptions are entertained comfortably only in the absence of valid and compelling descriptions of the functional relations that account for those events.

For example, within our culture, we cannot develop effective practices for dealing with the realities of slow and differential dying as long as life is presumed superstitiously to represent the presence of a sacrosanct spirit and death, its departure—all according to the will of a greater mystical entity whose unfathomable intentions we dare not (and presumably could not) thwart. Furthermore, those who entertain such superstitious ideas may suspect that any inevitably futile human effort to probe or question the intentions or methods of such an omnipotent entity could be deemed presumptuous by that entity—a being with whom mere mortals are presumably in no position to negotiate.

Many people argue that superstition is necessary insofar as it permits individuals to cope with their behavioral inadequacy when confronting the various and often unpredictable adversities that are posed by their environments. Thus, recourse to superstition is often prescribed as a palliative by which to contend with what Shakespeare called "the slings and arrows of outrageous fortune." Superstition is also touted for its therapeutic circumvention of the anguish that is imposed on each individual when contemplating the ultimate futility of the biological imperative to survive. It can be argued that the human species is not yet sufficiently evolved intellectually, perhaps in the biological sense and certainly in the cultural sense, to avoid a substantial indulgence in superstition regardless of the various reductions in well-being that it may cost.

When considered at the sociological level, superstitiously informed practices are found to contribute substantially to the prevailing cultural integrity, although a

² Note that the common phrase *desired change* alludes to the contingencies under which the desirous individual is behaving. The effect that one is under contingencies to produce is described as the *desired change*. A *desire* is a fictional, behavior-compelling, internal force that is commonly substituted for an account featuring environment-behavior functional relations.

too narrow focus on that fact may beg the question of whether a better kind of cultural integrity is possible. Still other apologists for the arguably pathetic human susceptibility to superstition attempt to put a noble spin on superstitious behavior by treating a complete surrender to certain forms of it, especially to the religious varieties, as a worthwhile exercise of the human intellect. Such arguments have been employed to lend respectability to certain forms of superstition at all levels and in all facets of human culture.

From an alternative perspective, recourse to superstition can be construed as evidence of intellectual immaturity, whether of individuals or of the human species as a whole. From this perspective, recourse to superstition is regarded as a shortcoming that is laden with potential threats to human well-being. Although an easy susceptibility to superstition is often said to reflect the current stage of natural human progress, in a less accepting view it can also be said to represent some accidental and relatively inferior intellectual output from a species that, although it remains under evolutionary development, as a whole currently performs well below its optimal potential. Thus, especially at a cultural level, programs of intervention to suppress and preclude recourse to superstition in favor of more intellectual exercises would seem worthwhile insofar as such programs would feature desirably accelerated exercises of the human intellect in ways that comport with the natural course of human evolution.

Thoughtful and reputedly enlightened people sometimes ask whether (a) the superstitious approach or (b) the natural science approach can produce the best prescriptions for coping with the pressing behavioral issues that characterize contemporary human culture. Typically they point to a specific behavior-related issue that seemingly requires the kind of intellectual treatment that matches their predilection. A perspective that regards superstitious ways of knowing as unworthy in *all* contexts implicitly challenges its adherents to design new cultural practices that afford better solutions to the kinds of seemingly intractable problems that traditionally have fueled recourse to superstition.

At the cultural level, we are confronted with the frequent resort to warfare and with the dissension and discord that swirls around sociobehavioral issues such as euthanasia, abortion, criminal justice, economics, governance, health care, and welfare, among others. Many people ponder whether the most effective coping practices are (a) those that follow as implications of superstitious assumptions or (b) the objectively focused actions that follow as implications of naturalistic assumptions. The question may seem especially urgent when the problems that are to be solved via one approach or the other pertain to how and why people are behaving in ways that have critical implications, whether of a reinforcing or aversive nature.

That such a dichotomy of intellectual approach is currently the subject of serious consideration represents one kind of measure of the intellectual maturity of the human species. No matter how embellished with scholarly affectations, recourse to any kind of superstition, including the traditional agential attribution to humans, is antithetical to natural science, and it arguably represents an intellectual deficiency when it occurs under contingencies to produce valid accounts. Except by rare accident, superstitious accounts are demonstrably irrelevant to practical matters and may prove to be fraught with detrimental implications. Recourse to superstition amounts to a kind of surrender to current incompetence when in most cases an acknowledgment of ignorance would not only be safer but would establish the conditions under which searching continues for valid objective accounts and for the kind of reliable interventions that they inform.

The common tendency toward implicit agential attribution to human beings may in some cases represent avoidance behavior. Insofar as doing so passes as fashionable among people given to mystical interpretations of human beings and their behavior, such casual attributions fail to attract critical scrutiny from the enforcers of the predominant superstitious ideology. Some natural scientists with nonbehavioral specializations may gain some personal elbow room in which to pursue their own work by reflecting that popular form of behavior-related superstition. A kind of personal social security is thereby purchased at the expense of the integrity of the broader natural science community in which they claim membership.³

³ A rather stark example may occur when a natural scientist, seeking employment, can find work only on the faculty of a religiously sponsored university that screens its faculty members for adherence to the ideology of the sponsoring agency. If the interface between scientific objectivity and the prevailing superstition can be kept beyond that scientist's operational situation, then the objective scientific work by that scientist in his or her specialization can be conducted in that setting without personal conflict. However, that scientist must insure his or her job security with displays of deferential respect for the prevailing ideological superstition in ways that almost necessarily contradict the work of at least some other natural scientists working elsewhere on certain other kinds of natural phenomena. To the extent that a natural scientist thus disrespects the objective approach of other scientists by investing the phenomena that they study with a sacrosanctity that is impermeable to objective science, the integrity of the natural science community is eroded. The nineteenth century work of Gregor Mendel, who was university trained in natural science and mathematics, featured objective scientific methods in sorting out the genetics of pea plants. His objectivity was not

Improvement of the general human intellectuality occurs in various ways. These include (a) the naturally occurring biological evolution of human intellectuality, which seems to occur very slowly and is difficult to control, (b) interventions to improve intrinsically the nature of human neural systems, which normally must be undertaken with respect to one person at a time and which currently is of limited technological feasibility, and (c) the improved education of contemporary individuals. Potentially, the education-related approach can be accomplished rather rapidly, but on a large scale it is expensive in proportion to the current levels of educational funding that governments allocate. Furthermore, curricula that would promote general intellectuality by explicitly exploring the relative quality among ways of knowing would tend to be resisted by those whose prosperity somehow involves the exploitation of superstitious people as well as those over whom they exert control.

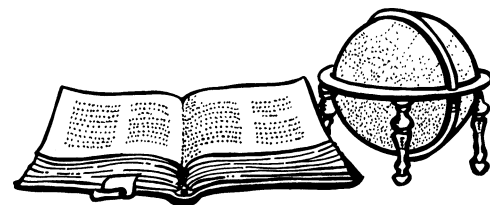
Our global culture is heavily invested in various forms of mysticism, often with far reaching implications. Governments that represent superstitious majorities tax their citizens to pay for a kind of educational system that protects the local cultural investments in superstition. Within most current human subcultures, an education curriculum from which all substantial recourse to superstition had been removed would probably be permitted only with stringent restrictions and limitations, and therefore would probably be feasible only on a small scale. Perhaps in private institutions that are rather exclusively supported and controlled by a natural science subcommunity, a curriculum could be established that is (a) relatively free of superstition, (b) teaches explicitly the nature of superstition, (c) considers why and how superstition arises, (d) explores the implications of indulgence in superstition at the personal and cultural levels, and, finally, (e) compares and contrasts superstition with scientific objectivity with respect both to scientific and philosophical kinds of behavior.

