

BOOK REVIEWS

Biological Weapons: Limiting the Threat

Joshua S. Lederberg, ed.

Cambridge, MA: MIT Press, 1999, 351 pp. US \$21.00 paper. ISBN: 0262621282. MIT Press Bookstore, 292 Main Street, Cambridge, MA 02142, USA.

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The papers in Joshua Lederberg's excellent collection, entitled *Biological Weapons: Limiting the Threat*, were first published in August 1997 in the *Journal of the American Medical Association*. This was an appropriate forum for a topic that Lederberg describes as "transcend[ing] medicine and public health, private criminal acts, terrorism, interstate warfare, and international law." A range of experts, from clinical infectious disease physicians to UNSCOM inspectors, present analyses of a complex set of topics ranging from the signs and symptoms of relevant diseases to the intimate details of Iraqi bioweapons facilities. The current position of the U.S. administration was deftly outlined by the Secretary of Defense, William S. Cohen: the primary focus of U.S. policy is to use diplomacy to prevent acquisition of biological weapons and their delivery systems. However, the administration maintained that proliferation cannot be expected to be entirely prevented. U.S. and coalition forces must be trained to "fight and win in a chemical- or biological-contaminated environment."

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It is now five years later, and the world has completely changed. The terrorist attack of September 11, 2001 and the anthrax releases during the autumn of that year have led to unprecedented changes in the legal, political, economic, social, and academic fabric of the United States. Since the publication of this volume, the U.S. administration withdrew from the negotiations on the Biological Weapons Convention, carried out a major multibillion dollar military endeavor in Iraq, created the Department of Homeland Security and equipped it with massive funding, and—supported by Congress—pushed a series of legal moves that have redefined privacy, academic freedom, and immigration policy. These topics are outside the purview of this review and have been and will be addressed in other pages of this journal. Our task here is to consider this book.

After introductory sections designed to frame the issues, the papers are organized in four sections: arms control, the Iraqi bioweapons program, detection and case studies, and policy issues such as legal aspects and national security. Threaded throughout the presentations are discussions of possible solutions, as varied and wide-ranging as the topics themselves. Much of the information in this book remains timely and useful; nevertheless, a fascinating exercise for the reader is to consider how the context of these urgent topics has changed.

Before 1995, biological weapons were not a topic of general public concern in the United States. Three major events (and a number of minor ones) contributed to their current position in the political spotlight. First, the details of Iraq's bioweapons program gradually came to light, described in Lederberg's book in two separate chapters by Raymond Zilinskas, an UNSCOM (United Nations Special Commission) inspector and BW arms control expert, and Stephen Black, UNSCOM historian, respectively. The experience in Iraq has important lessons for negotiators of compliance regimes associated with the BWC: according to Saddam Hussein's nephew, Iraq's biodefense program was in full swing during the second half of this decade,

despite the presence of UNSCOM inspectors on Iraqi soil.

Second, the terrorist chemical attack in the Tokyo subway system by Aum Shinrikyo was followed by the discovery of that group's attempts to develop and weaponize biological agents. Third, the details of the Russian program were revealed, a massive effort stretching into the years after the dissolution of the Soviet Union and the signing of the BWC by the Russian state. Again, confidence in the BWC was shaken in light of these undetected violations.

Other events and developments contributing to BW's highlighted position are discussed throughout the book. For example, detailed case studies of domestic outbreaks of disease and of the anthrax outbreak in Sverdlovsk in 1979 are chilling predictors of what might be expected in the event of BW use. Possible scenarios are suggested by these case studies and lead to analysis of who would constitute the front line in the event of an intentional release of disease-causing organisms. In the case of a biological attack, given presently available methods, the most effective measures will rely on recognition of clusters of cases in local emergency rooms, or a sudden increase in cases reported to public health departments.

Physicians and related health care workers must be prepared to recognize outbreaks, and epidemiological investigations should initiate the necessary steps required to recognize the outbreak of disease from the use of biological weapons. Effective containment of such a threat requires that the diseases be recognized as early as possible. Thus, a dual effort is called for, both to improve the delivery of currently available public health measures, and to dramatically improve our ability to recognize that a bioweapon has been used.

An understanding of historical context is valuable for developing solutions. Several chapters present the history of aspects of biological weapons development and control. The U.S. offensive bioweapons program was in full swing during the years after WWII. It was Richard Nixon who studied the program and concluded that its tactical inadequacies required dissolution of the program. On November 25, 1969, President Nixon announced the unconditional and unilateral renunciation of biological weapons development by the United States. The United Kingdom, Sweden, and Canada followed suit. In 1975, the Biological Weapons Convention (BWC) went into force, signed by 33 States Parties. This remarkable document has the distinction of being the only arms control treaty drawn up before documented use of the weapons it proposes to control.

Written into the convention is a provision for review conferences to be held roughly every five years. In 1993, two years after the Third Review Conference, a group of verification experts (VEREX) appointed by the States Parties presented a report outlining the possibility of

developing legally-binding verification measures. An Ad-Hoc group was then established whose charge was to negotiate a legally-binding protocol to strengthen the convention. At the time of publication of Lederberg's book, these negotiations were underway, and their progress can be monitored in the "rolling text of the Protocol" (the best site for following developments is www.brad.ac.uk/acad/sbtwc). The events of the past decade have underscored the urgent need for enforcement of the terms of the BWC.

In addition to international efforts to control the proliferation of biological weapons, there are a number of related developments in domestic law. The Chemical and Biological Weapons Control Act of 1991 sought to limit the proliferation of biological weapons by economic sanctions and export controls. The Biological Weapons Act of 1989 defines the following activities as a federal crime: development, manufacture, transfer, or possession of any "biological agent, toxin or weapon" for "use as a weapon." Finally, the Anti-terrorism Act of 1996 was passed by Congress in the wake of the Oklahoma City bombing. With this act, law enforcement agencies had greatly expanded powers to deal with biological and other terrorist weapons.

Nevertheless, in the years since 1975, little progress has been made in creating a world safe from the horrors of biological weapons. With the BWC now boasting more than 140 signatories, the world still faces what author Kadlec and colleagues call "proliferation reality." John D. Holum, speaking at the Fourth Review Conference in November 1996, stated that "overall the United States believes that twice as many countries now have or are actively pursuing offensive biological weapons capabilities as when the Convention went into force." In the light of recent events and intelligence, one must now add activities outside of state-sponsored programs, i.e. possible terrorist programs.

There is no consensus on the nature of definitive solutions to the threat of BW use (either state-sponsored or terrorist-induced), attesting to the intricate complexity of the problem. The editor, a Nobel Laureate in Medicine and President Emeritus of Rockefeller University, calls for "scrupulous adherence to the BWC," but concedes that unlike nuclear capability, "BW capability is unlikely to be contained by legal prohibition and formal verification." This paradoxical position—that prevention/deterrence must be pursued but cannot work—is a common theme across the board in *Biological Weapons: Limiting the Threat*, and the thoughtful reader may turn away, discouraged. On the other hand, the valuable data and discussions offer a sweeping overview of the complexity of the problem. Readers should be inspired by the tireless efforts of those involved in biological weapons control over the decades.

Source Book in Bioethics: A Documentary History

Albert T. Jonsen, Robert M. Veatch, and LeRoy B. Walters (eds.)

Washington, DC: Georgetown University Press, 1998, 510 pp. US\$95.00 cloth. ISBN 0-878-40-683-2.

US\$39.95 paper. ISBN 0-87840-685-9. Georgetown University Press, 3619 O Street NW, Washington, DC 20007, USA.

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A benefit of being a book review editor for this journal is the option occasionally to write a review of a book I would like to keep. The *Source Book in Bioethics*, published in cloth in 1998 and paper in 1999, is one such book. In this source book, three leading figures in bioethics bring classic documents in bioethics together in a single volume. In so doing, they provide a service to those who frequently use court cases, commission reports, and other primary sources in their research and teaching.

The rise of the internet makes many of today's policies and statements by governmental and nongovernmental organizations available with gratifying speed. Yet documents released before the internet era are often hard to find and are less-than-easy reading once located. A bound leaflet of government documents and court cases I use for required readings in a class on biomedical policy contains photocopies of dim pages with miniscule print from years-old issues of the *Federal Register* and other governmental sources. The pages from court reporters feature blurred print where the book's spine was splayed for photocopying. Library books, such as *Splicing Life*, a 1982 volume written by the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research (President's Commission), bear the distracting yellow highlighting and ink notations that signal over two decades of patron use. Numerous primary documents are available in the appendix to the *Encyclopedia of Bioethics* (Reich, 1995), but the heft and price of that multi-volume encyclopedia place it out of reach for most office collections.

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The *Source Book in Bioethics* brings key reports, court cases, legislative documents, and reports by national and international professional organizations together in an easily readable format. The documents are grouped into five sections: human subjects research, death and dying, human genetics, assisted reproductive technologies, and health care allocations. The book's editors have written introductory essays for each of the five sections and a capsule history for each of the book's 46 selections.

Deciding which documents to include in a single volume devoted to a documentary history of bioethics involves discretion, and the section introductions indicate the editors' rationale behind the selections. For example, the section on the ethics of death and dying contains excerpts from *Defining Death*, a 1981 report from the President's Commission; *In re Quinlan* (1976); the California Natural Death Act (1976); *Superintendent of Belchertown State School v. Saikewicz* (1977); *Deciding to Forego Life-Sustaining Treatment*, a 1983 report from the President's Commission; *In re Conroy* (1985); *Cruzan v. Director, Missouri Department of Health* (1990); the final rule from the Department of Health and Human Services on Child Abuse and Neglect Prevention and Treatment (1985); and *In re Baby K* (1993). The editor of this section, Robert M. Veatch, selected entries that documented changing issues in death and dying debates. The early issues related to the patient's interest in refusing life-sustaining treatment; later issues related to the patient's access to medical resources when interventions appear to be futile, as in the case of Baby K.

