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The discursive practices of chemical discipline

Roger L. Pippin

Louisiana State University and Agricultural and Mechanical College, tabularasa001@yahoo.com

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THE DISCURSIVE PRACTICES OF CHEMICAL DISCIPLINE

A Thesis

Submitted to Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
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in

The Department of Communication Studies

by

Roger L Pippin

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Abstract

This project examines the history of science and its relationship to the popular, or lay, audience, a problem of rhetorical inquiry since Aristotle. This project also explores the implications of the emerging trend in lay literature on Attention Deficit Hyperactivity Disorder (ADHD) to transform the causal mechanism underlying ADHD so that it is isomorphic in structure and parallel in content to the most contemporary and fetishized sciences of the human body. In other words, how ADHD was once a problem of brain chemistry, and is now a problem of genetics is not simply a matter of scientific practice on the level of empirical data, but instead reflective of a larger societal trend in the era of rational instrumentality to reduce human behavior to the analogy of a mechanical machine. As such, by examining literature on ADHD that is designed to persuade a lay audience of the existence of ADHD, this project argues that the rhetorical dimensions of ADHD are perpetuated by a logic of a “black box,” or a type of reasoning that privileges effects over the internal operations of an organism or machine.

Chapter 1: Chemical Discipline

All that exists for bodies is *discipline and repetition*. Such an ontological statement has a relationship to the material realm from which it derives its predicates. The primary role of discipline is to alter the functioning of bodies. Human bodies have no teleological end, besides death perhaps. Despite the genetic priority of “propagation” offered to us by reductionist biology, there is no one way that a body is supposed to act, because a given body’s actions are structured by discipline. The nature of discipline changes according to the technological innovation of a given culture; discipline changes in relationship to machines.

This thesis will interrogate the role of discipline within a culture that celebrates as its panacea the molecular machine. Having once been the province of those who could order space and time, discipline has now been miniaturized to the level of the molecule. Although thinkers like Foucault have detailed the forms of disciplinary procedure that can be seen, this study explores the nature of a discipline that cannot be seen: molecular discipline machines.

Molecular machines are introduced into a body by penetrating a membrane. Penetrating a system by a machine can sometimes happen by violent force, as is the case with warfare guided by metallurgical machines (bullets, knives, bombs). The act of penetrating a membrane in the case of molecular machines is the result of a persuasive process. The machines in question for this study are pharmaceuticals that must be taken by will alone, if in fact we regard a patient as still operating within the “home,” and not within a hospital, the place of intravenous injection. To put it a slightly different way, pills must be taken “by hand,” whereas intravenous injections are materialized (sometimes) without the direct assent of the patient.

Before a pill is taken, there is a prior persuasive process. A discursive bridge is built between the makers and propagators of pharmaceutical-molecular machines, the medical

industry, and the decision making agents of the bodies in question. For example, the parents of children who are ill with the *untold disease* of not doing *what they are told* must make decisions for their child. Before a child swallows a pill by “free” volition, the child must see a representative of the pharmaceutical machine complex, a psychiatrist. Who will bring that child to a psychiatrist other than a parent? In what follows, I will ask the question of what rhetorical dynamic is in play that persuades a parent to take their child to the psychiatrist in the first place? In addressing rhetorical concerns, I will also ask the question of what rhetorical dimensions are within the diagnostic criteria by which a psychiatrist makes decisions concerning what type of molecular machines will be introduced into a child’s body. For this project, I assume from the outset that what already exist in our society is a relationship between molecular machines and behavior. Molecular machines, if they are designed to change behavior, are a form of discipline, and not necessarily a “cure” for an illness. A child’s body, a biological machine that is unlike a instrumental machine such as a toaster or a computer, has no intrinsic way that it is supposed to act in a social setting. When using molecular machines to change a child’s behavior so that it is “normal,” the child’s body becomes a “black box,” that is, the child’s body is articulated to an “rational instrumentality” in which something goes into the child, and the child has a change of behavior, and what transpires “inside” the child is of no consequence. The word “normal” is a rhetorical invention that serves the interests of the dominant instantiations of disciplinary power, institutions that have a vested interest in the child-as-black-box. Harry Broudy states that “it makes no sense to say of a biological machine that it should have performed other than it in fact did perform, for it does not perform in order to reach a provisioned goal nor is its performance guided by principles that it acknowledges as normative for its action.”¹

In other words, biological machines have no telic end that is prescribed by the evolutionary mechanism of variation, usually discussed today in terms of “genetics.” The scientific theories that prescribe “normal” behavior are in fact rhetorical creations, and the tools of rhetorical critique are appropriate for their analysis. Although it is “normal” to eat and to defecate, what is discussed as normal in our society goes above and beyond the day to day regulatory mechanisms of the body’s autonomic functioning. To give a rhetorical critique of these theories of normalcy that prescribe specific behavior, and how this normalcy is folded into a body by way of discipline that is made possible by molecular machines, is to also give a critique of the logic of the “black box,” and the discipline that makes it work. The discipline I speak of is a kind of discipline that is no longer inscribed onto the body from outside, but instead *ingested*.

All children need to be disciplined, and a process of discipline helps to facilitate the child’s development along a continuum of behavior, the goal of which is to socialize the child into the world of “adult” behavior. The practice of this discipline has adopted many different forms throughout history. To use a familiar example, consider how the “whipping” of a child with a belt or a hand remains a controversial form of discipline. This form of negative reinforcement on the child is an example of *discipline as punishment*. During the latter half of the 20th century, there were reforms within the ideas that govern the procedures for correct disciplining of a child. For example, many schools up until recently still used the tool of the paddle in order to discipline students. Due to a critique of this method by parent groups and child psychologists, paddling is now considered abusive. As is the case with most reform movements within disciplinary procedure, however, there is a shift away from punishment and a move

towards doing what is more “humane.” Or, at the least, this shift to “humane” characterizes the rhetorical strategies used to promote “reform.”

The disciplinary tool that is superceding the discipline of the hand is the tool of the pill. Increasingly, children are no longer beaten in order to change their behavior, instead, brain function is altered at a molecular level to produce desired behavior. This shift to a more “humane” model is what I call chemical discipline. This thesis is a study of “chemical discipline,” and how this concept relates to Attention Deficit Hyperactivity Disorder (ADHD). The study of chemical discipline, as well as the cultural and social institutions that support it, is important for two reasons. First, an understanding of chemical discipline explains a cultural logic of rational instrumentality that emphasizes that the internal processes of instrumental machines and human machines are not merely analogous, *but identical*. This putative identity property between human machines and instrumental machines is harmful for human beings because *they are not* instrumental machines, and should not be treated as such. Second, the explication of chemical discipline opens up new possibilities for scholarly dialogue within the rhetoric of science, dialogue that is attenuated to both science as a *techne* and as a cultural practice. In other words, there is a rhetoric of pathologization that supports the cultural practice of chemical discipline, and this rhetoric is made clear by examining the logic found within texts of institutions that support chemical discipline. Before I take up this task of examining various manifestations of the logic of the black box, I would like to clarify the parameters of this project and how they relate to the larger narrative of the rhetoric of science. Then I will provide a brief history of the specific pathology I will take up within this study, Attention Deficit Hyperactivity Disorder. Finally, I will provide a richer description of the terms that I will be using in a unique manner within this project. In order to situate this project within a more general field of the

concerns of rhetorical studies, we will now move to a brief summation of insights made by other scholars who have focused upon the rhetoric of science, specifically, viewing science as partly structured by rhetorical processes.

This study focuses on what happens when an accepted scientific “fact” is articulated to a larger set of societal norms, such as the “proper” behavior of a child in a classroom. First, I will show how rhetoric can explore a realm of study that is typically considered at the “other end” of the continuum of academic study from rhetorical studies, namely, scientific inquiry.

As philosopher and scientist Carl Sagan has noted, one of the defining characteristics of science is that it possesses a built-in conceptual device for qualifying results known as the scientific method.² Although this scientific method is without doubt one of the most powerful conceptual forces within contemporary technological culture, the method in itself does not necessarily imply that scientific theories are not first and foremost *rhetorical inventions*. By defining scientific theories as rhetorical inventions, I do not mean that scientific theories are structured by way of the same process as oratory. Instead, I mean to say that to consider scientific theories as rhetorical inventions offers us a space to critique scientific theories on the basis of their rhetorical, and not their empirical, criteria. As Alan Gross has noted:

To call scientific theories inventions. . . . is to challenge the intellectual privilege and authority of science. Discovery is an honorific, not a descriptive term. . . . The term invention. . . captures the historically contingent and radically uncertain character of all scientific claims, even the most successful.³

Gross implies that scientists are always participating in a ceaseless effort to convince their fellow scientists that their theories are correct. From a viewpoint of the history of science, we can extrapolate here and assume that eventually, some scientific theories will be confirmed as fact, and others will be confirmed as nonsense.

This study is not so much concerned with the technical dialogue of the scientific community as it is with the discursive bridge that exists between the scientific community and the lay public. This discursive bridge has been outlined as one of the two proper areas for the rhetoric of science project by Gaonkar when he explains that

the general aim of the RS [rhetoric of science] project is to show that the discursive practices of science, both internal and external, contain an unavoidable rhetorical component. Internal here refers to those discursive practices that are internal to a specific scientific language community; external refers to the discursive practices of that scientific language community in respect to its dealing with other scientific (or non-scientific) communities and society in general.⁴

The lay public holds a certain respect for scientists. This is not due to the epistemological properties of the work of science. Instead, the rhetorically constructed authority of *scientists* as a group of people that scientific work proceeds from is a formulation that arises from the *ethos* of expertise. This ethos is possible because *reason* itself has been lauded for its own transcendent capabilities for centuries. Therefore, when I say that it is fruitful to see scientific theories as rhetorical inventions, it is not a challenge to the scientific method as a valuable tool. Instead, I mean to challenge the authority of science when scientists enter the realm of modifying human behavior for the sake of a socially created “normalcy.” Gross has commented to this effect:

All scientific [works]. . . are embedded in a network of authority relations. . . . The objectivity of scientific prose is a carefully crafted rhetorical invention, a *non-rational appeal to the authority of reason*: scientific reports are the product of verbal choices designed to capitalize on the attractiveness of an enterprise that embodies a convenient myth.⁵

This does not mean that rhetorical scholars regard science solely as a rhetorical enterprise.

Gaonkar notes that

RS [the rhetoric of science] minimally aspires to re-describe science as a form of rhetoric. While not claiming that science is “mere” rhetoric, RS insists on exploding the positivist myth that science is entirely free of rhetoric. In a more positive vein, RS seek to show how rhetoric is an integral part of scientific practice.⁶

One of the key questions for this project, then, is what type of process do scientists use to engage in dialogue with the lay community? Furthermore, by understanding the answer to this question, I will argue that there is a more fundamental issue: some scientific theories are harmful to human beings. To begin to explore this danger, we must move out of the realm of philosophical discourse, and into the world of bodies. For example, atomic physicists have created nuclear machines that are capable of disintegrating many bodies at once. The destruction of human beings by nuclear weapons is one way that scientific theories can harm bodies. Yet what is the manner in which scientific theories can produce a particular procedure of discipline that is designed to create and maintain a *certain kind* of body? What is the larger social function of using scientific theories to produce bodies that free the “individual,” the autonomous sovereign self, of personal responsibility concerning the state of affairs within the body? In effect, for chemical discipline to maintain its coherence, there must emerge a scientific theory that re-assigns causes for types of behavior onto the body. The function of the theories, or the rhetorical inventions, that produce the diagnostic category of ADHD, is exactly to serve the purpose of placing the “self” into a causal slot that cannot interfere with the internal operations of the body.

