

## **OPINION: NOTES FROM A RADICAL BEHAVIORIST**

### **ARE WOMEN, PEOPLE OF COLOR, ASIANS, AND SOUTHERN EUROPEANS INHERENTLY INFERIOR TO NORTH-EUROPEAN MALES? A HISTORY OF BIOLOGICAL DETERMINISM—A CULTURAL, SPIRITUAL AND INTELLECTUAL DISGRACE—AND THE IMPLICATIONS FOR UNDERSTANDING “MENTAL ILLNESS”**

Richard W. Malott<sup>1</sup>  
*Western Michigan University*

**ABSTRACT:** *Biological determinism* is the view that biological or genetic factors are the main or even the sole cause of important behavioral differences between people, even when those behavioral differences involve complex behavior-environment interactions. However, biological determinism has a disgraceful history, a history involving scientific racism, scientific sexism, scientific classism, and what I call *scientific mentalism*. Furthermore, an appreciation of that disgraceful history can provide perspective for evaluating the contemporary emphasis on the biological and genetic basis of “mental illness” so well critiqued by Wong (2006) and Wyatt (2006). The present article is an attitude-laden summary of that disgraceful history, followed by a few guidelines for a behavioral approach to the analysis of complex behavior-environment interactions, and finally a glance at a couple current “mental-illness” issues from the behavior-analytic perspective developed in this article.

**KEYWORDS:** behaviorism, biological determinism, scientific racism, scientific sexism, intelligence, mental illness, mental health, biological behavior analysis

## **INTRODUCTION**

Some readers of an earlier draft of this essay didn't realize that I'm being ironic in my treatment of scientific racism, scientific sexism, etc., that I'm being ironic when I treat these atrocities as if they were examples of good science deserving a respectful analysis. With irony, I'm trying to show the absurdity of dealing with this biological-deterministic nonsense as if it were anything other than a miscarriage of science in the hands of male bigots of North-European Ancestry—in many cases, good scientists gone bad. And I'm assuming that essentially all of you who are apt to read this essay will agree that these 19<sup>th</sup> and early 20<sup>th</sup> century examples of race, sex, and class bigotry are

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<sup>1</sup> Address correspondence to Dick Malott, Behavior Analysis Program, Department of Psychology, Western Michigan University, Kalamazoo, MI 49008; email: DickMalott@DickMalott.com. You can download this article from DickMalott.com.

## A HISTORY OF BIOLOGICAL DETERMINISM

atrocious; I'm assuming that even wealthy, 21<sup>st</sup> century males of North-European descent like myself will agree. And I suspect that most of you will find a few shocking examples of this misuse of science in the name of biological-deterministic bigotry of which you had been unaware—at least they amazed me.

I use the same irony in dealing with the early biological, deterministic efforts at “treating the mentally ill.” And, again, I assume that essentially all of you will agree that these are further examples of good science, if not good scientists, gone bad.

But all of the preceding, the bulk of this essay, is just a preamble to my main, and more controversial point: much of the current emphasis on the biological basis of behavioral problems, aka “mental illness” may be just as misdirected and biased as the biological, deterministic “science” of previous centuries. However, to appreciate this, I think it's important to understand the tradition of biological determinism from which these 21<sup>st</sup>-century efforts have sprung.

One more thing; the original title of this essay was *Are Women, People of Color, Asians, and Southern Europeans Inherently Inferior to You and Me*? The point of the *You and Me* was to set the stage for an ironic treatment of the white, North-European males who would only be thinking in terms of themselves and other white, North-European males, who would not have thought of the possibility that someone outside the old-boys club would be reading this. Turns out not everyone got the joke. But now that you've been forewarned, please allow me to morph into the perspective of the old-boys' club, to morph from this overtly hostile attitude to a slightly more subtle ironic mode ... shhh, ... careful, ... careful, ... we're all slipping quietly into the old-boys club, come on in, the huge leather chairs are so comfortable, and we'll have nothing but the finest Cuban cigars and Irish whiskey ... shhh.

### SCIENTIFIC RACISM

#### Blacks

#### *Inferior Intelligence*

#### *Laboratory Studies: Craniometry*

In the 1800s, it was said to be scientifically proven that Blacks are not as intelligent as Whites. The proof was that their brains are not as large as ours; and, of course, people with bigger brains are smarter. This is not just a casual observation; researchers have scientifically measured brain size by poring grain into the skulls of deceased Blacks and Whites and then measuring the amount of grain each skull holds. This is the exact science of craniometry (a semi-offshoot of phrenology) (Gould, 1981, p. 40-53).

However, around 1906, Robert Bennett Bean, a Virginia physician, failed to replicate this scientific finding; his measurements showed no difference in the skull and brain size between Blacks and Whites. But, after a more thoughtful analysis of the data, he was once again able to prove that Blacks were inherently less intelligent than Whites. With a more refined craniometric analysis he showed that intelligence was not caused by

the absolute size of the brain but rather by the relative size of the front of the brain, the forebrain (“the seat of intelligence”) compared to the rest of the brain (that handles all of those mundane animal-like functions). It turns out that Whites have a higher portion of their brains devoted to intelligence than do Blacks, which is why Blacks are less intelligent (Gould, 1981, p. 77-80).

However, Franklin P. Mall feared that Bean’s results were too good, not enough variability in his dependent variables; so, around 1909, Mall did a *blind* comparison where he didn’t know whether the individual skulls were from Blacks or Whites. And he failed to replicate Bean’s scientific findings; he failed to find a difference between Blacks and Whites in the proportion of their brains devoted to intelligence (Gould, 1981, p. 80).

### ***Field Studies***

However, scientific research is conducted in the field, as well as in the laboratory. And the brilliant Sir Francis Galton summarized informal field studies by pointing out, “Seldom do we hear of a white traveler meeting a black chief whom he considers to be his superior” (Gould, 1981, p. 76). And the brilliant philosopher, David Hume, (1776) summarized his systematic replication of Galton’s field study as follows, “I am apt to suspect the Negroes and in general all the other species of men (for there are four or five different kinds) to be naturally inferior to the whites. There never was a civilized nation of any other complexion than white . . .” (Gould, 1981, pp. 40-41). (Note that this scientific dichotomy between civilized and uncivilized nations has proven so valuable a tool for cross-cultural analyses, that not only has President George W. Bush resurrected the distinction but also the Democrats have turned it into a bi-partisan socio-political classification schema.)

However, some field studies produced strange, anomalous data. Black and White infants had the same IQ scores; but as they grew older, the IQs of the Black children rapidly fell behind the IQs of the White children. Some naively assumed that this was due to environmental factors and not an innate intellectual inferiority of the Black children. However, the world’s greatest authority on comparative animal intelligence, the Columbia University experimental psychologist, C. J. Warden, pointed out that similar results were obtained when comparing human and ape infants: Infants of both species initially had the same intelligence but as they grew older, the IQs of the apes rapidly fell behind the IQs of the human children. So, in fact, these results simply showed that Black children were more like apes than they were like White children (W. W. Cumming, personal communication, 1962).

Similarly, the mere fact that African Americans living in the north had higher IQ scores than those living in the south should not be naively interpreted to mean that the discrepancy in IQ scores was due to environmental factors; but, as was explained, those who migrated north were inherently more intelligent than those left behind. In other words, if you have any brains at all, you move north.

### ***Inferior Beauty***

Benjamin Franklin (1751) thought the inferior intelligence of Blacks was a result of their behavioral history but, of course, their inferior beauty was inherent. Furthermore, he wanted to keep the Blacks in Africa, not America, to prevent miscegenation (inter-marrying) and thereby prevent a dilution of our White blood, “Why increase the Sons of Africa, by planting them in America, where we have so fair an opportunity, by excluding all blacks and tawneys, of increasing the lovely white and red” (Gould, 1981, p. 32).

However, there was not complete agreement among experts on the esthetic quality of red: The brilliant Dr. Oliver Wendell Holmes (1809-1894) on the genocide of the American Indian—“...and so the red-crayon sketch is rubbed out, and the canvas is ready for a picture of manhood a little more like God’s own image” (Gould, 1981, p. 32).

But, still, you should not think beauty is in the arbitrary eye of the beholder, because, in 1909, Sir Francis Galton proved otherwise by scientifically measuring the beauty of the girls of the British Isles. It turns out that measurements of the girls in London showed that they scored highest on the beauty index, while girls in Aberdeen scored lowest. Furthermore, Galton obtained good inter-observer reliability—really (Gould, 1981, p. 75).

In addition, scientists not only do laboratory and field studies, they also build scientific theories to provide a framework within which to understand their empirical data. Dr. Benjamin Rush explained that Negroes don’t have the good fortune to have white skin, because they “suffer from a congenital leprosy” which, “appear(s) in so mild a form that excess pigmentation [is] its only symptom” (Greger, 2006).

### ***Inferior Morality***

Dr. Samuel Cartwright—discovered *drapetomania*—“An irrestrainable propensity to run away.” This was a common form of psychosis in North America during the 1600-1800s, where it expressed itself in an uncontrollable urge of African Americans to escape slavery. Dr. Cartwright also discovered a cure for this psychosis—surgical amputation of the toes. He shared this with the scientific community in 1851 in “Report on the diseases and physical peculiarities of the Negro race,” published in the *New Orleans Medical and Surgical Journal* (Wikipedia, 2006).

(Editorial comment: To my knowledge, this form of mental illness has not been listed in the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, perhaps because the *DSM* had not been invented at the time these illnesses were most problematic. Editorial comment: Some scholars might argue that the scientific racism we’ve been examining is enough to make James Brown shout it loud, “I’m Black and I’m proud.”)

## **Other “Inherently Inferior” Races**

### ***Inferior Intelligence***

In 1923, Princeton University Professor of Psychology, Carl C. Brigham, argued for the exclusion of southern and eastern-European immigrants who had scored poorly on tests of innate intelligence. In other words, it's crucial to keep out of the USA the Italians, Greeks, and Eastern Europeans of low intelligence, so as not to allow them to pollute our pure, Anglo-Saxon American bloodstream. And for those of low intelligence who had slipped across the border, Dr. Brigham advocated eugenics—the surgical prevention of breeding by intellectually, morally, and esthetically inferior human beings, such as Italians.

In addition, Professor Brigham had scientifically proven that American education was declining and would “proceed (to decline) with an accelerating rate as the racial mixture (became) more and more extensive.” So he created the Scholastic Aptitude Test (SAT) to keep these low-intelligence students out of our colleges and universities. (Caruano, 2006)

### ***Inferior Morality***

Scientific field studies were also applied to the area of morality. For example, Samuel George Morton (1799-1851), discovered that “the Greenland esquimaux... are crafty, sensual, ungrateful, obstinate, unfeeling”—1839 (Gould, 1981, p. 56).