In areas without rich case law, the editors have selected reports of commissions and professional associations. The selections for assisted reproductive technologies include excerpts from reports by the Ethics Advisory Board (United States), Waller Committee (Australia), Warnock Committee (United Kingdom), Royal Commission (Canada), and Glover Report (European Commission). It also contains statements by professional associations (American Fertility Society, American College of Obstetricians and Gynecologists), a court case (*In re Baby M*), a report by a government agency (U.S. Office of Technology Assessment), and a religious perspective (*Instruction on Respect for Human Life by the Congregation for the Doctrine of*

the Faith). These selections highlight sources of emerging consensus and lingering dissensus among policy advisors internationally.

As a documentary history, this book does not necessarily lend itself to late-night reading. Yet the sources, taken as a whole, reveal much about the state of biomedical policy. The genesis of today's suppositions and working principles becomes clear when one looks at the reports and policies consecutively. Moreover, while the United States is often criticized for inadequate biomedical policy, these documents challenge the fairness of that claim. Here one sees a succession of government reports examining scientific, ethical, and policy issues and laying the groundwork for cautious but manageable recommendations. The documents set a foundation from which current controversies can be examined. For example, recommendations on human fetal

tissue research (p. 105) inform contemporary efforts to enact recommendations about embryonic stem cell research.

A news release on this book informs us that the *Source Book in Bioethics* was named one of the "Outstanding Academic Titles" from *Choice* magazine. It is, indeed, an important resource for those seeking a single volume containing classic bioethics documents combined with intelligent editing and helpful introductory summaries. Although primarily a reference book, its reasonable paperback price and straightforward presentation makes it a possibility for class use as well.

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The Meme Machine

Susan Blackmore

New York: Oxford University Press, 1999, 264 pp. US\$25.00 cloth. ISBN 0-198-50365-2. Oxford University Press, 198 Madison Ave., New York, NY 10016-4314, USA.

Thought Contagion: How Belief Spreads through Society

Aaron Lynch

New York: Basic Books, 1996, 256 pp. US\$24.00 cloth. ISBN 0-465-08466-4. Basic Books, 10 E. 53rd St., New York, NY 10022-5299, USA.

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In his forward to *The Meme Machine*, Richard Dawkins compares the spread of the word "meme" to the spread of the Charles Lumsden and E.O. Wilson counterpart,

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"culturgen." Based on a web search for the two terms, Dawkins concludes that the "meme" meme has replicated like bunnies whereas culturgen is virtually sterile (5,042 occurrences of memetics vs. 20 occurrences of culturgen). Why has the meme word won out so handily in this "Darwinian struggle between the two memes," as Dawkins colorfully styles it? It comes down to wordcraft. "Meme" is a euphonious monosyllable that supports a battalion of coinages—meme splicing, meme pool, metamemes, vaccime, memed out, and more. "Culturgen," by contrast, is inelastic and not easy to hear. Besides, the authors abandoned all possibility of prime time exposure by locking "culturgen" up in equations. So "culturgen" lost the war to control terminology.

"But wait just a minute!" I hear you cry. "That's chest beating about market share. What ever happened to truth?"

Truth, as the saying goes, is the first casualty of war. Memetics construes beliefs on selectionist principles, meaning that it isn't beauty or truth that matters, but adaptability for a particular population. This entails the "paradigm shift" that brandmarks memetics (Lynch, p. 17). The complicated fabric of intentionality, motivation, and belief is jettisoned. It is replaced by an epidemiological analysis of ideas renamed "memetics." Memes (a.k.a. "information viruses") are defined as replicators that have a life history, a phylogeny, and progeny (Lynch, p. 2; Blackmore, p. 7). Memetics launches a germ theory culturology (Lynch, p. 155) that turns the intuitive sense of the relation between thought and self on its head. My ideas are not "mine"; instead, I have been "acquired" by memes that use my brain as the "host" or "vector" from which they will launch new "contagions" (Lynch, pp. 3, 17). I am, in short, the sum of my "infections" (compare sociology: the sum of my social roles). This deep insight, we are told, has hitherto been overlooked in the social sciences. Both authors undertake to close this knowledge gap by founding the new science of memetics (Lynch, pp. 3, 175; Blackmore, p. 36). They are by my count the fourth and fifth claimants to be the Mendel of memetics and the Pasteur of thought contagion.

The meme idea was proposed by Richard Dawkins as the cultural analogue of genes. Memes are the supposed unit of cultural evolution. Genes, in Dawkins's view, hold the "vehicles" (or phenotypes) in which they reside in complete submission. He is fond of spouting that humans and other living organisms are nothing but self-replicating robots. This same idea applies to memes, which hold their "hosts" and "vectors" in complete thrall. In the debut appearance of this idea, Dawkins glossed it thus:

When you plant a fertile meme in my mind, you literally parasitize my brain, turning it into a vehicle for the meme's propagation in just the way that a virus may parasitize the genetic mechanism of a host cell. And this isn't just a way of talking—the meme for say, "belief in life after death" is actually realized physically, millions of times over, as a structure in the nervous system of people all over the world. (1976:207)

The brain mechanists are right, it seems. Memes and other signals entering the nervous system leave a trace detectable (presumably) by imaging techniques (Blackmore, pp. 39, 57). It's a double whammy. First, subjectivity is robotized by genes; then lobotomized by memes. Could memetics also be a mindless meme competing for space on our hard drives?

Blackmore, a psychology lecturer at the University of the West of England, declares the implication that the self is just an illusion. "There is no 'I' who 'holds' opinions," she intones. "There is a brain that can store knowledge . . .

. . . but there is not in addition a self who 'has' the belief. There is a biological creature who eats yoghurt every day but there is not in addition a self inside who loves yoghurt" (Blackmore, p. 233). (That's the theory. Beware of taking it literally, because the publisher's page attributes copyright to Susan Blackmore and states that her moral rights have been asserted.)

The Buddha and a bunch of philosophers agree that the self is illusory. Contemporary psychology knows of dissociated states and other phenomena that establish the persistence of this paradoxical self-perception. Does Blackmore link her meme machine to this "phylogenetic" background? She does not. Instead she congratulates herself on discovering the illusory self: "Now we have a radically new idea of who we are. Each of us is a massive memplex running on the physical machinery of a human body and brain—a meme machine" (Blackmore, p. 235). The moral rights of the Buddha have been usurped.

The illusory self is not a Nothing. It suffered in the Buddha's time and it suffers today. Blackmore speculates that the various modes of stress, depression, and depletion common today are due to excessive exposure to numerous, often competing memplexes. She writes:

I wonder just how much memetic pressure selfplexes can take before they blow apart, become unstable, or divide into fragments. The unhappiness, desperation, and psychological ill-health of many modern people may reveal just this. Today's psychotherapy is a kind of memetic engineering, but it's not based on sound memetic principles. That is something for the future. (Blackmore, p. 233)

My selfplex bifurcates to chaotic oscillation trying to imagine my illusory self shifting into a second order of non-entity by exploding. What comes to mind (if you will pardon the expression) is stream-of-consciousness delirium pioneered in literature and perfected by disco strobe lights. I think I shall call it "memebabble." I'm going to upgrade my onboard RAM drive to 64 MB so that I may better understand it.

Memetics is not the first aspiring science to delete Self. Behaviorists of the 1920s adopted the programmatic doctrine that behavior was explainable by the machinery of stimulus and response. Thoughts, intentions, and emotions do not in any way influence behavior. Learning is strictly reactivity. However, when experimental animals were observed to learn by doing, an agent-based learning concept, "operant conditioning," was embedded in feedback/feed-toward loops connecting stimulus, perception, motivation, and action such that the animal disposes of a learning capacity that functions as a template for interpreting new experiences. Thus, crows safely prey on the toxic cane toad

because they have learned where the poison sacs are. Elephants can detect the smell of fermenting beer and raid the Indian peasant's still to appropriate his produce. Operant conditioning restored the agent dimension of "organisms" expelled from the original programmatic doctrine. It only remained to add the neurology of the operant feedback loop to undermine the behaviorist agenda. By describing the hard- and softwired configurations of a species' learning program, we understand better why a given species is unresponsive to a range of sensory inputs but is highly sensitive to others.

Memetics is dumbed-down behaviorism. Memes (stimuli) enter the brain, parasitize (condition) it, and are emitted as responses (retransmission of memes). But it's dumber than behaviorism because it's unable to define memes as an empirical object domain comparable to stimulus and response or genes or gene products. Without a detailed description of this process, memetics is no more than speculative fantasy.

Neither of our wannabe Mendels solves this problem. Lynch refers to Douglas Hofstadter's exploration of self-referential sentences. The example discussed is chain letters, styled "viral texts" because they promise rewards for resending and punishments for disobedience (Lynch, p. 35). Fascinating though they are, chain letters cannot define an object domain. Lynch abandons them to focus on a topology of self-propagating transmission, inter alia, parental, proselytic, adversative, and motivational. Under the parental, he observes that parents tend to rear kids in their own belief system. (This commonplace is made scientific by renaming it "phenotypic cloning.") He doesn't examine the mechanisms of parental transmission of memes. Instead, he tosses out episodic comments about the use of ostracism and threat to impose compliance.