The type of ontological template that is required to free the “person” from the body is one in which the body is dissected irrevocably from the self. We can trace this division back to Descartes. Lührman has noted that “psychiatrists have inherited the Cartesian dualism that is so

marked a feature of our spiritual and moral landscape. . . . when psychiatrists talk in this manner, psychosis and depression become likewise written on the body.”⁷

In one sense, psychiatry usefully employs dualisms to alter the mind by offering the body certain remedies. Yet, as I shall argue in succeeding chapters, in the case of ADHD, the door only swings one way because the corporeal components of mental illness cannot be altered by any changes to the psyche, thus canceling out the efficacy of therapy. This shift to the body as the locus of the cause of mental illnesses and disorders is not simply a theoretical insight that appropriates Cartesian dualism, it is a moral postulate, for “if something is in the body, the individual cannot be blamed; the body is always morally innocent.”⁸ If a scientist, say, a psychiatrist, enters into the diagnostic process with the untold presumption that the body is “always morally innocent,” then the body becomes not only the site of diagnosis, but also the locus of control for changing behavior, if in fact diagnostic criteria are composed of behavioral parameters.

Scientists as psychiatrists are given the power by the lay public to formulate the criteria of what types of behavior qualify as a malfunction within that which “controls” behavior in body, the brain. Within this authoritative relationship with the lay public, there is an asymmetrical knowledge relationship that controls and has power over bodies. In the case of ADHD, the bodies of children are at issue. The field of medicine, which is highly specialized, nurtures this asymmetrical relationship for the purposes of controlling access to the knowledge of nomenclature, which serves as a proportional indicator of the level of control that the field of medicine has over bodies. Although medical knowledge also serves the purpose of curing disease, it also maintains a hierarchy of knowledge. Medical technology and medical science saves countless lives and eases human suffering, and pharmacological machines offer cures as

well as preventative measures against illness and death. Nevertheless, the tools of rhetorical analysis enter into this larger discourse of pharmaceutical technology when it is used to modify behavior, because the power to change the behavior of people is power embodied. Sociologist Adam Rafalovich notes that:

Within this asymmetrical knowledge relationship, many argue, is the potential for the abuse of power, perhaps through the literal fabrication of social problems. . . . The medical realm invents (or socially constructs) a problem and then claims ownership of the feasible measures for rectifying it. As the problem and solution become more known, and hence more legitimate, the knowledge asymmetry between medical and lay realms is maintained and exacerbated. Such inequity fosters a dependency in which the public continually seeks medical professionals for the definition of problems outside of the lay purview.⁹

Parents who do not understand why their children behave in an abnormal manner often seek the help of medical experts in order to provide their children with discipline; parents seek help to make their child “normal,” that is, well disciplined. If it is the case that psychiatrists not only have the power to define what normalcy is, but also the measure to achieve it, then it is implied that any understanding of the process that creates the criteria that comprise what “normal” behavior is will always be beyond the understanding of parents *who are not psychiatrists*. Parents of children with behavioral difficulties are a genus of layperson that has a special relationship with medical experts, because it is they who will act upon the interest of their children by proxy.

For the sake of this project then, I will examine those texts that seek to persuade parents of their child’s normality as it relates to a number of assumptions: First, that ADHD is a “real” disease and not simply a category imposed upon children with “poor” social conduct. Second, that ADHD has a discrete pathology that is organic in origin. Third, that the best way to remedy the effects of ADHD is with medication. Finally, these texts suggest that parents do not possess the knowledge or understanding to make decisions about their child’s mental health. By understanding how parents of children with ADHD are persuaded to believe in these three things,

I hope to demonstrate that the diagnostic criteria of ADHD is a rhetorical invention that reflects the ever widening distance between the discursive worlds of experts and layman.

The discovery of a discrete attention disorder is usually ascribed to a British doctor named George Still. In 1902 he labeled this disorder “defect of moral control.” The characteristics of this disorder included “passionateness, jealousy, lawlessness, dishonesty. . . . sexual immorality and viciousness.”¹⁰ Although unruly children have existed in every historical epoch since the beginning of civilization, what is important about Still’s work is that, for the first time, the unruliness of children became a medical-moral diagnostic category.

By making “defect of moral control” the purview of the medical establishment, the stage is set for the disorder to be later renamed by Straus and Lehtinen “minimal brain dysfunction.”

Walters and Barrett describe this renaming imperative in greater detail:

Strauss and Lehtinen focused on defining the nature of handicaps present in these children with diffuse brain damage, with little or no attention was paid to the definition of a specific symptom of hyperkinesis. However, the association of the symptoms of excessive motor activity and distractibility with brain damage became firmly entrenched as a result of these early descriptions of the behavioral sequelae of known and inferred brain injury.¹¹

The reason that the disorder was called minimal brain dysfunction was because it was assumed that the disorder was caused by some kind of damaged area of the brain. Since this particular neurological area was never identified, it was simply and euphemistically referred to as “minimal,” denoting the fact that the patient is not clinically retarded, only “minimally” damaged. As early as the 1930’s, scientists discovered that stimulant medication had an effect of reducing hyperactivity within a child. During the thirties, psychiatrists such as Charles Bradley began to experiment with dextroamphetimine (Benedrine) and children who had been diagnosed with “organic brain dysfunction.” Prescribing stimulant medication to children has continued to this day as the primary mode of treatment of children diagnosed with ADHD.

The history of the development of ADHD is intimately tied to the history of schools as apparatuses of discipline. As the increasing use of technology required students to learn more tedious information than ever before, other programs were fiscally strangled within the schools because they were not seen as practical in the world of technological innovation. ADHD and its history are wed to certain types of behavior, and this behavior is in turn tied to stimulant medication that helps children concentrate on ever growing bodies of unrelated data that they are required to learn. The psychiatric community claims that the introduction of stimulants into the body of a child has the effect of replacing neurotransmitters that the child is otherwise missing because of brain damage or “bad” genes. Paul Wender, one of the leading proponents of ADHD as a diagnostic category, explains:

Medication is necessary unless and until the brain, through its own growth and development, begins producing adequate amounts of required chemicals. This is very similar to the treatment required for pernicious anemia, except that pernicious anemia requires administration of vitamin B. . . . Stimulant drugs have a much different effect in ADHD children than they do in normal adults. Instead of becoming high or excited, these drugs in general calm down ADHD children and sometimes they may even become somewhat sad. Children do not become addicted to these medications, there is absolutely no danger that this will occur.¹²

Children who have ADHD are missing the requisite chemicals that “normal” children have, and because of this, they require the introduction of drugs into their bodies in order to behave correctly. This is an example of the rhetoric that underlies the official diagnostic categories of ADHD, which are described within psychiatry's canonical document, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM).

This DSM advances the idea that stimulant medication replaces essential chemicals within the brain. Yet, as independent researchers who are not fiscally supported by the producers of stimulant medication have pointed out, the effects of stimulants upon the bodies of children are

homogenous, that is, stimulants effect most people in the same way, regardless of whether they have ADHD or not. As Golden and Moses have concluded, “the response to the drug cannot be used to validate the diagnosis. Normal boys as well as those with ADHD show similar changes when given a single dose of a psychostimulant.”¹³ In other words, stimulant medication has the same effect upon all children, regardless of what “illness” they have been diagnosed as having.

The relationship between ADHD and pharmaceuticals has created a general situation in which parents know that their children are behaving “better,” and this better behavior correlates with the taking of the drug. Stimulants in general increase the brain’s ability to concentrate on tedious tasks, due to the way that stimulants effect the functioning of the frontal cortex. If stimulant medication replaces essential neurotransmitters, then why is it that many people (illegally) take stimulant drugs in order to concentrate? This question has been implicitly posed in another way by Alexandra Marks:

In public schools and private universities across North America, Ritalin is increasingly the drug of choice for thousands of young people, from 10 year old grade schoolers dabbling with a first illicit high to graduate students in need of an all night push to finish a term paper.¹⁴

If Ritalin, a popular stimulant medication for treating ADHD, only helps those with ADHD overcome their symptoms, that is, if it helps them concentrate, then why do graduate students also take it to concentrate? The answer to this question lies in understanding *what* Ritalin is molecularly similar to: cocaine hydrochloride. Alarming, Volkow and his team of chemists have come to some rather disturbing conclusions: “Cocaine, one of the most reinforcing and addictive of abuse drugs, has pharmacological actions very similar to those of methylphenidate (Ritalin), one of the most commonly prescribed psychotropic medications for children in the United States.”¹⁵ Like Ritalin and other stimulants, cocaine allows the mind to focus in upon a task while enduring extended amounts of fatigue. Although psychiatrists can be expected to use

caution when prescribing Ritalin, the disease has never been confirmed as having a discernable referent within the body. ADHD is defined by the manner in which it is cured. The fact that no one knows what causes ADHD is irrelevant to diagnosis because the diagnosis concerns behavior. This is an openly admitted and indisputable fact within the psychiatric community, although “genes” are always mentioned when any attempt is made to elucidate the seemingly illogical maneuver of diagnosing a disease that has no causal relationship to the material body. As leading ADHD psychiatrist Carol Lensch admits: “Due to the complex nature of ADHD, it has been difficult for researchers to identify a specific cause or causes for the disorder. Therefore, in spite of the extensive studies that have been conducted, there is no known cause.”¹⁶ The sublimation of material causality, combined with the radical disparity between American children’s stimulant medication consumption and the rest of the world, at the least demonstrates that the dialogue surrounding ADHD and stimulant medication has rhetorical dimensions. The Drug Enforcement Agency points out in its own internal reports that the United States consumes five times more stimulant medication than the rest of the world combined.¹⁷

As is becoming more common within the intertwined discourses of psychiatry and the pharmaceutical industry, a wider and wider range of disparate behaviors are labeled as aberrant due to their lack of conformity to the standardized vision of what it means to be a human being. The increasingly broader continuum of “abnormal” behavioral patterns is couched within a larger cultural discourse that incorporates the efficacy of psycho-technology. This cultural ideology of “better living through chemistry” has precedence within the texts that support the apparatuses of chemical discipline, and this chemical discipline is subsumed under a new kind of power: bio-power. Hardt and Negri offer a summation of Foucault’s notion of bio-power in their book, *Empire*:

Bio-power is a form of power that regulates social life from its interior, following it, interpreting it, absorbing it, re-articulating it. Power can achieve an effective command over the entire life of the population only when it becomes an integral, vital function that every individual embraces and reactivates of his or her own accord.¹⁸

Bio-power does not exist in a vacuum however, it is made manifest within bodies by social structures, namely, disciplinary social structures. Although Foucault's list of "universities, secondary school, barracks [and] workshops" names outright some of these social structures, I would argue that another social structure, the molecular-corporeal dynamic, might also rightly belong on such a list.¹⁹

The social structures that facilitate chemical discipline might contribute to the health of children, yet they also exacerbate the mental health problems for which they were designed to remedy. A clearer articulation of this rhetorically created and ideologically sustained "feedback loop" comes from Bosco and Robin when they write that

The absence of system articulation generates controversy. A social system is, unfortunately, likely to be more concerned about protecting itself than about developing the kinds of changes that may produce a coherent social context. In responding to a crisis, one tends to view as givens the very characteristics of the system, that in large measure, generated the crisis. One reaction to this situation is the emergence of policy and laws to proscribe the behavior that led to the crisis.²⁰

In order to understand the weaving of chemical discipline into the world of bodies, it is necessary to introduce new terminology into the method of rhetorical analysis.

