

stance, points out that one can map from a network fitness model to a Bose gas, and he then suggests that this mapping serves as an explanation of network fitness that allows one to make predictions about network structure: e.g., that "winner takes all" networks will arise, just as Bose-Einstein condensates form. But the relationship here is evocative, not explanatory. Though it may help guide the search for the mechanisms that determine the structure of a particular system, it does not describe those mechanisms.

Both *Linked* and *Nexus* observe correctly that these revolutionary ideas on network structure offer profound new insights into our world. Meanwhile, researchers continue both to validate these principles via increasingly careful studies of real networks and to extend and revise the ideas themselves. Such work continues to turn up surprises. For example, one recent study suggests that the scale-free interconnection structure of the Internet is not explained adequately by preferential attachment (3). So although Barabási and Buchanan succeed admirably in telling the story of how structure was first revealed within networks, the last word on this topic remains to be written.

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BOOKS: PSYCHIATRY

Marketing Drugs to Mend Minds

Herbert Y. Meltzer

In the last century, psychopharmacology produced the first effective drug treatments for schizophrenia and other mental illnesses and contributed greatly to the development of hypotheses about the biological basis of mood and anxiety disorders, schizophrenia, and other psychoses. David Healy, a distinguished but controversial psychiatrist and historian (1) at the University of Wales College of Medicine, describes these developments, especially those concerning antipsychotic drugs, in *The Creation of Psychopharmacology*. Furthermore, he prophesies that

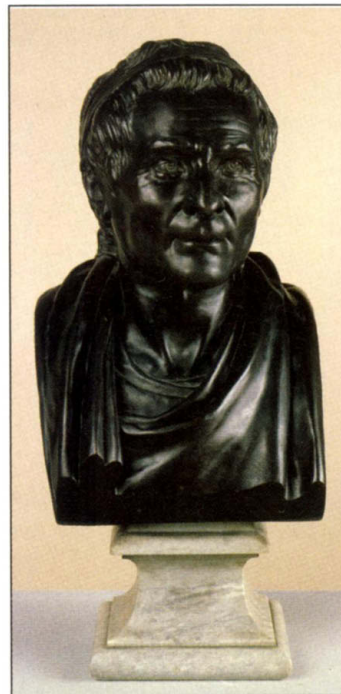
The Creation of Psychopharmacology by David Healy

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Cambridge, MA, 2002.
479 pp. \$39.95, £27.50,
€39.95. ISBN 0-674-
00619-4

current research linking psychopharmacology to pharmacogenomics and brain imaging will lead to control of the major mental illnesses, so that psychopharmacology and psychiatry can and will turn their attention to the treatment of personality disorders and self-improvement in normal individuals. What many will find most provocative about this book and its predecessor, *The Antidepressant Era* (2), is the recommendation that powerful psychotropic drugs, including neuroleptics such as chlorpromazine, could or should be available without prescription.

The Creation of Psychopharmacology begins with an accurate and lively history of the treatment of psychosis and other deviant behaviors in the 18th and 19th centuries. After discussing the 1952 discovery of chlorpromazine (the first antipsychotic drug, which arguably launched the modern era of psychopharmacology), Healy offers a less detailed account of the remarkable advances which followed from its discovery and initial clinical trials. The author pays special homage to the 18th-century philosopher Jean-Jacques Rousseau, who was an exhibitionist in his youth and died in the throes of a psychotic disorder with paranoid features. He argued for the perfectibility of mankind, for trust in instinctual knowledge of what is in one's best interest, and against the corrupt and corrupting social order. His blend of Enlightenment and Romantic ideas exerts a powerful influence on Healy's conceptions and conclusions about psychopharmacology and on his prescription for the future. In the author's interpretation, "the antipsychotic story shows very clearly that the

clash of a rationalist psychiatry with a romantic antipsychiatry [by which Healy refers to the writings of R. D. Laing, Thomas Szasz, and Michel Foucault, among others] did not lead to the triumph of either but rather led to the takeover of both by a psycho-pharmaceutical com-



An Enlightenment perspective. In his *Confessions*, Jean-Jacques Rousseau admitted to behaviors beyond his control and wondered about their origins. Healy hopes that any future Rousseau should be able to decide freely whether psychiatric interventions have anything to offer him.