To me this doesn't sound like "hosts" being shaped by memes, but agents (parents) making their kids toe the line. Indeed, whenever Lynch seeks to describe how memes control their hosts, he lapses into agent talk drawn from ordinary experience. This is especially clear in his discussion of barriers to meme propagation. One barrier is the "cynical" attitude of those who regard mass beliefs as "user-made tools for controlling the masses" (Lynch, p. 13). It is regrettable that the author doesn't follow up his lead and examine the techniques for the manufacture of consent. Were he to do so, he would encounter a large and diverse literature on propaganda, promotion, indoctrination, and influence (Eibl-Eibesfeldt and Salter, 1998). We know how spin doctors design candidate images, how ad agencies sell products, and how cults capture minds. Our memeticists ignore this literature. They could make no use of it even if they knew about it because they are committed to the upside-down tenet that beliefs propagate themselves; whereas we know that manufacturing consent is a highly skilled, very deliberate activity. Lynch's one example of a self-

propagating meme, chain letters, falls on the sword of agency. Chain letters are illegal if they are sent through the mail. Who should be prosecuted, the letter or the person who sent the letter? The ardent memeticist is undaunted by paradox: the letter did it.

The Meme Machine is an unusual book. At the Amazon.com web site, one reader concluded by saying, "Thank you Susan Blackmore for bringing hope. And a new religion." Religion emerges in the closing chapters as the ineluctable outcome of genetic and memetic determinism. The argument there runs thus: The meaning of science in our cultural context is moral meaning; it empowers self by liberating from ignorance and superstition; and it is the tool for subduing natural forces to human welfare. But this meaning is subverted by the discovery that the self is a pack of lies that continuously renews the illusion of free will, control, intentionality, and rationality. Memetics, if it is to be consistent with its own findings, must abandon the stance inherited from the last century's ethical rationalism. Thus, Daniel Dennett debunks free will and human agency, but clings to its moral remnants by affirming illusory ideas of free will that are "worth having" (1995).

Blackmore debunks the debunker: "Unlike Dennett I neither think the 'user illusion' is benign, nor do I want any version of free will that ascribes it to a self who does not exist" (Blackmore, p. 237). The prophet of memetics, Richard Dawkins, declared at the conclusion of *The Selfish Gene*, "We, alone on Earth, can rebel against the tyranny of selfish replicators." He thinks that a culture dominated by natural selection would be a "terrible place to live." This biological Bolshevism is an ingredient to the moral stance of memetics, which assigns to itself a grandiose agenda for social reform, especially purging society of harmful religion. Blackmore's commentary:

But this is all a cop out We must ask who gets to choose? If we take memetics seriously then the "me" that could do the choosing is itself a memetic construct: a fluid and ever-changing group memes installed in a complicated meme machine If we take memetics seriously there is no room for anyone or anything to jump into the evolutionary process and stop, direct, or do anything to it. (Blackmore, p. 241f)

Buddhist quietism emerges as Blackmore's reconciliation of science and spirituality. The Buddha ascribed human suffering to the relentless desire to acquire, to achieve, to control. The remedy is withdrawal from the rat race by meditative letting go of all thoughts that run into the future ("meme-weeding"). Blackmore conducts her readers through self-talk that threads through the maze of illusions of control to arrive at spiritual composure: "To live honestly, I must just get out of the way and allow decisions to

make themselves It brought a great sense of freedom to let so many decisions alone” (Blackmore, p. 244).

This self-talk is a tour de force, not despite of, but because of, its paradox. Writing as an insider who knows which buttons to press, Blackmore shows that the moral stance of memetics clashes with memetic “science.” She does not, in my view, show that Buddhist quietism follows from memetics (from a contradiction, nothing follows), but her open embrace of it shows confessing memeticists a possibility occluded by their activist assumptions.

I have attended to the moral issue because most reviewers pass over it in embarrassed silence, and because it has the potential to reshape the debate about memetics. But there is much more to Blackmore’s study. If you read the book backwards, keeping her end point in mind, you will see that her demolition of the memeticist’s moral stance is preceded by a demolition of its purported science. It is no science at all (obvious to everyone but memeticists). Let me mention just two of her criticisms.

What is a meme? A passably clear definition is required to establish the unit of memetic selection. But alas, memeticists do not come close to agreement; collectively they give the impression that anything at all can be a meme. Blackmore acknowledges that a non-arbitrary definition isn’t possible; her own arbitrary definition is that a meme is anything that can be imitated (Blackmore, p. 52). This writes “finis” to the aspiration for a memetic science, for without a unit of cultural selection there can be no reductionist science of cultural evolution. Anthropologists, archaeologists, and political scientists investigating cultural evolution have long known this and today reject units of culture along with the idea of a reductionist science of culture. Blackmore puts a brave face on it by blithely comparing the predicament to the ambiguity of “genes.” In two brief paragraphs, she points out that “gene” has no single definition in genetics (Blackmore, p. 53f). Sometimes it is a codon, sometimes a cistron, and neither of these necessarily replicates. This is correct, and it could be taken much further. Ideally (for reductionist science), genes would be the unit of recombination, of mutation, and of function. However, the unit of recombination is a single nucleotide, while the unit of function is the cistron, which is 900-1800 nucleotides long. A single nucleotide was believed to be the unit of mutation, but recently discovered somatic hypermutation (a phenomenon of immune response) is not a unit at all but a process by which somatic cells re-engineer their DNA! If these elementary facts about genes were to become known in memetics, it would so complicate discourse that the “science” would become a quagmire even to its exponents. Blackmore has slipped a mickey into memetics.

The second point concerns Blackmore’s central thesis that the evolution of a second type of replicator, memes, dampens, and in some areas extinguishes, genetic deter-

minism, replacing it by cultural determinism. This entails numerous criticisms of gene-based interpretations of human behavior stemming from sociobiology and evolutionary psychology. Particularly arresting are her commentaries on reproduction (“birth control is a disaster for genes”) and altruism, which, thanks to meme-control, extend it far beyond kin selection and reciprocal altruism to humanity at large and to animals. This isn’t news; there have been countless criticisms to this effect. But Blackmore inserts it like a Trojan horse into the memetics meme, and that is what makes it different.

The one tenet unchallenged by Blackmore’s debunking is what she styles “the most powerful idea in all of science”—evolution by natural selection. It is a powerful idea in neo-Darwinism, but it is not relevant to most of biological science. Moreover, it is not the only acknowledged evolutionary mechanism, and new discoveries about symbiosis, directed mutation, and the like may eventually indicate that natural selection has little to do with cultural evolution. This is shown indirectly by Blackmore’s book, which produces not one instance of a meme replicating independently human agency, nor a single lineage of meme evolution.

Memetics appeals to people, mostly New Age types, looking for a spin on the deluge of media and internet messages. We all feel overwhelmed at times, and in such moments the extravagance that I am nothing but a memeplex strikes a chord. In the 1960s, the spin doctors were Marshall McLuhan and George Orwell, whose *1984* helped a generation grasp the horror of mind capture. Behaviorism was the progeny of the then-new experience of all-sided war propaganda and postwar advertising. Memetics is a cyberculture fashion that flourished because it delivers a do-it-yourself kit of buzzwords enabling users to construct their own personal antidote to mind capture by invading memes. In other words, it empowers the Selves of its users. But taken at face value as purported science, it proves to be a phantasmagoria of metaphor, polemic, and babbling self-talk that blocks access to knowledge, both common and scholarly, of how ideas spread.

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Voices and Echoes for the Environment: Public Interest Representation in the 1990s and Beyond

Ronald G. Shaiko

New York: Columbia University Press, 1999, 288 pp. US\$49.50 cloth. ISBN 0-231-11354-4. US\$21.00 paper. ISBN 0-231-11355-2. Columbia University Press, 61 W. 62nd Street, New York, NY 10023, USA.

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When was the last time you wrote a check to an environmental organization, sending along with your money the hope that your dollars would help to fight pollution or save critical habitat? Odds are it hasn't been too long, since millions of us in the United States do just that every year. Ronald Shaiko's book, *Voices and Echoes for the Environment: Public Interest Representation in the 1990s and Beyond*, gives us a detailed view inside five environmental organizations, showing us how they have evolved from their grassroots origins in the 1960s to the multimillion dollar giants some have become. Shaiko, a political scientist, organizes his book into seven chapters, each well documented through notes and appendices. The goal of his study is to define and assess the relationships that exist between organization leadership and membership through analysis of organizational attributes, leadership styles, communications, recruitment efforts, membership motivations, and political activities. He focuses in particular on two competing goals of modern environmental organizations: effective policy influence and maintenance of membership. This book will be of interest to political scientists and public interest policymakers, environmental scientists and advocates of every stripe, and each of us as citizen contributors to the cause.

Shaiko, in Chapter 1, begins by describing changes from the 1960s through the 1990s in public interest groups in general. The number of public interest organizations has increased dramatically; however, more important is the change in the nature of member participation from one of direct street-level activism to one of mere financial support. Today's baby boomers may lack the time to act on their convictions; however, they can, and do, use their disposable income to pay organizations to "take it to

the streets" for them. This shift from direct to indirect membership involvement presents a potential problem for policy-oriented organizations: the greater the gulf between the professional staff constructing policy agendas and the membership itself, the greater the challenge of ensuring that the voices of organization leaders are effectively supported by the grassroots membership, that is, the *echoes*. Finally, Shaiko raises this important point: the assumption that the primary product of public-interest organizations is political representation no longer holds (p. 21). The primary task is now simply keeping organizations in operation.