Some would argue that it is for naturalists to demonstrate, with respect to one sociocultural problem at a time, how consistent respect for natural reality fosters the better solution. Indeed, as behaviorology continues to mature and become an established discipline within the culture that sort of thing will occur inevitably with respect to important behavioral problems just as it has with respect to nonbehavioral problems whenever the physicists, chemists, or biologists have addressed them. However, at a more fundamental level, it may be of greater

importance to demonstrate, in general, why only the objective approach can lead reliably to effective outcomes and why a superstitious approach is but a palliative for coping with ineffectiveness. Common wisdom may hold that superstition has been discredited to a substantial degree in modern human culture, but that trend has pertained only to some rather peripheral if conspicuous superficialities. An objective supersession of the more intrinsic forms of cultural superstition portends cultural revolution on a much grander scale.

References

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



compromised by the fact that he was a devout monk living and working in a monastery. We can only speculate about Mendel's regard for the work of other natural scientists in cases where their findings would have challenged in a more direct way the ideological foundations of his religious commitment.

TIBI Online Syllabus for BEHG 120: Non-Coercive Companion Animal Behavior Training

Stephen F. Ledoux

SUNY-Canton

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

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

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

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

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

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

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

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

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

Note #2: You may take this course without a prerequisite even though it is listed as having both BEHG 101 and BEHG 102 (the introduction to behaviorology sequence) as prerequisites. That listing was designed to show the *preferred* course sequence based on the relation among these three courses: the *basic* science principles (BEHG 101), followed by the applications of the principles to *general* concerns (BEHG 102), and then the application of the principles to the *specific* area of companion animal behavior training (BEHG 120), an area of interest to many in society.

Course Description

BEHG 120: Non-Coercive Companion Animal Behavior Training. This course introduces the contributions of the natural science of behavior to the area of behavior training for companion animals. After reviewing basic principles and the significance of species differences, relevant practices are differentially applied to the pro-active, non-coercive, positive, and effective behavior training of four representative companion animal species: (a) cats, (b) dogs, (c) birds, and (d) horses. The generic application of these non-coercive practices to training other species also receives attention.

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

Course Objectives

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

✻ Analyze the basic, natural–science principles of behavior for how they can be non–coercively applied to companion animal behavior training;

✻ Describe the general, non–coercive behavior training practices as they differentially apply to *each* of these representative companion animal species: (a) cats, (b) dogs, (c) birds, and (d) horses;

✻ Explain the significance and list the benefits of the non–coercive nature of the covered behaviorological practices for training members of other species.

✻ Compare species differences for their significance in requiring adjustments to effective, non–coercive application of various behavior training practices;

✻ Design particular, non–coercive behavior training practices to teach a different selected response pattern to each of these representative companion animal species: (a) cats, (b) dogs, (c) birds, and (d) horses;

✻ Demonstrate the successful, non–coercive training of at least one new double response chain for at least one companion animal (One’s own pet will suffice.);

✻ Summarize the generic application of these non–coercive practices to the training of other species.

Additional Objectives

✻ Successful, A earning students will use (at an accuracy level of 90% or better) appropriate disciplinary terminology both when discussing behaviorological concepts, and when applying behaviorological skills, relevant to companion animal behavior training.

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

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

Required Materials (in their order of use)

✻ Pryor, K. (1999). *Don’t Shoot the Dog: The New Art of Teaching and Training—Revised Edition*. New York: Bantam Books.

✻ Ledoux, S.F. (in progress). *Study Questions for Karen Pryor’s Don’t Shoot the Dog*. Canton, NY: ABCs.

✻ Pryor, K. (1999). *Clicker Training for Dogs*. Waltham, MA: Sunshine Books.

✻ Ledoux, S.F. (in progress). *Study Questions for Clicker Training for Cats/Dogs/Birds/Horses*. Canton, NY: ABCs.

✻ (A/V) Pryor, K. (video program). *Clicker Magic!* Waltham, MA: Sunshine Books.

✻ Clicker and target stick (from Sunshine Books).

✻ Pryor, K. (2001). *Clicker Training for Cats*. Waltham, MA: Sunshine Books.

✻ Johnson, M. (2004). *Clicker Training for Birds*. Waltham, MA: Sunshine Books.

✻ Kurland, A. (2000). *Clicker Training for Horses*. Waltham, MA: Sunshine Books.

Recommended Materials

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

✻ (A/V) Pryor, K. (video program). *Puppy Love*. Waltham, MA: Sunshine Books.

✻ Ledoux, S.F. (2002). *Origins and Components of Behaviorology—Second Edition*. Canton, NY: ABCs.

✻ Pryor, K. (1991). *Lads Before the Wind: Diary of a Dolphin Trainer*. Waltham, MA: Sunshine Books.

✻ Sidman, M. (2001). *Coercion and its Fallout—Revised Edition*. Boston, MA: Authors Cooperative.

✻ Skinner, B.F. (1953). *Science and Human Behavior*. New York: The Free Press.

Note #4: You can order many of the required and recommended books, videos, and materials through these publishers: Sunshine Books (at www.clickertraining.com or 1-800-472-5425 [1-800-47CLICK]) and ABCs (at 315-386-2684). You can order the rest through your local bookseller or perhaps the online bookstore at www.behavior.org which is the web site of the Cambridge Center for Behavioral Studies.

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

Grades

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

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

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

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

For convenience a point-accumulation system is invoked to keep track of progress through the course. The seven short assignments on the *Don't Shoot the Dog* book are worth an average of ten points each, for a total of 70 points (with this breakdown: Foreword: five points; Chapters One, Two, and Three: ten points each; Chapter Four: ten points for each half; and Chapters Five and Six combined: 15 points). Each of the two assignments on each of the four *Clicker Training for...* books (...Cats, ...Dogs, ...Birds, ...Horses), eight assignments in all, is worth ten points for a total of 80 points. The video summary assignment is worth 15 points, while the performance-design assignment is worth 40 points, and the double-response-chain demonstration video assignment is worth 45 points. This provides a grand total of 250 possible points. The percentage used to consider what grade you are earning is the percentage of these possible points that you actually earn.

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

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

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

About Using the Texts & Study Questions Books

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

The “Don't Shoot the Dog” Book

The *Don't Shoot the Dog* textbook reviews some basic natural science principles of behaviorology. As an expert in non-coercive animal training, rather than as a professional behaviorologist, the author then applies these principles as a general approach, particularly the use of hand clickers, to the non-coercive practices appropriate for companion animal behavior training.

The “Clicker Training” Books and Video

The *Clicker Training* books more explicitly apply the basic principles of non-coercive companion animal behavior training to four common companion animal species. Each book provides step-by-step instructions and examples tailored for the species it covers. The video, by providing similar material in a format more revealing of the actual application process, should make your applications of the training practices more quickly effective.

The Study Question Books

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

Each *Study Question* book starts with a section titled To the Student and Teacher. *Read this section first!* It explains more on how to use the *Study Question* book successfully. *Study Question* book assignments are provided in the *Assignment Sequence* section of this syllabus. Sub-

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

The Audio/Visual (A/V) Assignment

The audio-visual (A/V) assignment on the *Clicker Magic* video extends your homework-based book-learning toward the area of skill development. While viewing and studying the video, *you need to write out a continuous outline/summary of the material* on regular 8.5 x 11 binder paper (as if you were taking sophisticated notes at a lecture). This A/V assignment is scheduled in the *Assignment Sequence* section. Submit your work according to the method specified in the *Submitting Your Work* section.