## **SCIENTIFIC SEXISM**

### **Women**

### ***Inferior Intelligence***

#### ***Laboratory Studies: Craniometry***

And, “In the most intelligent races, as among the Parisians, there are a large number of women whose brains are closer in size to those of gorillas than to the most developed male brains. This inferiority is so obvious that no one can contest it . . .”--Gustave Le Bon, the founder of social psychology, Paris, 1879 (Gould, 1981, pp. 104-105). (Editorial comment: If even Parisian women have inherited less intelligence, you can imagine the intelligence of women in the rest of the world. Editorial comment on editorial comments: In spite of my introductory warning about my characteristically heavy-handed use of irony and sarcasm, and in spite of having just spent seven weeks in my Behavioral Boot Camp directly experiencing my sophomoric style, several of my excellent female graduate students had discussed among themselves whether I was in literal agreement with my editorial comments about women. No, all these comments are to show the absurdity of the point of view I'm commenting on; but if you're not inherently a member of the old boys' club, if in the past your ox has been continuously gored, it's hard to discriminate between irony and literalness about your own ox.)

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“... Conceptual thought is exclusive to masculine intellect . . . [but] it is no depreciation of a woman to state that she is more sensitive in her emotions and less ruled by her intellect. We are merely stating a difference, a difference which equips her for the special part for which she was cast . . . Her skull is also smaller than man’s; and so, of course, is her brain.” (Lang, 1971)

(Editorial Comment: So the good news is that, although women have inherited an inferior brain and thus inferior intelligence, there are still plenty of good jobs for her, especially around the home—“the special part for which she was cast” (Lang, 1971). (Yes, irony again.)

And, again, a refined craniometric analysis showed that women’s inferior intelligence was caused by the small size of their frontal lobes (“the seat of their intelligence”) compared to the rest of their brain, (Sorasio, 2002, pp. 29-30).

### *Field Studies*

“Intrinsic (genetic) differences between the sexes [are one of the main reasons] fewer women than men have top science jobs”—Dr. Lawrence Summers, President of Harvard University, 2005.

(Editorial Comments: In other words, even though women may get As in Math 101, they are biologically wired to get Cs in Math 698. Incidentally, Dr. Summers resigned as President of Harvard, in February, 2006, just before he was about to face a second no-confidence vote by Harvard’s faculty, with the result that his five-year presidency is the shortest Harvard presidency for the previous 140 years. He was replaced by a woman.)

### ***Inferior Mental Health—PMS***

#### *Field Studies*

“Female hysteria is caused by a lonely womb that wanders through the body crying for a baby”—Plato (circa 400 BC)

However, further field studies proved that the cries of the lonely womb were not the primary causes of women’s poor mental health: Women’s “raging hormonal influences” make them unfit for political office (Dr. Edgar Berman, the personal physician of our liberal vice president Hubert Humphrey, 1965-1969). Similarly, in 1975, anthropologist Dr. Lionel Tiger explained that women were condemned to be subordinate to men in the universities, because their intellectual performance was impeded by the debilitating effects of their premenstrual syndrome (PMS).

Scientific field studies have proven that a large percentage of women experience a clinically significant level of PMS—so much so that this “internal earthquake” has come to be known as the “monthly menace.” In one study, women who took daily records of their anxiety, depression, and anger found that, as menstruation drew near, they had a 76% increase in these negative emotions, along with a 193% increase in physical problems.

However, those researchers also used a blind control group composed of women who didn't know the purpose of the research was to study PMS. And the women didn't show the increases in negative emotions and physical problems as menstruation drew near. Other studies also failed to replicate the field studies that had proven the universality of PMS; instead, PMS was shown to have little impact on women's daily personal and professional lives. "PMS and its associated mood shifts are a Western phenomena" (Tavris 1992, pp. 134-158).

### ***Superior Incidentals***

Cultural feminism stresses women's biologically inherent virtues: "A typical woman . . . innately understands the basic principles of conflict resolution"--Helen Caldicott, 1985; "Non-violence is a natural method of action for women"--Peace Conference, 1983 (cited in Tavris, 1992, p. 62). (Editorial comment: This suggests that the scars my soul has acquired during interactions with ex-girlfriends 1 through 12 were self-inflicted.)

## **Sexual Orientation**

### ***Laboratory Studies***

Just as earlier craniometric researchers showed that Blacks and women were less intelligent than White men because their forebrains are disproportionately smaller, a recent researcher, Dr. Simon LeVay, has shown that homosexual men are homosexual because a region in their hypothalamus, perhaps the seat of sexual orientation, is smaller than for heterosexual men. And Drs. Bailey and Pillard did a twin study that further demonstrated that homosexuality is inherited.

However, Hubbard and Wald (1999) were skeptical. In LeVay's research, the 19 homosexual men had died of AIDS (which seems to be correlated with the size of the hypothalamus) whereas only 6 of the 22 heterosexual men had died of AIDS. Furthermore, between the two groups of men, the range in the sizes of the hypothalamuses were essentially the same; so having a large hypothalamus did not necessarily mean its owner had been heterosexual, and having a small hypothalamus did not necessarily mean its owner had been homosexual.

And in the Bailey and Pillard research, aside from the logical error of inferring causation from correlation, all the homosexual and bisexual brothers had been recruited from advertisements in gay periodicals, leaving open the possibility that they were not representative of the homosexual and bisexual populations, the possibility that "men with gay brothers were more likely to participate than men with brothers who were straight, especially if the [straight] brothers were homophobic or if the gay men were not 'out' to their families. [And] since many people believe that homosexuality is genetic, a straight man who has a homosexual identical twin might well feel that his own sexual orientation was 'suspect,' and might find the subject threatening" (Hubbard and Wald, 1999, pp. 95-97).

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### SCIENTIFIC CLASSISM

#### Intelligence

“Francis Galton, the father of eugenics, attributed both the superior intellectual and professional achievements of successive generations of upper-class Englishmen and the deplorable habits of ‘paupers’ and ‘criminals’ to their inherited biological constitutions” (Hubbard & Wald, 1999, p. 76).

#### Mental Health

Psychiatrist Dr. Benjamin Rush discovered *anarchia*—a “form of insanity that causes people to seek a more democratic society.” He also discovered the cure for this form of madness—*dunking*—the immersion of a psychiatric patient in water and telling the patient that he or she will be drowned. The resulting terror “acts powerfully upon the body, through the medium of the mind, and should be employed in the cure of madness” (Greger & United Progressive Alumni, 2006).

Incidentally Benjamin Rush was one of the signers of the our Declaration of Independence, Physician General of the Continental Army, Dean of the Medical School at the University of Pennsylvania, and father of American psychiatry (his portrait is still on the official seal of the American Psychiatric Association) (Greger & United Progressive Alumni, 2006).

Successful people have often understood that a person’s poverty or wealth results from something inside that person. In the nineteenth century, the expression was, “blood will tell.” For example, in spite of the horrible environment into which he was cast, the fictional character Oliver Twist was a virtuous, honest boy because of the good blood he had inherited from his middle-class family; he had a good bloodline. “Now geneticists have translated such perceptions into scientific terms.... In a *Science* editorial, Kolshland states ... that mental illness is ‘at the root of many current social problems: and that understanding the human genome will enable us to move beyond the current warehousing or neglect of these people’” (Hubbard & Wald, 1999, pp. 60-61). Although poverty may no longer be a result of bad blood, it is a result of bad genes.

#### Criminality

##### *Field Studies*

From the early days of the eugenics movement, scientists have tried to find a genetic basis for criminality. These attempts have been spurred on by studies such as one recently reported in the *New York Times*, ... “more than half of all juvenile delinquents imprisoned in state institutions and more than a third of adult criminals...have immediate family members who have also been incarcerated.” (Hubbard & Wald, 1999, p. 105)



### ***Laboratory Studies***

Though such field studies are open to multiple interpretations, the discovery of a gene for criminality might not be. Women have two X chromosomes, XX, and most men one X and one Y chromosome, XY; however, an occasional man is XYY. Now men need one Y chromosome for their testes to develop. So, probably if they have an extra Y chromosome, their testes will develop even more. And probably, if their testes are more developed, they will have more testosterone. And probably, if they have more testosterone, they will be more aggressive. And probably, if they are more aggressive, they will be more likely to be criminals. So we've probably discovered the genetic basis of male criminality.

And several scientific field studies have proven this theory. For example, scientists found that men in a high-security mental hospital were 20 times more likely to be XYY than were those of us on the outside. And scientists replicated these results in other mental hospitals and prisons.

However, further scientific study found that most men were put in prison for non-violent crimes. And most XYY men outside of prison led non-aggressive, non-criminal lives. So the validity of the criminality gene became less clear.

### **SCIENTIFIC MENTALISM**

As long as the brain is at rest the man enjoys his reason; depravement of the brain arises from phlegm and bile; those mad from phlegm are quiet, depressed, and oblivious; those from bile excited, noisy, and mischievous.—Hippocrates, 460? - 377? BC (Encarta Staff, 2006)

### **Madness**

#### ***The Genetic Transmission of Mental Illness***

In the early, 1900s it became clear that the mentally ill had defective germ plasm which could be transmitted to their offspring; so, in accord with eugenic principles, they were prevented from marrying, were incarcerated, or were sterilized. As Sir Francis Galton had pointed out, those who had severe mental illness, had even worse germ plasm than Blacks, the poor, and criminals.

Around the same time, large numbers of Jews, Italians, and Slavs followed the earlier Irish and Germans in migrating to America and bringing their bad germ plasm with them. This produced an epidemic of insanity, with an extremely disproportionate number of the insane being among the immigrants.

But immigrant groups that brought the insanity germ plasm also brought other problems. With the help of a Carnegie Foundation grant, Harvard zoologist Dr. Charles Davenport showed that Mendelian genetics described the inheritance of nomadism and shiftlessness. Furthermore, the Italian, Greek, Hungarian, and Southeastern European

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immigrants brought genes that caused larceny, kidnapping, assault, murder, rape, and sexual immorality. And the Jews brought genes that caused thieving and prostitution.

Then, with the support of Dr. Davenport, Dr. Aaron Rosanoff showed that Mendelian genetics also described the inheritance of mental illness. In his initial analysis of the family histories of 72 insane patients, he only found 43 family members who had been hospitalized for mental illness, not nearly enough to support the Mendelian model of inheritance. But then he realized that a neuropathy did not always result in hospitalization. The manically depressive insane could have mentally ill relatives with neuropathic genes that would cause them to be high strung, excitable, dictatorial, abnormally selfish, periodic drinkers or prone to awful tempers or severe blue spells. And schizophrenic patients could have mentally ill relatives with neuropathic genes that would cause them to be cranky, stubborn, nervous, queer, restless, suspicious of friends and relatives, religious cranks, or excessive worriers. So a reanalysis of the data discovered 351 relatives with such neuropathy, almost exactly as the Mendelian model predicted.