In Chapter 2, Shaiko shows that no other public interest sector has undergone as dramatic a shift from social movement to professional national organization as has the environmental sector. In the 1960s, the environmental movement in the United States was comprised of about 150,000 citizens with a collective wealth of less than \$20 million annually. Today, more than 8 million citizens are affiliated with national environmental organizations and the collective wealth is estimated to be close to \$1 billion (p. 25). For his analysis of the contemporary environmental movement, Shaiko chose five organizations: the Sierra Club, National Wildlife Federation, The Wilderness Society, Environmental Defense Fund, and Environmental Action. The groups vary from among the oldest in the nation to the relatively new, from the largest and wealthiest to the smallest and least wealthy. They differ as well in the breadth of issues they address, their philosophies of advocacy, and internal decision-making processes. They have, as well, important organizational characteristics in common. Direct mail serves as the primary method of membership recruitment. Each is organized to have a board of trustees and executive leadership, and each focuses its political representation at the federal level.

Issues of leadership are the focus of Chapter 3. The management of large, nonprofit organizations requires executive directors that possess a variety of organizational, management, and leadership skills, and this pool of managers is not particularly large. Shaiko shows that this pool is limited in part by pronounced bias in favor of white males in leadership selection and salaries (pp. 57-60).

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Shaiko recounts the frequent leadership changes over recent decades in each of the five focus environmental organizations. Each shows an interesting history of dealing with the challenges of rapid growth and expansion of goals followed by the realities of shrinking member base and necessary downsizing.

Differences emerge across the five organizations in how well organizational structures facilitate two-way communication between leadership and membership. The Sierra Club's organizational structure is best designed to encourage member participation in policy formation (p. 66). Shaiko cites, as well, critics' claims that many of the national environmental organizations have become top-heavy, conservative, "inside-the-beltway" monoliths unresponsive to grassroots motivations. Otherwise positive coalition-building efforts across national environmental organizations, according to Shaiko, have too often been conducted by Washington staff leaders and have failed to integrate grassroots elements, only furthering the perception of exclusive, national-level control (p. 91).

Chapters 4 and 5 address membership recruitment methods and membership incentives and motivations, respectively. Direct mail remains the primary method employed by environmental groups to solicit new members. Since the cost of maintaining up-to-date mailing lists and of producing and mailing membership campaign literature is high, organizational effectiveness is an important issue for potential donors, yet one that has been difficult to assess. Shaiko presents data from the American Institute of Philanthropy (AIP) rating the five focus environmental organizations, plus others, on the average cost to raise \$100 and the percent of budget spent on charitable purposes (p. 112). Though the five organizations received generally passing grades from AIP for the period covered, only one, Environmental Action, received an overall grade of A. It avoided costly direct-mail marketing, thus keeping expenses down; however, it also failed to increase its 20,000 membership base and has now ceased to exist. Of the organizations listed, only The Nature Conservancy was comparable to Environmental Action in its consistent efficiency of raising money and in spending more than 80% of its budget on its environmental goals. Contributors to environmental organizations should be aware of the AIP evaluations and base their support of organizations at least in part on these data. Unfortunately, this ranking is only part of the analysis needed to make wise investments. Contributors really need to know, not just what percent of funds are spent on the issues, but how effective this spending is in influencing actual policy outcomes.

In Chapter 6, we find that environmental organizations face a growing dilemma. Today, only a small percentage (2% to 10%) of members—perhaps better identified as "check-book affiliates"—self-identify as active members (p. 146). This clearly presents a barrier to motivating

grassroots action. In addition, groups vary significantly in the degree to which they address policy issues within their magazines and newsletters. Some, such as the National Wildlife Federation, have traditionally feared offending portions of their membership and therefore felt it best to steer clear of policy controversy in their communications with members. Shaiko presents a content analysis of the communications of the five focus groups. His results show that, while the National Wildlife Federation has recently increased its delivery of policy information, the remaining four organizations have significantly reduced the frequency of distribution and the number of issue messages sent to members. Though these groups have at the same time introduced passive access to information through their web sites, Shaiko concludes that it will become increasingly difficult to mobilize grassroots activists if leadership continues to decrease the role of communication of policy to membership (p. 173).

In Chapter 7, Shaiko returns to the issue of the elitist nature of the leadership of the national environmental organizations. Though acknowledging new efforts among public interest groups to recruit women and minorities into their leadership, he nevertheless concludes that the governing elite continues to be drawn primarily from a small social network. In identifying other challenges for the twenty-first century, Shaiko raises the issue of growing foundation and corporate support of environmental organizations and addresses the potential benefits and costs of these new relationships (pp. 185-188). Members of public interest groups, Shaiko argues, must be prepared to play an active participatory role if policy agendas are to be achieved. And, finally, the organizations themselves must continue to struggle to make policy advocacy and effective organizational structure top priorities in order to achieve their goals of political representation.

Ronald Shaiko provides us with a critical and in-depth study of the structure and organization of some of our top environmental organizations. The disheartening message he sends is that while environmental organizations have attracted vast memberships over the last few decades, they have done so by minimizing the complex and often controversial nature of environmental issues so as not to offend members. They have inadvertently produced a membership in which the majority is unlikely to be useful grassroots advocates for the causes at hand. My own impression is that, at some level, national-level staff may welcome this trend for minimizing grassroots activism, which may serve to reduce interference and complications in their day-to-day efforts to define and implement policy. The leaderships of environmental organizations need to take a hard look at Shaiko's assessment and ask whether or not they have let the balance slide too far toward economic security and national-level control at the expense of the vital goals of environmental protection.

Brain Policy: How the New Neuroscience Will Change Our Lives and Our Politics

Robert H. Blank

Washington, DC: Georgetown University Press, 1999, 224 pp. US\$60.00 cloth. ISBN 0-878-40712-X. US\$21.95 paper. ISBN 0-878-40713-8. Georgetown University Press, 3619 O St. NW, Washington, DC 20007-0866, USA.

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Robert H. Blank has written a series of books on health and medical policy, focusing particularly on technological advance, unfettered research agendas, maintenance/corrective versus preventative treatments, unconsidered financial outcomes, and social consequences adhering to our current reactive policy. This latest most powerfully illustrates his argument for forward-looking, preventative policies, for the human brain is the most personal of organs, giving rise to our individual personalities and our selves. For, as anyone who reads newspapers or watches television news will know, current events in brain intervention are already outstripping our current policies (or lack thereof), and the social effects are becoming visible.

In his forward, Blank identifies his objective as offering “insights into this new area of biomedical policy” with an “emphasis on understanding the policy context and ramifications of . . . remarkable developments” in understanding and intervening in the brain (p. vii). He certainly achieves his objective.

Known as a prolific but succinct writer, in less than 200 pages Blank fulfills his objective as he briefs the current state of medical knowledge of the brain; gives an admirably effective, concise layman’s picture of the hows and whys of the functions, genetics, and development of the brain; suggests areas of policy concern in the near future; and fleshes out his insights with examples in chapters dealing with specific brain interventions and the policy choices which necessarily follow. A final chapter presents his overview of problems and opportunities that should properly be addressed (he hopes in the immediate future) in brain policy.

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As Blank correctly points out in his opening chapter, medical knowledge of the brain and its function has advanced at a much more rapid pace than the accompanying understanding of the policy implications of this knowledge. Indeed, “brain policy and politics is a critical area of study for social scientists and ethicists . . . [and] given the brain’s centrality to human existence, . . . brain policy [should] be considered a prototype for analysis of the social impacts of biomedical intervention” (p. 2). Thus, he argues that social scientists in biomedical policy dealing with various brain interventions must educate themselves on a much wider range than usual of collateral disciplines, including most specifically genetics and neuroscience, plus demographics, technology, sociology, and public attitudes towards brain disorders of various types and the interventions available to alleviate these disorders.

Blank first sketches the foundations of the “Decade of the Brain” (1990s) and lays out his major conceptual points underpinning proper brain policy. First is the aging of our population and the incident effects on brain function, such as Alzheimer’s, and the potential cost of mere supportive care. In point of fact, at least two new experimental, remedial treatments of Alzheimer’s were announced in the fall of 1999, each portending expensive procedures.

Second is brain injury and mental disorders. While one-half million cases of head injury per year will result in some disability, this number is dwarfed by the number of actual and potential disabling mental disorders, each calling for expensive treatment.

Third is the various types of intervention available to treat three areas of policy concern (debilitation due to aging, injury, and mental disorder). These include: “(1) direct brain intervention. . . ; (2) chemical, hormonal, or biological intervention; [and] (3) genetic intervention” (p. 9). Of major concern is the setting in which the interventions may occur: (1) with the patient’s consent; (2) with “consent” under duress; and (3) without consent.

Finally, public attitudes toward the mentally ill and the stigmatization of many individuals and their treatment re-

gimes must be taken into consideration. It is not obvious that a great deal of change has occurred in public sentiment since Sen. Thomas Eagleton was forced to withdraw from the 1972 presidential campaign when it was revealed that he had undergone electro-convulsive therapy for depression. In the 2000 campaign, the emotional capacity to be president was challenged in the case of Sen. John McCain.

Blank draws all these concerns together in three policy dimensions for brain policy: (1) "decisions must be made concerning the research and development of technologies"; (2) "the individual uses of technologies once they are available"; and (3) "the aggregate consequences of widespread application of a technology" (pp. 11-12). These are echoes of arguments made in many of Blank's other writings on medical policy. This in no way obviates the need for restatement, as he has amply demonstrated in the past. It begins to seem inevitable that policy in this critical and extremely rapidly evolving area will trail (badly) in all three dimensions rather than being used to examine goals and guide development and use.

