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ADHD as Emergent Institutional Exploitation

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Attention Deficit/Hyperactivity Disorder (ADHD) is examined in terms of the systems that define it and as a structure that creates the world around it. Considering ADHD as an aspect of the whole environment allows the assembly of partial and conflicting views to create a single, multi-faceted picture. The ADHD label is shown to be an emergent property that manifests the failure of the social, economic, therapeutic, and political parts of our culture. This approach provides a theoretical basis on which to analyze the diagnosis's evolutionary path and to make predictions about its future.

Keywords: ADHD, institutions, systems theory, education, emergent structure

Complex systems change as a multitude of interconnected agents create new rules from old rules. From this process emerges unpredictable new structures that may complement or consume existing structures: evolution is inherently destabilizing. The same process underlies changes in attitude and social behavior. In particular, our notions of health and normality change over time and, as in any evolutionary system, new attitudes are often antithetical to old ones. Such is the strange case of Attention Deficit/Hyperactivity Disorder (ADHD), a diagnosis of dysfunction now assigned to 20 percent of adolescent males.

I will show the ADHD diagnosis does not follow previously existing norms of health care because it does not aim to improve an individual's own sense of well-being. Instead, ADHD represents an institutional exploitation of children for the benefit of institutions. This diagnosis generates greater rewards and fewer penalties for powerful social interests than other ways of organizing people. It is a structure that has emerged from our complex, self-organizing society. It has no independent biological reality, and requires none. In order to understand how this diagnosis has come about, and how it will evolve in the future, we need to study the institutions that sustain it and their agents.

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Controversy has surrounded ADD/ADHD since it was added to the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM–III) by committee vote in 1980 to codify the symptoms of a behavior for which there was no known cause or biological indicator. A large number of interested institutions – schools, corporations, unions, professional organizations, health-care providers, and government organizations — were involved in a disorder that had different implications for each. A tapestry of unacknowledged special interests, commercial advantages, historical relationships, and cultural paradigms held together an otherwise implausible diagnosis. People who get labeled ADHD are a diverse group who actually suffer from a spectrum of problems whose remediation would require separate medical, psychological, cultural, and political solutions. But ADHD has emerged as a diagnosis precisely because it provides a greater remuneration to special interests than attempting to address the diverse problems from which the ADHD population suffers.

Method

This article adopts a systems approach to elucidate the forces behind the ADHD diagnosis. The purpose is to understand the costs, benefits, and impacts of one subsystem on another and to determine what interests are being served through the diagnosis and treatment of ADHD.

Four constituencies that define, support, or benefit from the diagnosis – psychiatry, education, pharmaceutical manufacturers, and parents — are considered along with the evidence that ADHD is a dysfunction of biological origin. Scientific, financial, and political relationships exist within and between these constituencies that lie outside public scrutiny and the consideration of specialists. These relationships develop without interference because of our culture's deference to authority and to institutions that control the social dialog. This dialog depends upon the functional unity of a common understanding and generates predictable relationships in accordance with the widely accepted tenets of biological psychology and other modern "mythologies."

ADHD is not an individual dysfunction, but a societal issue involving organizations that compete to profit from school-age children. Each constituency benefits from the position that ADHD be treated as an incurable biological dysfunction in spite of much evidence that no physical difference reliably distinguishes individuals assigned this label from a population of healthy individuals. Using the notion of emergent properties in feedback systems, I consider ADHD as a construct created for the benefit of these systems and the organizations from which they are built. I conclude that the diagnosis of ADHD will evolve in whatever manner is maximally profitable in this multi-systems context.

Attention Deficit Hyperactive Disorder

The DSM, written and published by the American Psychiatric Association (American Psychiatric Association, 2000), is considered the authoritative source in diagnosing mental illness. The DSM is used by therapists as the basis of treatment, by pharmaceutical companies as a description of symptoms needing remediation, by the courts as a basis of culpability, by government and social institutions to identify abnormal behavior, and by insurance companies as a basis for compensation.

The DSM is designed to provide an understandable, repeatable, and uniformly applicable description of behavior that is currently recognized as a disorder. It does not argue why these particular behaviors should be taken as indicative of a disorder. It does not explain why various disorders have been added, removed, further resolved, or dropped from mention altogether in subsequent editions. The DSM assigns diagnostic labels to behavior but should not substitute for understanding patients as people (Carlat, 2010, p. 62).

The DSM is the standard text used by mental health professionals for defining, labeling, and treating so called mental illnesses. It forms the nexus between what therapists treat, pharmaceutical companies research, doctors prescribe, insurance reimburse, the law allows, and patients are expected to accept. The DSM is a document that caters to the needs of many institutions and social structures. It is not a scientific document.

The diagnosis of ADHD is extreme in the generality of its symptoms. Each of its supposedly defining characteristics is separately or jointly present to varying degrees in normal behavior. Consequently, there is a lack of specific criteria for diagnosis (Conrad, 2006, p. 54). For example, the DSM suggests that a person's lack of focus and attention are indicators of possible dysfunction but these qualities are not aberrant in themselves and only symptomatic in certain conditions, when observed repeatedly over extended times and in different situations. The DSM describes ADHD entirely in terms of the subjective observation of a person's behavior in social situations, as judged by teachers and other people in positions of authority with whom the person may be in casual contact and whose connections to that person are largely lacking in psychological depth and intimacy. The opinion of the person who is a candidate for the diagnosis plays little to no role in the diagnosis.

All the symptoms of ADHD exist in varying degrees in normal behavior. The diagnostic criteria rest on subjective notions of deference to authority and behavior that these authorities consider appropriate in the context of social activities in an often hostile school environment. In addition to being potentially attention-disabled, people who behave in manners considered inappropriate may be angry, bored, depressed, or frustrated. The ADHD diagnostic criteria do not distinguish among these causes of what is being deemed inappropriate behavior.

Agreement among practitioners regarding the validity of a diagnosis does not confer validity to a disorder, or establish that what is being identified as a disorder is a disorder. That is to say, even if authorities unanimously agree that you have a disorder, this provides no evidence that such a disorder really exists. This does not mean that people labeled with ADHD are normal; rather, it is the incontestable observation that symptoms never explain anything, and that things do not exist just because people say so.

Institutions

Psychiatry

Psychiatry is a socially driven practice that identifies and treats symptoms of aberrant behavior, where aberrance is defined relative to social norms. Predominant current opinion, as has been the opinion at various times in the past, is that mental illnesses originate from biological causes that can be cured through chemical, electrical, or surgical means. These claims have been repeatedly vitiated (Kendler and First, 2010; Valenstein, 1988, p. 3). In addition, it is established that rather than normalizing brain chemistry, psychiatric drugs tend to cause brain damage and may induce pathology (Breggin, 2008; Whitaker, 2005).