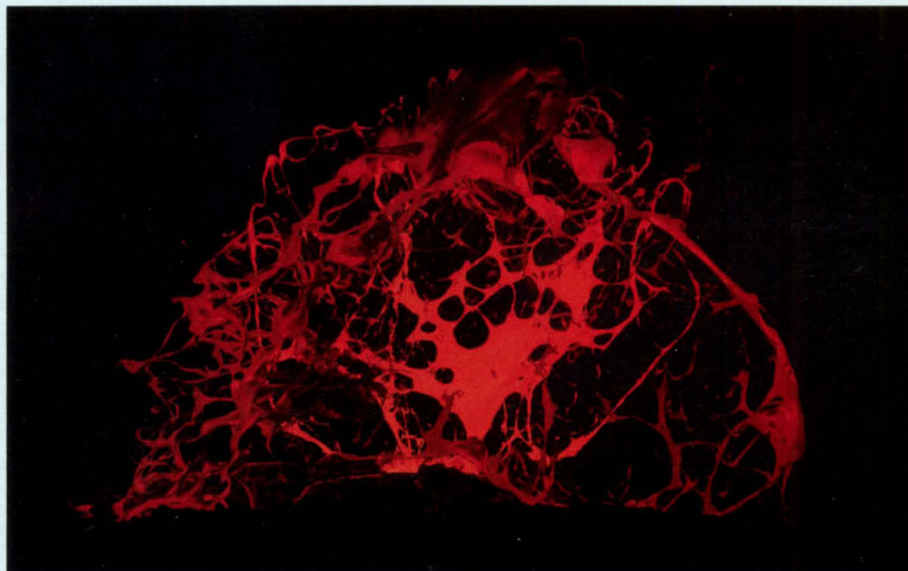
these drugs. He faults members of the academic community who, he claims, have made gross errors in the conceptualization of—and, thus, the incidence of—depression, anxiety disorders, and catatonic schizophrenia, as well as in understanding the true nature of antidepressant and antipsychotic drugs (as "tonics" and "tension relievers"). He argues that, in some of their writings and lectures, these academics have been co-opted by the pharmaceutical industry to assist in the creation of a greater market for its wares. And he also criticizes research and clinical psychiatrists who have harmed schizophrenic and depressed patients by prescribing drugs in accord with misguided theories about their mechanism of action or with a lack of understanding that they may sometimes cause effects opposite to those intended (e.g., increase rather than decrease the risk of suicide).

The scientific literature, media, and government hearings document—and my personal experience agrees—that some, but not all, of these criticisms have merit. But hardly to the extent that Healy suggests, and rarely for the motives that he believes caused the problems. Some, though not all, of his criticisms are being addressed voluntarily by industry, academics,

plex." Thus, a recurring theme in the book is Healy's blistering critique of the pharmaceutical industry. He believes the industry, aided and abetted by misguided public policy, has caused considerable iatrogenic illness and engaged in unconscionable profiteering. It has shaped our sense of self with drugs like the selective serotonin reuptake inhibitors, and, at the same time, it has limited access to drugs that could safely and effectively do so. Healy notes, "The possibility that marketing [of psychotropic drugs by the pharmaceutical industry] now determines culture is at the heart of this book."

The drug industry is not the only target of the book. Healy criticizes the U.S. legislation that regulates psychotropic drug approval and requires prescriptions from physicians to obtain

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BROWSTINGS

Volcanoes. Philippe Bourseiller and Jacques Durieux. Abrams, New York, 2002. 416 pp. \$49.95, C\$75. ISBN 0-8109-1699-1. Translated from the French by David Baker.