As is often the case for a work that explores the relationships between bodies, power, and rhetoric, there are terms that are either created or introduced from various disciplines. To assist the reader, below I offer some clarification of my own special uses of "discipline," as well as some other terms. Also, in this brief section I will define the terms that are unique to this project alone.

By “discipline,” I mean a technology that is designed to create a modification within the central nervous system. Repetition creates a neuro-corporeal feedback loop that eliminates conscious second order abstracted deliberation in the performance of an action, or the neglect of an action. For example, discipline within a school consists of a regulatory mechanism comprised of words that order a body. If a teacher says “sit down,” a student will sit down. If the student is “normal,” he or she responds to the ordering word without conscious deliberation. Likewise, part of basic training within a military unit is the preparation of the soldier’s body to respond, again, without conscious deliberation, to the word “attention.”

“Chemical discipline” is mode of discipline, unlike the discipline outlined above, that creates a modification by directly altering the human nervous system without the process of the neuro-corporeal feedback loop. While *discipline* is a set of procedures that are repeated for the effect of producing neural patterns on the level of the automatic, thus changing behavior, *chemical discipline* changes behavior by way of direct molecular interaction with the central nervous system. In other words, chemical discipline is the effect of a particular type of molecular technology.

By “apparatus,” I mean any social structure that organizes discipline, be it chemical or analog. The way that I will be using the term within this project also extends to designating any type of structure that provides demarcations of space and time by way of discipline. Therefore, this way of defining apparatus includes spaces and procedures that incur their effects upon the microscopic or ordinarily unseen organs, such as the brain. Hence, the molecules of pharmaceuticals are an apparatus, as are the corporations that produce them.

By “pathologization,” I mean any process that uses rhetorical parameters for the production of categories of abnormal functioning of the body. For example, homosexuality was

at one time included in the list of mental diseases that psychiatrists used to diagnose. There was a rhetoric of pathologization that discursively provided epistemic coherence to this particular diagnostic category; it was in essence then a *norm* that was also a *diagnostic category*. Jurgen Link has offered commentary that shares some of these ideas within his essay “From the ‘Power of the Norm’ to ‘Flexible Normalism’”:

According to concurrent interpretations of ethnology, anthropology and sociology, all human societies possess and have possessed “norms” and “normativity.” Explicit and implicit regulatives, which are reinforced through sanctions, pre-scribe a specific action to materially or formally determined groups of people. Norms therefore always pre-exist (social) action: they are already known to at least a few professionals of the norm before such action.²¹

In the case of ADHD, the norms are known to the professionals, psychiatrists, and are reinforced through sanctions, or punishment. The difference between ADHD as an “anti-norm” and other forms of aberrant behavior is the fact that ADHD entails sanctions that are molecular, and thus require the pragmatics of pathologization.

Pathologization as a practice then, appropriates certain types of behaviors from the discursive field of vice or choice into the realm of disease. Alcoholism was once defined as a vice or a lack of moral control, a conscious decision-making process on behalf of the agent to engage in destructive behavior for the sake of temporary pleasure. “Bad” children were once simply that, children who failed to cognize the culturally produced set of behavior mores. Due to the rhetoric of pathologization that surrounds the treatment of children’s bodies, this “bad” behavior now functions to support the pathology of a disease, such as ADHD, and the norm is defined by the professionals who also impose the “sanctions,” psychiatrists. Pathologization finds its conceptual counterpart within a particular genus of rational instrumentality that I call the black box, a term originally used by behavioral psychologist B.F. Skinner.

By “black box,” I mean any machine of which the internal operations are regarded as irrelevant to the results produced. For example, the vast majority of computer consumers treat their computers as black boxes: whenever there is a problem with the behavior of the computer, the owner takes it to an expert to be fixed. A similar operation takes place on the level of automobiles, televisions, and electronic home appliances generally; that is, instrumental machines. In an identical and not merely analogous fashion, children are treated as black boxes when they are not “performing normally.”

One of the features of systems that are treated as black boxes is that whenever the system is not complying with the parameters of pre-defined normalcy, normalcy is sought after by way of the knowledge of an expert. These “experts of the black boxes” not only have the knowledge to change the system so that it functions normally, but also it is their sole purview to set the parameters for normalcy in the first place. When it comes to discipline, this conflation of both consequence and cure finds itself localized within the power dynamic that forms the base of the discursive channel that crosses between experts and laymen. It is this vector that prescribes the manner in which children are treated like machines. This is not to say that children are not biological machines; what the discursive channel means is that to treat both biological machines and analog/digital/instrumental machines in the same way magnifies the problematic of defining normal operating criteria. These problems of criteria are pronounced within human machines because whereas digital/analog/instrumental machines are constructed (with a pre-defined end/purpose), human biological machines grow, and hence their social purpose of functioning is not part of their structure. Any pre-conceived notion of telic purpose, such as the purpose of staying within the boundaries of social defined normalcy, is created by way of the rhetoric of pathologization within the age of chemical discipline.

Thus far I have introduced the idea of ADHD and its relationship to rhetoric, the nature of the discursive bridge that exists between scientist and the lay public, and defined the specialized terminology that I will be using within this project. The remainder of the project will be two additional chapters. Chapter two will examine the history of science, and how science relates to rhetoric and the popular imagination. Chapter three will be a rhetorical analysis, on the level of rhetorically constructed identity properties, of various texts about ADHD.

The case examples for this study will be comprised of texts that illustrate the idea that the disease known as Attention Deficit Hyperactivity Disorder (ADHD) is a disease caused by a chemical imbalance within the brain that can be “cured” by (stimulant) medication. Within this master’s thesis, I will demonstrate how children function as black boxes in the rhetoric of chemical discipline. To that end, the texts I will examine are those of the National Institute of Mental Health (NIMH), the Attention Deficit Disorder Association (ADDA), and the programs of Children and Adults with Attention Deficit Disorder (CHADD), a social group for children and adults with ADHD.

I have chosen to examine the texts of these three organizations because of their focus upon children. The importance of this study of children lies within this study's general line of departure that re-appropriates the topic of ADHD and stimulant medication away from the mechanisms of the medical apparatus. This is possible because the questions I will be answering not only involve why parents are persuaded to take their “unruly” child to a doctor. I will also pose the question of what rhetorical practices and persuasive patterns are part of a larger cultural discourse that allows parents to be persuaded that ADHD exist at all. In giving attention to these questions, I hope to address the possible harm that may be inflicted upon children by certain rhetorical practices, a project that contributes the rhetoric of science in spirit as well as content.

In essence the remainder of this project will focus upon the effect of molecular machines on bodies in the age of chemical discipline.

Chapter 2: Scientific Theories and the Popular Imagination

There has always been an intimate relationship between theories of science and the working of culture within large societies or civilizations that exist outside of the “hunter-gatherer” designation. This relationship is built on a particular type of rhetoric that serves as a bridge between the expert (scientists) and the layperson (non-experts). The rhetorical bridge is necessarily pedagogical in nature because the persuasive strategies of the scientist are focused upon teaching the outcomes of scientific investigation to a popular audience, which we might think of as the layperson. Such an insight is not new, and as Aristotle himself notes within *The Rhetoric*:

Again, supposing we had most exact knowledge, there are some people whom it would not be easy to persuade with its help, for teaching scientific exposition is in the nature of teaching. . . . We must give our proofs and tell our story in popular terms, as we said in *The Topics* with reference to the controversy of the many.²²

Aristotle makes it clear that scientific illuminations are to be taught to “the many” by using “popular terms.” Throughout the history of scientific development, this teaching of science in popular parlance has taken different forms depending upon the social structure of the “many” within a given historical epoch. What is particularly problematic when examining social structures and scientific discourse is the situation that arises when the language of the many is under girded almost completely by scientific discourse, such as is the case within a highly technological culture. When scientific discourse and the language of “the many” are in such close alignment, so close that they might overlap in terms of form, then the relationship between common parlance and science becomes very pronounced. Indeed, one might even go so far as to argue that scientific discourse itself changes according to the popular, or lay, understanding of

how it operates. In this chapter, I will argue that when science changes its theories in response to popular discourse, which is itself patterned by scientific terminology and semantics, a rhetorical trope emerges that is neither “scientific” nor “popular.” This trope is known as the logic of the black box. This black box has spent many years developing, and now I will trace one of the many paths of its eventual fruition by way of the history of science, beginning in ancient Egypt.

Ever since the Egyptians used the lever in order to facilitate the construction of geometrically precise pyramids, there has been a discursive bridge between the theories developed by the scientific community and laypeople. The layperson uses scientific theories to replicate structures of power, enact aesthetic projects, support philosophical speculation, and provide evidence for maintaining the *status quo* of “normalcy.” In the time of the Egyptians, normalcy was defined by the polytheocratic order that was articulated to the body of the Pharaoh. Similarly, the layperson within the age of chemical discipline utilizes scientific theories to offer justification for the normalcy of the chemically disciplined body. In other words, although the community of scientists in the realm of medicine belongs to the paradigm of empiricism, this does not preclude the fact that scientific theories are appropriated for uses that are not in alignment with their original formulation.

Some scientific theories are popularized, and become a folk ontology. Within this research project, I argue that not only is the preceding statement taken to be an axiom, but its converse is also equally valid. In other words, rhetorical invention within discourse that percolates through social structures and popular concerns are often worded to be in agreement with scientific theories. Oddly enough, sometimes scientific theories, the theories of a cognitive authority, are rhetorically crafted with the “language of the many,” which is in turn formulated by the terminology of machine technology, a structure that is given form by the scientific community.

The true problematic of this project is to outline what arises when society's popular concerns *are* scientific theories, and scientific communities are concerned with popular discourse. What rhetorical inventions are deployed when popular discourse and scientific theories overlap, or perhaps in a more convoluted fashion, what happens when these two discourses become one and the same? To answer this question, we must first examine scientific theories and social constructs in order to understand how the two might have been separate in the past.