The Performance-Design Assignment

After completing each of the *Clicker Training for...* books (...*Cats*, ...*Dogs*, ...*Birds*, ...*Horses*) in turn, apply the techniques therein to design the steps appropriate to training the performance of at least a novel double-response-chain that you have specified (i.e., that you have also designed) for a member of the species of companion animal covered by each book. The chain may be either functional (i.e., pertinent to the animal's daily life) or entertaining (or both). *Use as much detail as needed to assure that a classmate could successfully do that training using only your description.* For each species, write or type your specified novel double-response-chain, and your design of the steps appropriate to training its performance, on regular 8.5 x 11 (binder) paper. You may submit this assignment in four parts as you complete each one, or you may submit all four parts together after completing them all. However, the benefit of completing and submitting each part after completing its relevant species-specific *Clicker Training for...* book—and before beginning the next species-specific *Clicker Training for...* book—is that the feedback you then receive on the early parts can make your efforts on the later parts both easier and more successful. Submit your work according to the method specified in the *Submitting Your Work* section.

The Double-Response-Chain Demonstration Video Assignment

Select one of the double-response-chain performance designs that you prepared for the performance-design assignment, and use it for this assignment (or use a new chain, also of your own design, particularly if the pet that you wish to train for this assignment is of a different species from those covered in the *Clicker Training for...* books). Then, apply your clicker-training knowledge and skills to train that double-response-chain. When the chain is established, make a video-photographic record of the complete performance. The chain may be either entertaining or functional (or both) at your

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

Note #5: Since you are to write out your responses directly in the *Study Question* books, you need to have your own *Study Question* books. To assure that this is followed by everyone equally, you need to fill out and send in to your professor (by regular postal mail) the original ownership forms in the rear of your *Study Question* books.

Submitting Your Work

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

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

To submit the video summary assignment, you can scan and fax to your professor the pages that have your summary. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

To submit the performance-design assignment, you can scan and fax to your professor the pages that have (a) the description of your specified novel double-response-chain, and (b) the description of your performance-design steps for training the chain, for each of the four species covered by the *Clicker Training for...* books. However, your professor would prefer that you photocopy those pages and send them to your professor by regular postal mail.

To submit the video record of the double-response-chain you trained, send a VHS tape or DVD *copy* of your video to your professor by regular postal mail.

For every assignment you are to keep the original of your work. This insures against loss and enables you and your professor to communicate about your work (as you will then both have an identical copy). Note, however, that for the *Study Question* book responses, email and email attachments are neither reliable enough, nor identical enough, for this purpose, so they are not to be used for this purpose. Also, note that for the *video summary* assignment, and the *performance-design* assignment, email attachments are neither reliable enough, nor identical enough, for this purpose, so they are not to be used for this purpose.

Your work will be perused and points will be allocated according to the quality of your work. Should any inadequacies be apparent, you will be informed so that you can make improvements. While sometimes your pro-

fessor will provide a metaphorical pat on the back for a job well done, if you do not hear of any inadequacies, then pat yourself on the back for a job well done even as you continue on to the next assignment.

Assignment Sequence

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

- Week 1: Acquire and examine all the materials while completing the study questions assignment for the *Foreword* to the *Don't Shoot the Dog* book.
- Week 2: The *Don't Shoot the Dog* book, Ch. 1.
- Week 3: The *Don't Shoot the Dog* book, Ch. 2.
- Week 4: The *Don't Shoot the Dog* book, Ch. 3.
- Week 5: The *Don't Shoot the Dog* book, Ch. 4 (through Method four of the eight Methods).
- Week 6: The *Don't Shoot the Dog* book, Ch. 4 (from Method five to the end of the chapter).
- Week 7: The *Don't Shoot the Dog* book, Chs. 5 & 6, and watch the *Clicker Magic* video while writing the assigned summary of it, and begin work on both your performance-design assignment and your pet training assignment (and continue these, while completing the study question assignments on all the *Clicker training for...* books, until everything is done and submitted).
- Week 8: First half of the *Clicker Training for Dogs* book.
- Week 9: Second half of the *Clicker Training for Dogs* book.
- Week 10: First half of the *Clicker Training for Cats* book.
- Week 11: Second half of the *Clicker Training for Cats* book.
- Week 12: First half of the *Clicker Training for Birds* book.
- Week 13: Second half of the *Clicker Training for Birds* book.
- Week 14: First half of the *Clicker Training for Horses* book.
- Week 15: Second half of the *Clicker Training for Horses* book.

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

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

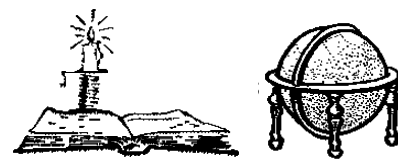
Note #7: The usual higher education workload expectation for a course is about 150 hours. (The typical face-to-face course features about 50 in-class contact hours with the university expecting about 100 more hours of additional study at the average rate of about two hours out of

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

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

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

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



Origins, Status, and Mission of Behaviorology Chapter 3 (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 3: Issues Driving the Independence Movement

After the introductory Chapter One, Chapter Two of this account of the emergence of behaviorology examined the nature and origins of the behaviorology concept and its emergence worldwide. An idea like behaviorology can rise to the level of a mature concept, but subsequently to do something concrete about such a concept requires strength in the reasons for bothering. This chapter, Chapter Three, explores the increasing strength, in five different classes of contingencies, to incur the high costs of organizing a separate and independent discipline. It reviews the accumulating and intensifying reasons why the early behaviorologists would be led to take the actions that will be described in Chapter Four.

Disciplinary independence movements are costly and not undertaken lightly. Few of the potential early supporters of such movements actually become involved. Various contingencies must operate in some combination: The punishers from which people are escaping must have grown strong. Access to critical reinforcers must have come under serious threat. And participation in a new movement must hold promise of important outcomes, though some might be deferred.

The rarity and difficulty of such personal commitments evoke a special scrutiny with respect to why those commitments occurred. The early behaviorologists were individually affected by different sets of causal factors. This chapter turns from *what* was happening to *why* it was happening, and discusses several of the reasons which, in some combination, might explain the commitment of any given individual to the behaviorology movement. Each of the five following sections explores a different class of motivating variables. The first, concerning *the scientific rift*, addresses, in several subsections, various components of this perhaps most critical of those classes.

(1) *The Essential Scientific Rift*

By the latter part of the 1980s, the decade in which an independent behaviorology emerged, some behaviorists had developed in applied fields without ever having been affiliated with organized psychology. The many behaviorists of all kinds, who did operate within organized psychology, still represented a minority in psychology of only a few percent. For example, a 1990 list of regular members in the American Psychological Association (APA) Division 25, the behaviorist's division, contained only about 1200 people including student and affiliate members (Division 25, 1990). In contrast, in 1987, APA had nearly 65,000 members (Hayes, 1987b, p. 41). By that time the rift between behaviorist and cognitivist/mentalistic camps had become a salient problem for many persons concerned with the disciplinary future of psychology. Many argued that the differences did *not* or *need* not conflict. Some even invented new concepts of "discipline" more tolerant of disparity (Staats, 1986). But others emphasized seemingly irreconcilable differences and distrusted the implications of disciplinary integration.

Having thoroughly criticized cognitive psychology in 1977 (Skinner, 1977), Skinner a decade later (1987b) asked rhetorically why "the experimental analysis of behavior as a function of environmental variables and the use of that analysis in the interpretation and modification of behavior in the world at large" have not *become* psychology (p. 782). He offered some reasons in the form of obstacles that he identified as humanistic psychology, psychotherapy, and cognitive psychology. Having described the essential effects of those obstacles, he concluded that:

...by their very nature, the anti-science stance of humanistic psychology, the practical exigencies of the helping professions, and the cognitive restoration of the royal House of Mind have worked against the definition of psychology as the science of behavior. (p. 784)

Skinner, until as recently as May 1989, had always hoped to change psychology into a useful science of behavior. He had presented a lifelong analysis of why it is not. Concurrently he was providing the natural science and philosophy that psychology would have to adopt to fulfill its cultural mission. Yet it remained for the vast majority of psychologists to adopt that science and philosophy.