The scientific discovery of the genetic basis of so much pathology caused many civic-minded people and institutions to actively campaign for a eugenic solution to the pollution of America's gene pool. These civic minded included Andrew Carnegie, who brought us public libraries; John D. Rockefeller Jr., who brought us the Rockefeller Institute for Medical Research, the Rockefeller center, and the Rockettes; George Eastman, who brought us the Kodak camera; Theodore Roosevelt, who brought us the Teddy Bear; John Harvey Kellogg, who brought us Battle Creek; Supreme Court Justice Oliver Wendell Holmes, who brought us the legalization of involuntary sterilization; Victoria Woodhull, the early American feminist; several presidents of the American Psychology Association; several presidents of the American Association for the Advancement of Science, the American Museum of Natural History, the Ivy League and many other universities; and the *New York Times*.

And, as it turns out, sterilization of the mentally ill not only benefited society, but also benefited the sterilized patient. For men, it allowed for the conservation of sperm, the elixir of life, with a resultant improvement in both mental and physical health. Sterilization also reduces the size of the abnormally large testicles the mentally ill seem to have and thereby rejuvenates them. It brings about better composure of the nervous system. And, after sterilization, mentally ill women no longer need fear the rigors of childbirth.

Although some American scientists and legislators advocated the extermination of the mentally ill, it was the Germans who actually implemented this social intervention. Over the course of 18 months, they exterminated 70,000 mentally ill Poles and would have made more progress, but they needed to ship the gas chambers to concentration camps where they exterminated the Jews and others without value (Whitaker, 2002, pp. 50-66). In the US during the 1950s, surgeons sterilized about 4,000 people to prevent the genetic transmission of their mental illnesses (Whitaker, 2002, p. 142).

### ***The Biological Basis of Mental Illness and Its Treatment***

#### *Excessive Brain Blood*

It had long been clear that the proximal or immediate cause of madness is morbid and irregular actions in the blood vessels of the brain, which in turn can result from more distant causes such as masturbation, intense study, too much imagination, extreme weather, worms, etc. And with this understanding of the etiology of madness, Dr. Benjamin Rush, America's first authority on madness, discovered a cure for madness, especially mania. The cure consists of a large number of repeated bleedings to remove a few quarts of blood from the patient.

Dr. Rush also empirically discovered several other cures: producing head and neck wounds which would be kept open from months to years to let the excess heat escape from the brain; spinning therapy for patients who suffered from melancholy (torpid madness) and which consisted of being strapped to a horizontal board and rapidly spun, to increase the blood circulation in the brain; and what he called the *tranquilizer*, a chair into which a patient was strapped immobile for 4 to 24 hours to keep excess blood from returning to the brain (Whitaker, 2002, pp. 14-16).

Similarly, problems of blood flow were shown to cause mental illness, through the demonstration of the effectiveness of needle shower therapy (high-pressure, cold water) that stimulated the heart and got the blood flowing to the internal organs, thereby rousing depressed patients (Whitaker, 2002, p. 76).

#### *Excessive Neural Activity*

However, as the population moved from tranquil farm life to high-pressure city life, excess blood stopped flowing to the head and, thus, stopped causing madness. Instead, nerves became exhausted and started sending faulty impulses to the brain or from one part of the brain to another. This explained the apparent superiority of the revolutionary, new treatment practiced by the Quakers—pastoral environments, recreation, warm baths, and kindness, a sort of precursor to positive behavioral support. The neurological reason for the effectiveness of this treatment was that it restored and soothed the irritated nerves (Whitaker, 2002, pp. 14-16).

But there were other causes of insanity: Scientists discovered that women are driven insane by excessive worry about their vaginas and clitorises. Furthermore, removing the uterus and ovaries of insane women improved their mental health in 50% of the cases. Also masturbation seemed to cause abnormal enlargement of the clitoris which lead to insanity. However, removing the clitoris did not always stop masturbation nor eliminate nymphomania.

Madness could also occur just because the nervous system was exhausted and in need of an extensive rest. So, in addition to using barbiturates to keep manic patients in order, this wonderful drug could be used to put the patients in a deep sleep therapy—asleep for days or weeks, with a resultant improvement in up to 70% of the psychotic patients. But deep sleep therapy also had a resultant 6% mortality rate; so it gradually fell into disuse.

*Dysfunctional Hormonal Glands*

Another cause of psychoses was dysfunctional hormonal glands. Injection with sheep thyroid caused 50% of the insane people to improve, though only after recovering from the resultant feverishness, weight loss, and decrease in red blood-cell counts.

*Dysfunctional Brain Cells*

*Surgery.* Dr. Henry Cotton realized that bacterial infections also could cause brain deterioration, which in turn could cause mental illness. Dr. Cotton found such infection hidden in his patients' teeth. So he pulled out their infected teeth. But unfortunately, the mental health did not improve for the 50 chronic mental patients he treated in this way, perhaps because their brains had already deteriorated too much. So Dr. Cotton moved into an early intervention mode, pulling the teeth he diagnosed as infected on newly admitted patients, those not yet chronic, with a 25% rate of improvement. And although this may have been clinically significant, it did not meet Dr. Cotton's high standards; so he started also removing their tonsils, with another 25% being cured. He went on to remove the colon, gall bladder, appendix, fallopian tubes, uterus, ovaries, cervix, and seminal vesicles producing an 85% cure rate, with only a 3% relapse rate. And, as you might suspect Dr. Cotton's amazing scientific breakthrough garnered great praise from fellow physicians as well as the popular press.

Unfortunately, other medical researchers failed to replicate Dr. Cotton's results. So a thorough review of his data showed that, instead of 85% of his patients being cured, 43% (over 100 patients) had died because of his surgical interventions (Whittaker, 2002, pp. 80-82).

*Insulin coma therapy.* A more precise analysis of the brain explained the success of another therapy. Brain cells infected with mental illness suppressed the function of mentally healthy brain cells; so if the sick cells were killed, the healthy cells could once again function. Of course, the center for both mental health and mental illness is in the cerebral cortex. And a way to precisely kill only the mentally ill cells was *insulin-coma therapy*, though this could require up to 60 sessions of insulin-induced coma, with a resultant 70% cure and an additional 18% improvement. Research throughout Europe replicated these results. And the popular media gave this medical breakthrough the extensive coverage it deserved.

Dr. Manfred Sakel invented this insulin-coma therapy in 1933. But, unfortunately, and in spite of the earlier replications of his research, further follow up failed to replicate these results: In 1941, it was realized that insulin-coma therapy resulted in an 80% rate of return to the hospital, with only 6% remaining "socially recovered" three years after treatment, a much lower rate of maintained recovery than in control groups who had not received insulin-shock therapy. In addition, insulin-shock therapy had a 5% mortality rate. Nonetheless, insulin-coma therapy was commonly practiced into the mid-1950s.

*Electroconvulsive therapy.* In 1938, inspired by a visit to a slaughter house where he observed pigs being stunned by electric brain shock to quiet them down so their throats could be slit, Dr. Ugo Cerletti invented another way to curtail the mentally ill cells in the

cerebral cortex—pass electrical current through the brain to produce a seizure, a convulsion—*electroconvulsive therapy (ECT)*. An early problem with ECT was that up to 40% of the patients broke bones while thrashing around in their convulsions, but temporarily paralyzing the patients with curare prevented this. The therapeutic effects of ECT were a decrease in undesirable behavior along with a decrease in desirable behavior, depending on the number of ECT sessions. For example, a 17-year-old girl had run off to the city with a boyfriend whom the parents suspected of being homosexual. And before that, she had often read the French author Marcel Proust; so her parents committed her. After 62 sessions of ECT, she no longer read Proust and no longer showed any inclination to run off to the city with a boyfriend who might be homosexual. In addition, she was incontinent, walked around naked, and didn't recognize her parents. The treating physician considered this a successful therapy.

ECT was not only the medical treatment of choice for adults and teenagers but also for schizophrenic children who could be made less excitable, less withdrawn, and less anxious with two ECT treatments a day for 20 consecutive days. This even worked with a two-year-old toddler.

However these results have been considered somewhat controversial; and depending on the number of ECT treatments needed, like up to 100, the negative side effects seemed to be brain hemorrhages, neuronal degeneration, permanent memory loss, permanent loss of learning skills, etc. Fortunately, there were other medical treatments for dysfunctional brain cells.

*Prefrontal lobotomy.* In the 12<sup>th</sup> century, surgeons drilled holes through the skulls of the mentally ill in order to let the demons escape from the brains of their patients, a technique called *trepanning*. However, by the 20<sup>th</sup> century, it was clear that dysfunctional cells in the brain were an even bigger cause of mental illness than were evil demons. So neurologist, Dr. Egas Moniz, invented the *prefrontal lobotomy*, a surgical technique that allowed for a much more precise attack on those diseased brain cells than did either electroconvulsive therapy or the 12<sup>th</sup> century trepanning.

Because schizophrenia and emotional disorders were caused by pathological thoughts stored in clusters of cells in the prefrontal lobes, the best way to get rid of those thoughts was to disconnect the brain cells containing them, so that they could no longer disturb the patients.

After considerable empirical work, Dr. Moniz developed a surgical ice pick that he could insert through the holes drilled in the patient's skull to destroy the precise cells containing those pathological thoughts.

After more years of hard work and continuous quality improvement, neurosurgeons refined the technique of performing the prefrontal lobotomy to the point where, instead of laboriously drilling through the skull, a highly skilled surgeon could use a pair of ice picks to poke a hole in each eye socket and simultaneously perform the lobotomy on each lobe, with one hand on each of the two ice picks protruding through each eye socket exactly seven centimeters into each prefrontal lobe. This allowed a surgeon to perform the prefrontal lobotomy in less than 10 minutes as an in-office procedure—an amazing and practical medical breakthrough.

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The benefits of disconnecting these dysfunctional brain cells were equally amazing: 7 of 20 patients cured, 7 significantly improved, and 6 unchanged, with no negative side effects. In 1949, Dr. Moniz received the Nobel Prize in Medicine for his pioneering work.

In follow-up research, Drs. Freeman and Watts did a prefrontal lobotomy on a 63-year-old woman diagnosed as a “master at bitching” and who made her poor husband “lead a dog’s life.” The woman was depressed, suicidal, and concerned about growing old. After disconnecting the brain cells containing the bad thoughts, she was nicer than she’d ever been and was “content to grow old gracefully.” In another case study, after prefrontal lobotomy, an extremely violent “Negress of gigantic proportions” became so docile they could “slap her on the behind,” with no aggressive reaction. Both were clinically significant successes.