Certainly it is not a new concern for scientists to offer their theories to the judgment of the state. One possible reason for this is because any given scientist, since the beginning of science as a cultural project, has a desire to have their work seen in a favorable light by those who provide funding for research. Occasionally there are other concerns as well:

The heart of creatures is the foundation of life, the Prince of all, the Sun of their Microcosm, on which all vegetation does depend, from whence all vigor and strength does flow. Likewise the King is the foundation of his Kingdoms, and the Sun of his Microcosm, the Heart of his Commonwealth, from which all power and mercy proceeds. . . . all things human are according to the pattern of man, and most things in a King according to that of the Heart; Therefore, the knowledge of His own Heart cannot be unprofitable to a King, as being a divine resemblance of His action.²³

This small excerpt is taken from William Harvey's *Anatomical Exercises*, a treatise that deals with the functioning of the circulatory system. While most of the researchers in Harvey's time were clinging to the Galenic paradigm of the four humors, he broke from that model in an effort to advance the theory that the heart is not simply a regulatory organ, but instead a pump. Harvey published this text in 1653, and although Galileo was long dead, the final outcome of Galileo's rebellion against the papacy was still a legitimate concern for Harvey.

As protection against the fate of Galileo that preceded him, Harvey brilliantly opens his book with a letter to King Charles of England. A direct appeal to the sovereign was a common practice at the time within scientific literature, and Harvey's work is no exception. The explicit

homology that is rhetorically created between the Heart, the Sun, and the King is meant to not only shield Harvey from the oppositions of his detractors, who might have the King's ear, but also to directly implicate the well being of the King within the research itself. The social dynamic within England at the time demanded that Harvey acknowledge the Sovereign within his work, and he does so by including him within the paradigm that guides his operant cosmology. This placing of the square peg of social mores into the round hole of scientific theory is a trend that not only continues up to the present day, but also unfolds in problematic ways, largely due to technological advances in communication and observation.

The advancement of the scientific project into the modern era of communication technology, and the aforementioned relationship between scientific theories and popular concerns, can occasionally take on a general air of fear and wild speculation. This can be seen clearly within the cultural myths of the 19th century known as "science fiction." This particular genre of fiction is a rich cache of the links between the popular imagination and scientific discourse, a relationship brought to bear within the following infamous radio broadcast:

No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man's, yet as mortal as his own; that as men busied themselves about their various concerns they were scrutinized and studied . . . minds that are to our minds as our minds are to the beasts that perish, intellects vast, cool and unsympathetic, stared at this earth with envious eyes, and slowly and surely drew their plans against us.²⁴

Thus opened the first minutes of *The War of Worlds* broadcast in 1938 by H.G. Wells. Doubtless we are all familiar with the social outcome of this broadcast, and how it changed the American socio-political relationship to radio broadcasting. Yet for the purposes of our present concerns, I will concentrate upon the cultural and scientific events that lead up to this broadcast, as opposed to the panic and trauma it caused as a result. These cultural and scientific events do not solely

arise from the language of the many, but also derive their form from scientific research into the material world, in particular the realm of the heavens. Human beings have constructed myths around the motions of the heavens since time immemorial, but these myths take on a decidedly technological flavor in the era of advanced observation techniques. In the late nineteenth century, advances in optical technology afforded astronomers an opportunity to see one of their closest neighbors in ways they had never seen before. The red planet, Mars, unlike Venus, was the natural object of scrutiny because unlike Venus, Mars has a transparent atmosphere.

The planet Mars has always served as an archetype for the strangeness of those things which lie beyond the Earth. Since ancient times, its retrograde motion, which is attributable to the fact that it revolves along the elliptical plane at a slower speed than Earth, has served as a point of mystery within popular thought until the development of the Copernican cosmology. Even after the Copernican system became accepted, laypeople and scientists alike noted seeing bright flashes upon the surface of Mars, and some suggested the construction of giant geometrical shapes in the Sahara Desert. Upon filling the shapes with liquid kerosene, we could then signal the “Martians.”²⁵

This longstanding flirtation with Mars as the theatre of the possible-future/ myths continues to this day with films such as *Mission to Mars*, *Red Planet*, and *Total Recall*. The genealogy of these films has its root within astronomical events, popular discourses, and architectural projects that happened during the end of the 19th century.

With the aid of telescopes, which were increasingly larger and more powerful, Pietro Secchi, a Jesuit priest, coined the term “*canli*” in reference to the water ways that he believed that he observed on the surface of Mars. In 1894, Mars was in a close opposition to Earth. This close opposition of Mars, in combination with advances in optics, afforded astronomers the very rare

opportunity to observe the red planet with more scrutiny than ever before. These observations, combined with the pre-existing “pop-science” notions put forward by Secchi, led many astronomers to revise their previous theories about Mars. Some of these revisions were a veritable explosion of “sightings” of canals on the surface of the red planet.

Where there are water canals, there must be canal builders, many reasoned, and this logic was the “scientific” conclusion of two books published by astronomer Percival Lowell: *Mars and It's Canals*, published in 1906, and *Mars as the Abode of Life*, published in 1910. Here is an excerpt from the former:

That Mars seems to be inhabited is not the last, but the first word on the subject. More important than the mere fact of the existence of living beings there, is the question of what they maybe like. . . . if astronomy teaches anything, it teaches man. . . . [that] though he will probably never find his double anywhere, he is destined to discover any number of cousins scattered through space.²⁶

Canals and *Abode* were popular books in the early 1900's, and demonstrated a popular belief that aliens lived on Mars. Because respectable scientists such as Lowell supported the idea, the existence of Martians was not considered entirely outlandish. Even though Lowell's ideas were criticized by other scientists, namely Alfred Wallace (the co-discoverer of natural selection), the notion of extraterrestrial life on Mars gained popular acceptance. Carl Sagan explains the popular impact of Lowell's writings:

It had a mythic quality as old as Genesis. Part of its appeal was the fact that the nineteenth century was an age of engineering marvels, including the construction of enormous canals: the Suez Canals. . . . the Corinth Canal. . . . the Panama Canal. . . . [and] the Great Lakes locks. . . . If Europeans and Americans could perform such feats, why not Martians?²⁷

Sagan's observations suggest that the Martian's building of canals seemed reasonable because of other mechanisms of material culture that were transpiring at the exact same time. In effect then, there is an understanding of science that is structured by the popular imagination, and this

process reaches its ultimate and traumatic end within the social events that occur after Wells' radio broadcast. Material events (Mars/Earth near opposition in 1894), engineering feats (canals), communication technology (radio), recent events (the general "war scare" going on in Europe), and fictional prose (Wells' text), come together within the popular imagination and create a situation where scientific theories are rhetorically influenced by not-so-scientific events, situations as relatively mundane as the construction of what are essentially giant ditches. This is a trend that will continue into the age of digital technology, and a pattern will emerge in which the convergence of technology and nature provides a psychological template for the rhetorical construction of behavioral disorders. The construction of these behavioral disorders is wed to the miniaturization of discipline, a process that has its beginnings within the concept of a thinking machine and the mathematics of digital computing.

Digital technology truly enters popular discourse after the events of World War II. The military's use of the machine ENIAC to calculate the flight patterns for projectile missiles opened up a realm of scientific investigation and production that was not known before. For the first time, machines were being used to calculate meta-performance, or how new machines could be engineered. In other words, machines were built in order to facilitate the construction of engineering diagrams that presumably lead to the construction of new machines. In effect, this new era of machine meta-performance was the first time that people used machines to calculate precise tolerances in designing machines of ever greater complexity, and this complexity was a result of these precise tolerances afforded by digital technology. The engineering possibilities of digital machines were studied and acted upon by new engineering diagrams that were themselves a result of digital technology.

These new and precise tolerances of machine production sometimes move onto metaphysical accounts of the natural order. To put it another way, occasionally scientific speech is used in the service of promoting highly questionable, and even mythological, descriptions of the natural world. The recent polemic concerning intelligent design is the latest example, though certainly not the most harmful. One example of this motion is the misappropriation of the work of Dennis Gabor (who would later win a Nobel Prize for his work), who is credited with being the founder of the science of holography, or the creation and study of holograms. In 1947, Gabor stumbled upon an engineering curiosity while working to improve the use and resolution of the electron microscope.²⁸ Other scientists began to experiment with his largely accidental findings, most notably Emmett Leith and Juris Upatnieks of the University of Michigan, whose work proved highly successful due, in part, to the invention of the laser in 1960, which they used to create the first true hologram in 1969, *Train and Bird*.²⁹

One of the unique properties of holographic photography is that the three dimensional image (at least in appearance) burned onto a piece of holographic plate will maintain coherence even if the original plate is twinned. In other words, if you take a holographic photograph and cut into two parts with a pair of scissors, both pieces will maintain the original image. Unlike a chemical photograph, a laser photograph is fractal, so that even the smallest pieces of it contain all of the information as the “original.”

This unique property of holograms has served as a trope for some philosophers who propose that all structures in the universe are in fact holographic, each small part containing all the information of the whole.³⁰ Such a line of thinking has been adopted and diffused into a wide range of lay books on science, most notably, *The Holographic Universe*, by Michael Talbot, and

The Holotropic Mind, by Stanislaw Grof. Here is an excerpt from the former that effectively encapsulates this “holographic” cosmology:

But what is even more astounding is that some scientists are beginning to believe that the universe itself is a kind of giant hologram, a splendidly detailed illusion no more or less real than the image of Princess Leia that starts Luke on his quest. Put in another way, there is evidence to suggest that our world and everything in it are also only ghostly images. . . . from a level of reality so beyond our own it is literally beyond both space and time.³¹

What stands out in this passage is the metaphysical similarity to a dynamic that is already familiar to the popular imagination, namely, the Platonic theory of the forms. Arguably, most Westerners might not call it by that name, but the structure is still the same because it is a “level of reality” that is “beyond space and time.” The reference to the hologram, and its position as one that serves (metaphorically) as a possible unifying logic for all of existence, is a wild extrapolation at best, and a technocratic recapitulation of Platonic mysticism at worst. Yet, only by way of the scientific work performed by Gabor and his followers is such a model possible. Furthermore, what is curious about Talbot’s particular work is that it often uses concepts from quantum mechanics, specifically the work of David Bohm.³² Dressed in a language of scientific terminology, specifically the terminology of subatomic physics, Talbot’s dubious metaphysics makes an appeal to the popular imagination by way of an enthymeme. The aspect of the popular imagination that Talbot appeals to is the diffused “other level of reality” idea, and the readers of his book supply the missing middle of the “another reality” enthymeme.

Although Talbot’s work is based upon an empirically sound idea that has been proven to work, the extrapolations that Talbot sees following holographics are utilized to offer theories of explanation for a plurality of paranormal phenomena. Talbot marshals the holographic model to create accounts for astral projection, telepathy, general psychic phenomena, and ghosts. Although certainly an interesting read, Talbot’s work is an example of legitimate scientific theories used to

give an account of phenomena that they have no way of explaining. Holograms and quantum mechanics, when deployed as explanatory theories in a text designed for the general, or lay reader, demonstrates that the rhetorical efficacy of this text is bolstered by the sheer *ethos* of the scientific project in general. Certainly the lay reader is not more than casually familiar with the term “quantum mechanics,” and as I will argue, the lay reader is also not more than casually familiar with terms such as “gene,” and “methylphenidate hydrochloride.”