The introductory chapter concludes with a brief overview of a model of the brain as the critical mediator of genetics and environment that results in behavior.

The four following chapters do a highly credible, though brief, job of covering four areas that need to be considered by anyone interested in brain policy: brain structure, development, and death; brain, mind, and consciousness; genetics and the brain; and brain and behavior. These chapters demonstrate both Blank's capacity as a scholar and the major difficulty of brain policy. He accurately and concisely provides information known at the time of writing in a way that is both accessible to the more well-educated layperson and adequate to a more-than-superficial, but less-than-comprehensive, understanding of (then) current thought in those areas. However, events in the research he is discussing were undoubtedly outpacing the writing even as he wrote. In fact, the major point of his book is that it is not enough to consider *today's* technology and research to make policy for tomorrow, it is *essential* to consider *tomorrow's potential* research and technology to make policy for tomorrow. While this has been an undercurrent in his previous work, never has it been demonstrated more conclusively.

Events are overtaking the discussion in the chapters on brain intervention techniques, neural grafting, and neurotoxicity. Particularly in the first two areas, research, technology, and actual practice are racing beyond Blank's

examples. In addition, neural grafting has become part of the abortion debate, since some of the most promising techniques use stem cells clones from stem cells taken from aborted embryos. An argument now rages over whether an undifferentiated stem cell is "a potential person," despite not even being a fertilized gamete. In addition, the physical technology (hardware) is sometimes so easy to use that the conceptual technology (software) of neural grafting is moving almost immediately into the hands of practitioners (wetware) upon release of research data.

If anything, Blank appears overly sanguine on the probability of policy keeping pace with developments in brain research and treatment. We appear to be reaching a convergence of information that bodes to overwhelm any attempt for outside policymakers to keep up. Information in terms of technology (Blank does not even mention the emerging nanotechnology revolution), biological knowledge (physical, hormonal, chemical, etc.), process knowledge, and public knowledge of possible "cures" for very scary brain malfunctions all appear to be increasing exponentially. Policy is barely even linear. Thus, the major thrust of Blank's thesis, the interdisciplinary awareness necessary to good "brain policy," might be even more unreachable than in the case of, for instance, reproductive policy.

Brain policy might be the example that breaks the current policy paradigm of qualitative analysis, judgment, policy. Policy wonks unschooled in the interdisciplinary necessities might as well be uneducated totally for all the good their input might do.

Blank uses his final chapter to argue more forcefully for an integrated, interdisciplinary approach to brain policy in particular and health policy in general. I fear he is preaching to the choir. Unfortunately, his audience probably already agrees with him. His examples of looming policy issues in the brain policy area are both provocative and immediately upon us. His analysis is trenchant and timely. Get some well-meaning nontechnical, nonbiological policy types of your acquaintance to read this book. It will certainly challenge them. It may well intrigue them. It might possibly alter their posture vis-à-vis this important policy area. What it should not do is allow them to assume that brain policy is just a continuation of SOP in health and medical policy. It is destined to be troublesome, contentious, expensive, and have enormous impact on most or all of our lives. It is also destined to happen much sooner than we will be ready.

Entwined Lives: Twins and What They Tell Us About Human Behavior

Nancy L. Segal

New York: Dutton/Plume, 2000, 396 pp. US\$27.95 cloth. ISBN 0525944656. 416 pp. US\$12.00 paper. ISBN 0452280575. Dutton/Plume, 375 Hudson St., New York, NY 10014, USA.

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About one in 80 births are twin births; of these, about one-third are identical twins, with the same genotype. Twins, especially identical twins, are thus of great interest to behavioral scientists interested in the interactions of nature and nurture in human development, and in individual characteristics and achievement. Nancy Segal is herself a (fraternal) twin, and also a psychologist who has studied twins for many years and who worked with Thomas Bouchard on the Minnesota twin study (which looked at identical twins reared apart). She is well placed to write this book, which combines an authoritative knowledge of the literature with an accessible style of writing and a great deal of human as well as scientific interest.

Although identical twins (splitting from the same egg) are genetically identical, they are not completely identical. They can be differentially affected by the intra-uterine environment, plus one twin is inevitably born first, and there may be risks at birth (rather higher for twins than singletons, in fact). Nevertheless, identical twins generally appear very similar. They also tend to be very similar in intellectual skills (including I.Q.), personality characteristics, and athletic interests. However, the twins themselves (or their family) may exaggerate (and will certainly be very familiar with) what may appear to outsiders to be small differences. Fraternal twins come from the fertilization of

two eggs at the same time, and are no more genetically similar than ordinary brothers or sisters (and unlike identical twins, they may be opposite sex). Diagnosis of same sex twins as identical or fraternal is not always obvious, and Segal cites a case of two identical twins, both presidents at U.S. universities, who were uncertain if they were identical, and whose mother thought they were fraternal.

Twin studies are, of course, famous in behavior genetic studies. If identical twins are more similar in some aspects of development than fraternal twins, then this suggests the importance of genetic factors for such aspects. Arguments for genetic influence are further strengthened when similarities are found in identical twins who have been reared apart. Segal illustrates this point with examples from her Minnesota work, describing both the laboratory procedures and the often moving accounts of previously separated twins being reunited. She discusses the standard arguments about genetic influences, as well as shared and non-shared environmental influences. For many (not all) developmental outcomes, both genetic and environmental factors are important; but it is mainly the non-shared rather than shared environmental influences that are important—that is, the major environmental impact comes from particular, different environmental experiences between siblings (birth order, different friends, etc.) rather than shared aspects such as having “the same upbringing.” A chapter of case studies of the development of some half-dozen sets of identical and fraternal twins provides some fascinating insight and speculation into factors that influence the similarities and dissimilarities in their life trajectories.

There are many twists in the simple arguments about twins reared together and apart, compared to fraternal siblings, and these are brought out in the book. They include a number of unusual family constellations. One is when identical twin pairs marry each other (double twin marriages—two identical males marry two identical females). When this happens, the children of each pair are, in genetic terms, like the children of the other pair (the children are “genetic full siblings”); and if they are born close in time, as can happen (see the photograph on p. 17), they are “genetic fraternal twins”! Another, very different, family setup is when two children are adopted close in time, or a couple

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adopt a child but have their own biological child soon after; these “pseudo-twins” (as Segal calls them) have very similar environments, but no genetic relatedness—the exact opposite situation to identical twins reared apart.

There is an interesting chapter on legal issues related to twins. Some legal issues relate to effects on a co-twin and on a parent when a twin dies. There appears to be some popular belief that if an (identical) twin dies, the grief of a parent might be less than for a singleton, because the other twin is still there. Segal demonstrates that this is far from the truth: the presence of the surviving twin provides a continuing painful reminder of the lost twin, and the surviving twin’s birthday is always confounded with the memories of the nonsurvivor who would also have had a birthday on that day. Another set of legal issues relates to conjoined twins, and when and whether it is right to separate them.

Segal also discusses triplets and multiples, and the effects of fertility treatment in making these situations more common. Altogether, Segal covers a great range of topics. A few areas get short shrift; one, perhaps, is the effect of

twinship on other (for example, older) siblings: do they feel “left out” because of the attention given to the twins? This possibility is hinted at, but not really explored. Cultural differences in attitudes to twins does not get much treatment; this may be because of a lack of research, but I am not sure that the anthropological literature has been trawled as thoroughly as the psychological, medical, and behavior genetic literature. However, these are minor points given what is in the book.

This is not a textbook, and therefore full evidence of research studies is not given; but there is very full citation of sources. The text combines reasonable detail of studies with a style designed to make the book accessible to a wider audience. It would be an excellent read for social scientists who have some interest in the area; they may well find more connections with their own discipline than they might expect. It would also be very suitable for first-year undergraduate students, giving them some introduction to issues around human development and behavioral genetics while having a strong human-interest theme.

The Politics of Medicare

Theodore R. Marmor

New York: Aldine de Gruyter, 2000, Second edition, 228 pp. US\$35.95 cloth. ISBN 0-275-95789-6. US\$16.95 paper. ISBN 0202304256. Aldine De Gruyter, 200 Saw Mill River Road, Hawthorne, NY 10532, USA.

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Over the course of the twentieth century, there have been, by different counts, four to six attempts to pass a program of national health insurance in the United States, all failures. After the failure during the Truman administration, those supporting national health insurance turned toward an incremental strategy (extending public health insurance to particular segments of the population), which eventually resulted in the passage of Medicare (and Medicaid) in 1965. That story was admirably told in the widely ac-

claimed book by Theodore Marmor, *The Politics of Medicare* (1970, 1973).

Decades later, Marmor has published an important update of the politics of Medicare. The second edition contains all of the first edition in what is now Part I; nothing has been changed in this part. Part II takes us up through 1999. This review will focus largely on Part II.

Marmor’s book is not simply a descriptive, journalistic account of what happened. While there is ample description, Marmor seeks to explain and not just describe. In Part I (the first edition), Marmor makes use of the analytical framework of Graham Allison, in *Essence of Decision* (1971). That framework employed three models to account for the development and history of Medicare: the rational actor model, the organizational process model, and the bureaucratic politics model. In Part II, he describes the development of Medicare and the politics and problems it faces.

