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REVIEW

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Healing the Hardware of the Soul

by Daniel G. Amen

Reviewed by Richard J. DeGrandpre



About the Reviewer:

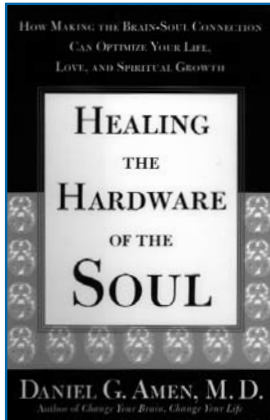
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Healing the Hardware of the Soul

by Daniel G. Amen

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Reviewed by Richard J. DeGrandpre, Ph.D.

For foreigners, driving in London can be a navigational nightmare, worsened by having to drive on the left side of the road. Hiring one of London's almost 20,000 official cabbies solves this problem, saving out-of-towners from driving in endless circles. That cabbies can do without a map what you cannot do with one stems from years of studying the byways of the capital city, including the 60 or so streets that include the name Gloucester. Few would take on the studious task were it not a requirement for securing a license to drive one of London's "black cabs."

The result is not just that London cabbies know their way around. A March

2000 report in the *Proceedings of the National Academy of Sciences* asked: What do 16 right-handed London cabbies have that you probably do not—other than a black cab, an opinion on almost everything, and an unwavering sense of direction? The answer, surprisingly, is a larger brain—specifically, a larger area in the hippocampus. The rear area of this brain structure, which is responsible for spatial memory, was found to be a few millimeters larger in London cabbies than in right-handed men with similar demographics who were never cabbies. The research, by Eleanor Maguire of the Institute of Neurology at University College, London, used magnetic resonance imaging (MRI) to look at the cabbies' brains.

One possible explanation for Maguire's finding is that only those with a special capacity for spatial memory are attracted to this line of work, or can master its requirements (three out of four aspiring cabbies drop out). But this explanation falls short. Maguire also found that, overall, the longer a cabby had been navigating the streets of London the larger was his hippocampus. It seems that experience alone can cause an area of the brain to grow, a conclusion that builds on her earlier report that this region of the brain is more active in cabbies (compared to match controls) when asked to recall London driving routes. The message of this study thus seems to be "change your life, change your brain."

This message, although not altogether new, has probably only now reached you. If so, the reason may be that it is the opposite of the view assiduously promoted by most brain-imaging researchers. In the

scientific literature as well as the media, brain imaging has been hailed as revealing once and for all that who we are lies not in our minds, or in our experience, but in the structures and processes of our brains.

This standard interpretation of imaging research, with its frequent emphasis on chemically imbalanced (for example, depressed) and damaged (for example, addicted) brains, is summed up nicely in the title of Daniel Amen's best-selling book *Change Your Brain, Change Your Life* (Random House, 1999). The distinction between it and "change your life, change your brain" is more than a matter of emphasis; it is a difference in ideology. In *Change Your Brain, Change Your Life*, Amen guides his readers through an interpretation of brain-imaging research that puts the brain first and change (or recovery, or healing—whatever phrase you choose) second. Put another way, the

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brain, not lived experience, sets all boundaries and possibilities. Amen and biological psychiatry hereby suggest something quite conservative: that we need not go beyond the brain to find the ultimate causes of the human condition, that all humanity begins with the brain. In contrast to this, the

London taxi driver study suggests something radical: that the development and workings of the brain reflect first and foremost our experience from earliest childhood onward.

HEALING, SECULAR AND RELIGIOUS

In his new book, *Healing the Hardware of the Soul*, Amen continues to capitalize on the popular (and conservative) message that "it's not you, it's your brain." A self-described child and adult neuropsychiatrist and brain-imaging specialist, Amen sticks with the best-selling notion that it is okay to blame it on the brain, but with an added twist. The brain is still at the core of his message: However biologically determined we are, we still can act to maximize the brain's potential and minimize its limitations. What is new in *Healing the Hardware of the Soul* is an attempt to soften the reductionism of mainstream biological psychiatry by bringing God and soul into the picture.

A devout Christian, Amen seeks to escape this secular reductionism by suggesting to readers that recognition of the biology of the brain does not exclude an appreciation of the God above us and the soul within us. Indeed, as suggested by his subtitle—*How Making the Brain-Soul Connection Can Optimize Your Life, Love, and Spiritual Growth*—Amen believes that a proper understanding of the brain should actually encourage people to get in touch with their souls and, in doing so, heal them.