Some argued that the prolonged dominance of less effective or impractical science in psychology was largely a result of politically defended access to a variety of reinforcers, some extraneous, within that organized discipline. Resistance to behaviorism on the scientific and technical front where Skinner had fought his battles (e.g., see Baer, 1987) was of lesser importance. Others might have been reluctant to turn away from the familiar impli-

cations of mentalism. Either way, some therefore saw a *political* rather than a purely scientific solution as appropriate and increasingly necessary. They saw recognizing a behaviorology discipline, separate both in subject matter and organization, as that kind of step.

The scientific rift hinged on two major classes of difference: paradigmatic and thematic—or, roughly, *how* to think, and the subject matter *about which* to think. The following four parts of this section examine significant components of these aspects of the scientific rift.

Mentalism versus behavior-behavior relations.

Historically the internal agent has been difficult even to locate much less analyze. In more ancient times false starts had seemed to lead to the lungs or heart. But many contemporary psychologists, following the quest of these predecessors going back to the time of the ancient Greeks and Romans, now seek the elusive agent in the brain. An organ (the brain), rather than an organism, is said to behave. Presumably, the brain acts like another person within. It processes this, recognizes that, perceives something else. Those who accept the premise of internal autonomous causal agency are limited in their scientific approach to searching out some physical reality presumed either to be the heretofore ill-described agent or to be symptomatic of its ethereal presence. In either case the agent is circularly inferred from the same behavior to be explained (Michael, 1989, Ch. 6; Skinner, 1953, Chs. 1-3). From a natural science perspective, laboratory methodologies are wasted to investigate what is not really there, while legions of students are trained to replace the professionals expended on the crusade. (An enlightening exposition appears in *Beyond Freedom and Dignity* [Skinner, 1971, Ch. 1].)

Behavior analysts Hayes and Brownstein (1986), in their article "Mentalism, Behavior-Behavior Relations, and a Behavior-Analytic View of the Purposes of Science," argued that the majority of psychologists are mentalists because their philosophies and sciences provide no analytical means to avoid mentalism. They noted that treating thinking as a "mental" event treats it as a hypothetical "non-spatiotemporal" activity—that is, as non-natural.

In contrast, radical behaviorists have long regarded thinking as *behavior*, mostly verbal and controlled, as is all behavior, by variables in the natural environment. Thinking is apparently all, or nearly all, behavior of the operant kind. Though usually covert, thought has the same properties as more overt behavior (also see Moore, 1981, 1984). Construing thought to be natural, radical behaviorists transform the troublesome question of how metaphysical mental events can control physical events, like behavior, into the more rational and answerable question of how covert behavior can control overt behavior. Hayes and Brownstein referred to that class of relations as "behavior-behavior relations" wherein the second behavior (an observable overt kind) occurs under the antecedent con-

trol of a preceding behavior (such as a thought). These sequential relations, though at times obscure, are not mystical. They merely involve two kinds of behaviors—a covert one serving an antecedent stimulus function for the next. And, especially when contemplating intervention, behaviorologists are quick to go back a link in any causal chain and search in the accessible environment for the functional public antecedents of that covert event. By tracing the functional relations back to events in an *accessible* part of the environment, they locate potentially manipulatable variables. This affords control over the subsequent internal and otherwise inaccessible parts of the sequence as well as over the external parts. The previously insoluble problem, recast in this way, becomes routinely manageable. (Also see Hayes & Brownstein, 1985.)

The mentalistic account of thinking, prominent in psychology, does not even reach the point of behavior-behavior relations, in part because the controlling antecedent variables, called thoughts, are seldom if ever regarded as behavior. The psychological analysis of an observable overt *behavior* that has been “stimulated” by an antecedent covert behavior usually stops at the interface between the exterior and interior domains. The behavior is regarded merely as the final emitted stage of some changing entity that undergoes a transformational sequence—usually entering the body as information and emerging as behavior. Thus, transformations from some preceding state in the internal domain are thought to yield the observed behavioral manifestations. That internal domain is, by some accounts, possessed of mysterious properties, and metaphysical events thus supplement the processes. In other accounts, information is accepted as something real, and therefore real mental processors have to be hypothesized to deal with it. Without the kind of science necessary to carry analyses of multi-term contingencies back through the functional chain—and tending to attach little importance to such an effort anyhow—mentalists are ill-prepared to avoid what behaviorologists construe to be the fallacy of original internal causation (Sidman, 1986a; Skinner, 1969).

Conversely, behaviorologists regard “mental” events as covert behavior, mostly (if not all) verbal. An understanding of these events can support *prediction* of the overt behavior that they may share in controlling. However, behaviorologists do not regard analyses to be complete until not only prediction but also *control* is attainable. That usually requires tracing any causal chain further back ...back to locations—generally outside the body, in the external environment—where controlling variables are *accessible*. Behaviorologists describe these analytical moves to the exterior in terms of “four-term contingencies of reinforcement” (see E.A. Vargas, 1991b). Unless that move to accessible variables is accomplished, effective behavioral technologies, which depend on ma-

nipulating accessible independent variables, cannot be developed by design and must emerge, if at all, as intuitive or scientifically unsupplemented practice.

Engineering versus inquiry. Cognitivists sometimes *do* attain control adventitiously in direct response to practical contingencies. But too often when that happened, the radical behaviorists were left to contend with invalid claims of credit made by the cognitivists on behalf of the prevailing cognitive science.

Mentalists sometimes disavow control as their goal, because their approach does not readily facilitate analyses that backtrack through the chain of functionally related variables to the “environment.” (Radical behaviorists define “environment” as that domain, part of which might be inside the skin, in which independent variables *can be manipulated in behavior-controlling relations*.) Instead of stressing control, mentalists emphasize “understanding.” Their practical work is often confined to predicting behavior from other behavior—as when behavior on a specific occasion is predicted from a putative causal trait induced from behavior on previous occasions. For example, educational psychology courses in the measurement of behavior typically ignore direct measurements of the properties of behavior (as delineated, for example, by Johnston and Pennypacker [1980, Ch. 7]) and instead feature textbooks devoted to identifying and measuring the intensity of what are assumed to be behavior causing traits.

The quest to gain control of behavior is sometimes criticized as an allegiance to superficiality. However, as Hayes and Brownstein (1986) wrote, control

...is a required element for the successful functioning of the [behavioristic] perspective. Thus, mental causality is a form of theorizing rejected because its pursuit threatens the successful operation of science as viewed from the standpoint of behavior analysis. [p. 187] ...an emphasis on prediction and control is not arbitrary in behavior analysis because it is a necessary part of successful forms of the philosophy [of radical behaviorism] that underlies behavior-analytic theorizing. (p. 175)

Failure to include control as a planned final step condemns a science to immaturity (see Skinner, 1953, Ch. 2). As a practical matter, those who would not attain control in their subject matter can only *interpret* life in various ways. And mere *interpretations* evoke little threat to the acceptance either of the science that informs them or of the persons who offer them. But most important scientists echo Gould’s (1987) notion about life—that “the point ...is to change it” (p. 154). Those whose science carries to the level of effective control must confront a world well organized to defend established modes of access to long and strongly conditioned reinforcers. Those who re-

sisted the behaviorologists did so in ways never wasted on others who merely teased with counter interpretations but who lacked the technologies to affect actual changes.

Among persons working under the rubric of psychology, those pursuing the developing behavioral paradigm increasingly gained more of a capacity to control behavior than did the cognitive/mentalistic remainder. Reinforced for their successes in the domain of practical behavior engineering, the behavioral people increasingly concentrated on exploiting *that* aspect of their science. This widened the scientific rift, because the cognitive/mentalistic psychologists, lacking that opportunity, focused their efforts on understanding, in their own way, the inner workings of what they construed to be a behavior-controlling mind.