He begins by revisiting the origins of Medicare and moves to examine the impact of accommodating those

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who had resisted the program in a way that led to inflationary pressures. In particular, Marmor notes that Medicare was a much more difficult program to administer than Social Security, because of technology changes, because providers varied in what they charged, because of varying needs of beneficiaries (requiring more medical care as they aged), and because of the two-part structure of the program with its diverse funding mechanisms (Part A, or hospital insurance, was funded through a trust fund and included co-payments and deductibles; Part B, or supplementary medical insurance, was funded through premiums, some trust fund money, and general revenue, and included co-payments and deductibles).

Efforts to deal with some of these problems in the 1970s were ineffective, leading to continued inflationary pressure, confusion on the part of beneficiaries, and erosion in the value of the benefits. In the 1980s, the Reagan administration engaged in “budget reduction politics” (p. 108), cutting the budget for ideological purposes. Marmor writes:

When taken together, the Reagan administration’s health policies emphasized four themes: reducing the federal medical budget; restraining payments to Medicare providers; cutting benefits, in particular through increased cost sharing for Medicare and Medicaid recipients; and claiming that excessive health insurance causes medical inflation. (p. 108)

The major results of the Reagan administration efforts were prospective payment systems, essentially fee schedules, first for hospitals in 1983 and then extended to doctors in 1989. Marmor writes that these were the most important changes to Medicare since its inception. He notes that the hospital payment system did reduce inflation in hospital costs. Ironically, the most significant accomplishment of the antigovernment Reagan administration was a highly regulatory payment system, the prospective payment system (Diagnostic Related Groups).

Marmor also discusses the turnabout history of the Medicare Catastrophic Coverage Act (MCCA) of 1988, which was repealed in 1989. The MCCA was, Marmor writes, the only extension of benefits proposed by the Reagan administration and passage was largely the result of the work of Health and Human Services Secretary Otis Bowen. The legislation, perhaps with the word “catastrophic” as overstated, saw the clash of interest group and budget reduction politics. The act included coverage of outpatient prescription drugs, extended nursing care coverage, and expanded home health and hospice care, among other benefits. It did not, however, include extended long-term institutional care in nursing homes. Apart from the benefits package was the unique financing mechanism. The MCCA did not call for new taxes to cover the new benefits or for new government spending in the absence of taxes.

Rather, because of the pressure of large budget deficits, the MCCA called for self-financing. That is, Medicare beneficiaries would pay additional Part B premiums, with the affluent elderly paying more than the less affluent. The affluent were the least likely to need new benefits because they had private Medigap policies. Though AARP, the largest seniors group, supported MCCA, other senior groups did not, and the pressure placed on Congress led to its repeal.

Medicare politics went through three phases in the 1990s. The first was the debate over national health insurance, stemming from the stunning 1991 special senatorial election of Harris Wofford in 1991 and the 1992 presidential campaign. The Bush administration’s proposed Medicare budget cuts were rebuffed by Congress and others. Marmor makes some very important points in this section. First, while there was agreement among the public that there were problems with Medicare and the health care system in general, there was substantial disagreement over what to do about those problems (negative versus positive consensus). Public support for change, Marmor writes, is a precondition for a change but insufficient on its own. Further, Medicare was doing better financially than generally believed in that expenditure increases were declining and Medicare was controlling its expenses better than the private sector in the 1980-1991 period. Still, Medicare had a substantial impact on federal budgets. While the Clinton administration could have directly addressed the problems of Medicare (fiscal and generational conflict), it chose to focus on health system reform.

Marmor then turns to the important 1995 report of the Medicare and Social Security trustees, which predicted depletion of the Part A trust fund by 2001, providing fuel for the now-ruling Republicans in Congress. Here Marmor makes an important defense of Medicare by noting that the trust fund concept is an accounting tool. There is no reason, he argues, why a trust fund has to be used for hospital insurance. Medicare was built on the Social Security model and embodies the principle that everyone contributes. But the trust fund principle that helped to get the program enacted eventually became a major weakness, a fiscal vulnerability. Marmor then moves quickly through the budget battles between Congress and President Clinton in 1995-1996, in which Medicare was a major target, and the 1997 Balanced Budget Act (BBA), which created the most significant changes in the program since its inception, including expansion of choice of plans.

One weakness of Marmor’s narrative appears here. The BBA also called for the extension of the prospective payment system to nursing homes and home health care agencies and called for substantial cuts in their payments (as well as to hospitals and doctors), in excess of what those who supported the legislation anticipated. However, this was not evident while Marmor was writing the book (see

Pear, 2000). He also examines the Bipartisan Commission created by the BBA, which proposed a premium support or voucher plan for Medicare.

Marmor then explores the difference in outlook between those who worked to get Medicare enacted and the pro-competition forces embodied in the BBA and the Bipartisan Commission. For example, the originators saw Medicare as but one step toward expansion of coverage; the pro-competitive forces do not see the program in that light and seek only to transform it.

Marmor concludes by examining three puzzles in the historical development of Medicare: why Medicare was not extended to others; why a pro-competitive administration adopted a regulatory approach (prospective payment system); and, the most intriguing of all, why those who opposed managed competition during the 1993-1994 debates over national health insurance then turned to managed competition to reform Medicare. Marmor offers a series of explanations for each puzzle. Marmor also takes to task the recommendations of the Bipartisan Commission, arguing that they were based on unproven assumptions and assumed a fiscal situation that was not nearly as urgent as originally depicted. The 1995 trustees' report estimated that the Part A trust fund would go bankrupt by 2001, thus supporting the desire of Republicans to cut benefits. By 2000, because of both the booming economy and changes mandated by the BBA, the bankruptcy date was estimated to be 2015.

Marmor also makes it clear that much of the debate over Medicare is really a debate about the role of government—in particular, social programs.

The Politics of Medicare does not go into great detail in a number of areas. Hacker (1997) provides a considerably more detailed discussion of the development of the Clinton plan. Palazzollo (1999) presents a thorough discussion of the development and provisions of the Balanced Budget Act of 1997.

Despite this, the definitive history and analysis of the development of Medicare, by one of its strongest supporters, has been extended up to the new millennium. Part II is equally as captivating as Part I, especially given its closeness in time to us. It is an important book that should be on the shelf of those interested in health policy, in public policy, and in the American political system.

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What Makes Us Think? A Neuroscientist and a Philosopher Argue About Ethics, Human Nature, and the Brain

Jean-Pierre Changeux and Paul Ricoeur

Princeton, NJ: Princeton University Press, 2000, 335 pp. US\$29.95 cloth. ISBN 0691009406. Princeton University Press, 41 Williams Street, Princeton, NJ 08540, USA.

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Reading the dialogue between the eminent French neuroscientist, Jean-Pierre Changeux, and his countryman, the distinguished philosopher Paul Ricoeur, I could not help thinking of the description in Tolstoy's *Anna Karenina* of the conversation Levin hears between his brother and a professor. What they are discussing is a question then in vogue, and still very much alive today in the book reviewed: "Is there a line to be drawn between psychological and physiological phenomena in man? And if so, where?"

Levin becomes frustrated because “every time they were close upon what seemed to him the chief point, they promptly beat a hasty retreat, and plunged again into a sea of subtle distinctions, reservations, quotations, allusions, and appeals to authorities, and it was with difficulty that he understood what they were talking about.”

If I sometimes felt like Levin, it is perhaps more a comment on my limitations than on the merits of the dialogue between two illustrious intellects. I was not helped by the fact that their dialogue at times resembled not so much the “organ stop” that “playfully mimics the timbre of the human voice,” that they themselves describe (p. 311), but rather a series of jazz riffs in which each goes off on his own, and the result is a conversation occasionally at cross-purposes.

Almost the first two-thirds of the book is a contemporary replay of the question debated in *Anna Karenina*, namely, whether “the consciousness of existence is derived from the conjunction of all your sensations.” One need only substitute “neurons” for “sensations” to arrive at the current formulation. Both discussants dismiss extreme reductionist, mechanistic, and eliminativist views of consciousness; but Changeux, as befitting a scientist in a frontier field, is far more optimistic that neuroscience can, in the future, throw valuable light on the nature of consciousness. Ricoeur, as a phenomenologist, is not so sure; he serves as a constant critic, reminding Changeux that the minute neuroscience oversteps its boundary into the psychological realm, it is in danger of imposing concepts that are inapplicable or are too limited onto that realm.

The conversation does crystallize around the topic of creativity (pp. 240-41). Here Changeux acknowledges that current neurobiological models cannot account for the creative expression that clearly exists in our “common experience.” This acknowledgment seems to come close to the critical view held by neurophilosopher David J. Chalmers—and anticipated by Alfred North Whitehead in his *Science and the Modern World*: “Wordsworth, to the height of genius, expresses the concrete facts of our apprehension, facts which are distorted in the scientific analysis. Is it not possible that the standardised concepts of science are only valid within narrow limitations, perhaps too narrow for science itself?”

Both agree early in their dialogue (pp. 11-13) on the need to reexamine the fact/value distinction that traces back to David Hume—in line with the reexamination already in progress in political science, as in the work of Larry Arnhart, Roger Masters, and in the last chapter of my *The End of the Empty Organism: Neurobiology and the Sciences of Human Action*. In the final third of the book, some of the key ethical questions that already have interested neuropolitically minded political scientists, like Robert Blank and Gerald Cory, Jr., are addressed. In particular, they explore the origins of morality and the basis for violence, conflict, and evil.