None of the major psychiatric ailments has been traced to biological etiologies, although there have been many attempts — and biological factors such as developmental and physical trauma remain possible causes. The reason for this partly lies in the reductive models that propose simple biological causes for complex mental conditions. Biology certainly plays a role in one's mental condition, but mental illnesses do not have simple structural causes.

The 1951 Durham–Humphrey Amendment explicitly distinguished prescription from over-the-counter medication and accorded doctors the exclusive privilege of writing prescriptions. Doctors' salaries doubled, and income from pharmaceutical advertising in journals published by the American Medical Association went up tenfold. A doctor's prescription was then required to obtain what are now heavily marketed pharmaceuticals.

Select members of the American Psychiatric Association write — and the organization publishes and carefully guards copyrights to — the DSM, from which it garners $5,000,000 per year in sales, or 1/6 of the total annual income that the APA relies on to fund its operations. The DSM's classification of illnesses has financial impact for both pharmaceutical companies and association members. Nearly 70 percent of the members of the task force charged with assembling the next version of the Diagnostic and Statistical Manual, the DSM–5, have financial relationships with pharmaceutical companies, up from 57 percent for the previous version (Cosgrove, Krimsky, Vijayaraghavan, and Schneider, 2006; PLoS Medicine Editors, 2012).

As a discipline, psychiatry is based on observation, but it lacks objectivity and a definitive test for its theories. Guided by consensus, its norms develop in whatever direction is advocated most loudly and practiced most widely. Psychiatry's mutable methods and conclusions are prone to oversimplification and political influence.

Political and financial interests pressure the field of psychiatry to support their objectives and foster the expectation that psychiatry will help resolve social or behavioral issues. Financial reward, political power, and institutional security are some of the rewards offered to the field of psychiatry, and to psychiatrists themselves, for developing and applying their expertise in the aid of these institutions (see Carey and Harris, 2008). In this way the field is offered positive incentives for defining and diagnosing ADHD for the benefit of other institutions. Psychiatry has scientific pretensions that conflict with its subordination to corporate interests.

Compulsory Education

Trends and current practice in compulsory education provide support for, or benefit from, the notion that ADHD is an individual's dysfunction. Many leaders in the formation of compulsory education policy have advocated the molding of student behavior and the shaping of intellectual dialog in accordance with political objectives. In this context part of compulsory education's objective is to identify children who lie outside this norm, to label them as different, and to remediate their behaviors and attitudes as part of the educational agenda. Educational attitudes of this kind are consistent with the creation of ADHD as a diagnostic category and the treatment of children assigned to this category.

From its inception, a primary goal of compulsory schooling has been socialization, with "education" defined in terms of its effect on society and its success in training students to play a useful economic role. Writing in 1915 John Dewey was a leading voice in the design of compulsory education. He considered the student to be possessed of innate capacities that needed to be shaped and modeled. A school's role in the development of children was "not to leave them alone to follow their own 'spontaneous development,' but to provide an environment which shall organize them" (Dewey, 1916, p. 134). These ideas were consonant with the laboratory schools Dewey developed, the subsequent development of behaviorist educational psychology, and today's standardized testing.

Dewey exerted and continues to exert a great influence on education policy in the United States. He called for a curriculum that developed students in accordance with the moral and intellectual needs of the society. In his later writings Dewey empahsized that education's main goal was social reform and, according to Ravitch (2000, p. 203), Dewey was frequently "skeptical of . . . excessive concern for individualism and spontaneity." He lauded the removal

of family influence, which Dewey (1984, see pp. 229–231) considered "a breeder of non-social interests."

Compulsory education has been widely used in Western European history as a tool of denationalization and assimilation according to historian and economist Ludwig Von Mises (1944, p. 82), and has been applied in numerous cases in United States history as a means of national, economic, or cultural disenfranchisement. Riots in 1917 reversed New York City's "Gary Plan" to apply industrial models to the education of immigrent children (Gatto, 2006, p. 187). Southern states created segregated schools that perpetuated the economic disparity between Blacks and Whites until the Supreme Court's 1954 case, Brown v. Board of Education, ruled segregation unconsititutional. A series of United States congressional acts between 1877 and the late 1960s forced the relocation of Native American children to off-reservation boarding schools where they were stripped of their cultural identity (Curcio, 2006; Stahl, 1979). From its origins in Prussian social engineering, compulsory schooling has been a battle ground between institutional control and personal freedom.

From 1981 to 2002, the weekly time spent doing homework by six- to eight-year-old children had tripled, despite the lack of any demonstrable benefit (Cohen, 2006; Cooper, Robinson, and Patall, 2006). According to the 2006 National Sleep Foundation survey, 45 percent of adolescents get an insufficient amount of sleep, and 31 percent get a borderline amount of sleep on school nights (National Sleep Foundation, 2006). A 2009 study (Gau and Chiang, 2009) reported a strong association between ADHD symptoms and sleep problems, and suggested that adolescents be screened for sleep problems before being assigned a diagnosis of ADHD.

The right of children to be free of institutional supervision and control was once considered a medical necessity.

> In the early 1900's doctors led a movement to abolish [homework], insisting that children needed at least 5 hours of fresh air and sunshine each day. At that time, those kids who would be diagnosed with attention-deficit/hyperactivity disorder were told to go outside and play more — not take medication so that they could sit still. (Bennett and Kalish, 2006, p. 35)

In spite of these studies correlating environmental influences with symptoms of ADHD (Biederman et al., 1995; Carlson, Jacobvitz, and Sroufe, 1995) we continue to be told that the explosion in the number of children diagnosed with ADHD is due to an undiscovered biological pathology.

At the beginning of the twentieth century Edward Thorndike helped start the field of educational psychology by defining learning as the process by which animals repeat ever more efficiently and economically those actions for which they are rewarded. His laws of learning underpin current notions of operant conditioning, and are a basis for segregation in the teaching of different subjects

(Horn, 2007, p. 227). Thorndike's work to undermine the teaching of general intellectual skills — work that was inconclusive at the time (Hofstadter, 1962, p. 349) and since overturned (Breuner, 1977, p. 6) — coincided with the burgeoning government interest in behaviorism and scientific management. Educational psychology, adopted at teachers colleges, became a science, and schools became their laboratories.

> As schooling encroaches further and further into family and personal life, monopolizing the development of mind and character, children become human resources at the disposal of whatever form of government is dominant at the moment. This confers a huge advantage on the leadership of the moment, allowing it to successfully reproduce itself, foreclosing the strength of its competitors. (Gatto, 2006, p. 359)

The training of teachers, which previously focused on teaching content, was refocused on educational psychology as "central to the teaching enterprise and to the prepartion of teachers" (Peterson, Clark, and Dickson, 1990). In 1973 the United States Department of Education commissioned the Rand Corporation to create a seven volume study on how schools could be better used to foster behavioral modification (Berman and McLaughlin, 1974; Eakman, 1991, p. 118). The training of teachers as "change agents" started in the 1960s and this training advocated behavioral control, managed conflict and resistance, and the testing of students' values and obedience to authority. The role of teachers as change agents remains a current research topic (Lu and Ortlieg, 2009).