Quality of science issues. Since the concept of mind had been induced entirely on the basis of behavioral evidence in the first place, efforts to explain behavior through appeals to the features and functions of the mind were logically circular. This offended the scientific sensibilities of many behavioral people, whose analytical paradigm paralleled the non-circular logic common to the well-established natural sciences. When, across the last half of the twentieth century, the cognitive/mentalistic psychologists turned increasingly to physiologically based brain science for independent corroborations of their theories of mind, the future behaviorologists again took umbrage, because old theory was being carted to new evidence in *theory-biased searches* for fits and matches. These were inevitably “successful” because something physiological is always occurring internally. No matter how fanciful or far-fetched the theory, some physiological activity is always present to be correlated with the behavioral events said to be external representations of whatever internal functions the theory hypothesizes—an approach prone to fallacies and low on the quality scale in scientific practice. Some future behaviorologists, especially those more sensitive to quality of science issues, were embarrassed before the at-large community of natural scientists by the psychology community to which many of them were nominally attached. And, becoming more so as time passed, they increasingly recognized the need to regroup separately; they wanted out.

Irrelevant subject matter. The physiological alternative to non-natural mentalism pursued by many psychologists focuses on a subject matter somewhat irrelevant to behaviorology. Behaviorologists distinguish between (a) the valid natural science of physiological linkages between behavior and environment (a field of study in which they have had limited though valid scientific interest) and (b) the science (or pseudo-science) of mentalism which they construe to be an indulgence in metaphysics unworthy of status in the scientific community at large. Unfortunately, those two scholarly tradi-

tions have remained so intertwined within psychology that they can be difficult to discriminate there.

Those scholars of mind who eschew a metaphysical mentalism and assume thinking to be a purely natural physiological activity nevertheless also depend on cognitive science. But that approach does not bring thoughts and feelings unequivocally into the realm of behavior in accordance with the kind of scientific principles recognized by behaviorologists. Those cognitive psychologists probe for independent, non-behavioral variables in the nervous system, a line of inquiry going back to when people first noticed that from nerves come the behavior-initiating impulses that stimulate muscles. But because the activity within nerves only mediates the functional relations between a controlling environment and exhibited behaviors, that effort can be somewhat like searching myopically through the mechanical steering linkages of an automobile in an effort to discover the driver who remains external to that system and cannot be found within it. From the behaviorological perspective, the behavior-mediating neural events that might be discovered there, though necessary if real, are little relevant to the practical operations that constitute behaviorological technologies. The classic argument was set forth by Skinner (1938) in his often-quoted chapter 12 (entitled “Behavior and the Nervous System”) of *The Behavior of Organisms*. There Skinner defended his assertions

...not only that a science of behavior is independent of neurology but that it must be established as a separate discipline whether or not a rapprochement with neurology is ever attempted. (pp. 423-424)

E.A. Vargas put it this way (1990; also see E.A. Vargas, 1991a):

The fact that cellular action underlies every muscle action that underlies every limb movement that underlies the behavior of two teams playing football does not explain why the game is played as it is or why those teams play *that* game.

The extensive physiologizing by cognitive psychologists also shifted their subject matter into disciplinary territory claimed by physiology. However, whether those internal events are real events or not, the independent variables that are relevant to practical concerns always remain in the behavior-controlling environment or milieu. The inter-nerve variables that play a mediating roll between independent variables and behavioral manifestations do not lend themselves to feasible intervention even if one could possibly determine, on given occasions, what changes within those nerves might be worthwhile. Thus psychologists cannot attain the capacity for control over behavior through analyses focused on nerve functions.

Increasingly, the behaviorists within psychology exploited their growing capacity to develop effective behav-

ioral technologies based on the manipulation of external variables. They were becoming behavioral engineers, and discovering largely untapped markets for those skills in all facets of the culture. Internal physiological linkages, though necessary, played little or no role in the practical interventions undertaken to produce behavior change and remained of little concern to the behaviorists. Most others who called themselves psychologists—a vast majority—continued to focus on those internal events. The subject matter difference was becoming ever greater.

Summary of the scientific rift. Most early behaviorologists saw themselves organizing a new disciplinary support structure—a scientific verbal community—apart from the organized discipline of psychology. They viewed psychology as a discipline focused, with an unreliable mix of natural and non-natural science, on subject matters largely irrelevant to behaviorological concerns.

Behaviorologists, in separating from psychology, would be leaving the enormous problem of purging that discipline of non-natural mentalism to the psychologists. Should the psychologists eventually succeed in doing that, the residual natural science of internal events will still pertain to a field largely apart from behaviorology. A demystified psychology could leave its natural scientists in far more territorial conflict with the discipline of physiology than with behaviorology. As Skinner (1974, Ch. 13; 1983b, 1987b) has noted, the discipline of physiology relates internal physiological events to observable behaviors as an aspect of *its* mission, and it is far better prepared to do so than is psychology.

The work of behaviorologist Carl Cheney (1988, 1991, 1992) later exemplified the *appropriate* natural science bond between behaviorology and physiology. In his work Cheney completes accounts of some behaviors by treating the body as a set of independent variables in environment/behavior relations. That differs from attempting to exploit the findings from physiological studies to validate what most behaviorologists construe to be ill-conceived mentalistic theorizing.

(2) Behaviorological Training Issues

The problems in training behaviorologists are largely those of training scientists in any discipline that provides complex scientific alternatives to common wisdom and traditional assumptions. But in the 1980s those who would soon acknowledge themselves as behaviorologists faced increasing difficulty training their students within their respective nominal disciplines, especially organized psychology and its satellite fields. The repertoires of behaviorology—its philosophy, science, technologies, and vocabulary—are as extensive, and as difficult and demanding to acquire, as those of any other scientific discipline. The verbal community of behaviorology, like those of other natural sciences, must therefore claim access to

the controls on all of the discipline-related behavior of its trainees. This monopoly on control over training in behaviorology is further necessitated by a particular characteristic of the task: The substantial lore about behavior that pervades the general culture will have informed the prior training of behaviorology students in nearly all subject matters. The training must eliminate that legacy from their technical repertoires as it shapes their new verbal skills (just as it must for students of other natural sciences so that, for instance, astronomy students learn not to refer to “the sun rising” in technical contexts).

Where behaviorologists and psychologists have been compelled to share the same training program and compete with each other for sufficient student contact to get students properly trained, both sides have tended to regard as extreme any efforts of the other to monopolize the training. But to master behaviorology, like any other complex natural science, requires a substantial commitment on the part of behaviorological aspirants. However, “commitment” merely describes the strength of certain controls over the trainees’ behaviors that their verbal and social communities have managed to arrange. A trainee’s aspirations are also products of the community’s behavior-controlling practices. Their aspirations are functions of the reinforcers to which the trainees are conditioned and of the schedules of reinforcement (Ferster & Skinner, 1957) by which trainees are afforded access to those reinforcers. Given (a) the degree of control that must be established between subject matter variables and trainee behavior, (b) the extensive new verbal repertoire that must be acquired, (c) the traditional repertoire that must undergo extinction (at least in technical contexts), and (d) the new and different reinforcers that the trainee must behave to contact (i.e., the new perspective of the trainee in approaching the subject matter), the necessary interaction between trainee and the behaviorological community is too great for the trainee’s time to be shared with the verbal community of another discipline.