Talbot’s misappropriation of the concept of holograms, while scientifically questionable, is a limited exercise in obtuse philosophical speculation. One must acknowledge limitations, and one of the limitations of Talbot’s work, and there are many, is the fact that it offers little room for harm to real world human beings. Now, I would like to turn our attention to scientific theories that do harbor within their dissemination the power to cause pain and suffering, theories that are not limited to the exercise of philosophical speculation. The most severe example of this is that of eugenics.

When one speaks of eugenics, immediately images of the Nazi “social experiment” spring to mind. The United States, however, was one of the leading propagators of genetic reductionism and deterministic social engineering. Consider one of the most famous studies in eugenics, *The Kallikak Family* by government scientist Henry Goddard, first published in 1912. Within this book, Goddard argues that one strategy to deal with the problem of those who are “unfit” is to sterilize them, the goal of which is to make a better society. Consider the following explanation he offers for justifying this plan:

The other method proposed of solving the problem is to take away from these people the power of procreation. The earlier method proposed was unsexing, asexualization, as it is sometimes called, or the removing, from the male and female, the necessary organs for procreation. The operation in the female is that of ovariectomy and in the male of castration. There are two great practical difficulties in the way of carrying out this method on any large scale. The first is

the strong opposition to this practice on the part of the public generally. It is regarded as mutilation of the human body and as such is opposed vigorously by many people. And while there is no rational basis for this, nevertheless we have, as practical reformers, to recognize the fact that the average man acts not upon reason, but upon sentiment and feeling; and as long as human sentiment and feeling are opposed to this practice, no amount of reasoning will avail.³³

This is Goddard's vision of a socio-biologic utopia that is premised upon a teleological and essentially fascist reading of Darwin's natural selection; a disciplining of bodies by way of direct physical intervention directed at reproduction. Although the Darwinian concept of natural selection is one of the most useful and powerful scientific models of explanation ever devised, the work of Darwin's cousin, Francis Galton, himself influenced by the work of Thomas Malthus, led the American political landscape to adopt a number of theories and practices that brought harm upon human beings.³⁴ One of the most notable mechanisms, in the category of social institutions that harm human beings, is the United States Eugenics Records Office (1910-1944) that was headed by Henry Laughlin.³⁵ In 1907, the state of Indiana was the first state to pass a mandatory sterilization act for those individuals who were deemed unfit to procreate, those who were "mentally unfit." Here we have an example of an institution conferring upon a group of selected bodies a certain form of discipline, namely, procreative discipline. In other words, the Eugenics Records office, itself based upon a (mis)formulation of evolutionary theory, enacts a procedure for controlling a group of bodies. In the case that we have before us here, the group of bodies in question is a particular phylum of human beings that are confined to a socio-economic class, namely, the poor and uneducated (like the Kallikaks). Arguably, what the eugenics movement in the United States led to was "the horror show of eugenics that spawned unspeakable atrocities. . . . excess populations (those of no use to Capital) were viciously attacked and done away with."³⁶

Although Goddard argues for sterilization techniques, his plan was ultimately put on hold by the events of scientific focus during World War II, a time when breeding a better society took a backseat to the imperatives of war, such as the construction of the mechanical brain of ENIAC. The primacy of winning the war against Adolph Hitler, and the knowledge that Hitler advocated sterilization of the “Jewish Problem,” cast a permanent negative light upon Goddard’s program. This coupled with the fact that it was widely believed within the military industrial complex that the key to power was through machines, and not the society of the genetic “overman,” ultimately ended Goddard’s vision of discipline.

This new focus upon the creation and understanding of machines that utilize logic and help promote exact calculations for the purposes of not only World War II, but also the Cold War, reaches its peak within the study of the human brain on the micro level. The human brain not only serves as the template from which studies of artificial intelligence and computers generally derive their descriptions on the level of form, but also as the “example of excellence” that is auto-telic and functional at the same time. The study of the brain after the invention of computing machines serves the purpose of illuminating what it means to be a human being, as well as provides methods to manipulate people by way of discipline. That brain science functions both to illuminate and to discipline is demonstrated by the rhetorical emphasis placed upon its “inevitable” and consummating elucidation. The study of the human brain on the microscopic level is driven by the same desire for the disciplining of bodies that drives the study of eugenics. Both eugenics and brain science are focused toward an understanding of biological mechanisms, and both are infatuated by the promise of social control that appears to be the outcome of these studies. Both eugenics and brain science seek the deterministic causal operator behind human behavior. Eugenics begins in the world after Darwin, and brain science begins in the world that is

opened up by advances in microscopic imaging, a world brought about in the latter half of the 20th century by digital technology. The 1990's, for example, begin with an utterance that performs that which it also describes; the 1990's was the decade of the brain, not only in terms of research emphasis, but also by decree:

The human brain is one of the most magnificent and mysterious wonders of creation. . . . The seat of human intelligence, interpreter of senses, and controller of movement. . . . to enhance public awareness of the benefits to be derived from brain research, the Congress, by House joint resolution 174, has designated the decade beginning January 1, 1990 as the "Decade of the Brain". . . . Now, therefore, I, George Bush, President of the United States of America, do hereby proclaim the decade beginning January 1, 1990, as the Decade of the Brain.³⁷

The "Decade of the Brain" was co-extensive with the introduction of large amounts of funding to those within the scientific community that made the decade truly noteworthy. McKay's work on stem cells, Sejnowski's discovery that brain cells can re-grow, and McKhan's research on brain image producing technologies offered new insights into the function of the brain as a holistic organ.³⁸ With new technology and theories came a corresponding popular discourse about the brain. One of the concerns within these popular discourses is the behavior of children, a social problem that has existed since the inception of the human race. With the Decade of the Brain came a new focus upon the problem of "bad kids" and how to solve this problem through the manipulation of brain chemistry. In effect, then, there is a new popular discourse of chemical manipulation of the brain.

The new popular discourse about the brain was co-opted by the "scientific" community researching the causes of ADHD. The discourse is transformed into a social concern by way of the rhetoric of pathologization. At the same time, the "language of the many" is, as always, in a reciprocal relationship with the scientific community. This reciprocity is a feature of a society whose cultural practices are derived from an intimate material relationship with technology. For

example, Paul Wender, a scientist who studies the causes of ADHD, has stated on numerous occasions within his writings that are intended for a lay audience, that ADHD is the result of the brain missing certain chemicals that usually lead to normal development within a child.³⁹ As in the case outlined earlier concerning the writings of Michael Talbot, the ADHD research community has rhetorically re-centered its mechanisms of explanation so that they are consistent with popular discourse, that is, the rhetorical tropes that began within the scientific community and have since moved into the realm of lay speech. The rhetorical tropes become part of language of the many, and then the popular audience places pressure upon the scientific community in such a way as to suggest to them that the lay text written by the scientific community should share a homology with popular concerns, which again, begin with the scientific community. These tropes might find their rhetorical origin within the scientific community, but their motion into popular discourse is always accompanied by a shift back into the scientific community. The tropes of scientific discourse are in fact created by a third force, a desire for rational instrumentality, a desire for control of bodies. The latest form of this desire is to be found within the microscopic world of *inflated determinism*, the clear victor in the “Nature vs. Nurture” debate, also known as genetics.

As language about the brain enters into popular discourse, new scientific findings within genetics research began in earnest, best exemplified by the work of the Human Genome project, followed by the work of Dr. Ian Wilmut and his cloning of the infamous sheep, Dolly, in 1997. Although today one might hear a person speak of someone who is not in conformity with normalized mores of behavior as having “bad genes,” it goes without saying that such folk ontologies truly have their beginnings much earlier in the century. Popular discourse on genetics and the brain, while having its origins perhaps with the invention process of the scientific

community, is also concerned with other social dynamics. Although this attention to social dynamics is also not a new phenomena, as was demonstrated by the section on William Harvey, their character and efficacy take on a whole new dimension once the nature of the causal changes that can be instantiated by the speech itself are such that human beings come to be harmed. Consider again the fact that the popular imagination at the time of H.G. Wells' broadcast was already partly focused upon the construction of large canals. The popular idea of canals on Mars, coupled with the fact that the scientific community was already expounding upon the possibility, if not the certainty, of life on Mars, as "proven" by the observation of canals, provided a general situation in which the radio broadcast of *War of the Worlds* was taken at face value. Today, the situation has changed, because public interest in specific scientific projects changes in reference to the work of actual scientists.

Yet, let it be clear that I do not subscribe to the saccharine maxim that a lack of knowledge of the past "dooms us to repeat it." Instead, I offered a review of specific historical instances that highlight particular articulations of scientific theories and how they relate to popular concerns and events. Due to the discursive reciprocity between scientific theories and popular concerns, I would suggest that the formulation of the diagnostic category of ADHD is over-determined. I proceed, however, with caution: the formulation of ADHD is over-determined not simply because of a dialectical relationship between the "people" and "scientists." The rhetorical construction of behavioral disorders is a feature of rational instrumentality, that is, the logic that drives discursive reciprocity between scientists and laypeople is a logic that is concerned solely with instrumentality/rational control over bodies. It is this rational instrumentality, and the identity equivocation that it rhetorically crafts, that is the "missing middle" to understanding the relationship between "the many" and "scientists." Furthermore, this missing middle of rational

instrumentality is concealed within the body itself in the age of chemical discipline, and because of this concealment there is a hierarchy of knowledge that privileges those who understand the body on the level of physiology. Control over bodies has always been part and parcel of social hierarchies, and scientists and laypeople are a social hierarchy of asymmetrical knowledge. What differentiates scientific theories and popular discourses prior to neural and genetic science is the fact that in the current era, discipline has taken the form of a microscopic machine. Therefore, the rhetoric of miniature discipline is the rhetoric of machine language, *the logic of the black box is the rhetoric of chemical discipline*. A story where the logic of the black box shows up most clearly is a story that changes, even though it always has the same label. Perhaps where the black box reveals itself most clearly is in two texts with the same title.

As a lay reader into the subject of ADHD, people might ask themselves first where they would want to go to begin to learn more about this topic. As is the case in the era of the Internet, it so happens that a large amount of digestible reading is made available by the institution that many people tend to regard as an authority and a trustworthy source. Even though many people might disagree with the executive branch's ideas of foreign policy, they still trust certain people within the government. In fact, these people are simply paid by the government, and not influenced by any kind of agendas, be they conspiratorial, or simply the usual brand of politics. These "unbiased" people can be trusted as an authority for two reasons. On the one hand, they are scientists and therefore have a degree of automatically justifiable *ethos*. On the other hand, if they are scientists who work for the government, then they are the best that there is, because the government is not known for hiring "just anyone." Indeed, many lay people look to a government sponsored institution for their information on ADHD, in this case, the National Institute of Mental Health (NIMH).

Between the years of 1996 and 2004, the NIMH used a document entitled *Attention Deficit Hyperactivity Disorder* for the purpose of disseminating information to the public. This text, authored by Sharyn Neuwirth, is a booklet published by the National Institute of Mental Health, which is a subsidiary organization of the National Institute of Health. The booklet can be printed as a 48 page PDF document, or it can be read directly as an autonomous webpage on the National Institute of Mental Health's homepage.