Hierarchical institutions, like the federal government and the Department of Education, are always concerned with the identification and training of people whose task is to catalyze, instigate, aid, and nourish change or to prevent it (Havelock, 1973, p. 7). It is necessary to recognize that in the mix of individual, curricular, community, labor, and government dynamics almost everything that transpires in the classroom, from the choice of textbooks to the protocol for speaking out during class, is either manifestly political or has political ramifications.

The change agent is admonished to "be a familiar object to the client in ways that are not important to his mission," and to "identify some common interests which are far removed from any change project . . ." (Havelock, 1973, p. 54). While educators must have some skill in the art of persuasion, when taken to an extreme the exploitation of familiarity is legally recognized as "affinity fraud." This is troubling in the context of education because those involved — students, parents and communities — may not know who is acting on what agency's instructions.

In 1990 Anita Hoge prevailed in actions conducted within the Department of Education accusing the United States Federal government of: (a) amassing personal, psychological profiles fraudulently passed off as academic achievement tests, (b) approving curricula to remediate incorrect attitudes, and (c) subsidizing a policy of practicing medicine without a license (see Eakman, 1991, p. xi).

This established that government control exists at the highest levels of public education for the purpose of promulgating social values pertaining to deference to law, authority, and community norms. The collection and cross-tabulation of attitudinal data are now widespread (Eakman, 2007, p. 201).

The aims of compulsory education are strongly influenced by institutions whose aim is to control individuals, rather than to empower individuals to control institutions. The diagnosis of ADHD serves many of this system's goals while providing rewards to the institutional elements that operate within it.

The Pharmaceutical Industry

It is estimated to cost between $400 million to $2 billion dollars to develop and bring a new drug to market (DiMasi, Hanse, and Grabowski, 2003; Masia, 2008, p. 82). Global sales of the ADHD drugs Ritalin, Adderal, Concerta and similar generics, were estimated to be $2.8 billion in 2003, with 85 percent of these sales in the United States (Scheffler, Hinshaw, Modrek, and Levine, 2007). Based on the 3.4 percent annual growth rate of ADHD medication, according to 2008 figures (Nauer, 2009), we can estimate that 2012 sales were over $3.6 billion.

The management of pharmaceutical companies, like the management of all corporations, maximizes profits with little regard to social cost. Not only is this expected, it is effectively required by law as public corporations are obliged to satisfy the interests of their shareholders first. Executives are professionally responsible to pursue any action that will generate legal profits.

Prolonged use of amphetamines or Ritalin can create neurochemical imbalances (Higgins, 2009), stunt growth (Swanson et al., 2007), result in chromosomal changes (El-Zein et al., 2005), and sometimes lead to substance addiction. Overdoses can cause liver, kidney, and heart damage (Greene, Kerr, and Braitberg, 2008). The manufacture's imperative is to ensure that side effects do not become financial liabilities. This can be effected by such means as supporting research that contradicts alleged adverse reactions or that creates difficulty in interpreting the scope or identification of adverse reactions, by withholding the publication of research that demonstrates adverse side effects, and by using advertising leverage or corporate affiliations to discourage journalistic exploration, discussion, or release of information that might imply a correlation between drug use and adverse reactions. Other legal protections include limiting liability, using confidentiality to withhold public disclosure, and offering settlements in exchange for denial of culpability and sealing of court proceedings.

Pharmaceuticals companies spend billions of dollars in research to fund organizations, conferences, and educational programs to extol their product. They work for the election of politicians and the appointment of authorities who will support their strategy. An analysis of the United States pharmaceutical industry concluded that the industry spent almost twice as much on promotion than on research and development (Gagnon and Lexchin, 2008).

Twenty five percent of all doctors in the United States received drug company money for helping to market drugs in 2004 (Campbell et al., 2007). Arguing in the British Medical Journal, psychiatrist Giovanni Fava (2008) says this money is dispensed by pharmaceutical companies for the purpose of getting "as close as possible to universal prescribing of a drug by manipulating evidence and withholding data" (p. 1405).

Financial bias in research is pervasive and has been widely noted (Pachter, Fox, Zimbardo, and Antonuccio, 2008; Sen and Prabhu, 2012). Financial incentives are paid to universities that invest their endowments in pharmaceutical companies, and these universities rely upon pharmaceutical companies for research grants. Not-for-profit organizations advocating the use of pharmaceuticals are subsidized by pharmaceutical companies (Herxheimer, 2003). These organizations include the National Alliance for the Mentally Ill (Harris, 2009) and Children and Adults with Attention Deficit/Hyperactivity Disorder (Eberstadt, 1999). News in the mainstream press is seeded by pharmaceutical companies who freely disseminate research that endorses pharmaceutical use. Ninety percent of the authors of three major psychiatric clinical practice guides had undisclosed financial ties to companies that manufacture drugs identified or recommended as therapies for the respective mental illnesses (Cosgrove et al., 2009).

The pharmaceutical industry funds most of the pharmaceutical research and, since the 1992 passage of the Prescription Drug User Fee Act, all of the FDA's costs for approving and licensing drugs. Most researchers are invested in or directly paid by the industry, and most professional and public educational material is produced and paid for by the industry. There is virtually no support for independent voices or unbiased opinion. Scientific standards provide little countervailing influence because the standards are subverted by financial incentives to willing researchers. Government regulation is limited by scarce resources and the high cost of enforcement, and further undermined by the government and the industry's revolving door policy of placing agents of industry in government positions, and then hiring agents of government to fill industry positions. Pharmaceutical research is directed so as to maximize profit, and ADHD provides a highly profitable market.

Parents

Studies show a connection between a parent's mental state and the child's ADHD, with parental stress increasing in proportion to the problems caused by the child's condition (Harrison and Sofronoff, 2002). But the stress of parents of ADHD children is not simply due to their childrens' problems. "ADD children are far more likely than other children to have parents who have suffered major depression, about 30 percent compared to 6 percent" (Maté, 1999, p. 104).

Doctors warn parents that without treatment the long-term outcome for children with ADHD is poor (Mannuzza and Klein, 2000). According to Newton–

Howes, "possibly the most disabling aspect of ADHD in adulthood is the disruption it causes in interpersonal relationships, with increased risk of chronic conflict with work peers, socially inappropriate behaviours, disputes with partners and spouses and trouble with the law" (2004, p. 533). Marketing by pharmaceutical companies, as well as by the educational and medical establishments, targets these vulnerable parents by citing research perpetuating the assumption of ADHD's biological origin.