To the extent that they dilute the training curricula, compromises with any other discipline reduce students’ opportunities not only to acquire skills in their own discipline but also to acquire the supportive emotional behaviors as well (see Branch & Malagodi, 1980). Also, the trainees’ reliance on the science of their discipline diminishes. For example, Mahoney (1989) reported a longitudinal attitude survey conducted on 42 “influential representatives” of cognitive and behavioral psychology using a “lengthy questionnaire” on “beliefs about scientific method, the nature of learning, and so on.” Having discerned three subsets among his *psychologist* subjects—(a) extreme behaviorists, (b) cognitive-behaviorists, and (c) extreme cognitivists—Mahoney reported that all three groups had become more cognitive, though behaviorists changed least. The extreme cognitivists found even less merit in

behavioral ideas than what little they previously conceded, while the cognitive-behavioral psychologists had shifted the balance in their views significantly toward the cognitive perspective. Mahoney noted that:

...both cognitive-behavioral and extreme behavioral respondents showed signs of shifts in the direction of personal agency as an important counterbalance to exclusive environmental determinism. Cognitivists appeared to be going even further in this direction, exhibiting a clear trend toward acknowledging the influence of unconscious processes. (p. 1375)

Mahoney found that behaviorists *in psychology* were increasingly variable in their “meanings and models of behaviorism” which in his view were “in the throes of dramatic revision”—away from what he characterized as the extremism of radical behaviorism. Extremism in this context, though, mainly reflects characteristics that imply a different discipline whose practitioners resist training compromises that degrade the scientific repertoires of their students.

Furthermore when students, whose skills and enthusiasm for behaviorological science are reduced by mixed training, eventually succeed the behavioral faculty members in the programs of research, practice, and training, they tend to enter into those positions as less competent behavioral experts than the former mentors whom they replace. This reduction in the behaviorological competence of each succeeding generation of faculty decreases the capacity of the science to contribute to the culture. (For an early warning, see Michael, 1980, p. 16; for an analysis of the implications when one operates concurrently in incompatible verbal communities—a probable circumstance for behavioral psychologists—see Fraley, 1984; for tactics to nurture behavioral repertoires within non-supportive environments, see Morse & Bruns, 1983.)

Many training problems in behaviorology stem from delaying the study of behaviorology until a student enters higher education—in many cases, graduate school. Unlike other basic sciences, which are introduced to students in primary and secondary schools, behaviorological science *under any label* has been generally unavailable to students until they have become adults. In contrast, mentalistic and cognitive psychology courses are occasionally offered in high schools. Perhaps worse, most kindergarten-through-twelfth grade curricular materials on other subjects are heavily laced with inaccurate references to behavior that are based on the mentalistic assumptions prevailing throughout the culture. Behaviorologists support replacing that cognitive/mentalistic psychology with appropriate, practical behaviorology in those curricula (e.g., Ledoux, 1987a). A strictly natural science, behaviorology provides young learners with *explicit* principles by which to deal more effectively with behavior in *practical* contexts.

Some behaviorologists have deemed as acceptable the practice of providing behavior-related training for lay persons and beginners *in lay language*, believing that students would then more readily understand behaviorology. But lay language is implicitly cognitive and mentalistic—a legacy of Western cultural history (Ledoux, 1997a; based on Lerner, 1991). That language legacy maintains a counter-implication to the very concepts that the teachers would be seeking to establish. The rather widely understood realities of the *physical* world, which are contrary to ancient and mistaken wisdom, are appreciated by lay persons to the extent that the technical language of physics has become part of the ordinary citizen’s language. *That* circumstance is the legacy of two or three centuries of science teaching in the schools. Other behaviorologists have therefore counter-argued that the most educationally sound approach to teaching the science of behaviorology is to get people to talk and think in behaviorological language—and to do so as part of their everyday mode of expression.

On a more practical level, some behaviorologists who were attempting to train students in university units controlled by other disciplines found themselves without behavior laboratory facilities. Administrators representing the interests of other disciplines do not tend to divert resources to the laboratory space and equipment that behaviorologists deem important. In 1993 Ernest Vargas, after years of unsuccessful efforts to secure behavior laboratory space at the College of Human Resources and Education (West Virginia University), opened a laboratory in the basement of his home. With assistance from Carl Cheney, he and graduate student David Feeney began to conduct behavior research. This represented the first experimental laboratory facility opened under the general umbrella of organized behaviorology. A small research support grant to Carl Cheney from The International Behaviorology Association—the first such grant made by that organization—defrayed some of the costs.

Summary of training issues. Some behaviorologists came to the movement in part out of a conviction that their discipline could only continue and advance through relief from the constrained and limited training opportunities available, especially within the psychology community. However, behaviorologists must still solve the curricular and tactical problems intrinsic to instruction in any basic natural science. Creative interim measures have included private ventures to fill gaps in research and training opportunities within university units controlled by advocates of other disciplines.

(3) *Employment Opportunities*

The modern psychology establishment, for its part, has already arranged a kind of separation based on hiring. “Behavioral” psychologists are, in general, no longer hired in

psychology. For example, the September 1989 issue of the *APS Observer* (The coherence, 1989) advertised over 85 employment opportunities for psychologists organized by categories, including 15 under “Cognitive Psychology Positions.” No corresponding category for behavioral psychologists was present. Most of the remaining ads specified or implied a cognitive orientation among desired applicant characteristics, while no ad was equally explicit about a behavioral orientation. Earlier, Epstein (1987a) had reported finding a similar pattern in the *APA Monitor*. For some years he had been tabulating the Monitor’s job listings and considered those for 1985 as “typical for nearly a decade.” He called them “good indicators of the composition of future psychology departments.” He found no entry-level, tenure-track positions for “animal learning, behavior analysis, or any related area” (p. 127).

The rare advertisement for a “behavioral” psychologist is the exception that proves the rule: Mainline psychology continues to provide no niche for behavioral people. One can infer that psychologists do not construe the behavioral approach to represent their field. Behaviorologists agree. Since behavioral types did not seem likely to get hired as psychologists, the behaviorology movement became attractive in part because it would afford access to the job market under an independent disciplinary label. Applicants also hoped that their entrance into the job market as disciplinary independents would facilitate appealing to an even broader spectrum of potential employers than those traditionally seeking to hire psychologists.

Summary of employment opportunities. The appeal of the behaviorology movement was increased in part due to few positions being available for behavioral people within job markets controlled by organized psychology. The appeal also increased in part because a broader job market seemed accessible through training provided by an independently identified behaviorology discipline.

(4) *Capacity for Contributions to the Culture*

Whether behaviorists could fully provide their potential contributions to the culture (Fraley, 1987) without an independently organized discipline had, by the mid-1980s, become an urgent question for many of them. Increasingly they saw important long-term implications in that issue. The contributions of behaviorology, both actual and potential, were being ignored and often stifled by the traditional bond to organized psychology. Behaviorologists encountered impediments in the areas of training and funding—and, in the perception of many of them, behaviorologists were denied appropriate recognition, respect, and other common consequences of successful and meaningful scientific and academic endeavors (see Fraley & Vargas, 1986).

Psychologists of many varieties continue to denounce behaviorism and behavioral approaches while enthusias-

tically describing the latest cognitive and mentalistic models. In some cases those psychological constructs depend on reiterations, in imprecise cognitive language, of well established, purloined, behaviorological principles that have found their laundered way into the cognitive literature. In one example Kauffman, describing conceptual models in the fourth edition of his *Characteristics of Behavior Disorders of Children and Youth* (1989, p. 85), regarded contributions from behavioral research as inadequate and touted the putatively more complete “social cognitive theory” said to represent the “natural-science perspective.” That model has two main features. One deals with behavior in its relations with a controlling environment. Although Kauffman gave no hint of it, those relations constitute a basic *behaviorological* concept (attributed in part to Bandura, although Skinner had been the one who had earlier spent years experimentally probing those functional relations and authoring several books developing that concept). The second main feature of social cognitive theory is a reliance on “personal agency.” This is a remnant of theological epistemology to which many cognitivists cling in outright antithetical rejection of natural science. “Personal agency” requires that one either be ignorant of the science of verbal behavior or fail to appreciate it. (For another example, see Fraley & Vargas, 1986, pp. 49–51.)