Drs. Freeman and Watts also did early intervention surgery with patients who had suffered mental illness for less than a year. They had spectacular results, with the patients having “radiant” faces through which their inner happiness shown. Eighty percent of their 623 patients had been helped, with no negative side effects.

Although there were no negative side effects, the patients’ behavior was changed in many interesting ways. Following a lobotomy, the patients would often be incontinent, stay in their beds like motionless “wax dummies,” defecate in wastebaskets rather than toilets, and show no sense of shame when seen naked. About 25% stayed this way for the rest of their lives, but they were no longer violent or hostile, as they had been before surgery, though, of course such patients who had been working before the surgery could usually no longer return to work. The most successful results were those who could return to work, though Drs. Freeman and Watts warned the families that the cured patients would not adapt well to work and would often be fired. The doctors also warned the families that their lobotomized patients often had considerable problems in sexual adjustment, pawing their spouses in public; and refusal of sexual gratification could occasionally result in a savage beating of the wife who refused. Furthermore, even the most successful would never be able to give good advice; and they would lose most of their pre-lobotomy interests and skills in such areas as music, painting, philosophy, psychology, world affairs, medieval history, spirituality, and religion. However, their intellectual skills and interests were exactly what had gotten those patients in trouble, in the first place, as their over-active imaginations had produced their mental illnesses; and the prefrontal lobotomies had brought their imaginations down to earth (Whitaker pp. 107-127).

### *Dysfunctional Brain Chemistry*

I will discuss only briefly the antipsychotic medications as their history, use, effectiveness, and side effects are well described elsewhere (Wyatt & Midkiff, 2006, and Wong, 2006).

*Neuroleptics.* As it became clear that excessive neural activity mediated by dopamine was the real cause of schizophrenia, neuroleptics, like chlorpromazine, were used to prevent this dopamine-mediated neural activity in the brain. These drugs were scientifically proven so effective in curing schizophrenia that both the popular media and

the professional journals enthusiastically spread the word. As a result, neuroleptics were almost universally used in the US, though over the years, their effectiveness became less and less clear, and it became more and more clear that the reason for their apparent effectiveness was simply that they decreased overall performance, functional performance as well as dysfunctional performance, making the residents in the mental hospitals easier to handle, as had electroconvulsive therapy and prefrontal lobotomies; and it also became more and more clear that the drugs had serious, negative side effects, such as Parkinson symptoms, as well as early death (Whitaker, 2002, pp. 149-159).

*Atypicals.* Fortunately, biomedical researchers finally found a better way of blocking the neural activity in the brain. In short, they had finally discovered the real cure for schizophrenia—drugs called *atypicals*. These drugs cure or reduce schizophrenia by blocking not only the dopamine receptors but also the serotonin receptors in the brain, without the disastrous side effects of neuroleptics. And these new atypical drugs have been scientifically proven so safe and effective with schizophrenia that psychiatrists are now proactively using them in early intervention, with disruptive two-year-old toddlers and with teenagers who are deemed at risk of becoming schizophrenic, though they are not actually schizophrenic at the time of treatment.

Unfortunately, much of the research proving the effectiveness of atypicals involved research protocols carefully designed to bias the results in favor of those atypicals. In the clinical trials, the scientists would abruptly withdraw their subjects from their current medication; and this abrupt withdrawal would produce adverse physical and behavioral effects. The control group would stay in that cold-turkey condition, while the experimental group would immediately receive the atypical medication, preventing those problems of immediate withdrawal and thereby biasing the results in favor of the atypical drugs. And, when comparing the atypicals to the currently maligned neuroleptics, they would use an excessively large single dose of the neuroleptic drug; and this excessive dose would then produce medical problems; at the same time, these researchers would use smaller, repeated doses of the atypical drug. In this way, the scientists proved that the atypical drug was much safer than the neuroleptic. In addition, the pharmaceutical industry would pronounce that an atypical had no serious side effects, when, in fact, one in every thirty-five subjects experienced what the FDA considered life-threatening side effects, about half of which were suicides or suicide attempts. Also, the pharmaceutical industry would support multiple publications in various medical journals of single clinical trials, giving the deceptive impression of multiple replications of their positive results.

Then physicians not hired by the pharmaceutical companies failed to replicate this original research that the pharmaceutical industry had sponsored. The independent researchers found the atypicals caused Parkinsonism in 59% of their patients, an even higher percentage than the 52% caused by the maligned neuroleptics. Other researchers found that the atypicals produced a laundry list of serious medical side effects and that the drugs had either no benefits or no more than the maligned neuroleptics. However, while the public had been previously exposed to much positive coverage of the atypicals

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through the popular media, they have rarely heard about the problems later uncovered (Whitaker, 2002, pp. 253-286).

### ***Summary of Biological Determinism and Mental Illness***

The 1961 statement by the Joint Commission on Mental Illness and Mental Health seems just as relevant in 2006 as it did then: “This is a field where fads and fancies flourish. Hardly a year passes without some new claim, for example, that the cause or cure of schizophrenia has been found. The early promises of each of these discoveries are uniformly unfulfilled. Successive waves of patients habitually appear to become more resistant to the newest ‘miracle’ cure than was the group on which the first experiments were made” (Whitaker, 2006, p. 253).

“Unfortunately, at this point each correlation that results in a scientific paper tends to give rise to a news headline. When later scientific papers show the correlation to be false, that sometimes rates another headline, but often it does not. ... The claims about manic-depression and schizophrenia genes were withdrawn soon after their announcement and the gene for alcoholism met the same fate later, although another one has since crept into the news” (Hubbard & Wald, 1999, pp. 65-66).

## **MOTIVATIONS FOR BIOLOGICAL DETERMINISM**

We’ve been reviewing the extensive efforts of scientists to explain complex behavior-environment interactions in terms of biological/genetic causes. This is called *biological determinism*. Now let’s look at some possible motivations for their persistence.

### **Financial benefits**

#### ***The Pharmaceutical Industry***

##### ***PMS***

The move toward medicalization of PMS was and is actively supported by drug companies, ... which stand to make a great deal of money if every menstruating woman would take a few pills every month. ... Drug companies sponsor research conferences and ‘medical education’ seminars on PMS. ... It is to the drug companies’ interest, ... if physicians and the public confuse the small minority of women who have premenstrual or menstrual problems with the majority who have normal, un-drug-worthy menstrual cycles. (Tavris 1992, p. 11)

##### ***Schizophrenia***

Eventually, the neuroleptic market became crowded with too many competitors; and also the neuroleptic patents were beginning to expire, leaving the profits for the pharmaceutical industry too vulnerable to inexpensive generic brands, with the result that the industry earned a total of only \$400 million from their neuroleptics from 1980 to 1990, chump change when one new blockbuster drug could earn that much in a single year. The income from their neuroleptics had dwindled to a relative trickle.



So, the industry needed a new batch of patentable blockbusters. And with a few years of diligent research and diligent marketing, the atypical drugs brought the industry \$2.3 billion in a single year (Whitaker, 2002, pp. 257-261).

#### *The Addictive Personality*

“Cigarettes and tobacco products account for about 30 percent of all cancers .... (because) ... the six major U.S. cigarette companies produce 600 billion cigarettes a year ....” But we turn down the heat on the tobacco companies, when we blame the victim, the nicotine addicts and not the nicotine drug pushers. But it’s not exactly the victim/addicts’ fault either, because they suffer from a genetically caused “addictive personality.” So, rather than implement performance-management contingencies and environmental constraints that would decrease the manufacture, sale, and consumption of this drug of abuse, the government sponsors research on the biological basis of the “addictive personality” (Hubbard and Wald, 1999, p. 86).

#### *Researchers*

The belief that genes determine, and therefore can be used to predict, a wide range of significant traits and diseases is essential in order to marshal the popular and congressional support ... [molecular biologists] need. If genes can be implicated only in relatively rare conditions such as Tay-Sachs disease, sickle-cell anemia, or cystic fibrosis, it is difficult to justify spending increasing amounts of money for the analysis of DNA at a time of shrinking budgets for other lines of biomedical research and for all sorts of social and medical services. ... [However,] I do not mean to suggest that molecular biologists are deliberately deceiving people .... (Hubbard & Wald, 1999, p. 117)

Also, medical researchers now get big grants to study the biological basis of the “disease” PMS (Tavris, 1992, p. 141).

Furthermore, medical researchers have developed profit-making research centers to do the drug research for the pharmaceutical industry, with the result that the research industry itself began earning \$3.5 billion a year. One research business hired attractive women to talk male schizophrenic patients into participating in drug trials because the pharmaceutical industry paid the research centers \$10,000 to \$25,000 per head (Whitaker, 2002, pp. 263-267).

#### *Physicians*

##### *Madness*

For a brief time in the 1800s, the medical model of behavioral problems (e.g., lunacy) was replaced by a non-medical “moral-treatment” approach, where the patients/clients were housed in pleasant, supportive environments, with no medical treatment for their behavioral problems. And moral-treatment asylums were built by Quakers and others, with results suggesting that this model was much more effective and

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much less harmful than the treatments resulting from the medical model. However, physicians quickly formed the Association of Medical Superintendents of American Institutions for the Insane; and, in turn, this medical association quickly passed a resolution that only physicians should run asylums, with the result that, soon, the medical model again prevailed; and the physicians and physician-administrators had more jobs (Whitaker, 2002, pp. 24-29).

In the 1930s, neurosurgeons had slim pickings as far as patients were concerned, being limited to removing the occasional brain tumor, with resulting salaries less than \$5,000 per year. However, prefrontal lobotomies offered these underemployed physicians a new, larger clientele producing fees up to \$1,500 per mentally-ill patient. "Frontal lobotomy was returning great dividends to the physiologists [neurosurgeons]. But how great the return is to the patient is still to be evaluated," as Dr. Stanley Cobb of Harvard Medical School said in 1949.

In addition, physicians did cost-benefit analyses indicating that state mental hospitals could save considerable money by performing prefrontal lobotomies, because a large percentage of the residents would become so docile they could be deinstitutionalized; and even the 10% who would die because of surgery-induced cerebral hemorrhaging would save the hospitals considerable money, as the deceased residents would no longer need to be cared for (Whitaker, 2002, p. 130).

In the United States, over 10,000 patients received prefrontal lobotomies in the 10 years from 1940 to 1949, and the rate increased to about 10,000 in the two years from 1950 through 1951 (Whitaker, 2002, p. 142). Great financial benefits all around. However, these days it's so hard to find a neurosurgeon willing to do the surgery for you that, if you want a prefrontal lobotomy, your best bet is to down a 6 pack and then drive your car 80 miles an hour on a curvy country mountain road.

And, the profit-making research centers started paying local MDs over \$300,000 a year for helping to run their clinical trials (Whitaker, 2002, pp. 263-267).