Gabor Maté describes parents of children with ADHD this way:

> The erosion of community, the breakdown of the extended family, the pressures on marriage relationships, the harried lives of nuclear families still intact and the growing sense of insecurity even in the midst of relative wealth have all combined to create an emotional milieu in which calm, attuned parenting is becoming alarmingly difficult. (1999, p. 109)

> No matter whom they had consulted, not one of the couples I have seen in my practice had ever before been encouraged to look closely at how their emotions, lives and marriages might affect their children . . . . It seems to them just normal human existence to live at a hectic pace and in tense relationships, nerves stretched taught as piano wires. Sensitive children, as all children with ADD are, will be particularly affected. (1999, p. 96)

While not usually thought of as an interest group, parents are consumers of ADHD treatment in the same way that society is the consumer of law enforcement. It is the parents who pay for treatment, and without parental acceptance of the diagnosis, few children would be so labeled. Because parental acceptance is key to the acceptance of the diagnosis we can ask what parents have to gain.

In a society composed either of families of single parents, or families in which both parents work and where in-laws are not available for child care, many parents believe that sending their children to school is an economic necessity. The education industry insists, and parents generally believe, that parents cannot teach their own children and that children cannot teach themselves. The growing home and democratic school movements disprove these assertions (Miller, 2002). The United States school-age population has grown approximately 2 percent in the last several years and this represents a number of children equal to the number that are leaving institutional schools in order to be home-schooled. Considered as a whole, the home-schooled population now constitutes roughly 3 percent of the school-age population (Ray, 2011).

The ADHD diagnosis is offered as a solution to an existing problem. Given that a problem exists, what other solution do parents have? For children not disabled in any other regard, at least not according to authorities, there may be no other explanation aside from the diagnosis of ADHD. Most parents do not have the resources or the self-confidence to challenge the educational, psychological, pharmacological, social service, and medical establishments. They have nowhere else to go for advice and direction.

Once parents have accepted the diagnosis, and the recommended treatment has solved their child's behavior problem — at least according to the accepted

criteria — there is little incentive for parents to reject the diagnosis even if urged to do so by their children. The behavioral modification to accompany children's psychiatric drug-induced compliance — as commonly recommended by psychologists, teachers, and parent groups — then ensures that both the parents and children comply with teachers' wishes (American Academy of Pediatrics, 2002). This is made clear by the growing trend in which parents seek ADHD medication to enhance their children's performance without regard to whether the children have any disorder at all (Schwarz, 2012). This demonstrates that some parents view the ADHD treatment as conferring scholastic benefits that they desire for their children, and that the treatment does not just restore normal performance to a subgroup of individuals.

Parents who have accepted that their children have ADHD are under pressure to defend the label. Rejecting the diagnosis not only means they erred in accepting it initially and that they now have to find some other solution, but also that their behavior as parents may have contributed to the condition. This is because the alternative to the biological explanation of ADHD is a developmental etiology in which school and family environments contribute to the development of the child's dysfunctional behavior. It is not surprising that parent support groups, such as CHADD (Children and Adults with Attention Deficit/Hyperactivity Disorder), defend the validity of the diagnosis; but the existence of these groups does not constitute evidence that a medical condition exists.

Medication-based Reasoning

If treating the child as if he has an illness generates family-wide rewards, then there is an incentive for parents to believe their child has an illness. The logic is this: the treatment assumes the existence of a disease. Therefore if the treatment is successful, it is taken as proof that a disease exists. According to this logic if a person is given an anti-depressant and improves, this is taken as proof that he suffers from biological depression. This is erroneous reasoning as there may be environmental factors causing the depression, even though a drug might elevate the child's mood.

This reasoning, termed *ex juvantibus* from the Latin phrase meaning "from that which helps," is the classic fallacy of seeing one thing as causing another when only a correlation exists. There are many examples in medicine where there is no direct connection between the treatment of a condition and the condition's cause (Valenstein, 1998, p. 133). The point is that the various rewards of treatment lead parents to support the diagnosis regardless of its validity. In this situation the ADHD diagnosis generates positive feedback from parents as a result of how the treatment affects them and the behavior of their children, and not because it resolves any biological problem.

ADHD Childen as Individuals

Much research explores the cause of ADHD in order to find or to advocate a solution, but little is done to explore how the available solutions shape our understanding of the issue: if the preponderance of research is done by neurobiologists or pharmacologists, then the preponderance of explanations are biological and chemical. Various factions — researchers, therapists, politicians, teachers, and parents — advocate for particular solutions and have a vested interest that leads them to argue for particular causes. The factions are not united in their efforts to understand one condition; they are divided by their interests in justifying different programs. One faction aims to control individuals in ways that strengthen institutions, while another aims to refashion institutions in ways that strengthen individuals by making them more confident, independent, and able to employ their own resources. The strongest of these groups determines public attitudes toward the treatment of ADHD. The nature and scope of each group's strength is not as important as recognizing that the whole system develops toward the configuration that provides the greatest benefits to the most powerful players.

The Existence of a Disorder

No causative agent has been found for ADHD, and there exists no objective criteria to diagnose the condition. The definition of ADHD as a loose collection of subjective assessments precludes a scientific basis for its definition. The fact that a large number of practitioners believe that the subjectively evaluated symptoms of ADHD imply that ADHD is a real disease calls into question what psychiatrists and psychologists mean by a disorder. I can only conclude that for these practitioners a condition is a disease if it is effectively treatable to some degree.

Biological reductionists look for correlations between ADHD behavior and brain chemistry. This approach only requires the study of a population of those who "have it." These researchers have explored various possible correlations over the last 35 years but have found no correlation sufficiently accurate or consistent that it can be used for reliable diagnosis (Leo and Cohen, 2003). No biological cause has yet been found, and the arguments for the inheritance of ADHD are flawed (Joseph, 2000).

A paper by Hanneke van Ewijk and colleagues illustrates this kind of reductionist research (van Ewijk, Heslenfeld, Zwiers, Buitelaar, and Oosterlaan, 2012). van Ewijk et al. performed a meta-analysis of previous research in tensor imaging in an attempt to find support for the thesis that tensor imaging can discriminate between controls and people with ADHD. In this they are compiling research that was originally conducted for purposes other than exploring ADHD, such

as the ability of tensor imaging in yielding information for a given population. Tensor imaging is a new means of brain imaging that measures small changes in the acceleration of water at different locations within the brain.

This paper engaged in a number of common fallacies. First, van Ewijk et al. assume that the ADHD participants are biologically abnormal, which is what they are trying to establish. Second, they mine the data to uncover any differences in observations taken from different groups — and there are always differences to be found somewhere — and imply the differences are biologically and etiologically significant. This is a logical error because it fails to weigh alternatives or recognize the existence of what are known in statistics as confounds. Confounds are correlations between events that are only related because of a incidental commonality. An example of this is the correlation between the eating of ice cream and the frequency of drowning. Ice cream consumption and drowning are related because they both occur on hot summer days, and not because one causes the other.