The Neuwirth text reads essentially like a troubleshooting manual for a home appliance. It begins with a very brief history of ADHD, and details the changes in medical understanding that accompany the diagnostic criteria that define the disorder. It answers the questions of "what are the symptoms of ADHD?" "can any other conditions produce these symptoms?" "what causes ADHD?" and "how is ADHD identified and diagnosed?" The text also outlines the officially sanctioned procedure for taking a sick child to a specialist for a diagnosis, as well a list of organizations that specialize in helping those afflicted with ADHD.

One of the most rhetorically rich and conspicuous features of this text is how it makes use of a series of narratives about three fictitious individuals; Mark, Lisa, and Henry. These characters are created in order to bring their dealings with ADHD as a life-problem to a personal level for the reader; in other words, these fictitious persons are used for an appeal by way *pathos*. "Mark," for example, is a fourteen-year-old boy who has discipline problems concerning his temper and impulsivity:

Starting at age three, he was a human tornado, dashing around and disrupting everything in his path. . . . he darted around from one activity to another, leaving a trail of toys behind him. . . . his parents didn't know what to do.⁴⁰

The text then moves to a discussion of a teenage girl in order to illustrate that ADHD is not simply a problem of young children. "Lisa" is a seventeen-year-old girl who has difficulty

censoring what kind of socially unacceptable comments she says in public in the presence of her parents. She also has serious problems with maintaining discipline as far as completing her schoolwork:

In elementary and junior high school, Lisa was quite and cooperative. . . . she was smart, yet couldn't improve her grades no matter how hard she tried. Several times, she failed exams. . . . even though she knew most of the answers. . . . one day, after Lisa had failed another exam; the teacher found her sobbing, "What's wrong with me?"⁴¹

After this episode in "Lisa's" life is discussed, the text moves on to the third main character, and adult male who has normal social skills, but has problems at work. This character, "Henry," has never been able to advance in his career as a skilled wood-worker because of his inability to focus on complex tasks:

Over the years, afraid that he might be losing his mind, he had seen psychotherapists and tried several medications, but none ever helped him concentrate. He saw the same lack of focus in his young son and worried.⁴²

As the text discusses the trials of these three individuals, it intermittently expounds upon the symptoms, causes, diagnostic criteria, and medicinal cures for ADHD. Using each of the three "people" to produce a linear time-line narrative, the text describes the "stages" of their cognitive and social development, what their problems are, and how they eventually overcome the obstacles of ADHD. For example, Lisa exhibits symptoms of ADHD as detailed by the author, and the next section of the text is a more detailed and scientific explanation of the symptoms of ADHD and how they are identified. The text also discusses educational options for young people with ADHD, but its main focus is on cures and the prescribing of stimulant medication.

The text moves back and forth between a discussion of the three characters, and how they were helped by way of stimulant medication. One possible reason that it focuses upon the prescribing of stimulant medication is because it is not a "drug" per se, but instead "medicine."

Another reason, the one I will focus on, is the way the text utilized the pre-existing discourse of the brain that is part and parcel to popular discourse. The three characters bring the disorder of ADHD to a personal level, thus making the disease and cure of ADHD an issue that the readers care about. In effect then, the tying together of cause and cure of ADHD, as both a scientific endeavor and a popular concern, is accomplished by the characters and the explicit causal claims of Neuwirth, for example:

With so many American children diagnosed as having attention disorder, research on ADHD has become a national priority. During the 1990's, which the President and Congress have declared the "Decade of the Brain," it is possible that scientist will pinpoint the biological basis of ADHD and learn how to prevent it and treat it even more effectively.⁴³

In this passage, there is a telic goal posited, a goal that is implicated within future understanding of the brain. In other words, the text forwards the prediction of a possible, and not a confirmed, causal relationship between the decade of the brain and a cure for ADHD. The "national priority" of research on ADHD is not the outcome of more people having ADHD, but the outcome of the new coming era of brain understanding. What is conspicuous, then, in terms of rhetorical analysis, is Mark, Lisa, Henry and the "decade of the brain" topoi, and the possible reasons why these persuasive devices are omitted from the 2005 publication of this booklet, a book found in the same place in the NIMH's website, and a text sharing the same title? Why do the three children disappear in the updated version of the text, an update that was created after the decade of the brain was officially over?

One possible explanation is that the inclusion of the three characters humanized the problem of ADHD, and thus stripped it of its features of exclusivity to moral concern; the characters were not properly rationally instrumental. The preceding version of the booklet turns to a more machine/instrumental aesthetic, firmly dragging discourse on ADHD away from a

personal problem, and into a format that is what we might call “scientific-populism.” The three characters are gone, and this disappearance is accompanied by a shift in discourse from the brain, to genetics.

In the 2005 version of this booklet, authored by Margaret Strock, the discussion concerning the brain is minimized, and Mark, Lisa and Henry are gone altogether. Whereas the Neuwirth version begins with a description of these characters, noted above, the Strock version of this same document begins with a brief, and arguably revisionist, history of this disorder:

ADHD was first described by Dr. Heinrich Hoffman in 1845. A physician who wrote books on medicine and psychiatry. . . .[he] was interested in writing for children when he couldn't find suitable materials to read to his three year old son. “The Story of Fidgety Philip” was an accurate description of a little boy who had ADHD. Yet it was not until 1902 that Sir George Still published a series of lectures to the Royal College of Physicians in England in which he described a group of impulsive children with significant behavioral problems, caused by a genetic dysfunction and not by poor child rearing.⁴⁴

Notice the changes in this new version of the text. First, there is a shift from the brain to genetics, and secondly the outdated biological machines, the kids, are removed altogether. The trope of the brain has also been effectively replaced within this new text. To clarify the obfuscation of this introduction to the Strock text, consider the fact that nowhere in any of his writings does George Still mention genetic dysfunction. As I mentioned in the previous chapter, Still called the disorder “defect of moral control,” a diagnostic category that had little or nothing to do with genetics, given the fact that Mendelian Laws of variation and heredity were not widely accepted until the 1920's, and Theodosius Dobzhansky did not publish *Genetics and the Origins of Species* until 1937.⁴⁵ It seems highly unlikely that Dr. Still described the behavior of these children as the result of some “genetic dysfunction.”

Why a shift to genetics, even to the level of retrojecting the idea of genetic origins onto an otherwise objective historical document that is the *actual writings* of Dr. Still? Why does Strock

eliminate the three fictitious individuals? Some might argue that such a shift is part of a conspiratorial background, a kind of Orwellian revision of history that promotes an otherwise “hidden” agenda. I argue differently, given the fact that the popular concerns of the social body in which the text is inserted into, the social body of which the Strock text is articulated to, is one that is no longer decreed to be the “Decade of the Brain,” but instead one that is concerned with “building a DNA revolution,” a theatre of determinism that will be played by “DNA’s cast of thousands.”⁴⁶

Insofar as Strock is the voice of the NIH on ADHD, one possible explanation of this move made by the NIMH is because of the effect of popular discourse, representing how it has shifted away from a guiding master subject that centered on the operations of the brain, and moved to a new center. This new pre-occupation with genetics, which has been circulating within the American popular imagination for some time, is the result of a wide variety of other phenomena, in particular, popular culture’s near obsession with the Human Genome Project. Consider also the far flung controversy over human cloning, or even the pre-natal manipulation of the human genetic code, an idea used as a fictional device within the 1997 science fiction film, *Gattaca*, a movie about a young man who is unable to advance in his career because of “genetic discrimination.” The master trope of genetics, as it reaches out of the scientific community and into the popular imagination, is captured back again into the scientific community. People desire a deterministic explanation to give an account of their lives and behavior, and this desire is in the form of genetics, a black box logic that has morphed and changed in terms of content throughout the study of the human animal.

In effect then, the new “heart of the microcosm” is the gene, a molecular machine unlike the mechanical machine of the heart. Seeing ADHD as genetic in origin has become *common*

sense, given the other scientific discourses concerning genetics that are available within lay reading. Although it would have been strange for Wells to create a program that used as its antagonists aliens from planets from other solar systems, since these planets were not discovered until the technological invention of the Hubble Space Telescope, it was not such an outlandish idea to use aliens from Mars. The canals that were built in Wells' day on Earth lent credibility to the theories of Lowell, and the idea of life on Mars was part of the popular imagination because of Lowell's very popular books. Similarly, although it might be strange to attribute the cause of ADHD to the very rhetorical devices that are used to analyze it, it is certainly reasonable to promote the idea that ADHD is genetic in origin, because we are currently living in the "decade of the gene." Although eugenics is a taboo subject, because the end result of the American and German eugenics programs was human suffering in the form of mandatory sterilization, we are in fact living in an era in which the manipulation of genes is a real and achievable possibility. It is this possibility that drives the rhetoric of pathologization, pushing it out of the realm of the brain, and into the micro-world of genetics.

There is a relationship between the master tropes of current scientific invention and popular discourse/folk ontologies. In examples as diverse as the heart, astronomy, holograms, eugenics, and the brain, there is always a rhetorical tie to the lay understanding of these scientific fields. The discourse on ADHD has suggested a relationship between the scientific field of genetics and a folk ontology that tells us that some people simply have "bad genes." The solution to these bad genes is manipulation of the "cause," which is at the level of the mechanism of variation (genes), and well as the suppression of symptoms by molecular machines, thus altering the fitness landscape of child, a procedure which is at the level of (artificial) selection. The reason that this relationship exists is because of a rhetorical expression on a wide variety of

disparate discursive fields. Furthermore, and somewhat counter-intuitively, I believe that these disparate fields of discourse are united and driven by the logic of the black box, a mode of speech and thought that is both lay and expert simultaneously.

In this chapter, I have reviewed Aristotle's ideas about how rhetoric can be a tool to teach the scientific concepts in "popular terms." This teaching process has been a source of much controversy, tragedy, and poor metaphysical formulations throughout the history of science. The contemporary ADHD research community finds themselves in a situation in which scientific discourse and popular discourse are increasingly reciprocal. The force which drives this reciprocal relationship is the black box, a logic that is wed to the semantics and aesthetics of technological machines, a logic that is one variation of rational instrumentality. In the next chapter, I will explore this machine aesthetic in greater detail. Simultaneously, I will show how the instrumental language of genetics is a formal articulation of the logic of the black box, the "engineering diagram" that provides precise tolerances for the pathologization of human behavioral patterns in the age of chemical discipline.

Chapter 3: Machine Analogies

I will turn now to further examination of lay texts about ADHD, that is, the discursive trends found within lay text about ADHD. Yet, Chemical discipline constitutes more than a cultural trend. Chemical discipline, and its predication upon the logic of the *black box*, a particular genus of rational instrumentality, extends beyond a trend because over time, as I hope to demonstrate, it has become something other than a simple infatuation with “pill popping,” or alternately, the “McDonaldization” of medicinal practices. The black box is a logic that extends to a larger social dynamic, that is, it codes a range of discourses, both lay and expert. Chemical discipline, as instantiated within the particular form of molecular machines, is not a “mirror” of a larger discursive field. Chemical discipline is not the determining outcome of a series of causal chains that converge upon the bodies of children. Instead, chemical discipline has become the paradigm of discipline for the age of rational instrumentality, or the era of black box logic. In terms of rhetorical efficacy, then, it is meaningless to make an attempt to point out a singular origin for the formation of chemical discipline. It is both antecedent and cause because of the manner in which it disguises its operations.