In addition, medical organizations profited from the pharmaceutical industry's bio-deterministic model of complex behavioral problems. From 1950 to 1960, the amount the pharmaceutical industry paid the American Medical Association's journals rose from \$2,600,000 to \$10,000,000. And the journals stopped requiring the pharmaceutical industry to show proof of their advertising claims, with the results that those advertisements generally exaggerated their drugs' benefits and downplayed or hid the negative side effects as shown by a US Senate Subcommittee probe. Also, the committee found that medical journals often refused to publish articles critical of the pharmaceutical industry for fear they would kill the industrial goose that had laid the subsidizing golden eggs, the advertising revenue. In addition, these medical journals published "scientific" articles written by writers hired by the pharmaceutical industry rather than the medical researchers who had done the experiments and clinical trials and who might compromise the sales of their drugs by presenting a more balanced evaluation (Whitaker, 2002, p. 149).

*The Diagnostic and Statistical Manual of Mental Disorders (DSM)*

If you consider your client with a behavioral problem to be a medical patient and if you can find his or her mental disorder listed in the *DSM*, then the insurance company will pay you for providing the medical therapy, otherwise, probably not. And if the problems of some of your clients are not listed in the *DSM*, do a new edition of the *DSM*, put a label on the client's behavioral problem, and add the label to the list of mental disorders. As a result, the list of *DSM*-certified mental disorders has grown from 50 in the 1952 edition of the *DSM* to 318 in the 2000 edition, including mental disorders responsible for tobacco dependence and marital conflict. For example women frequently suffer from the "self-defeating personality disorder," symptoms of which are covering for another person's problems, worrying about other people's problems, assuming too much responsibility in relationships, ignoring their own needs to meet the needs of others, etc.

And how does a behavioral problem get labeled as a medical problem and certified as a mental disorder by the *DSM*? A few psychiatrists vote from those potential mental illnesses nominated, with essentially no empirical data and no reliability of diagnosis (no independent-observer reliability measures as to whether clients/patients have this mental disorder/. However, occasionally a mental disorder is decertified. For example, homosexuality was voted out as a mental disorder, in a large part as a result of the valiant, broadminded efforts of Dr. John Spiegel, the president-elect of the American Psychiatric Association, who, after he died, turned out to have been a closet homosexual (Satinover, 2005).

Similarly, masturbation was voted out, raising the question as to what those voting psychiatrists had been doing in their closets. On the other hand, incidence of penis envy and drapetomania evidently had become so low by the time of the first edition of the *DSM* that the psychiatrists saw no need to list those two low-occurrence mental disorders in the *DSM*.

The *DSM* doesn't only mean big money for psychiatrist; it also means \$1,000,000 per year for the American Psychiatric Association, the publishers of the *DSM*. In addition, once listed in the *DSM*, a behavioral problem is reified into an entity, a thing; and this reification then justifies the medical-research industry receiving large amounts of money to search for the neurotransmitter or gene that caused this invented entity, this mental disorder. And the pharmaceutical industry can charge the insurance industry large amounts of money for the pills they've invented to cure the invented mental disorder.

But the *DSM* classification has the negative side effect of tending to preclude the possibility that behavioral contingencies are responsible for the cause and maintenance of the behavioral problem. For example, why is this woman having problems with her marriage? Because she has a self-defeating personality disorder. And this *DSM*-supported victim blaming leads us away from a search for dysfunctional behavioral contingencies in the marriage (Tavris, 1992, pp. 176-192).

*The Bigger Financial Picture*

Beware the military-industrial complex.—President Dwight D. Eisenhower, 1961

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Beware the psychiatric-pharmaceutical-industrial complex.—Professor Richard W. Malott, 2007

But it's worse than that; the more I learn about the way the world works, the more depressed I get:

- Not only is pharmaceutical-industry money corrupting our efforts to understand and reduce behavioral (psychological) problems, but food-industry money is corrupting the nutrition and health professions (Campbell & Campbell, 2004);
- Dollar greed seems to play a major role in physicians performing 650,000 high-risk hysterectomies per year, with as many as 90% unnecessary—"hip-pocket hysterectomies," Tavis (1992, pp. 162-165);
- Public universities attempting to garner prestige and thus more money by investing their scholarship money in the "hiring" of academically gifted students, usually from relatively well-off families (like they "hire" athletically gifted students) rather than using that scholarship money to help students who can't otherwise afford to go to the university and thereby improve their lives and the lives of their future children;
- Votes by our members of congress and decisions by our presidents being bought by contribution money and junkets from the oil industry, the food industry, the tobacco industry, the fire-arms industry, the auto industry, the industry industry and transmitted by corrupt lobbyists with their ability to corrupt others (reference—essentially any NPR news broadcast, any time, any day).

In general, we should beware the \$-producing medical establishment etc., just as we should beware the \$-producing used car salesman (salesperson). The corrupting influences of money are getting me so clinically depressed that I started looking for a dollar-free communist country to move to, but even red China has now been corrupted by big money. There's no place to hide.

Power tends to corrupt; absolute power corrupts absolutely.—Lord Acton, 1887

Money tends to corrupt; absolute money corrupts absolutely.—Professor Richard W. Malott, 2007

### *The Status Quo*

Those who receive the greatest benefits from the status quo argue for biological determinism as a justification for the inequality in the distribution of those benefits—men vs. women, rich vs. poor, slave holders vs. slaves, current residents vs. immigrants, etc. In other words, women are genetically programmed to be mothers and housewives, while

men are genetically programmed to be executives. (Honey, I wish you had that mathematics gene, but seeing as you don't, would you mind doing the dishes, mopping the floor, and ironing my shirts after you nurse the baby, while I go off to my office in the Mega-Buck Bank Building? And oh, yes, I am genetically programmed to chase that cute little secretary.)

Similarly, wealthy Whites are genetically programmed to rule the world, while poor people and people of color unfortunately lack those crucial high-IQ/get-up-and-go genes. (Honey, I wish you had them high-IQ/get-up-and-go genes, but seeing as you don't, would you mind doing the dishes, mopping the floor, and ironing my shirts after you nurse baby, while the missus and I go off to the Mega-Buck Bank Building Banquet? And when we get back, you can take a couple hours off to visit your son who was genetically programmed to end up in his new home, Big State Prison; such a pity.)

You think I'm kidding? Then check out *The Bell Curve*, a [recent] best-selling, scholarly book, written by a couple of guys with real high-IQ/get-up-and-go genes. ... The divine right of kings is alive and well in America today (Malott & Suarez-Trojan, 2004).

Some quote the Bible or the Koran to defend the status quo and others quote those great books to advocate for social change; in other words, the same source can be used to advocate for the status quo and social change. But essentially no one quotes biological determinism to advocate for social change; this sources is used only to defend the status quo.

"Now the fact that the more powerful use biological determinism to justify their suppression of the less powerful doesn't necessarily mean biological determinism is wrong. But it might give a person pause to consider." (Malott & Suarez-Trojan, 2004) Or as Gould said, "Since biological determinism possesses such evident utility for groups in power, one might be excused for suspecting that it also arises in a political context, despite the denials ..." (1981, p. 21).

### ***People with Dysfunctional and/or Culturally Unaccepted Behavior***

People with culturally unaccepted behavior and reinforcers and people with dysfunctional behavior argue for the biological causation of those behaviors and reinforcers and thereby may reduce their blame and guilt.

Many people seem to believe that homosexuality would be more accepted if it were shown to be inborn. Randy Shilts, a gay journalist, has said that a biological explanation "would reduce being gay to something like being left handed...." This argument is not convincing. ... Quite the contrary. African Americans, Jews, people with disabilities, and also homosexuals have been persecuted for biological "flaws," and even exterminated to keep them from spreading biological "contamination." [Nonetheless, early turn-of-the-20<sup>th</sup>-century reformers were inclined to punish "perverts," those who chose homosexuality but not to punish "inverts," those who were biologically determined to be homosexual.] (Hubbard & Wald, 1999, pp. 94-95)

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In support of this analysis of escape and avoidance from criticism and attack, much of the search for biological components in homosexuality has been carried out by gay researchers. ... *Newsweek* quotes LeVay as saying, "I felt if I didn't find any [difference in the hypothalamuses], I would give up a scientific career altogether" (Hubbard & Wald, 1999, pp. 94-98).

And there's the obesity gene: "Both my parents were obese too; so don't blame me for being obese because there's nothing I can do about it."

And there's PMS: "Like all psychological diagnoses, ... PMS cuts two ways: It validates women, but it also stigmatizes them. ... PMS is also often a reification used to explain, justify, and comfort women in distress ..." (Tavris, 1992, pp. 142-158).

### ***People Responsible for Those with Dysfunctional and/or Culturally Unaccepted Behavior***

People responsible for those with culturally unaccepted behavior and reinforcers and for people with dysfunctional or inadequate behavior argue for the biological causation of those behaviors and reinforcers and thereby may reduce their own blame and guilt.

### *Education*

Over the past few decades, the educational establishment has increasingly countered ... [the] mounting dissatisfaction [with its ability to teach our children] by looking for problems in the children, rather than facing the problems in the learning environment or the broader society. Schools have developed long lists of diagnostic labels for so-called learning problems [reifications such as *dyslexia*, *attention deficit disorder*, and *defective short- or long-term memory*], which get interpreted as though the label itself provided information about the reasons a child is not doing well in school. Educators feel relieved if they can somehow attribute a child's problems to "underlying" biological causes, even when they cannot point to specific biological evidence. ... Of course, children do experience learning problems, and such problems may sometimes be related to biological dysfunctions. But I distrust the obvious relief with which some teachers, school administrators, and parents locate the source of such problems within the children's genes or brains (Hubbard & Wald, 1999, pp. 128-129).

I observe the same sort of victim blaming by us college professors when our students fail to do as well as we'd like (Malott, 2005b).

### *Industry*

Employers have used the concept of the "accident-prone" worker to shift responsibility for industrial accidents onto the people who are injured. For example, though there are consistently more accidents on the graveyard shift, such accidents are often blamed on the carelessness of the individual workers rather than on the difficulty of working through the night. By the same token, many employers now embrace the concept of genetic "hypersusceptibility" to explain why some workers respond to lower levels of

dust or other contaminants than the “average worker” does (Hubbard & Wald, 1999, p. 131).

And, a few years ago, I attended a colloquium given by a behavioral safety expert who explained that many mine workers injure themselves to collect compensation—one of my favorite examples of victim blaming.

### **Conclusions of Motivations for Biological Determinism**

Distressing as it is for us scientists, it looks like science is for sale. Actually, it looks like everything thing’s for sale (except me ... but that may be just because no one’s made an offer). And we’re for sale not only for dollars, but also for maintenance of the status quo, and to escape responsibility and avoid blame. However, as subject to cultural and financial bias as it is, science is still the best game in town for approximating the objective truth. It’s just that like, everything else, including this paragraph, we need to take science with a grain of salt.