The awesome beauty of volcanic eruptions, their devastating aftermath, and landscapes built of lava and ash fills this oversize coffee-table volume. The glow of lava bubbles exploding into shreds at Kilauea volcano, Hawaii, (left) is among the more striking of the 170-plus photographs by Bourseiller, most of which are presented in double-page spreads. The images are accompanied by Durieux's brief essays that cover topics ranging from Greek legends to assessing and living with volcanic hazards.

and clinicians, as well as by legislation and the market place. In his reformist zeal, Healy often loses perspective, and he fails to credit the pharmaceutical industry for its major contributions to science and society. He provides no cost-benefit analysis of the industry's contributions, and he omits any mention of the almost complete absence of government attempts—let alone successes—at developing effective drug treatments for mental illness within intramural research programs.

Before I discuss the radical solution Healy offers for one of the problems that he emphasizes, it is important to mention at least some of the book's major errors of fact. Healy's estimates for major depression, which he prefers to call "community nervousness," are breathtakingly low: 0.05% versus the consensus view of 10%. This low estimate is a central point in his argument that the "psycho-pharmaceutical complex" has "medicalized the human condition" and "mass manufactured disease states" to sell drugs. To support the lower rate, Healy notes the extremely low use of antidepressants in Japan compared with the West. He is apparently unaware that only very recently have the Japanese dropped their exclusion—supposedly for safety reasons—of most psychotropic drugs (including antidepressants), whose patents belong to Western drug companies. He presents the legitimate debate about the incidence of catatonia as a drug-company scheme to maximize the use of antipsychotics. His view that the pharmaceutical industry did something wrong in developing alternative drug treatments to methylene blue for mania and cyproheptadine for depression is misleading at best, as is his conclusion about the benefits and safety of these now-

obsolete treatments compared with current treatments. Healy argues that clozapine, an antipsychotic drug whose mysteries direct much academic and industrial research on the treatment of schizophrenia, is no more effective than low doses of typical neuroleptic drugs even in treatment-resistant patients; that it produces a higher rate of neuroleptic malignant syndrome than other antipsychotic drugs; and that it is ineffective in treating the disorganization syndrome (hebephrenia) in schizophrenia. Not one of these statements is correct.

There are errors of omission as well. Healy does not discuss the evidence that clozapine and other atypical antipsychotic drugs are better than typical antipsychotic drugs at improving cognition. Nor does he consider the importance of this advantage to facilitating work and social function or the cost-effectiveness of the atypical antipsychotic drugs. Although Healy acknowledges the contributions of Paul Janssen, who discovered haloperidol (the most widely used antipsychotic drug in the 1980s and early 1990s), there is no other mention of the enormous achievements of industry-based psychopharmacologists or of the ongoing investment of billions of dollars per year by industry to develop safer and more effective treatments for schizophrenia and mood disorders. Without such information, it is impossible to evaluate the pharmaceutical industry fairly and to make responsible recommendations for the role of the pharmaceutical industry in drug development and marketing.

In the last chapter, the book's most original and most challenging part, Healy advances his belief that disorders like schizophrenia and manic-depressive illness will largely disappear as targets for drug development and the clinical activity

of psychiatrists. He suggests that possible improvements in diagnosis and treatment may lead the current targets to be replaced by personality disorders or other limitations in the human character and intellectual capacity. Should these efforts succeed, he believes that people should be allowed to purchase these drugs without medical supervision: "[A]ny future Rousseau should be able to try the interventions of twenty-first-century psychiatry in a setting that will enable him to decide freely whether they have anything to offer him."

It is certainly possible that such panglossian nostrums could be developed by a massive combined effort of industry, academia, and government. The use of such "life style drugs" (as Healy calls them), if they become available, will present a great challenge to society. The abuse of alcohol or tobacco—certainly abetted by the spirits and tobacco industries' marketing—apparently has not made Healy concerned about what could happen if such drugs became available without some form of control, medical or otherwise. Even acknowledging the harm sometimes done by clinicians who do not use psychotropic drugs well, I find such deregulation an extremely naïve and dangerous proposal. It reflects Healy's fascination with the Enlightenment and Romanticism, rather than a clear vision of what would happen in our culture, with its history of abuse of alcohol and predilection for mind-altering drugs. Caveat emptor applies to those who would alter mental states and to readers of Healy's challenging book alike.

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