Third, they mention but do not integrate into their conclusions the idea that these differences have no causal relationship to ADHD. And fourth, the authors overlook fundamental uncertainties in their own observations. For example, the data provide a measure of fluid movement within the brain and describe a greater amount of fluid movement in ADHD subjects. This may be due to the greater movement of the subjects themselves and not to the fluids within them. As the authors themselves point out, the fuzzier images gathered from ADHD subjects could simply result from the fact that ADHD subjects are restless and their movement is causing the images to be out of focus. In spite of recognizing this limitation the authors do not control for it. This does not undermine the usefulness of this work for specialists in the field of brain imaging, as discussions of this nature are critical to the development of a better understanding of the strengths and limitations of using imaging technology for diagnostic purposes, but it does illustrate how psychologists can overlook the limitations inherent in brain imaging and interpret results of this kind as confirmation of the neurological origin of ADHD.

Genetics

A similar confusion surrounds the argument for the genetic origin of ADHD. The argument is that since ADHD runs in families it is inherited, therefore genetic, and therefore of biological origin. This reasoning rests on logical fallacies and scientific misunderstandings that lead to the common statement that 80 percent of the disorder is caused by genetic factors. Evidence of the near uselessness of using genetics as the foundation for a biological model of ADHD is revealed when those who present it as such qualify that "these are not 'dominant' genes but rather 'susceptibility' genes, which may interact with one another and with

a child's environment to create the potential for ADHD . . . . A child's environment may powerfully influence even strongly heritable traits" (DeGrandpre and Hinshaw, 2000).

Consider a similar case in which 80 percent of one's height is said to be genetically determined. This roughly means that by surveying the heights of a person's ancestors one can predict a person's height to 80 percent accuracy. In contrast, as will be discussed, Cummings and Wiggins showed that patient and parent counseling resolved nearly 85 percent of cases diagnosed as ADHD. Because biological conditions cannot be resolved by counseling, this implies that only the 15 percent of the population they considered, whose diagnosis was not reversed, might be afflicted by a biological condition. This means that at most 15 percent of people originally diagnosed with ADHD might actually have an inherited predisposition to the condition. In summary, dominant genetic factors account for 85 percent of height, while genetic susceptibility may play a role in 15 percent of the population labeled ADHD. Dominant genetic influences can explain something, but genetic susceptibilities do not provide a cause. Genetic susceptibilities imply a unresolved risk factor in which environmental forces play a crucial role.

In a 2010 study heralded as being the first to find direct evidence that ADHD is a genetic disorder (Williams et al., 2010), Thapar, who was one of the authors, is cited in a press release preceding publication of the article as saying: "Now we can say with confidence that ADHD is a genetic disease and that the brains of children with this condition develop differently to those of other children" (Walsh, 2010). This is a misleading statement that implies a genetic determinism that does not exist, stigmatizes a group of individuals who are labeled ADHD, and instills terror in the parents of these children. Furthermore Thapar implies that those who differ from the norm are necessarily inferior. She later clarified this statement by saying that "she was not asserting that genes alone were responsible for ADHD but rather a complex mix of genes and environmental factors" (Walsh, 2010).

What the study showed was that 85 percent of those labeled as having ADHD had no discernible genetic difference from those without ADHD at a 95 percent confidence level. That is to say, the basis for asserting that genetics plays a role in the etiology of ADHD is the observation that genetics may play a role for 15 percent of those with ADHD. The study did not control for differences in IQ. By removing from this study participants with impaired IQs (below 70), the number of individuals *failing* to display significant genetic differences rises to 89 percent. In a subsequent paper, two of the authors (Stergiakouli and Thapar, 2010, p. 557) clarified that "gene variants still explain only a small percentage of the inherited component of ADHD," by which they are referring to epigenetic tendencies and familial patterns that are not of genetic origin.

Geneticist Ruth Hubbard argues that genetic susceptibility does not determine behavior, saying that:

> Most inherited conditions exhibit a variety of symptoms and patterns of development, and may turn out to be families of related conditions rather than unique entities . . . . The situation becomes even more complicated when scientists try to predict conditions that are said to involve inherited "tendencies." . . . From a therapeutic perspective, it makes little sense to try to sort out the genes involved with complex genetic conditions, even if DNA is involved at some level . . . . Not only will this not cure or prevent the condition, it will create a new group of stigmatized people. (Hubbard and Wald, 1999, p. 37)

Freitag and Retz (2010) summarize studies of monozygotic and dizygotic twins that conclude 60 to 80 percent of ADHD in children and adolescents is hereditary and therefore might be a genetically determined trait. Joseph (2013) vitiates the conclusion of ADHD's genetic origin because all the studies are based on thoroughly discredited equal environmental assumptions. Twin studies of this kind cannot demonstrate ADHD has an underlying genetic proclivity any more than they could be used to argue that monozygotic twins are genetically more vulnerable to snake poison. The fallacy of that conclusion would be related to the environmental factor of identical twins frequently traveling and being bitten together, which has nothing to do with a genetic vulnerability to the poison. Joseph concludes that "genetic interpretations of twin method data in political science, psychology, psychiatry, and other social and behavioral sciences must be rejected outright" (p. 34).

Neurological, Emotional, and Developmental Correlations

Lydia Mary Furman writes: "evidence for a genetic or neuroanatomic cause of ADHD is insufficient. Experimental work shows that executive function deficits do not explain ADHD. The psychometric properties of widely used ADHD rating scales do not meet standards expected for disease identification" (Furman, 2008, p. 775). She concludes that ADHD is unlikely to exist as an identifiable disease and that its diagnostic criteria are symptoms of other treatable conditions underlying the medical, emotional, and psychosocial condition of children.

In an analysis of the epistemology of ADHD, Thurber, Sheehan, and Roberts (2009) suggest that conflicting claims regarding ADHD's etiology stem from a conflict between those who subscribe to the edicts of established institutions, and those who employ criteria derived from the scientific method. They assert that discussions of ADHD are dominated by persons of authority and power, and, consequently, by the institutions that grant authority.

This supports the current thesis that ADHD is an emergent property because it identifies the leaders in the debate as institutions that attempt to maximize their advantage in political influence, financial benefit, or other gross measures. Support also comes from the authors' observation that the discussion of ADHD has been indifferent to differences in the meaning of basic terms, investigative methods, and scientific standards. Failing to reconcile these differences creates factionalism, weakens critical feedback, and allows institutions to

shape the field according to their own needs. Thurber et al. conclude that "ADHD currently does not have status beyond that of the 'hypothetical construct.' Moreover, current brain-based causal models have failed to provide rigorous supporting data that comes [sic] from testing falsifiable hypotheses" (p. 33).