### **THE COSTS OF VICTIM BLAMING**

The behavior of victim blaming can be part of an escape contingency that allows those responsible for the problem to escape the blame for that problem. Also, the behavior of victim blaming can be part of a reinforcement contingency that results in the very gratifying outcome of the blamer’s feeling superior to those wretches who aren’t made of the high-quality material that he or she is. Furthermore, as we’ve seen, bio-deterministic victim blaming can be of great financial benefit to the blamers, for example, the psychiatric/pharmaceutical-industry complex. Unfortunately, victim blaming also directs us away from the environment and behavioral contingencies as probable causes of the victim’s problems and thus directs us away from probable solutions to those problems.

### **Sexism**

[The professional woman’s dilemma:] whether a woman is supposed to behave like a man or a woman—is played out a thousand times a day....leaving her child in day care... leaving her job temporarily to stay home...crying at work...spending endless hours taking care of her husband and ailing parents. ... [These dilemmas] will persist as long as women look exclusively inward to their psyches and biology instead of outward to their circumstances . . . . [But] most self-help books direct attention to women’s alleged inner flaws and psychological deficiencies... fear of independence, fear of codependence, fear of success, fear of failure, or fear of fear. Researchers in the fields of science, medicine, and psychology all celebrate a renewed emphasis on biological explanations of women’s behavior and a medical approach to women’s problems and their cures. . . (but not men’s)....Hormones “explain” many problems women have. ... [But] postpartum depression may be a function of pre-partum depression, “inadequate social support, reduced closeness to husband, and poor self-esteem.” ... It may be due to having three babies in four years, three babies in diapers with no help from others [like the husband who is out of town in the Navy].... And how do we account for the

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difference in rate of depression between men and women? Poverty, unhappy marriage, reproductive stress and sexual and physical abuse are stronger factors than biological conditions [according to an American Psychological Association study]. (Tavris, 1992, pp. 310-311)

### Health

For both men and women, mortality is negatively correlated with wealth. [But] by focusing our attention on microorganisms or genes, scientists succeed in drawing our attention away from societal influences. When physicians or policy makers treat smoking, alcoholism, cancer, or heart disease as individual health problems, they ignore the societal and environmental factors that contribute to these conditions. [For example, one high-placed Washington administrator at the National Institute of Drug Abuse explained to me that people may inherit addictive personalities.] In 1988, ... the infant mortality rate for African American babies in Boston was three times as high as for European American babies. (Hubbard & Wald, 1999, pp. 59-62)

In general, the government and government-sponsored science establishment tends to concentrate on biologically determined causes of medical and social problems rather than the environmental causes, whether that environment be a learning environment or an environment full of pollutants.

### Morality

As Darwin said, "If the misery of our poor be caused not by the laws of nature, but by our institutions, great is our sin" (Gould, 1981, p. v). And, as Condorcet said, "[They] make nature herself an accomplice in the crime of political inequality" (Gould, 1981, p. 21).

## A BEHAVIOR-ANALYTIC WORLDVIEW APPLIED TO BIOLOGICAL DETERMINISM

Most writers on biological determinism seem to have a single ax to grind; they are concerned with showing that biology is or is not responsible for individual differences with regard to one set of complex behavior-environment interactions, for example schizophrenic behavior, autistic behavior, same-sex behavior, female behavior, criminal behavior, or intelligent behavior. Exceptions are Gould (1981) and also the sociobiologists (Wilson, 1998); they deal with the larger picture of all complex behavior-environment interactions. And also, it is this larger picture with which I wish to deal, as the big picture gives us perspective from which we can look at individual instances, such as schizophrenic behaviors.

### Behavior Analysis vs. Mentalism

Advocates of biological determinism, for example, scientific racists and scientific sexists, tend to argue that "intelligence" and "mental health" are biologically determined, in other words, that our "intelligence" and "mental health" are inherited or at least result



from a bio-chemical cause. I think this tends to be a form of mentalism that results from the logical error of circular reasoning, an error that causes intelligent behavior and functional and dysfunctional behavior to be reified as things—"intelligence," "mental health," and "mental illness." And our intelligence and mental health are stored in our minds. And our minds are stored in our brains. And our brains are loaded with biochemistry. And being anatomical things, our brains are inherited. And, therefore, our intelligent behavior and our functional and dysfunctional behavior are determined by our brain size, healthy blood, healthy neurology, or healthy biochemistry and are most likely inherited.

On the other hand, I advocate a behavior-analytic approach that will tend to help us avoid mentalism, with its resultant biological determinism, and with its resultant scientific racism, sexism, and classism. I'm not arguing that scientific racism etc. necessarily result from biological determinism, nor that biological determinism necessarily results from mentalism. Nor am I arguing that this behavior-analytic worldview will necessarily prevent scientific racism etc. Rather, scientific and conceptual analyses informed by (influenced by) a mentalistic/biological-deterministic worldview may tend to result in scientific racism etc., whereas scientific and conceptual analyses informed by a behavior-analytic worldview may tend not to.

Caveat: Most behavior analysts will agree with most of this worldview, its assumptions and strategies of analysis. But few behavior analysts will agree with all the details, not that we behavior analysts are an especially contentious lot, but just that everyone and their professors have their own ways of cutting the cake. I hope you find my serving of the cake not only palatable but also useful.

### **Is the Nature-Nurture Debate Obsolete?**

There is one thing essentially all behavior analysts and mentalist/biological-determinists agree on—the nature-nurture debate is out of date and meaningless. They all agree that what we do is caused both by our nature (our biology) and our nurture (our behavioral/learning history); they consider any other view to be narrow-minded parochialism (for example, see Moore, 2001). However, I will argue that this nearly universal, conciliatory, ecumenical liberalism is wrong, that the nature-nurture debate is still meaningful and vital.

I prefer to take such complex issues back to the Skinner box for a simplifying (but not simplistic) clarification: We have two rats. One we train to press the left lever and the other we train to press the right lever. Now, of course, biology underlies their susceptibility to our training and to the reinforcers we use. And biology provides both rats the paws with which they press the levers. But, that's not the issue. The issue is: Why does one rat always press the left lever while the other always presses the right? And the explanation of that difference is not found in differences in their preexisting biological/chemical makeup (their nature). The difference in the lever pressed is found, exclusively, in their behavioral/learning history (their nurture). Or, as Jack Michael pointed out (personal communication, January, 2006), "The fact that the French speak

French and we speak English results from our behavioral/learning histories, not our genes.”

Now that we’ve firmly replanted our feet in the Skinner box, let’s look at another argument against the currency of the nature-nurture debate—the agnostic view that you can’t prove some sort of biochemical “god” is **not** alive and well and in our genes, a biochemical “god” pulling the levers that make us do all those crazy things; and therefore, though god is not dead, the nature-nurture debate is; and we must remain agnostic about the role of biological determinism. In other words, you can’t prove that biological determinism isn’t the prime mover, so stop arguing. Maybe not, but it would be too convolutedly unparsimonious to use genetic predisposition to explain why one rat presses the right lever, whereas the other press the left, when we’ve experimentally demonstrated the impact of the two rats’ different histories of differential reinforcement. And similarly, I would argue that it is unparsimonious to join the current fad and invent a genetic predisposition for more or less every weird behavior know to mankind. It’s unparsimonious because we have the potential of discovering the causes in the behavior’s behavioral history; it’s unparsimonious because we have the potential for a much more elegant, parsimonious explanation in terms of our small set of basic behavior-analytic concepts and principles.

So it is intellectually legitimate to ask whether our differences in intelligent behavior and functional and dysfunctional behavior are also caused by our behavioral history or whether they are biologically determined, even though there is a biological basis for everything we do, even though our biology determines our unlearned reinforcers, the effects of motivating operations, and even the fact that our behavior is susceptible to reinforcement. The question is not whether we are biological animals; the question is the extent to which the individual differences in our behavior are biologically determined.

### *The Utility of Multiple-Causation Analyses*

Even in the rare cases where we know the specific gene associated with (“for”) a particular condition, other factors combine with the gene to determine the nature of that condition. For example, the highly touted genetic cause of sickle-cell anemia does not, by itself, determine whether a given person will be seriously ill because of this anemia. In addition, decades of knowing the genetic “cause” of sickle-cell anemia, have not contributed to a cure or even a treatment for this problem. (Hubbard & Wald, 1999, p. 64)

And our failure to find the pill to cure sickle-cell anemia should dampen our enthusiastic search for the pill that will cure complex behavioral problems like autism, regardless of genetic or bio-deterministic involvement. Behavioral/learning approaches may always provide the most or only effective intervention.

### **Behavior-Analytic Strategies or Assumptions**

I find it helps to use the following strategies or make the following assumptions in trying to analyze and understand complex concepts such as “intelligence” and “mental health.”

#### ***All Psychological Concepts and Issues are Behavioral.***

To say we differ in our “intelligence” or our “mental health” is to say that we differ in our behavior and our values. (By *values*, I mean what we find reinforcing and aversive.) For example, some people tantrum more than do others (differences in behavior); and some people find disapproval more aversive than do others (differences in values). Therefore, we will not look for differences in “intelligence” or “mental health” between individuals, racial groups, or the sexes, though we might look for differences in intelligent behavior or healthy behavior.

And just as *intelligence* and *mental health* are reifications, so are *thoughts*. We don’t have thoughts; we think. Thinking is behavior, as is dreaming.

#### ***All Behavior is Operant.***

To say all behavior is operant is to say all behavior is controlled by its immediate consequence, or more precisely, all behavior is controlled by the immediate consequences of past occurrences of that behavior. And, of course, that may not always be true; but it’s a useful strategy to start with that assumption. It will force us to look a little deeper for environmental causation than to merely write off the behavior as respondent behavior or released behavior, as these latter classifications can provide the basis for easy, simplistic explanations, where we need a more finely nuanced operant analysis. Thus we will be less likely to talk about automatic, reflexive or released aggression and more likely to look for the reinforcement contingencies responsible for the acquisition and maintenance of aggressive behavior, though those contingencies may involve automatic, built-in, unlearned reinforcers, such as physiological arousal.

#### ***The Behavioral Contingency is Crucial.***

Assuming a psychological issue centers around operant behavior encourages the search for the behavioral contingencies that control and will explain that behavior. Therefore, we will be more likely to look for the current and historical reinforcement contingencies that support intelligent behavior and dysfunctional behavior than we would to look for the contingencies supporting intelligence or mental illness. And we will be less likely to look for a racist, sexist, or biochemical explanation of differences in intelligent and healthy behavior.