Amen first sets up his message with the story of Josey. A patient in one of

Amen's two California clinics, where 1,200 patients are seen monthly, Josey began experiencing panic attacks years earlier, in her early twenties, which produced sudden anxiety, chest pain, and shortness of breath. As these attacks worsened, Josey dropped out of college, quit driving, terminated relationships, and

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withdrew from the world. Her anxiety and panic attacks also turned her away from God, Amen says—a God she rejected after concluding that he was responsible for her suffering.

Amen goes on to explain that Josey's road to recovery began once he showed her that her panic attacks were caused not by God, or by a failure of character, but by a problem deep within her brain. To do this, Amen did a SPECT scan and showed it to Josey—a tactic he uses regularly to convince patients that their "illness" is a brain illness:

As part of Josey's evaluation, I ordered a brain SPECT study—an amazing test that examines how the brain works. Josey's scan showed a number of "hot spots," over-activity areas, in the part of the brain that generates fear and anxiety. Seeing the physiological problem in her brain for herself was the first step in the healing process that would unfold over the next several months. Rather than thinking that she had a moral, character, or personality problem, she now accepted the fact that she had a medical illness needing treatment.

With the problem now identified as biological, a medical-oriented approach to treatment began, centering on the secular religion of medication (and despite wide recognition that behavioral treatment is more effective than drugs in dealing with panic and anxiety). In addition to medication, Amen lists some secondary elements of Josey's treatment, which included prayer, meditation, and something called "mental exorcises." With time, the result of this treatment was much improved functioning for Josey, according to Amen, including her "making peace" with God: "Josey's brain, the hardware of her soul, all that she was inside had been ill, a fact that caused everything else in her life to suffer. Helping her brain allowed her to once again have access to her soul, her real self, and even her God."

CAUSE AND EFFECT IN AN AGE OF BIOLOGICAL PSYCHIATRY

Three things seem to me suspect about *Healing the Hardware of the Soul*. The first is easily summarized: This is a book about healing the soul, yet Amen's first line of treatment in almost every case is medication, including the use in children of some of the most radical drugs in psychopharmacology, including antipsychotics. Whatever the merits of this approach, most readers would agree that this is not a typical book about recovery through spiritual healing.

My second and third concerns, which have to do with Amen's basic assumptions and his scientific and medical legitimacy, require some elaboration. Amen appears to share an empirical assumption that is common to biological psychiatry, but that I

question. It is quite true that brain scans have located clear physiological correlates of behavioral or mental problems. The problematic assumption creeps in when Amen and others declare that these correlations somehow prove that psychological problems are biological ones (and thus need to be treated medically).

Look again at Josey's case. If asked whether her anxiety problems, regardless of their cause, would have some underlying physiological basis in the brain, even psychologists and physiologists of a century ago would have responded that they would. Such a claim is basic to the philosophical materialism that established psychology as a laboratory science late in the nineteenth century. No brain-scanning device, however wonderful, is necessary for us to appreciate that the brain both mediates experience and is changed by it over time, both structurally and biochemically. Brain research can, however, reveal the particular aspects of the brain that are involved in various kinds of thinking, feeling, and behaving; indeed, this is the legitimate task of neuroanatomy, and can lead to important discoveries. But many brain imagers have not been content with this task of anatomy alone and have stepped beyond it to make unproven (and ideologically conservative) statements about the nature of psychopathology. They have not, however, been able to demonstrate that these correlations between brain and behavior are in any way ultimate causes, rather than mere proximate shadows, of behavior.

The London taxi driver study alone is a clear example of how, via imaging technology, psychiatrists and neuroscientists have

begun peering not into a closed and more or less fixed system, but rather an open and highly dynamic one. What neuroimaging is revealing in the process is that the brain is a biopsychosocial stream, one in which a dialectic of impossible complexity continues throughout our lives. It seems, therefore, highly improbable that a simple SPECT scan could demonstrate that a problem such as Josey's is, in its origin, biomedical.

After noting that SPECT scans have been used to study "depression, attention deficit disorder, schizophrenia, and obsessive-compulsive disorder," Amen suggests how one can "actually see brain patterns associated with 'psychiatric' illness, meaning that many mental illnesses were actually visible brain illnesses." "Associated with," yes; but root causes, no, not necessarily. The statement that the illness lies in the brain, as Amen insists, assumes causality; it does not prove it. And thus we see that what has been lost in the study of the human condition in the age of biological psychiatry is also missing in *Healing the Hardware of the Soul*: an appreciation that the self is suspended perpetually between a social realm of culture, society, and family and a biological realm of genetics and physiology.