EEG Research

A test of a falsifiable hypothesis of the biological origin of ADHD has been done by Ogrim, Kropotov, and Hestad (2012), who measured the brainwaves of children labeled ADHD. The authors attempted to determine if differences in the amplitude of certain brainwaves can discriminate between children with and without the ADHD label, as claimed in previous studies. Kropotov is a specialist in EEG analysis and this study is one of the most rigorous works to date. Ogrim et al. concluded:

> We hypothesized that the accuracy of the theta/beta ratio, and theta and beta separately to discriminate between ADHD and normal controls would be 80 percent or more. This was not found. In fact none of the three EEG measures were significantly different in patients and controls . . . . Our results do not confirm research showing that elevated theta/beta ratio captures most ADHD, but are more in accordance with research showing several EEG patterns in ADHD. (Ogrim et al., 2012)

In particular, they found that 26 percent of their ADHD subjects showed a brainwave pattern (elevation in the level of frontal theta frequencies) that occurred in less than 3 percent of their controls. An excess of theta waves is a transient state in normal subjects that is traditionally associated with a dreamy state of mind and a lack of focus on the external environment. This suggests there may be a subclass of people labeled ADHD with either a measurable biological difference or a different cognitive style, neither of which is necessarily pathological. While this is a small portion of the population, it is roughly in line with 15 percent of clients in the Cummings and Wiggins (2001) study whose ADHD symptoms were not resolved by psychotherapy alone.

Wright (2005, p. 129) has noted a host of neurological, physical, and emotional factors that can cause ADHD-like symptoms, and rarely is a sufficiently thorough evaluation done to distinguish between these individuals and those with real cognitive problems (Leslie, Weckerly, Plemmons, Landsverk, and Eastman, 2004). Some of these may be related to, or develop into the depression noted by Weinberg et al. in 74 percent of their subjects identified as ADHD, although it was the neurological, physical, and emotional issues which they claim were the major factors determining their subjects' behavior (Weinberg, Harper, Emslie, and Brumback, 1995; see also Brumback, 2000).

No biological cause for ADHD has been found and no biological marker for any psychiatric disorder has been seen. Specialists in many disciplines have

engaged in the exploration of alternative hypotheses with scant attempt to confirm or refute any one hypothesis. The fact that a great quantity of conjectural work continues to be funded to explore possible new biological etiologies in spite of this is further indication that this work is motivated by institutional advantage, the pressures of professional advancement, and other forces within the social system itself.

Diagnostic Tests

As spelled out in the DSM, a diagnosis of ADHD rests on a comprehensive history and careful observations. This is clarified in instructions for testing, given by the Educational Testing Service (2008). Two types of test and one type of measure used to substantiate the diagnosis of ADHD are Continuous Performance Tests, structured personal interviews, and neurological profiles such as EEG and brain images.

Neither Continuous Performance Tests (Gillen, 2003; Riccio, Reynolds, and Lowe, 2001) nor neurological profiles demonstrate a level of accuracy deemed sufficient for clinical diagnosis (Loo and Makeig, 2012). The structured personal interview consists of at least one interview with observers of the subject, and at least one interview with the subject herself (Gualtieri and Johnson, 2005). The DSM's diagnostic criteria are detailed, but there is no instruction within the DSM as to how these criteria are to be met. For example, there is no instruction as to how to measure inattention, lack of focus, or impulsivity.

Consistent conclusions about a person considered for the ADHD diagnosis can be drawn by different practitioners who interview third-party observers such as parents, teachers, counselors, or administrators, but conclusions drawn by practitioners interviewing the subject have been shown to be inconsistent, so that there can be no reliable collective conclusion. The k statistic for inter-rater reliability of child-based interviews is reported at .10, where values below .20 indicate weak inter-rater reliability (Landis and Koch, 1977). There is no consistent diagnosis based on the subject's own statements or presentation in an interview. The only basis of diagnosis that is consistent — and this does not mean a valid diagnosis — rests on statements solicited by raters from third parties concerning the child. The validity of this diagnosis is doubtful since third parties are often partial, being employed by the institutions that have something to gain from a positive diagnosis, and are chosen because they support a positive diagnosis. As Kendell (1993, p. 290) points out, "reliability can be very high while validity remains trivial and in such a situation high reliability is of very limited value." It is considered acceptable — and in many cases all that is undertaken — to base a diagnosis solely on an interview with a child's caregiver and a report from school authorities. A recent study estimates that 90 percent of medical specialists who diagnose ADHD in preschoolers do not follow clinical

guidelines published by the American Academy of Pediatrics (North Shore–Long Island Jewish Health System, 2013).

Results of the Collaborative Primary Care/Behavioral Health Model

In 2001 Cummings and Wiggins reported on the result of 168,113 cases of behavioral intervention in the treatment of children and adolescents from five to 18 years old who received psychotropic medication over the period of 1988 to 1992, roughly half of whom were diagnosed with ADD/ADHD. Their retrospective data were summary in nature but the uniform diagnostic protocol and treatment make the study effective in assessing the effect of behavioral treatment on an actual ADD/ADHD sample rather than on an unrepresentative sample selected using diagnostic standards in order to narrow statistical variance.

Cummings and Wiggins' collaborative model involved primary care physicians, behavioral care therapists, parents, educators, social workers, peers, and juvenile authorities, and resulted in an assessment protocol that included more review and input from different parties than appears to be the average for the treatment of ADHD today. This gave greater weight to people inclined to maintain the diagnosis for the purpose of avoiding social disruption than what would result from a more strict diagnosis according to the guidelines given in the DSM. For these reasons the following results can be taken as more typical of real-world diagnosis and more pessimistic regarding the effect of behavioral therapy than what would result from a strictly clinical diagnosis.

Behavioral intervention consisted of an average of 17.2 sessions of therapy of which 6.3 were conducted with the child and 10.9 with the parent-figure. The study reports that 61 percent of the boys and 23 percent of the girls in the pre-treatment population were diagnosed with and medicated for ADD/ADHD compared with only 11 percent of the boys and 2 percent of the girls who retained the diagnosis at the conclusion of the intervention. Of the whole population, including those with diagnoses other than ADD/ADHD, less than 3 percent had to resume medication following discontinuance after having been diagnosed as free of symptoms.

These findings show that in one of the largest, if not the largest nation-wide sample of children diagnosed with ADD/ADHD, the symptoms of 82 percent and 91 percent of boys and girls respectively were resolved through behavioral therapy, with a relapse of rate of less than 3 percent. To be conservative we can say that the full 3 percent were improperly diagnosed as having been freed of ADD/ADHD behavior. This would then mean that on average at least $((82 + 91)/2) - 3 = 83.5$ percent of children grouped by sex and diagnosed with ADD/ADHD did not suffer a biological dysfunction, since such a dysfunction could not have been resolved by therapy without medication. Regarding the remaining 16.5 percent, nothing can be said with regard to whether their condition was

or was not of a biological nature. For ease of comparison I have rounded this figure up to 85 percent when referencing this result.