Similarly, when we stop talking about thoughts and start talking about the operant behavior of thinking, we are then more likely to look for the reinforcement contingencies, including those with automatic, unlearned, physiological arousal reinforcers, as well as those external outcomes such as the successful solution of a problem that results from our

thinking about it. In other words, thoughts are not things that flow through us as we passively stand by; instead, we think; and that thinking is controlled by its reinforcing consequences, even when we're not aware of those consequences or not even aware that we're thinking.

***The Behavior Is Arbitrary.***

What response produces a reinforcer is generally arbitrary, in that we could make the food pellet contingent on the rat's pressing the lever or on pulling the chain. Of course, it is mechanically easier to pick your nose with your finger than your elbow. The point is that the reinforcement contingencies can generally involve any mechanically feasible behaviors, though of course, not all mechanically feasible behaviors are equally desirable, as it would usually be better if attention were contingent on the child's raising his hand rather than on the child's tantruming.

Suspecting that the behavior is arbitrary tends to lead us toward considering the behavior to be operant and looking for the reinforcement contingencies responsible for it. Thus, again, we are less likely to do a racist, sexist, or biochemical explanation of behavioral differences among people.

***Complex Behavior-Environment Interactions Are Not Biologically Programmable.***

The chick is innately attached to the mother hen and innately follows her everywhere she goes. Well not exactly. The bird forms this "innate" mother-child bond with anything that moves, as long as that moving thing is the first thing the bird sees out of the egg. Normally, the first thing is the mother bird; but it could be a model of an adult bird; it could be the ethologist Conrad Lorenz; or it could be a beer bottle—all have worked.

We call that attachment or bonding process *imprinting*. And I love imprinting because it illustrates the points in the preceding sections so well. Not only does the bird not innately bond with its mother, it doesn't even innately follow its mother. Following is behavior, and the bird will learn to do whatever behavior is reinforced by an increased proximity to the imprinted reinforcer, the visual stimulus; normally the bird will learn to walk toward the imprinted stimulus, but, instead, it can learn to peck a disc that will cause the stimulus to come nearer (Bateson & Reese, 1969).

In other words:

- The psychological phenomenon of imprinting is behavioral (walking, swimming, flying)
- That behavior is operant behavior (controlled by its past consequences, proximity to the imprinted reinforcing stimulus)
- The contingency is crucial (the relation between the response and proximity to the imprinted reinforcing stimulus).

- The behavior is arbitrary (the response can even be a key peck, instead of some form of following behavior)
- Furthermore, the acquired, imprinted reinforcer is arbitrary, just as the more traditional learned reinforcer is.<sup>2</sup>

But why doesn't the bird inherit the bond with its mother; why isn't that bond biologically determined? Why must the poor bird run the risk of bonding with a middle-aged ethologist or a beer bottle? I think it's because complex behavior-environment interactions cannot be biologically programmed; they cannot be biologically determined (caused); they cannot be inherited.

Why not? Because there's too much variability in the environment in which we complex organisms find ourselves. Suppose we inherited our English repertoire and ended up being born in France; wouldn't work. It's too difficult for us to be born, factory wired with the appropriate responses for every conceivable and also every inconceivable situation in which we will find ourselves. Instead, what **is** biologically determined, what we're born with, is the ability to learn complex behavior-environment interactions and to acquire learned reinforcers, and in the case of a few birds, to acquire imprinted reinforcers.

### ***Do a Molecular Analysis.***

The seductive ease of simplistic molar analyses may be a major reason why it's so hard to appreciate the amazing complexity with which even newly hatched chicks cope. We use molar concepts like "mother hen," but the mother hen is not a simple stimulus; instead, she's a complex concept. Considering only some of the visual dimensions of the concept "mother hen" is almost overwhelming: A molecular analysis shows that this concept consists of the visual image of not only a side view of mom but also a front view, a three-quarter view, a rear view, each of those views seen up close (generating a retina-filling image), each of those views at a distance (generating an image that fills only a small part of the retina), each seen at dawn, in the mid-day sun, out in the open, partially obscured, etc.

But, the generalization, discrimination, and multiple-exemplar training processes are usually so smooth and transparent, that we don't appreciate the complexity of the visual concepts that come to exert appropriate stimulus control over our behavior. However, after training an autistic child to say "Mommy" when shown one picture of Mom, the

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<sup>2</sup> Both imprinted reinforcers and learned reinforcers are acquired reinforcers; they are not unlearned, innate reinforcers. But the imprinted reinforcer becomes an acquired reinforcer simply as a result of presentation to the bird, within a critical time period after its hatching; and a learned reinforcer becomes a reinforcer, as a result of pairing with another reinforcer, often an unlearned reinforcer. By the way, contrary to the vernacular, over use of imprinting, very few species have the biologically determined capacity for imprinting, though most that we tend to work with do have the biologically determined capacity to acquire learned reinforcers.

novice trainer is shocked if the child doesn't say "Mommy" when shown a different picture of Mom, let alone when Mom walks in the room. And I'd predict that if we restricted the chick's imprinting to a side view of mom, three feet away, at dawn, a front view, 10 feet away, at noon would not have become an imprinted reinforcer.

All of this is just to illustrate how most of the behavior-environment interactions with which we are concerned are much too complex to have been biologically determined, preprogrammed, inherited. If nature can't even preprogram a chick to approach its mother, what chance does nature have to biologically determine the infinitely more complex environment-behavior interactions considered by scientific racism, scientific sexism, scientific classism, and scientific mentalism? Beware of simplistic extrapolations from the heritability of eye color or sickle cell anemia to the heritability of complex behavior-environment interactions.

### ***Optimism vs. Pessimism***

Incidentally, sometimes bio-deterministic analyses fatalistically and pessimistically suggest that problems such as poverty, crime, and obesity, are unchangeable because they are genetically programmed. And, sometimes bio-deterministic analyses suggest that such problems will only be solved once the long-awaited magic pills are found, though waiting for the magic pills is often like the cargo cults of the South Pacific islands waiting for the arrival of magic canoes loaded with great riches.

By contrast, a behavioral/environmental determinism can be more optimistic, in that the behavioral approach has a well-documented history of solving important problems; and we needn't wait for the canoes loaded with magic pills; we can start solving the problems now; all we need to do is get control of the relevant behavioral contingencies. That's right, but it isn't always easy to get control of the contingencies supporting the tantruming of an autistic child in a discrete-trial training booth, let alone the contingencies controlling pervasive social injustice.

Incidentally, I use a sort of reverse craniometry: If pigeons can do it in spite of their tiny brains, surely autistic kids can too; so if the kid isn't mastering a complex conditional discrimination though a pigeon can, it's not because an autistic brain is preventing the child from doing so; it's because we have not implemented the correct training sequence with the correct behavioral contingencies—a more optimistic, responsibility-accepting approach.

### **Strange Bedfellows**

We all have our biases about biological determinism; and those biases can result in strange bedfellows: My liberal, gay friends who argue for the biological basis for their sexual orientation are making essentially the same argument as cultural conservatives who argue that the woman's place has been biologically determined to be in the home, generally the kitchen, and until fairly recently, 1920, certainly not in the polling booth.

And some African American friends argue that they are of superior stock, compared to their ancestors back in Africa, because they are direct decedents of the few slaves who

had good enough genes to be able to survive the horrendous middle passage from Africa to the Americas. At its biological-deterministic roots, this argument is essentially the same as the racist arguments that justified slavery itself.

Similarly, in arguing against the biological determination of sexual orientation, I find myself making much the same argument as those religious fundamentalists who say that homosexuality is not inherited. But they go on to imply that homosexuality is chosen, and of course, amenable to change, with the resulting potential for salvation. And this implication is based on the assumption that there's only a dichotomy—either it's genetic or you chose it; but there's a trichotomy—the third option being that your behavioral history and the current contingencies determine what you do and what your values are, with little or no room for “choice.” But few victims and few victim blamers are tuned into this possibility of environmental determinism.

### **THE HARD PART—BRINGING IT HOME**

It's easy to see the silliness of those earlier arguments that biology is destiny, that our intellectual behavior, our moral behavior, and some forms of mentally healthful (functional) behavior are biologically determined—scientific racism, scientific sexism, etc. And I presented those examples to provide a historical background for our analysis of current arguments based on biological determinism; that's the hard part. For example, when we evaluate the current nature-nurture debates over the etiology of autistic behavior, schizophrenic behavior, depressive behavior, and intelligent behavior, and the periodic resurrections of scientific racism, sexism, classism, and even craniometry, we should understand the seedy past that is the progenitor of contemporary biological determinism. We should be suspicious of current bio-deterministic claims. Yes, I'm arguing guilt by historical association. Even though the entire psychiatric/bio-chemistry/genomic/scientific/mass-media/pharmaceutical-industrial complex argues that it's all in our genes, or at least a chunk of it's in our genes, I believe we should be skeptical; when it comes to complex behavior-environment interactions, they've usually been wrong before.

### **Contemporary Craniometry**

In spite of its shameful history, craniometry is back, this time in an effort to find the biological cause of autism, considered a neuropsychiatric disorder by the current generation of craniometric biological determinists (the disorder of autism hadn't been invented in time for the earlier craniometricians). And, as with essentially all previous searches for the biological causes of complex behavior-environment interactions, much of the current craniometric research on autism is plagued with failures to replicate. Also, as we discussed, 100 years ago craniometrician, Dr. Robert Bean, found the difference in “intelligence” between Blacks and Whites was not caused by the absolute size of the brain but rather by the relative size of the their forebrains (their seat of intelligence). And now craniometric scientists are finding the difference in functional behavior between autistic and normal subjects is not caused by the absolute size of the brain but rather by

the amount of cerebral gray matter and cerebral and cerebellar white matter (evidently the seat of autism). In addition, they are discovering that infants later classified as autistic have larger than normal brains when they are born, presumably to accommodate the autism in their cerebral gray matter and cerebral and cerebellar white matter. (Aylward et al., 2002; Courchesne et al., 2001, pp. 245-254).

So, what should our reaction be to this recent research? I vote for skepticism, as my classifying the research as a contemporary version of the discredited craniometry would suggest (note that, of course, the researchers, themselves, don't use the term *craniometry*). All of this work is correlational, rather than experimental; so, even if the correlations are replicated, we don't know whether the autistic brain caused the autistic behavior or vice versa or whether they are both a result of a third variable. In addition, the researchers don't seem to have controlled for the possibility that most of these correlations might be an artifact of drugs prescribed to cure or reduce the autism.

In addition to the past futility of the search for biological causes of complex behavior-environment interactions, the behavior-analytic worldview I've advocated suggests we need to think about "autism" in terms of autistic behaviors that result from behavioral contingencies and functional behaviors that were not supported by behavioral contingencies; and, in truth, my personal skepticism is at least as much informed by this world view as by the shameful history of craniometry. (For examples of behavioral and semi-behavioral views of the etiology of "autism" see Michael [2004] and Malott [2005a].)