In *Dreamworld and Catastrophe* (MIT, 2000), philosopher Susan Buck-Morris describes this as "ecological circuit." The brain is not "an isolatable anatomical body, but part of a system that connects the individual organism to the environment, passing through the person and her or his...culturally specific, historically transient ...world." Whatever might appear remarkable about Josey's brain in a single brain

scan, the ecological circuit, cycled through millions if not billions of times in Josey's life thus far, will not be revealed by that scan. Perhaps Josey never really learned to cope with anxiety, the problem became worse as a result, and the solution lies not in a close-up look at her brain, which obscures history, but in a close-up look at the nature of her learned relationship with the world around her. Josey's improved functioning

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following Amen's treatment proves nothing specific about the cause; in fact, there are suggestions that changes in her life were at least partly responsible for the changes in her brain, which in turn led to changes in her life. If the problem and the solution begin and end in the world around her, and us, the brain becomes less the great causal agent in who we are and more the great mediator in who we become.

In short, the problem with Amen's case studies is not that cognitive and behavioral problems never have more to do with the brain than with experience; just consider mental retardation or brain injuries. It is that Amen and other biological psychiatrists have never bothered to prove that what appears in brain scans has any meaning as a cause of behavior, healthy or otherwise. It

is hard to resist the temptation of saying that perhaps one day we might view these early years of imaging research with the same disdain we have today for the nineteenth-century science of phrenology. "Instead of having their bumps 'read' during a Victorian parlor game," writes Sandra Blakeslee in the *New York Times* (March 20, 2000), now "people lie down and put their heads inside a powerful magnet device that detects certain molecules in blood flowing through the brain."

If brain scans could, in fact, reveal a neuropathological condition underlying anxiety, mood, or cognitive dysfunctions in otherwise healthy people, two things would immediately happen. First, those conditions would be declared a physical disease (rather than a mental one) in every major newspaper across the country, as happened historically in the cases of the mental deterioration associated with untreated syphilis and later with Alzheimer's disease. Second, the dysfunction would be diagnosed accurately through medical tests such as brain scans, rather than with subjective psychological and behavioral tests that depend heavily on circular reasoning—"Billy does A, B, and C, so he must have X," and later, "He does A, B, and C because he has X."

These two things have not happened because brain-imaging studies have never isolated any brain pathologies that underlie mental illnesses. Without such evidence, the term "illness"—or "disease"—remains only metaphorical. As Thomas Szasz has written, "Medical diseases are discovered and then given a name, such as acquired immune deficiency syndrome (AIDS)." Mental diseases,

on the other hand, “are invented and then given a name, such as attention deficit disorder.” I would modify this only to say that these patterns of behavior or thought are not invented; what is invented is the idea that a biological illness or disease exists within the person that can explain them. Brain researchers rarely tell readers that the physiological differences between the brains of clinically “ill” and “normal” groups of subjects, however real those differences may be statistically, nevertheless fall within the realm of normal variance within people’s brains. Differences in the brain are not reducible per se to illnesses. What Amen and others see as brain pathologies are likely, in fact, to be the brain’s normal responses to pathological conditions, not in the genes or the brain, but in one’s life, family, and society.

ON BECOMING A BRAIN SPECIALIST

Roger Dobson wrote in 1998 in the *Sunday Times* that

From London to Los Angeles, volunteers...are queuing up to be frightened, depressed, shocked, saddened, challenged and stimulated so researchers can see which emotions elicit a response in which part of the brain. This detailed brain-mapping will, it is hoped, provide a better understanding of a myriad of diseases and disorders and pave the way for improved drug treatments and more effective therapies. It will also, promise the researchers, throw light on why some of us turn out to be mass murderers, while others are too shy even to speak to a stranger.

According to Amen, these promises have already been fulfilled.

In *Healing the Hardware of the Soul*, Amen repeatedly states that his SPECT

scans show that the cognitive and behavioral problems people suffer are typically due to brain dysfunctions. This points to a third aspect of the book that seems to me suspect. My suspicion began when reading Amen’s various biographical summaries in his books and Web sites (www.brainplace.com). In a

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1997 biographical summary, for instance, Amen defined himself as a “board-certified child, adolescent, and adult psychiatrist.” By 2001, however, he had changed this summary to read that he is a “child and adult neuropsychiatrist, brain imaging specialist, and the CEO of The Amen Clinics.” On the jacket of *Healing the Hardware of the Soul*, Amen defines himself as both a “clinical neuroscientist” and a “psychiatrist.” He also claims on his two Web sites to be “a nationally recognized expert in the fields of ‘the brain and behavior’ and ‘attention deficit disorders.’ ” The attentive onlooker might notice, however, that nowhere in his biographies is there any mention of any formal training in neuroscience. Amen received his M.D. degree from Oral Roberts University, did his residency in psychiatry at an army hospital, and then started what would become the Amen clinics. Amen appears to have become a neuroscientist not through

training but through his own unorthodox application of SPECT scans in his psychiatric practice. SPECT scans, I should note, are considerably less expensive than other imaging technologies, both in terms of the equipment and the scanning operations themselves, but they are also quite crude in that their specificity is much lower.