A meta-analysis was recently conducted on the effectiveness of parent behavioral therapy on the remediation of ADHD behavior in pre-school children up to six years old. Though these studies dealt with a mostly younger population, the results support the observations of Cummings and Wiggins in concluding that behavioral therapy shows "high strength of effectiveness for improving child disruptive behavior, including ADHD, in pre-schoolers," and "Methylphenidate (Ritalin) has low strength of effectiveness for improving child disruptive behavior, including ADHD . . ." (Charach, Carson, Fox, Ali, Beckett, and Lim, 2013, p. 12).

The Fiction of the Biological Model

Allen Frances, lead editor and chairman of the DSM-IV task force, believes the high number of children diagnosed with ADHD constitute a "faddish overdiagnosis" (Frances, 2012; Greenberg, 2011). Based on the results of Cummings and Wiggins we can infer that this diagnosis fails to identify patients' real issues 85 percent of the time. There is no dispute that there exists a population at risk, under stress, and in need of help. The issue revolves around finding a solution.

Evidence of the fallaciousness of the ADHD diagnosis has been known for years, and new information continues to support it, yet few embrace the evidence from the wider perspective shown here. The question for children diagnosed with ADHD and their parents is who should be given the authority to define the problem and its solution. There is no one "thing" that is ADHD. It is an emergent social construct applied to whichever people or groups of people fit the description.

Conclusion

Feedback Systems

The argument that ADHD is a structure created to benefit institutions begs the question of how institutions, whose agents express a concern for the welfare of children, could develop a structure that exploits children. To answer this we need to understand how structures develop from the interactions between systems and their agents.

The notion of feedback is essential to an understanding of how systems develop and influence those affected by them (Richardson, 2011). The formal theory of systems describes system regulation using feedback loops (Kirkwood, 1998). Positive feedback loops form reinforcing patterns that amplify effects; negative feedback loops form braking or "de-inforcing" patterns reducing actions or effects. Most social feedback systems have inherent limitations to growth so

that, unlike electronic feedback, they do not become unstable in the way that generates the familiar auditory squeal of runaway amplification.

The existence of ADHD rests on a series of feedback loops that exist within the context of social, political, and economic systems. ADHD is a phenomenon that emerges from the reinforcing feedback of society itself. Public education — and private education following the public model — play a central role in defining ADHD by involving corporations, psychologists, and parents in the loops shown in Figure 1 and described in Table 1.

System Dynamics and Emergent Properties

In this paper I am considering a system that generates some number of diagnosed cases of ADHD over a period of time. Each of four major factions involved in manufacturing this number — psychiatrists, educators, parents, and pharmaceutical companies — benefit from this diagnosis. What is more, with each increase in the number of those diagnosed with ADHD, the net reward generated for each faction increases proportionally. The benefits to each faction "feed back" in proportion to the growing numbers of children diagnosed. For each of the four factions this feedback is positive. If the consequence of a growing number of diagnosed cases of ADHD were negative for one or more factions, which could arise due to some net cost, risk, or other detrimental impact, then the system would contain negative feedback.

The type of feedback strongly affects how a faction responds. Three basic types of feedback are constant, linear, and proportional. A constant positive feedback occurs when a choice results in a fixed reward over a period of time. If all parents as a group received a single, lump sum reward for accepting the ADHD diagnosis, and this is not the case, then accepting the diagnosis would be described as having a constant, positive feedback effect. Linear feedback occurs when the reward increases in proportion to the duration over which the choice is maintained. If schools as a group received an extra, annual subsidy for supporting students diagnosed with ADHD, which also is not the case, then diagnosis would generate positive feedback that was linear over time. Proportional feedback occurs when an additional reward is obtained from each and every instance where the diagnosis is made. Pharmaceutical companies experience positive proportional feedback because every newly diagnosed person that is given medication, which occurs in one half to two thirds of the cases, results in additional income. In fact, all four of the factions experience proportional feedback in which the reward for accepting the diagnosis increases in proportion with the number of cases diagnosed.

Systems with a mixture of positive and negative feedback can reach an equilibrium where the gains to one faction are offset by the losses suffered by another. Systems governed by a fixed incentive will shift their state and then stabilize.

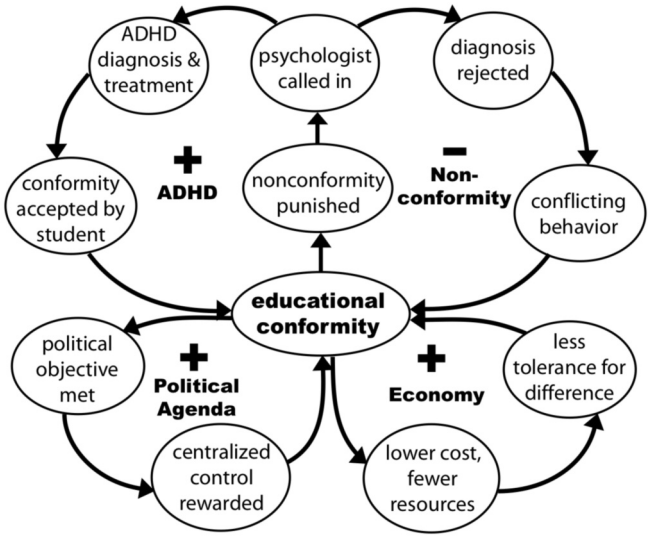

Figure 1: Educational conformity feedback loops. ADHD, political agenda, and economy provide positive feedback, nonconformity provides negative feedback.

Systems experiencing linear feedback tend to change at a constant rate over time. Systems that experience positive proportional feedback manifest exponential growth with an increasing number of rewarding choices being made in each period. This unconstrained growth slows only when rewards diminish, or penalties increase, for one or more of the factions.

The system considered here consists of four major factions, each separately responding to the choice of whether or not to accept the ADHD diagnosis. This is a first-order model because I am considering the factions as being independent from each other. A more sophisticated model would be a so-called second-order model in which additional rewards or disincentives arise from the interaction of one faction with another. For example, I have not considered the effect on psychologists, parents, or educators that arises from the decision of pharmaceutical companies to encourage or discourage the diagnosis. Second-order effects are usually smaller than first-order effects, at least in the early stages of a system's development. I am assuming that these forces are not of critical importance in the general evolution of this system, at least not yet. An investigation of these second-order effects is a topic for future study.