Here, unwittingly, they may betray the tendency of human brains in general (and intellectual minds, in particular) to impose more order on the universe—as William James noted a century ago—than is in fact warranted. Ricoeur declares, “Whether or not nature knows it, responsibility for imparting a bit of order to nature falls to us”; and Changeux responds, “Absolutely. It’s up to us to put in order” (p. 182). (This sentiment certainly is consistent with a central theme in Gerald Cory, Jr.’s, recently published *Toward Consilience: The Bioneurological Basis of Behavior, Thought, Experience, and Language*.)

Both explicitly share an Enlightenment orientation in which they would, in effect, flood Plato’s cave with light. Ricoeur, for example, would “educate [religious] believers to recognize and accept three things,” including the recognition of plural beliefs, the necessity for tolerance, and the co-primacy of the secular realm (p. 297).

What this orientation does is to bring both of them to an implicitly third-school psychological perspective in which humans are, if not perfectible, educable along high moral lines. Thus, Changeux sees the human species as “a social species” with “predispositions to a social bond—attrition, inhibition of violence, empathy, and sympathy” (p. 229). The “ultimate aim of moral life,” according to Ricoeur, “is to liberate in each of us what might be called our basic goodness” (p. 227). Their essentially neo-Kantian cosmopolitan perspective is clear at the end of the dialogue, when they join in urging “all parties” to “agree to take into account the teaching of the various branches of human wisdom in order to collaborate in a common endeavor, aimed at achieving peace and universal civilization—a universal civilization that will be free, just and joyful” (pp. 311-12).

The obvious problem remains to explain what they call “the scandal of evil” (p. 279)—which their typological emphasis on man’s basic goodness and sociality does little to address. If only they had taken seriously what they both refer to as a “populationist perspective” in which they acknowledge the wide genetic variability in the human species (pp. 180, 203). Thus, Changeux refers to “the random variability of the genome” and the “considerable variability found in the case of the human brain” (p. 185). Consequently, he can “insist once more on the fact that epigenesis and learning contribute as much to individual diversity as to the unity of all people” (p. 258).

Changeux, in fact, provides a clue to one possible source of conflict and violence in the world when he alludes to the work of Roger Blair (he might have cited still others) to indicate that some children “exhibit a selective deficit of the violence inhibitor” and therefore show clear “psychopathic” tendencies (p. 217). If there is plausibly a genetic basis as well for this neurobiological “deficit,” one’s optimistic outlook becomes tempered. Readers of my own just-published *The Fratricidal Global Village* might prefer the more congenial position in *What Makes Us Think?* to the more contentious view that I espouse.

From Chance to Choice: Genetics and Justice

Allen Buchanan, Dan W. Brock, Norman Daniels, and Daniel Wikler

New York, NY: Cambridge University Press, 2000, 412 pp. US \$29.95 cloth. ISBN 0521660017. Cambridge University Press, 40 W. 20th St., New York, NY 10011-4211, USA.

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On September 26, 2000, a six-year-old girl with Fanconi anemia, a rare blood disease that can lead to leukemia, received a transfusion of blood derived from her newborn brother's umbilical cord and placenta. Physicians hoped that the cord blood, rich in stem cells, would enhance the girl's immune system and prevent development of the leukemia that was sure to threaten her life. What is unique about this case is not the retrieval, storage, and use of umbilical cord blood, but the fact that preimplantation genetic diagnosis reportedly was used for the first time to select an embryo that contained the specific genetic characteristics needed to help a living individual with a genetic disorder (Grady, 2000).

The creation of a "designer baby" raises a host of ethical issues about the use and regulation of genetic science. These issues are examined in the multi-authored book, *From Chance to Choice: Genetics and Justice*, written by philosophers Allen Buchanan, Dan W. Brock, Norman Daniels, and Daniel Wikler. Although the authors focus on the role of genetic testing in reproductive choices in Chapter 5, they devote most of their attention to genetic interventions and genetic pharmacology. It is these two applications of genetic science that they believe raise "some of the most fundamental ethical issues" that will need to be addressed in the immediate future (p. 9). Two modes of direct genetic intervention are identified: (1) gene therapy, which involves the insertion of normal or desirable genes into somatic or germ-line cells, and (2) gene surgery, which deactivates abnormal or undesirable genes. Indirect genetic interventions include genetic pharmacology and embryo selection. Whereas embryo selection involves the implantation of an embryo with certain genetic characteristics, resulting in the so-called "designer baby," genetic pharmacology involves

using genetic knowledge to develop "designer drugs" that can help individuals suffering from genetic abnormalities.

From Chance to Choice is framed around a single, albeit important, question:

What are the most basic moral principles that would guide public policy and individual choice concerning the use of genetic interventions in a just and humane society in which the powers of genetic intervention are much more developed than they are today? (pp. 4-5)

In attempting to answer this question, the authors recognize the need to squarely confront the dark side of genetic science: the eugenics movements of the early twentieth century. By conducting "an ethical autopsy of the old eugenics," they conclude that the racist, classist, and genocidal characteristics of the "old eugenics" need not mean that "eugenics must be avoided in the future" (p. 45). The authors claim that "reprehensible as much of the eugenic program was, there is something unobjectionable and perhaps even morally required in the part of its motivation that sought to endow future generations with genes that might enable their lives to go better. We need not abandon this motivation if we can pursue it justly" (p. 60). Thus, *From Chance to Choice* aims to show readers how genetic interventions can be developed and applied in such a way that they meet the requirements of justice.

The authors identify three fundamental components of justice: equality of opportunity, the prevention of harm, and the morality of inclusion. They reject the brute luck view of equality of opportunity, whose emphasis on natural inequalities would require efforts to counteract the effects of the natural lottery that are beyond an individual's control. Instead, they adopt the social structural view that informs Norman Daniels's theory of a just system of health care and that is implicit in John Rawls's theory of justice. The authors contend that the Rawls-Daniels social structural view of equality of opportunity requires access to "genetic interventions for the sake of preventing or curing diseases," but that it does not require a wholesale commitment to genetic intervention or to "genetic equality" (p. 96). For example, while a just system of health care would ensure that individuals suffering from diabetes have access to genetic

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interventions that eventually might be developed to alleviate or cure this condition, justice would not require that everyone have access to genetic pharmacological therapies that increase intelligence.

The prevention of harm is a component of justice that has ramifications in the reproductive context. The authors agree that potential parents should be able to use genetic interventions to enhance the resistance of their future offspring to certain diseases, but they suggest that restrictions may be warranted when interventions are used to pursue advantages that might harm children. Moreover, the authors stake a position that will offend some disability rights activists and that raises questions about the role of the state in situations in which parents choose not to abort a fetus with disabilities or not to use available genetic interventions that will improve the health of their offspring.

While the morality of inclusion requires accommodating individuals with disabilities and including all persons regardless of race, ethnicity, gender, and other traits in society's cooperative frameworks, the authors contend that there is no societal obligation to ensure that individuals with disabilities do not diminish in number. Because a just society requires the prevention of harm and equality of opportunity, the authors contend that genetic interventions can and should be used to prevent disabling impairments, and they advocate a directional approach to genetic counseling. While the authors do not support government-mandated abortions when a fetus is diagnosed with a serious genetic disease, they do suggest that "allowing the child to be born and then withholding life support even over its parents' objections would be morally preferable" to forced abortion (p. 241). Moreover, they assert that confining a woman during part of her pregnancy "might sometimes be morally justified" if she refuses to be screened for a genetic abnormality like phenylketonuria (PKU) or to follow the rigorous diet that could prevent her offspring from being harmed by this serious disorder.

In the book's final chapter, the authors explore the policy implications of the current and potential advances in genetic science. While they offer no specific policy proposals, they outline a road map for developing policies that are consistent with the principles of justice explored throughout the book. This road map shows that the state has "a legitimate role as guardian of the genetic well-being of future generations," which includes government intervention to regulate and provide certain services, though it also affirms broad and comprehensive freedom in repro-

ductive choice (p. 338). Of course, the challenge will be whether genetic interventions can be used in a way that meets the requirements of justice in a society like ours that currently does not meet those requirements in distributing basic health care services to its populace. If only some individuals have access to genetic services like those used by the parents of the child with Fanconi anemia, the billions of public dollars used to fund genetic research will have been spent in vain.

Although the authors make a strong case that genetic interventions can be used to help individuals with genetic disorders in a way that meets the requirements of justice, readers who do not accept the liberal theory of justice that frames the authors' analysis may reach a different conclusion. Anticipating this possibility, the authors include an appendix that provides a detailed explanation of the methodology of the moral reasoning they used throughout the book. They also include an appendix on genetic causation, written by Elliott Sober, that will help nonscientists gain a better understanding of the principles of genetics. These are useful additions to the book, though the authors' attentiveness to their readers is not so apparent in the bibliography, which is missing several citations and includes several inaccurate ones. It is unfortunate that this editorial oversight leaves readers without the information they need to refer to some of the works the authors consulted.

Because the authors' goal was to develop a systematic ethical approach to advances in genetic science, they do not address the concerns others have raised about decisions to allocate public funds for genetic research rather than for other worthy health-related projects. Moreover, they tend uncritically to accept the goals and direction of the "genetic revolution" in biology, though they do acknowledge the danger of reinforcing genetic determinism in trying to provide ethical guidance for the development and use of genetic interventions. While many readers will disagree with the policy directions the authors support, from *Chance to Choice* stakes out a systematic ethical approach that can guide philosophers, ethicists, geneticists, physicians, social scientists, and policymakers in their deliberations about how to use and regulate genetic intervention technologies.