More worrisome is that, despite his claim in *Healing the Hardware of the Soul* that he is on the “cutting edge of brain science,” and that he has learned to detect brain illnesses using SPECT scans, Amen has according to his Web site bibliography apparently never published a single scientific report reflecting these findings. His biography does show a few published scientific studies using SPECT, but none of these establish a capacity to use these scans to diagnose or treat individuals. This is important not only because Amen gives every impression in *Healing the Hardware of the Soul* and at his Web sites of having this capacity, but also because there is no evidence in the literature generally to substantiate such claims. At the Web site noted on the jacket of the book, www.brainplace.com, Amen offers a view of more than 300 SPECT images, as well as several hundred scientific abstracts. Many such images also appear in his book. Upon inspection, however, I could find no link whatsoever between the science citations and the SPECT images displayed. The images are from Amen’s own clinics, privately paid for and interpreted in only the most subjective ways, while the scientific abstracts listed give no suggestion of any breakthroughs in etiology, diagnosis, or treatment of traditional

psychological disorders. These papers also fail to establish a link between neuropathology and psychological disorders, such as depression, anxiety, schizophrenia, and obsessive-compulsiveness. Amen appears to have attracted a large following, and his books now attract big New York publishing houses, but his books and Web pages imply a sophistication in diagnosis and treatment that goes far beyond what Amen really has to offer.

If anything can be said in support of *Healing the Hardware of the Soul*, it is that the second half of the book ultimately embraces the idea that, in “healing the hardware of your soul,” you must turn outward and change the way you live your life. If you change your life, you will, in time, most certainly change your brain. But, of course, this contradicts the core thesis of *Healing the Hardware of the Soul* and undermines the significance of the SPECT images on which the book is based. Change your life, change your brain. It is still a powerful message, but one increasingly obscured by the very research and researchers who are best suited to promote it. ■

EXCERPT

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BRAINS SCANS ON BALLOTS?

What do political candidates' past indiscretions mean? Does past drug or alcohol abuse mean anything? How about prior temper problems, extramarital affairs, or financial

problems? Maybe nothing. They may just be overblown issues in the otherwise normal lives of powerful political men and women. We all make mistakes. However, the symptoms may mean a lot, such as evidence of underlying brain dysfunction. Sometimes people with temper problems have underlying brain problems that are associated with emotional rigidity, holding grudges, and obsessive thoughts. Sometimes alcohol and cocaine have lasting negative effects on brain function. Sometimes an extramarital affair or financial problems may indicate underlying attention deficit disorder.

Is the brain health of a political candidate a fair topic in an election year? Should we even go so far as to do brain scans of high-level political candidates? Should this information be released to the public like the results of a physical examination? Some people think that discussing brain-health issues is an invasion of a candidate's privacy; some think that performing brain scans on would-be high-level political candidates is a silly idea. Not me. I want our elected leaders to be some of the brain-healthiest people in the land. How do you know about the brain health of a presidential candidate unless you look? As we have seen, the brain is involved in everything we do: how we think, how we feel, how we act, how we get along with others, how we negotiate, how we pay attention at meetings, and how we turn away the advances of White House interns.

President Woodrow Wilson is a dramatic example of how brain problems can affect politicians and political power. Wilson suffered a right-hemisphere stroke during the

Versailles Peace Conference, shortly after World War I. Even though the stroke didn't paralyze him, the people who knew him saw an immediate negative change in his personality. He was irritable, inflexible, and spiteful, whereas before he was forward thinking and able to compromise. He also became less sociable. Several weeks after the first stroke, he had another one that paralyzed his left side. Despite his obvious infirmity, he denied having any problems (denial is very common in right-hemisphere problems). Those around him became very distressed. He fired his secretary of state for trying to discuss his medical situation with the cabinet. His stroke may have involved setting the stage for World War II. After his stroke, he could not longer argue effectively for the League of Nations.

Two presidents in the recent past have shown clear brain pathology. President Ronald Reagan's Alzheimer's disease was evident during his second term in office... No one talked about the brain problems of President Clinton, but we suffered through his poor judgment, impulse control problems, not learning from mistakes, and excitement-seeking behavior—all problems that point to prefrontal cortex problems...

With SPECT we can see healthy or diseased prefrontal lobes (the judgment center), temporal lobes (a main memory center), and parietal lobes (main association area). If we have the tools, shouldn't we look? On the ballot we could see a presidential candidate's name along with a picture of his or her brain, and the opponent's name along with a picture of his or her brain. ■