The average annual parent-reported rate of diagnosed ADHD in male and female children aged four to 17 has gone from 4.8 percent in 1997, to 7.8 percent in 2003, to 9.5 percent in 2007 (Visser, Bitsko, Danielson, Perou, and Blumberg, 2010). Almost 20 percent of males four to 17 years old were given the diagnosis

Table 1

Explanation of Feedback Loops

Loop Name	Purpose	Description
Educational agenda	Conformity	Educational managers serve their mandate by instilling conformity leading to an agenda that ostracizes ADHD behaviors. Eliminating these behaviors eliminates objections to conformity-based schooling, strengthens cost-based and test-based measures of success that provide evidence in support of the conformist approach.
ADHD diagnosis	Conformity	Nonperforming and noncompliant students are punished with lower grades, disciplinary action, and stigmatization. Psychological services are applied to mitigate the ensuing conflict by issuing the ADHD diagnosis and prescribing treatment. The diagnosis justifies blaming performance failure on student deficiencies. Successful treatment remediates the problem of noncompliance and performance measures related to it.
Educational economy	Lower costs	Greater conformity supports the factory model of education that remains at the root of the public education program. Conformity supports hierarchical management and services, lowering costs by requiring less diversity of products and services.
Institutional psychology	Profit	Psychological institutions and individual practitioners carve an economic niche and a social role in defining and servicing the needs of the ADHD community. Greater recognition and acceptance of ADHD reinforces this loop.
Pharmaceutical industry	Profit	Increased pharmaceutical treatment of ADHD raises profits that feed greater support for ADHD advertising and research, thus reinforcing this loop.
Parental	Compliance and stability	Angry, depressed, reactive children suffering insults for noncompliance bring amplified frustrations back to the family. Parents are pressured by schools to either bring their children into compliance or consent to diagnosis and treatment. Parental acceptance of ADHD confers validity on the diagnosis and encourages other parents to do the same.

Table 1 (Continued)

Explanation of Feedback Loops

Loop Name	Purpose	Description
Media	Profit	Increasing public acceptance of and interest in the diagnosis enables the media to build an audience and a profitable pharmaceutical advertising business.
Academic research	Profit	Academic journals endeavor to serve and focus interest, and their own interests are more readily served when there is acceptance of and interest in the diagnosis.

in 2012 (Schwarz and Cohen, 2013). The model given here predicts that the rate of diagnosis of ADHD will continue to grow until some factions are negatively impacted, at which point the positive feedback system breaks down and the acceleration in the number of diagnosed cases of ADHD will slow and may reverse. The evolution of the diagnosis has all to do with gains and losses of institutions and has little to do with whether or not the ADHD label corresponds to a genuine medical disorder, or whether its diagnosis and treatment offers a benefit to individuals. This follows without any requirement that ADHD exist as anything more than a label.

ADHD as an Emergent Property

The program to create an ADHD-compliant culture is not necessarily intentional or recognized as a program by those who participate in it. This is a key observation of systems theory: the outcome does not need to be an intentional goal of those involved if the process is reinforced by the rules on which the system operates. In such a case the outcome is an "emergent property" of the system (MacLennan, 2007). If the process is stable and generates positive feedback, then the outcome may be more likely if the actors are unaware of the process and simply act in accordance with rewards and expectations: that is to say, when those in the system do not question the process or their assigned roles (Meyer and Rowan, 1977).

Processes of this sort are evolutionary, proceed by natural selection without central direction (Richerson and Boyd, 1984), and develop in a self-organizing manner through the sharing of resources (Ostrom, 2009). These strong aggregating forces lead to the emergence of behaviors in which it is commonly found that the details do not matter (Miller and Page, 2007, p. 154). Whether or not ADHD is a real dysfunction is, in this case, one of those irrelevant details.

Even this simple, first-order model shows us that the prevalence of ADHD increases in response to positive feedback even though no one faction is acting with the stated intention of increasing the number of people given the diagnosis. This process is one of many assaults on the autonomy and professionalism of "doctors, scientists, and teachers [which are] being increasingly replaced by the needs and dictates of corporate America" (Welch, 2008, p. 183), which is to say by virtue of the feedback loops that exist within the larger system. This is just Adam Smith's market dynamics in which every individual "intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention" (Smith, 1843, p. 184).

I have presented a simple picture of feedback systems with no differential equations, contingent probabilities, external sources, damping factors, or hysteresis effects. There is only one bifurcation in Figure 1 that distinguishes the path of students who are given the ADHD diagnosis from the so called normal populations.

To counter the argument that this picture is too simple, three points should be emphasized. First, this holistic picture contains within it all of the complexity of the subsystems that it includes. The holistic picture examines the forces operating on society, medicine, and science that are generated by large, vested interests and finds that these forces are simple. This picture has traditionally been overlooked and is a necessary first step in any understanding of how the system has developed and will continue to evolve.

Second, remove any one of these reinforcing feedback loops and the number of ADHD diagnosis would shrink or disappear entirely. And third, a systems theory approach is predictive and therefore testable and falsifiable. The prediction is that the system will develop in such a way as to create the greatest benefit, where "benefit" is defined separately by each group according to the power each group exerts on the development of the whole.

I have argued in this paper that ADHD diagnosis does not denote a disease of an individual and I have described how the system functions. Remove psychologists, education, pharmaceuticals, and parental support, and what we now call ADHD would splinter into the set of issues of which it is composed. We are already seeing this as parents clamor for access to ADHD prescription drugs as a means of enhancing their children's academic performance. If such general drug use is seen as a "win–win" proposition for the more powerful social and political factions, then it will likely manifest in spite of evidence of adverse drug effects, long term health risks, and lack of benefit to the patient.

This systems theory model explains the dominance of the biomedical model as a result of the benefits that the model provides — not to patients but to psychiatrists, drug companies, and the educational establishment — regardless of the evidence that supports or refutes the biomedical model. The systems theory model predicts that the ADHD diagnosis will persist for as long as the system that generates the diagnosis continues to profit from it. The biomedical model

supports the introduction of powerful psycho-pharmaceuticals into a child population and a school environment for which this was previously socially unacceptable. At the same time, the model is limiting because it compels the use of drugs for only a limited population who are identified by a doctor or therapist.

Failure of Institutions

The notion of ADHD as a biological disease helps to sell compulsory education's social engineering program. As described by Richard DeGrandpre,

> The difficulties experienced by the ADHD-diagnosed child vary across several dimensions, and each dimension — behavioral, cognitive, experiential — has its own continuum of severity. It is a mistake to try to flatten this multidimensional picture into a simple yes or no — as does the DSM in its diagnostic criteria for "ADHD." Such over-simplification is designed not to clarify and address these problems but to label children medically and then, as occurs in the vast majority of cases, "manage" their symptoms with psychiatric medications. A billion-dollar industry has grown up with the explicit function of carrying out this scheme. (DeGrandpre and Hinshaw, 2000)

ADHD is a fictitious illness projected by caregivers onto the child for whom care is given. As a systemic dysfunction, like global warming, obesity, and the debt crisis, it is a mistake to believe that ADHD will naturally evolve in accordance with the tenets of health care, or in a manner beneficial to children.

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