Vicki Lee (letter to Fraley, 15 June 1989) mentioned a further typical example. In her native country, Australia, where “behaviorological activity is virtually nonexistent,” one of her psychology colleagues recently published a paper reporting the “discovery” that reinforcers have to be identified empirically. That point is of fundamental scientific importance. It is also an essential point reiterated in the behaviorological literature from the beginning (see Skinner, 1938) and has always been included as an elementary principle in introductory behaviorological texts (e.g., Skinner, 1953; Fraley, 1996a).

On 22 January 1991 an English language broadcast in China provided yet another example of educational psychologists “discovering” a half-century-old behaviorological principle. Some educators in Hunan Province reported documenting a “new” teaching method that yielded substantial improvements in students’ academic performance. The “new” method was positive reinforcement. Students were positively reinforced for exhibiting the desired academic behaviors. In 1938 the historical behaviorology literature reported laboratory documentation of the basic relation in the positive reinforcement process (Skinner, 1938). By 1953 the process had been elaborately tested and documented, and its wide applicability was discussed in engineering detail in the literature (Skinner, 1953). And by the 1960s entire books were detailing its specific adaptations in educational practice (e.g., Skinner, 1968). (At the time of this discovery, the Chinese were

completing a ten-year long attempt to update a 30-year loss of contact with the West; the Western *psychological* sources for their update would have been ill-prepared to inform them about this application. See Ledoux, 1997d.) Even the half-century-old *basics* of behaviorological science often have to await “discovery” by psychologists who then invalidly attribute the favorable outcomes to their own discipline. But in most such cases, the technological practices in question would not have followed as logical implications of the kinds of basic assumptions upon which psychology rests.

Some people counter examples like these by insisting that ultimately what is important is how well humans deal with their world, not *who* makes the discoveries or gets the credit. But such arguments are economic nonsense for a discipline that must compete in the cultural marketplace for its resources in order to continue to make its contributions. Furthermore, in pirating intellectual merchandise from behaviorology, seldom are the practices simply borrowed and properly used (though under false labels). Separated from their quality-controlling philosophy and underlying scientific principles, the practices become distorted until eventually they lose their effectiveness. Then they are discredited and discarded.

Additionally, the *kinds* of threats facing the global culture (Skinner, 1978, Ch. 2; 1982; 1984; 1987a, Ch. 2), and even our species (Marcattilio & Nevin, 1986; Ulman, 1986), implied urgency in getting those threats reduced. That urgency provided a prompt leading some participants toward the behaviorology movement. Under the circumstances some early behaviorologists did not believe that time was available for mainstream psychology’s bit by bit rediscovery of behaviorological principles so that eventually those principles might be applied, by way of the psychological establishment, to our cultural problems. A separate discipline was needed, and needed right away so that it could help insure a viable future for humanity.

Perhaps global human culture is already fatally and irrevocably flawed (Skinner, 1987a, Ch. 1; Ulman, 1988). Or, instead, perhaps time for meaningful change is short. Organized psychology has from its inception been allowed to be keeper of the behavioral science upon which our culture depended. Psychology has had the mission to furnish both the scientific foundations upon which to build workable behavioral technologies and the analytical power to correct flawed policy in behavioral matters. Other cultural agencies such as organized religion, government, and education function (with some help from psychology) as instruments of organized eclectic behavioral lore. But organized behavioral *science*, traditionally represented by psychology, has had the mission to resist mystification of the human condition and provide more culturally propitious alternatives. Behaviorologists, voting with their feet, judged psychology to have failed in *that* mission.

However, the organized verbal community of psychology *had* succeeded in conditioning legions of people, including many of its critics, to feel inhibited about bluntly exposing that failure. Behavioral psychologists remain sensitive to their vulnerability within psychology. But behaviorologists, in circumventing psychology, have by design developed a discipline that requires neither persuading psychologists to change nor avoiding analyses criticizing the cultural role of organized psychology—although the choice of the most appropriate and effective ways to engage in that criticism remains an important strategic issue.

Perhaps psychology tried to do too much. Studies of mind do not spawn the practical behavioral technologies needed throughout the culture for solving major behavior problems. Behaviorology does that. A disciplinary division of labor seemed appropriate to the early behaviorologists, especially in view of the failure of psychology to prove its worth as an explicitly studied behavioral foundation science. Here is just one example of the conditioned neglect of psychology as a worthwhile foundation science: Among all the graduate degree programs in 17 different fields that focused on human behavior, listed in the 1990–1992 *Bulletin of the West Virginia University Graduate Catalog*, none were found to require *any* courses in the psychology department, although three required their own versions of traditional psychology courses. Fourteen of those seventeen departments posted no requirements for any coursework centered on psychological subject matters. The trainers in most behavior-related fields do not appear to regard as worth their students’ time and money whatever contribution psychology might make as a basic science foundation for their respective fields.

This neglect extends to the lack of representation of psychology in the general scientific literature in the culture. Skinner, who worked to change psychology into a worthwhile natural science, was troubled by that neglect because it reduced the contributions from his work. In a paper entitled “Whatever Happened to Psychology as The Science of Behavior,” Skinner (1987b) complained that the editors of *Science* magazine tended to avoid publishing psychology articles and observed that apparently they “no longer regard psychology itself as a member of the scientific community” (p. 784). To the extent that Skinner’s interpretation was correct, behaviorologists tend to side with the editors. Focusing more narrowly, perhaps the editors of *Science* are reluctant to entertain significant *behavioral* contributions because they construe these to represent psychology. Can natural scientists who maintain a close and affirmative affiliation with what is being construed as a pseudo-scientific discipline expect other than to stand “damned by association” within the community of natural sciences?

Also, the literature of psychology has included distorted views of behavioral principles and products put forth as straw men to suffer invidious comparisons with cognitive and mentalistic concepts. Such continuing misinformation reduces the effectiveness of behavioral contributions to cultural evolution. One well known example has been the consistently inaccurate treatment in psychological commentary concerning the aircrib invented by Skinner (see Skinner's foreword in Ledoux & Cheney, 1987; also Skinner, 1983a, pp. 385-386).

Summary of capacity for contributions. Behaviorologists pursued their separatist course partly to create an independent literature. That literature would report behaviorological contributions accurately. This would allow those works to find their way to effective cultural applications through authoritative print sources more respectful of their validity. But behaviorologists did not pursue independence simply to gain control of their own work, their own literature, and their own training programs. A more global objective was to afford the independent disciplinary status necessary for effectively interacting with other facets of the culture in providing behaviorological contributions.

(5) Control of Disciplinary Infrastructures

Difficulties arise in resolving the many *kinds* of contingencies in the mix necessary to bond a scientific discipline. Organized disciplines do not operate only under scientific contingencies. They also maintain political, economic, and social contingencies to regulate their members' professional lives. Historian Daniel Bjork noted that in the public view the essence of psychology is mystery rather than fact, and offered this speculation (letter to Fraley, 14 February 1989):

Perhaps most American psychologists don't really *want* a science at all. Rather they want a profession. That is another way of saying they want status most of all. Moreover, in behavioral terms, isn't "status" more reinforcing than "science"—especially in America.... Reduce it to science and the media loses interest.

Psychologists themselves have struggled over this and related issues. Their struggles precipitated a divisive crisis within the APA (discussed in detail in a later chapter).