For example, Foucaultian discipline operates exactly because of its articulation to *vision* as well as its location within social institutions that constitute the field of normalcy that we commonly refer to as “correct behavior.”⁴⁷ Chemical discipline, in many ways, is much simpler than Foucaultian discipline because the power of chemical discipline hides exactly because it cannot be seen with unaided human eyes, as opposed to being hidden because of its ubiquitous nature. Chemical discipline is the miniaturization of the hand and the belt to the level of the molecule. Furthermore, even though this is gauged here in terms of scale, chemical discipline is accompanied by a change of *kind*.

Whereas the physical discipline of the hand, the belt, or the *apparatus*, always begins “out there” in the macro level world, chemical discipline always begins its material/physiological operations from within, and then works its way out of the individual body and onto the social field of behavior. As chemical discipline migrates as both a *scale* and a *kind* onto the social body, its adverse effects become articulated to the social body as a set of harmful folk ontologies, sometimes called “common sense.” In other words, the effects of chemical discipline can be clearly seen in terms of its causal effect by way of what is defined as normal. *What is “defined” as normal in the age of chemical discipline is first and foremost the body that is disciplined by chemicals, or a body that acts as if it were disciplined by chemicals.* By implication, then, bodies that are spoken of as black boxes are bodies that are prepared to receive chemical disciplining. Only when the body is rhetorically generated already as a black box, can chemical discipline be reasonably tenable within the mind of a general audience. I begin this discussion of the black box then with texts that demonstrate little or no deviation from the practice of treating human bodies, discursively and materially, *as if* they were instrumental machines.

Machines are constructed and always have an end that is determined by their form. In order to show how human bodies are rhetorically co-opted into the language of instrumental machine operation, I begin my discussion of the black box by examining texts that create the human-body-machine, the kind of body that only chemical discipline can fill. As a point of convenience, let us return to the National Institute of Mental Health (NIMH). Again, the NIMH serves as an authoritative voice upon the behavioral disorder of ADHD, one that has the *ethos* of both *cognitive* authority, because it is a collection of scientists, as well as *administrative* authority, because it is a government institution. For example:

The impulsive child who acts before thinking may be considered just a "discipline problem," while the child who is passive or sluggish may be viewed as merely unmotivated. . . . Hyperactive children always seem to be "on the go" or constantly in motion. They dash around touching or playing with whatever is in sight, or talk incessantly. Sitting still at dinner or during a school lesson or story can be a difficult task. They squirm and fidget in their seats or roam around the room. Or they may wiggle their feet, touch everything, or noisily tap their pencil. Hyperactive teenagers or adults may feel internally restless. They often report needing to stay busy and may try to do several things at once.⁴⁸

Within the second, revised edition of the booklet entitled *Attention Deficit Hyperactivity Disorder*, there are numerous depictions of human bodies as instrumental machines, which is not only startling, but also points us in the direction of asking questions about motive: Why are human bodies spoken of in the manner? Perhaps we can use analogy to answer this question.

As any home appliance owner will tell you, it is important to them that the appliance performs in a manner that is consistent with its design. Certainly as a homeowner, one would be rather disconcerted if one saw the refrigerator attempting to wash the dishes, or the toaster trying to sweep the floor. This rather farfetched analogy is meant to elucidate a function of this passage that is not so humorous, namely, the manner in which it describes a hyperactive child as one that exhibits performance qualities that exceed socially imposed boundaries of appropriate levels of *motion*. By default, then, this passage has the function of drawing a line of demarcation between children who are still when they are told to be still, and those who "need to stay busy" and are "internally restless" as adults.

In like fashion, ADHD specialist Paul Wender, in his book *Attention Deficit Disorder in Children and Adults*, uses the same rhetorical trope of the instrumental machine to describe the problems of the ADHD afflicted child. He uses the analogy of the motor in a more explicit manner in order to help people understand the aforementioned line of demarcation:

As the ADHD child grows older the description changes, he is incessantly in motion, driven like a motor. . . . he may not even be able to sit still in front of the T.V. . . . What is different about the ADHD child is that when he is requested to turn off his motor, he cannot do so for very long.⁴⁹

In this passage, we see that the child is directly likened to a motor, but a motor that cannot be turned off, even if it is “requested” to do so. The argument by analogy that creates a rhetorical linkage between motion that cannot be controlled and the child/motor that will not respond to the commands given is accomplished by way of machine language; the *child is like a motor*. I would suggest that over a long enough time line, this analogical property is all but expunged from the rhetoric of chemical discipline. This expunging process is facilitated by the logic of the black box, which is not only party to the cultural logic of efficient, rational instrumentality, but also a mechanism of unification that captures many disparate elements. Furthermore, the discourse that creates and surrounds ADHD, that is, the *species* black box of the *genus* rational instrumentality, is not an analogical structure. In fact, the logic of the black box can only function when biological machines and instrumental machines are not simply analogous, but instead categorically *identical*.

The identity property of the black box is what promotes its rhetorical effect, for if the identity property was still on the level of analogy, it would not be persuasive, it would be frightening, for what parent *desires* to see their child *as* a machine? For example, if lay texts that concern ADHD made an explicit analogy, comparing children to machines, parents would be disconcerted. Yet the rhetorical identification of children with machines is a successful implicit analogy because it is only the language that surrounds the field of all general machines that is deployed, and not discourse on machines as such. The logic of the black box cannot function without this identification with instrumental machines. Chemical discipline, because it is a function of the black box, combines machines with other machines to produce an effect. The situation of fixing one machine, a child, with another set of machines, molecular machines,

becomes more and more acceptable because the child's body is seen as a instrumental machine meeting other instrumental machines.

This growing acceptability is a result of the persuasive process that is the rhetoric of pathologization. Children are no longer a *growing human body* changed irrevocably by taking methamphetamines. Instead, the child's body is the place where *guilt* is alleviated on several fronts. On one front, it is alleviated from the consciousness of the child, but more importantly for the system of chemical discipline to sustain itself (financially), the guilt of the child's condition is alleviated from the minds of the parents, which is revealed by the following passage:

The parents' focus should be on looking forward and finding the best possible way to help their child. Scientists are studying causes in an effort to identify better ways to treat, and perhaps someday, to prevent ADHD. They are finding more and more evidence that ADHD does not stem from the home environment, but from biological causes. Knowing this can remove a huge burden of guilt from parents who might blame themselves for their child's behavior.⁵⁰

The above passage not only labels certain types of aberrant behavior as a disorder, that is, brings them under the purview of the *apparatus* of the medical establishment, it also takes away responsibility, guilt, and personal accountability from both child and parent; it *strips them of moral agency*. This type of rhetoric must always accomplish these two things at the same time because if this rhetoric only addressed guilt and responsibility, it would be little more than the usual cultural maxim/folk physiology of "you're child is crazy because he has bad genes." If this alleviation of agency discourse only captured behaviors into the medical establishment, it would leave residual notes of personal choice upon an agent, which is unacceptable to the operations of chemical discipline. When this rhetoric of pathologization accomplishes both at once, there is only one choice available, which guarantees the illusion of choice, as well as capture into the medical establishment. Such a mode of seemingly contradictory cognition of a problem, i.e.

“doublethink,” is repeated many times throughout popular literature concerning the causes of ADHD. Consider this passage from the Attention Deficit Association homepage:

ADHD is **NOT** caused by poor parenting, family problems, poor teachers or schools, too much TV, food allergies, or excess sugar. One early theory was that attention disorders were caused by minor head injuries or damage to the brain, and thus for many years ADHD was called "minimal brain damage" or "minimal brain dysfunction." The vast majority of people with ADHD have no history of head injury or evidence of brain damage. . . . ADHD is **very** likely caused by biological factors which influence neurotransmitter activity in certain parts of the brain, and which have a strong genetic basis.⁵¹ [emphasis in original]

As I mentioned in chapter two of this project, this shift of moving ADHD away from discourse that comes from scientific treatments of the brain, and placing it upon biological causes (genes) is a persuasive maneuver by the culture of scientists that extends beyond a theoretical insight. Shifting the blame to a deterministic biological machine (genes) is a rhetorical maneuver that replaces moral responsibility with genetics, because again, the “body is always morally innocent.”⁵² The shifting of the behavior of the child machine onto the deterministic template of the logic of the black box constitutes the *pathos* of the rhetoric of pathologization; this logic provides parents and children with guilt free deterministic sources of their behavior. For the process of pathologization to occur, a necessary rhetoric corresponds exactly to the degree, or level, of determinism produced by a machine. Again, as is the case with ADHD, this correspondence of degree is always linked to a biological machine, called genes, which is the black box *par excellence*.

Since machines (genes and children) are often assumed morally innocent, they have no prior agency than that which is provided to them by discourse. Similarly, a rhetoric of pathologization must take into account the definition of what a family is, if in fact the agency of children (by way of the proxy of the parents) is to be co-opted into the structure of chemical

discipline (which it must be for it to function). In the following passage, we see that the term “family” must mean something other than parents caring for children:

Attention disorders often run in families, so there are likely to be genetic influences. Studies indicate that 25 percent of the close relatives in the families of ADHD children also have ADHD, whereas the rate is about 5 percent in the general population. Many studies of twins now show that a strong genetic influence exists in the disorder. Researchers continue to study the genetic contribution to ADHD and to identify the genes that cause a person to be susceptible to ADHD. Since its inception in 1999, the Attention-Deficit Hyperactivity Disorder Molecular Genetics Network has served as a way for researchers to share findings regarding possible genetic influences.⁵³

A family is a *gene carrying machine* that may or may not have “bad” genes that cause aberrant behavior. Machines in this instance are literally black boxes, and families are machines determined by a genetic script that supercedes any environmental, societal, or pedagogical factors. The cause of ADHD, while having no physical indicators on the level of the morally innocent corporeal body, is still expressed within patterns of behavior that fall outside of the range of normalcy. To phrase the point in a slightly different way, we can say that the lay literature of ADHD posits that the disorder has no identifiable cause, but scientists “know” it is there within genes because all behavior is coded by the genetic script, the master trope within the age of chemical discipline. Although scientists working within the NIMH and elsewhere cannot identify which particular genes code for ADHD, it must be the case that ADHD is caused by genes, because genes are the inflated theory of determination that used to be “fate,” eventually became “natural selection,” mutated to “the brain,” and now have become microscopic. This deterministic logic that inverts consequence and premise goes by another name in the idiom of sociology: *self-fulfilling prophecy*. Scientists know that it is genes that cause ADHD, they simply have not discovered which genes, and why. Clearly, one does not have to be a disciple of Karl Popper to see the epistemological difficulties within the position forwarded by the scientists at

NIMH. When a causal determinism is assumed in advance when it comes to judging the behavior of children, this is a black box logic. There is no better example of this black box determinism than Sharyn Neuwirth's revision of *Attention Deficit Hyperactivity Disorder*:

Attention Deficit Hyperactivity Disorder is not like a broken arm, or strep throat. Unlike these two disorders, ADHD does not have clear physical signs that can be seen in an X-ray, or a lab test. ADHD can only be identified by looking for certain characteristic behaviors. . . . and these behaviors vary from person to person. Scientists have not yet identified a single cause behind all the different patterns of behavior, and they may never find just one.⁵⁴

An inability to identify the causes of a disorder is should indicate that there is some element of rhetorical construction within the categories of diagnostic criteria. The writings of the medical establishment of late are meant to offer both explanation and a prescription for action to the lay public, and utilize the rhetoric of pathologization in two interconnected ways. First, the medical establishment of NIMH, an organization that derives its *ethos* from its social status of both a cognitive and administrative authority, utilizes a rhetoric of pathologization for the persuasive effect it has upon parents, convincing them that ADHD is a problem that requires a solution that they have the tools to solve. This “problem-solution” logic, although hitched to the rhetoric of pathologization, serves the function of an enthymematic code. The black box is persuasive exactly because it is the “missing middle.” To put it another way, the folk ontology of genetic determinism does not appear out of the lumeniferous aether; instead, the current discourse concerning genetics is part of a long term pattern of appropriation of scientific discourse into the popular imagination. Yet this appropriation is a bilateral mechanism, for the popular imagination influences the rhetorical construction of scientific theories, if indeed we can go so far as to assume that scientists live and breathe along with the “lay” public culture.