However, suppose the craniometricians do eventually manage to nail down biological "tendencies" toward autistic behavior, a biological tendency for some children to be susceptible to the behavioral contingencies or the lack thereof that cause autistic behavior. We still need to remember that autism is not a thing; it's still just an autistic repertoire. And then we need to find the underlying, molecular behavioral processes influenced by the autistic biology, with the resulting autistic repertoires. But we behavior analysts aren't very good at that sort of molecular analysis of the effects of biological variables such as drugs, brain injury, and Alzheimer's on the basic behavioral processes that produce the molar repertoire changes. So we need to get cracking on those molecular bio-behavioral analyses.

### **Contemporary Electroconvulsive Therapy (ECT)**

Also, in spite of its shameful history, including its inspirational origins in a slaughter house, over 30,000 Americans receive ECT every year. Furthermore, ECT was endorsed by the U.S. National Institute of Mental Health in 1985 and re-endorsed by the American Psychiatric Association in 1990 (Swartz & Abrams, 1994). The American Psychiatric Association strongly advocates ECT for major depressive disorder and for bipolar disorder, pointing to considerable research supporting these recommendations, including research using the now standard double-blind control designs (American Psychiatric Association, 2000, p. 467).



So, what should our reaction be to this more recent research? I think we should be more specific in asking that question: What should our reaction be to ECT as an **intervention** for various behavioral problems? And what should our reaction be to the implications of ECT research for supporting a biological **etiology** of those behavioral problems?

First, the etiology: Although the proponents of ECT don't know why ECT has its purported effects on behavior problems, they think it fixes a hypothesized biochemical disorder of the central nervous system (Swartz & Abrams, 1994), much as did those who cured madness by drugging their patients so they'd sleep for days or even weeks, much as did Dr. Cotton who removed teeth, tonsils, colons, gall bladders, uteruses, etc. to prevent the brain from being infected, much as did the advocates of insulin-coma therapy, prefrontal lobotomies, and neuroleptic drugs. Questionable company to be hanging with. And yet biological determinists still theorize that a bad central nervous system (CNS) causes behavioral problems. Theorizing like this caused Skinner to suggest derisively that, for many psychologists, *CNS* stands for *conceptual* (not *central*) *nervous system*.

But suppose ECT is as effective as claimed. Does that mean these behavioral problems necessarily have a biological etiology? Not necessarily. First, assume the brain really is screwed up. The screwed-up brain might result from the behavior problem, rather than vice versa. For example, suppose your behavior problem is that, as a result of an unfortunate set of behavioral contingencies, you self-injure by pounding your head on the floor, which in turn damages your brain. The behavior problem caused the biological problem. Then it might be that somehow, a biological intervention, such as ECT, did repair your damaged brain; but that doesn't mean the bad brain caused the head banging. Or it might be that a biological intervention, such as ECT suppresses almost all behavior, including head banging, and that gives your brain time to recover. Or it might be that the suppression of almost all behavior allows functional/therapeutic behavioral contingencies a chance to start supporting behavior that competes with the dysfunctional head-banging contingencies. Again, this doesn't mean the bad brain caused the bad behavior. (Of course, the effects of the behavior problem on the brain will normally be much more subtle than those that could result from head banging.)

And what should our reaction be to ECT as an **intervention** for various behavioral problems? By this point, you won't be surprised that, again, I vote at least for caution, if not skepticism, before jumping on another bio-interventionist bandwagon. Remember, these are the same guys who recently proved the effectiveness of the now-maligned neuroleptic drugs; and while their endorsement of ECT may be less susceptible to influence by the pharmaceutical industry, that endorsement may still be biased by other financial conflicts of interest.

However, suppose the MD's have or will establish ECT as an irrefutably effective intervention for some serious behavioral problems. We still need to remember that those behavioral problems are behavioral problems and not problems of the mind. And we still need to stay focused on the search for the contingencies that support those dysfunctional, problem behaviors and those contingencies that suppress or fail to support functional

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behaviors. And we will need to find the underlying, molecular behavioral processes influenced by ECT.

### **Biological Behavior Analysis**

Unfortunately, we behavior analysts are semi-pathetic at molecular analyses of the behavioral effects of biological variables. So we need to get cracking on the development of a new interdisciplinary effort, perhaps called *biological behavior analysis*. But we need to do so without falling prey to the sort of mentalistic, molar reifications that plague much of physiological psychology with its perceptions, memories, cognitions, emotions, traits, etc., and its mental processes.

In biological behavior analysis, we will need to do much more than lend our Skinner boxes to drug screening and the demonstration of the molar effects of various sorts of brain trauma and brain stimulation. We will need to ensure that, with the Skinner box, comes Skinner's molecular approach to the analysis of behavioral contingencies, an intellectual skill that is not too strong in the repertoire of many behavior analysts and will be in danger of being even further weakened in the sort of interdisciplinary verbal communities necessary for the development of biological behavior analysis.

### **CONCLUSIONS**

Gentle reader, please allow me to conclude with a few t-shirt slogans:

- The battle between behavior analysis and biological determinism is a battle for the soul of psychology.
- The history of our intellectual culture is the history of a drift in our search for an easy explanation of the unexplained. Our explanations have drifted from spirit to soul to mind to gene.
- Expedience and intellectual laziness have caused us to drift down the genome-strewn path to intellectual shallowness.
- Psychology's gene is the last refuge of scoundrels and the intellectually lazy.
- Biological determinism and mentalism are both products of the same simplistic, reification-laden, molar approach to psychology.
- Behavior analysis is more than a technology; it's also a worldview.
- We must use behavior analysis to help us understand the world far beyond the Skinner box. We must use behavior analysis to help us understand the human condition.

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- We must be thoughtful in our extrapolations from the Skinner box to the human condition, with all its complexities and subtleties.
- We must carefully and thoughtfully create a new interdisciplinary field—biological behavior analysis.

(Final editorial comment: In these conclusions, I'm not being ironic; I literally mean every word, no matter how outrageous they may seem.)

## CAVEAT

At the end of my rants, I feel morally and intellectually obligated to say, "This is only my humble opinion, and I could be wrong...ah...but probably not."

## REFERENCES

- American Psychiatric Association (2000). *Practice guidelines for the treatment of psychiatric disorders: Compendium 2000*. Washington, D.C.: American Psychiatric Association.
- Aylward, E. H., Minshew, N. J., Field, B. F., Sparks, B. F., & Singh, N. (2002). Effects of age on brain volume and head circumference in autism. *Neurology*, 59, 175-183.
- Bateson, T. G., & Reese, E. P. (1969). The reinforcing properties of conspicuous stimuli in the imprinting situation. *Animal Behaviour*, 17, 692--699.
- Campbell, T. C., & Campbell, T. M. (2004). *The China study: Startling implications for diet, weight loss, and long-term health*. Dallas, TX: Benbella Books.
- Caruano, R. M. (2006). *An historical overview of standardized educational testing in the United States*. (p. 2) [On-line]. Available: <http://www.gwu.edu/~giackson/caruano.PDF>
- Courchesne, E., Karns, C. M., Davis, B.S., Ziccardi, B. S., Carper, R. A., Tigue, Z. D., Chisum, H. J., Moses, P., Pierce, K., Lord, C., Lincoln, A. J., Pikizzo, S., Schreibman, L., Haas, R. H., Akshoomoff, N. A., & Courchesne, R. Y., (2001). Unusual brain growth patterns in early life in patients with autistic disorder: An MRI study. *Neurology*, 57, 245-254.
- Encarta Staff, (2006). *Encarta* [DVD], Redmond, WA: Microsoft.
- Gould, S. J. (1981). *The mismeasure of man*. New York: Norton.
- Greger, M. & United Progressive Alumni (2006). *Appendix 43—Drapetomania*. [On-line]. Available: <http://upalumni.org/medschool/appendices/appendix-43.html#fnB477>
- Hubbard, R. & Wald, E. (1999) *Exploding the gene myth: How genetic information is produced and manipulated by scientists, physicians, employers, insurance companies, educators, and law enforcers*. Boston: Beacon Press.
- Malott, R. W. (2005a). Autistic behavior, behavior analysis, and the gene—Part II. *The Analysis of Verbal Behavior*, 21, 175-179.
- Malott, R. W. (2005b). Behavioral Systems Analysis and Higher Education. In W. L. Heward, T. E. Heron, N. A. Neef, S. M. Peterson, D. M. Sainato, G. Cartledge, R. Gardner, L. D. Peterson, S. B. Hersch, J. C. Dardig. *Focus on behavior analysis in education* (pp. 211-236). Upper Saddle River, N. J.: Pearson Education.
- Malott, R. W. & Suarez-Trojan, E. W. (2004). *Principles of behavior* (5<sup>th</sup> ed.). (Chapter 26: Moral and Legal Control). Upper Saddle River, NJ: Prentice Hall. [On-line]. Available: <http://dick-malott.com/booksarticles/pbe5/#morepb>
- Lang, T (1973). *The difference between a man and a woman*. New York: Bantam Books.

## A HISTORY OF BIOLOGICAL DETERMINISM

- Michael, J. (2004). Special autism issue. *The Analysis of Verbal Behavior*, 20, 1-2.
- Moore, D. S. (2001). *The dependent gene: The fallacy of "nature vs. nurture."* New York: Henry Holt.
- Satinover, J. B. (2005). *The Trojan couch: How the mental health guilds allow medical diagnostics, scientific research and jurisprudence to be subverted in lockstep with the political aims of their gay sub-components.* National Association for Research and Therapy of Homosexuality Conference Reports, 2005. [On-line]. Available: <http://www.narth.com>
- Sorisio, C. (2002). *Fleshing out America: Race, gender, and the politics of the body in American Literature, 1833-1879.* Athens: University of Georgia Press.
- Swartz, C. M. & Abrams, R. (1994). *What you need to know about electroconvulsive therapy.* Lake Bluff, IL: Somatics.
- Tavris, C. (1992) *The mismeasure of woman.* New York: Simon and Schuster.
- Whitaker, R. (2002). *Bad science, bad medicine, and the enduring mistreatment of the mentally ill.* Cambridge, MA: Perseus Publishing.
- Wikipedia (2006). Drapetomania. [On-line]. Retrieved December 17, 2007, from <http://en.wikipedia.org/wiki/Drapetomania>
- Wilson, E. O. (1998). *Consilience.* New York: Random House.
- Wong, S. E. (2006). Scientific dead end or casualty of the mental health political economy? *Behavior and Social Issues*, 15, 152-177.
- Wyatt, J., & Midkiff, D. (2006). Biological psychiatry: A practice in search of a science. *Behavior and Social Issues*, 15, 132-151.