Even though a guild and profession focused majority might benefit in important ways from a scientific minority's products, it cannot let that minority gain control of the political, economic, and social infrastructure of the organized verbal community if that infrastructure is what sustains that majority. Although scientific psychologists of all kinds were, increasingly over the years, adversely affected, a disproportionately large number of *behaviorists* in psychology felt exploited in this way. Many behaviorists had spent years bringing to the attention of

their more mainstream colleagues how effective and applicable their evolving behavioral technologies could be. But this often left the contributions of mainline psychologists open to invidious comparisons whether that was intended or not.

Since a traditional operating dictum in a scientific verbal community is that those with the demonstrably most effective repertoire are entitled to inherit leadership, a *political* suppression of any such minority can result. Giles (1984) posed the following question to some "diplomatic" behavior therapists whom he deemed to be too deferential toward their mainstream psychology colleagues. Referring to how, in their publications, those behavioral therapists tended to obscure the behavioral science that actually informed their work, Giles asked them: "With the evidence so substantially in favor of behavior therapy, why do you state your conclusions in such guarded fashion?" Giles reported that "without exception" they responded that "they perceived aversive consequences from taking a strong position in favor of behavior therapy." Furthermore,

...in general, they were fearful of incurring antagonism from non-behavioral clinicians; of being labeled rigid, biased and hostile; of bitter replies in the literature... of rejection of papers submitted for review or greater difficulty in obtaining tenure or alternative employment. *Some of the respondents were able to document loss of employment or refusal of promotion as a result of their orientation.* (p. 24; emphasis added)

A more explicit example concerned a behavior analyst attempting to operate as a psychology faculty member. With respect to the attacks that are sometimes mounted to preserve psychology, such professors of behavior analysis are no safer (and perhaps are less so) than behavior therapists. As reported in the article "Court Battle" (1991), Dr. W. Joseph Wyatt, who edits and publishes *Behavior Analysis Digest*, had been denied tenure at Marshall University,

...because he was a behavior analyst... In recommending against Wyatt's tenure the psychology chairman held, in essence, that being behaviorally oriented had rendered Wyatt incapable of understanding psychology generally. "He argued that because behavior analysis was not psychology's 'mainstream' my knowledge base was insufficient to allow me even to teach introductory psychology..."

The chairman also held that Wyatt's research was unacceptable because it was published in behavioral journals

and presented at the Association for Behavior Analysis...

This approach touched anti-behavioral nerves with several of Wyatt's colleagues. One claimed to have thoroughly studied (and rejected) behaviorism, but could not name the terms of the three-term contingency... (p. 2)

These challenges, which some might label intellectually dishonest, were met by Wyatt in the courts. He said, "We all must stand for something, and for me behavior analysis and a faculty member's right to it as a legitimate point of view were worth taking a stand for" (p. 3). The county circuit court agreed with him and ruled on the issue; as a result,

...Wyatt, with the judge's order in hand, will return to Marshall University's faculty.... (p. 3)

While justice prevailed in the end, the energy that goes into these fights is not available for efforts that benefit the culture in more direct ways. The separation of competing epistemologies into their own academic disciplinary homes should reduce such battles for control of a shared disciplinary infrastructure.

Three additional examples of similar suppression were provided in detail by E.A. Vargas, Spangler, Stone, and Wishon (1988).

Summary of disciplinary infrastructures. These kinds of battles for control of the disciplinary infrastructure—especially that of organized psychology—helped propel some behaviorists toward the incipient behaviorology movement and its political solution of organizing the discipline separately.

Summary of Chapter Three

Different classes of contingencies, each class affecting individuals to varying degrees, controlled personal commitments to the behaviorology movement. Among the kinds most frequently identified as having been important in individual cases were the five discussed in this chapter. These pertained to paradigmatic incompatibility (mainly with psychology), control of arrangements to train future behaviorologists, potentially better approaches to professional job markets, improvements in one's capacity to make scientific contributions to the culture, and control over the organizational infrastructure of scientific verbal communities.

The next chapter, Chapter Four ("The Transition Period: Organizing the Discipline and Developing its Infrastructure") will present a comprehensive review of the activities to establish the organized discipline of behaviorology, and will examine the cultural engineering by which the newly named discipline was formalized and debuted in the scientific community. ✻

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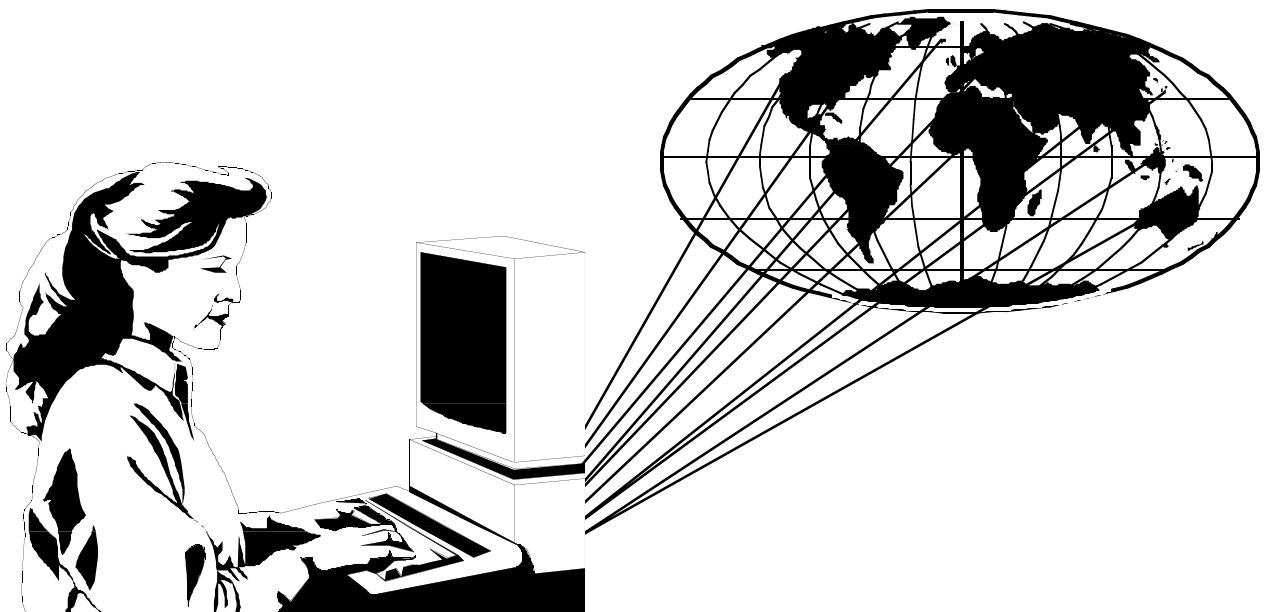
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- Volume ?, Number ? (Spring/Fall 20??): BEHG 250:
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TIBI / TIBIA Purposes*

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:

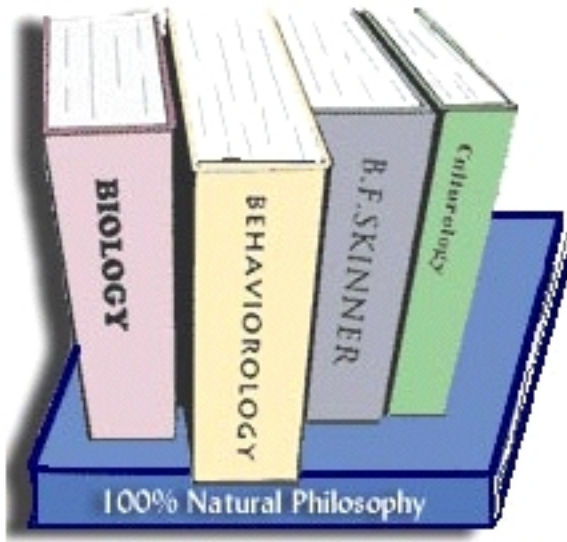
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To submit items for publication, contact the editor. Send items initially to the editor both by email (or disk) and by hard copy.

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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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