The bilateral movement of tropes and figures between lay and scientific communities is driven by the logic of our highly technological culture, the logic of rational instrumentality, the shortest and most efficient means to a rational end.

The larger culture, of which scientists and laypeople are both a part, reveals itself most poignantly within the writings of organizational interventions, particularly within discourse that is meant to engage human behavior in a black box. Consider these performance parameters and intervention tactics offered to the lay public by CHADD:

Q: What type of information should be considered in determining an adverse effect on educational performance?

A: Both the school district evaluation team and any outside clinician should obtain as much information as possible about the child's functioning. This would include an interview with the child...an observation of the child in the learning environment; review of grades, academic records [and] disciplinary records. . . . Consideration should be given to the child's current and historical functioning.⁵⁵

The child here is spoken of as if he or she were a instrumental machine, but it would also seem that within this particular document, there is a situation in which the “as if” no longer exudes the place holding effect that it does elsewhere. The universal child that is referred to within the passage is one that is subject to an “evaluation of functioning,” and a review of disciplinary records. This review process is not a review of the child that is ontologically given prior to the process of evaluation of review. This review of the child's functioning is the very process that socially and institutionally creates the child's satisfactory or unsatisfactory “functioning.” The enthymematic nature of this evaluation falls within the rhetoric of pathologization by way of its rhetorical effect. For instance, as was pointed out by Broudy within chapter one of this project, “it makes no sense to say of a biological machine that it should have performed *other than it in fact* did perform.”⁵⁶ The particular passage cited above reveals itself to be beyond the range of mere analogy, and firmly falling within the category of identity relations between biological

machines and instrumental machines, a category of identity that is harmful to human beings because they are in fact not mechanical/instrumental machines constructed by other human beings.

Within the example that I cited above on the child's functioning, the harmful identity category is drawn between the experiences that the general reader has with mechanical and telic machines, and the biological machine of the child's body. The semantics within the example on function reveal this identity category in terms of observation and review. Consider the word "functioning" and the somewhat antithetical connotative relationship it has to the word "behavior." Whereas the child's "functioning" is always articulated to a particular code of discipline, or as is the case above, disciplinary records, a specific child's behavior is only relevant in accordance with the past behavioral patterns of the given child. A mechanical machine can operate within the parameters of performance of a function, yet a child is auto-telic and cannot said to function in comparison to any other criteria than the manner in which the child did in fact behave. In other words, the identity category at work within chemical discipline has an enthymeme that is filled cognitively by comparing its form to other experiences that we have. What is not said is the warrant that justifies the linking together of children and machines under the same rubric of analysis, namely, *functioning and efficiency*. The criteria and functioning of the child-machine is only defined by patterns of behavior, the ideal norm of behavior is supported by the idea of the child's body as a machine that performs exactly as if it were previously prepared by chemical discipline. For example, texts from CHADD further demonstrate that the performance criteria of the child's body is always already implicated within disciplinary structures of normative performance as it is defined and diffused by way of standardization of intelligence, i.e.; functioning:

Q: What does “adversely affects educational performance” mean?

A: An adverse effect on educational performance can incorporate all aspects of the child’s *functioning* at school, including educational performance as *measured* by grades or achievement test scores. It is also manifested through behavioral difficulties at school; and impaired or inappropriate social relations. [emphasis mine]⁵⁷

Here we see the identity category that conflates children and toasters in the form of performance parameters that apply not only to the body of the child within the apparatus of the school, but also the (usually) “autonomous” zone of the familial domicile and/or interpersonal networks (the friends of the child). The form of discipline proper to the apparatus of the school applies not only the child’s body while she is physically within the architecture of the apparatus, but applies equally to all social “relations.” The rhetoric of chemical discipline is psychologically *efficient* because the conceptual identity relations that it constructs for persuasive purposes not only apply to the child, but to an *entire field of social relations*. Needless to say, the rhetoric of chemical discipline is found within other discursive networks, most of which center around other pre-defined behavioral “problems” such as anxiety and depression.

The standardization of normative behavior and intelligence is a facet of chemical discipline that also constructs an identity relation to the machine intelligence of computers, not a surprising revelation considering current social conditions in America, and our near obsession for all things digital. For example, psychiatrist Peter Breggin notes that:

Researchers who study and write about intelligence almost invariably describe it in terms more appropriate to machines than to human beings. Even when analyzing innovative expressions of intelligence such as critical thinking, insight, or creativity, scientists tend to describe these phenomena in terms of computer like models.⁵⁸

The child is linked formally on two separate levels to the form of the mechanical machine. On the one level, the child’s intelligence is expressed rhetorically in “terms more appropriate to

machines.” On the other level, the appropriateness of the behavior of the child is expressed in terms of machine functioning, an outcome of a series of criteria imposed by structures of normalcy that are over-determined by the medical apparatus. The medical apparatus, as the primary disseminator of the rhetoric of chemical discipline, has a vested interest within this process, because in the case of ADHD, the medical apparatus is in effect *producing the very production* of an endless series of child-bodies that will be subject to the logic of the black box.

The “cure” for the disease of ADHD is not rooted within physiology because the cause of ADHD cannot be determined on the level of the physiological. Yet, because of the cultural proclivity of people to engage in “machine discourse,” the discourse of our highly technological culture, the medical community of scientists and doctors have a ready made discursive channel to persuade parents of the existence of ADHD, as well as a method for producing the parameters which give the diagnostic criteria the *ethos* that is required to make the criteria seem reasonably tenable. All of this is not to preclude the fact that occasionally within the lay literature that can be found on ADHD there are older rhetorical tropes that surface, such as this example on disciplining the ADHD child:

Children with ADHD may need help in organizing. Therefore:
Schedule. Have the same routine everyday, from wake-up time to bedtime. The schedule should include homework time and playtime (including outdoor recreation and indoor activities such as computer games). . . . Organize needed everyday items. Have a place for everything and keep everything in its place. . . . Children with ADHD need consistent rules that they can understand and follow. If rules are followed, give small rewards. Children with ADHD often receive, and expect criticism.⁵⁹

Imposing a schedule upon the habits of the child is a discipline that controls time, and the organization of items is a discipline that regulates child’s space. These organizational impositions are not *new* measures of discipline, yet the transparency centers upon the use of “a place for everything and everything in its place.” This phrase was used originally by the Quakers

when attempting to outline the criteria for how objects here in the material world of bodies should be ordered, because it shares a form with the Quaker idea of Heaven. We might refer to this Quaker conception as a “Rational Instrumental Heaven,” an afterlife that is ordered, disciplined, and efficient. This is the ideal kind of afterlife, and an appropriate idiom to express the new conception of the rationally controlled child-machine in the age of chemical discipline. Although this functioning of the child is culturally constructed by discourse, its effects are purely material. The intimate relationship between rhetoric and material conditions is the indicator of the nexus where popular discourse and scientific text collide, namely, the body itself. When popular concern *is* scientific theories that change the actions of children, the effects migrate into the material realm. The migration can be tracked because of the black box, a logic that extends horizontally to popular discourse as well as vertically to expert discourse. This mitigation of the vertical and the horizontal by way of a unifying logic is only possible because of the manner in which the dubious term “human nature” has been captured by the machine discourse commonly referred to as “common sense,” one variant of rational instrumentality. This rational, instrumental, common sense is the true danger that structures chemical discipline.

Chemical discipline, using the rhetoric of pathologization, seals itself within a socially constructed discursive field that finds as its base the singular component that is entirely rhetorical (in the pejorative sense), namely, the diagnostic criteria that *define abnormal behavior as a physical disorder*. The objective existence of the physical order is not based on physical signs which might indicate a cause, but instead it is based on a conception of the human body that is identical to an instrumental machine. This mechanization of behavioral criteria serves the function of persuasion, coupled to an accompanying alleviation of guilt. The black box of genes is the engine that drives this system, and it is a symptom of chemical discipline, a discipline that

is not concerned with observation, but instead a direct intervention with physiological operation. This intervention is control over bodies, the type of control that used to be training into a body, but the controlling machine is now ingested. Once the molecular machine is inside of the biological machine, agency is stripped due to the nature of the drug.

If rhetoric is about praxis and agency, then what this project argues is something very simple; parents and children can reclaim their agency by *not taking the pills*. The process of cutting off the apparatuses from your body can indeed be explained along discursive lines. But the process of resisting the discipline of molecular machines begins with an understanding that drugs that are essentially cocaine in medicalized form *do not make children better*, or, if they do, we should begin to question what “better” really means in this era of chemical discipline. Our obsession with control, while making our limited control all the more highlighted, turns out to be something that harms human beings. School children and computers are not the same, should not be treated the same, and they require different logics. The logic of the black box, a “set it, and forget it” type of reasoning is all the more harmful because of the way in which it levels down relations in our life to the level of our relationship with appliances. And when children and appliances are both in the same category, it is time to reconsider what we mean when we say “good behavior.” Perhaps when “good” and “bad” behavior are no longer diagnostic categories, we will, as a culture, begin to see that rational instrumentality is not always the best way to bring up new generations of feeling, thinking, human beings.

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Vita

Roger L Pippin's research within rhetorical studies concentrates on the history and rhetoric of science, as well as the ancient Greek philosophers and sophists. His primary line of research is the materialism of Gilles Deleuze and Felix Guattari. A native of Baton Rouge, he attended Scotlandville Magnet High School, is an Alumni of Louisiana State University, and will be attending the University of South Florida to complete his doctoral research concentrating in performance studies and the philosophy of communication. His outside research interests include feminist martial arts pedagogy, the policy and intelligence manuals of the RAND Corporation, and the metaphorical uses of technology in modern science fiction.