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Evolution and Human Behavior: Darwinian Perspectives on Human Nature

John Cartwright

Cambridge, MA: MIT Press, 2000, 376 pp. US \$60.00 cloth. ISBN 0262032813. 400 pp. US \$24.95 paper. ISBN 0262531704. MIT Press, 5 Cambridge Ctr., Suite 4, Cambridge, MA 02142-1493, USA.

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I have two observations on John Cartwright's *Evolution and Human Behavior: Darwinian Perspectives on Human Nature*. First, this is one of the best books I have read on evolutionary psychology. I learned a lot from it and will always treasure it as a reference book on my desk. I will recommend it highly to all interested colleagues and graduate students of mine. Second, I am afraid Cartwright failed to achieve his goal in writing this book, and I suspect that it will be a market failure. Let me explain.

There is no question that this book provides an excellent overview of evolutionary perspectives on human behavior. For instance, his Table 2.1 (p. 49) provides one of the best summaries of the differences between evolutionary psychology (EP) and sociobiology (SB; or Darwinian anthropology or Darwinian social science), and Cartwright presents the best argument I have read that EP and SB are essentially the same (although I am personally still not convinced). His explanation of the Fisherian runaway selection process (pp. 142-145) is superb, and his discussion of the difficulties involved in adjudicating between the "sexy son" and "healthy offspring" hypotheses (pp. 147-151) is excellent.

Cartwright is also good at suggesting "the next question" in various areas within evolutionary psychology. Throughout the book, he points out intriguing puzzles, such as "Why is it that spiteful behavior is only observed among humans?" (p. 85), "What explains the "returning soldier

effect," whereby men returning from wars are more likely to produce sons than daughters?" (p. 121), and "Why is it that Hamilton's rule (help kin if $r > c/b$) in kin altruism looks very similar to Nowak and Sigmund's rule of indirect reciprocity (help nonkin if $q > c/b$ where q = probability that ego knows if alter helped another in the previous round)?" (pp. 299-300).

Like few others in the field, Cartwright also presents spirited and reasoned critiques of the "orthodoxy" of Cosmides, Tooby, and Dunbar (see, for instance, pp. 197-198 and 208-210). His critiques are to be taken seriously because they, unlike those from the Goulds, Lewontins, and Roses of the world, are not dismissive or politically motivated; they are based on deep understanding of evolutionary psychology on Cartwright's part.

So what is the problem? *Cartwright wrote this volume as an undergraduate textbook*. It is as such that I believe the book, unfortunately, fails. An average American undergraduate student, who would sit through an entire course of evolutionary psychology and raise a hand toward the end of the semester to ask timidly, "Um . . . does that mean . . . like . . . we're related to monkeys?" will simply not appreciate or care about the similarities and differences between EP and SB, or the theoretical and empirical problems with the modular view of the mind.

As an undergraduate introductory textbook, *Evolution and Human Behavior* has several shortcomings (although all of them are easily remediable in subsequent editions). First, the organization of the chapters is likely to confuse undergraduates. Cartwright introduces mating behavior in Chapter 4 and sexual selection in Chapter 5. He then switches to the topic of the evolution of the human brain and language in Chapters 7 and 8, only to return to mating behavior in Chapters 8 and 9. I simply do not see the logic behind this organization of the chapters. Chapter 11 on the evolution of altruism and culture, which is superb and highly original, is probably beyond most undergraduate students who have not had some prior exposure to game theory. His epilogue, in which he presents an excellent defense of evolutionary psychology against possible political and ideological attacks, should be placed at the beginning of the book, rather than at the end, so that the readers are already

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equipped with these defenses as they wade through the substantive chapters.

Cartwright's writing is occasionally careless and is likely to confuse undergraduate readers. In his Box 6.1 (p. 163), he briefly discusses and compares the four non-human great ape species. For bonobos, he notes, "Despite their name, bonobos are only fractionally smaller than common chimps," when he has not mentioned that bonobos are commonly known as pigmy chimps (he does eventually mention it, once and very obliquely, in a caption to a picture of bonobos 16 pages later, p. 179). On page 200, Cartwright states that the proportion of subjects who solved the Wason selection task "rose to 75 per cent" when the task was set as a cheater detection problem, without telling the reader what (smaller) proportion of them got it right as an abstract logical problem. Cartwright later evaluates the empirical evidence for and against Hrdy's "nice daddy" and "daddy at home" hypotheses of concealed ovulation among women, without explaining at all what these hypotheses are. All of these minor problems are mere annoyances for practicing evolutionary psychologists who are already familiar with the field, but might become major stumbling blocks for our undergraduate students who are introduced to evolutionary psychology for the very first time.

The book has a few shortcomings even as an academic book (and not as a textbook). Cartwright tends to be a bit lazy in providing citations for others' ideas. Since the book contains many genuinely original ideas by Cartwright, his lazy citation makes it difficult for the reader to figure out which ideas are genuinely original and which ideas are borrowed. While Cartwright discusses Machiavellian intelligence (pp. 178-183), it is not quite clear in his exposition how the intellectual arms race, born out of our ancestors' need to deceive and outsmart each other, led to the enormous encephalization and the explosion of the brain size during the early hominid evolution. Cartwright rightly emphasizes all the work on fluctuating asymmetry done by Manning (pp. 249-251), but neglects the equally (if not more) important work in the area by Thornhill, Gangestad, and Møller. Cartwright omits Marlowe's (1998) nubility hypothesis as a new and very plausible explanation for why women have permanently enlarged breasts and why men find them sexually arousing (pp. 153-154).

Given that Buss's (1999) introductory textbook on evolutionary psychology came out first, followed closely by Cartwright (and Gaulin and McBurney [2001]), some comparisons are in order. Buss focuses almost exclusively on humans, whereas Cartwright has lots of discussion of non-human species. Buss naturally focuses on mate selection, whereas Cartwright has more material on the brain. In my experience of teaching evolutionary psychology to undergraduates, I have found that they simply love all the discussion of sex and mating, because they can then apply the knowledge to their own dating behavior and make sense out of it (although I have never been able to convince my undergraduate students—all of whom are young and know only others who are equally young—that women's age is an important criterion for mate selection for men; they simply don't know anybody over 30, except for their parents and teachers). For this reason alone, undergraduate students are bound to like Buss's textbook better. The waist-to-hip ratio (which Cartwright also discusses briefly) is definitely sexier than encephalization, if they know what it means.

In my mind, Cartwright's *Evolution and Human Behavior* is very similar to Trivers's *Social Evolution* (1985), which was also written as an undergraduate textbook. However, Trivers's book contained so many original ideas that it continues to be cited in scholarly work 15 years later. Cartwright's book is just as full of original ideas, and I expect it to be read and cited, not as an undergraduate textbook, but as an academic book. So here is my verdict. Read Cartwright's *Evolution and Human Behavior* because it is good and you will like it. Use it as a textbook, if you teach a graduate-level course in evolutionary psychology, or if you teach at an Ivy League school, elite state university, or in the United Kingdom (where Cartwright teaches). If not (and most of us don't), use Buss's textbook instead.

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Childhood's Deadly Scourge: The Campaign to Control Diphtheria in New York City, 1880-1930

Evelyn Maxine Hammonds

Baltimore, MD: Johns Hopkins University Press, 1999, 312 pp. US \$39.95 cloth. ISBN 0801859786. Johns Hopkins University Press, 2715 N. Charles Street, Baltimore, MD 21218-4319, USA.

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During the last two decades of the nineteenth century, diphtheria was the leading cause of death among children under the age of five. In contrast, since 1980 fewer than 100 cases have been reported in the United States. Although diphtheria is not the only infectious disease to have faded, its story is unique because the early period of its decline can be directly linked to advances in bacteriologic knowledge and practice. Between 1880 and 1930, health authorities in New York City were responsible for much of the practical innovation in the control of diphtheria, as well as the scientific understanding of prevention and treatment of infectious diseases.

In *Childhood's Deadly Scourge*, Hammonds describes how New York City became the first city in the United States to apply laboratory-based advances in bacteriology and immunology to the treatment and prevention of diphtheria. She investigates the use of scientific medicine in a public health crisis, exploring the debates among physicians and public health authorities regarding how to conduct the campaigns, the social context and implications of their activities, and the implications for future public health campaigns and interventions for the prevention and control of infectious diseases (DeSalle, 1999; Garrett, 1994, 2000). Hammonds challenges the traditional position that scientific knowledge alone leads to the control of infectious diseases. She argues that the successful control of diphtheria cannot be attributed solely to the triumph of bacteriology and public health. Rather, control involved a complex mix of politics, professional rivalries, cultural debates, and medical science.

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Hammonds uses three interrelated stories to describe a series of campaigns that was used to move diphtheria from a deadly endemic childhood illness to a preventable condition. The first revolves around the efforts of the New York City Health Department to redefine the nature of the disease and to position routine diagnostic testing in the city laboratory, establishing both the power of laboratory science and the authority of public health. Public resistance to the health department's interventions was overcome by assuring residents that the autocratic police powers of the health department would be exercised only when the health of the community was threatened and by emphasizing that interventions were based, not on political grounds, but on objective scientific knowledge. The competition for authority between public health experts and the medical community is a continuing theme in the history of medicine and the history of control of diphtheria.

Hammonds then focuses on the department's promotional campaigns, demonstrating how public health authorities used the media to exaggerate the efficacy of their approaches in order to justify expanded programs in disease control. Public health experts believed that science gave them the authority to turn the control of diphtheria into a moral good that transcended politics and private interests. The media campaigns were used to gain public support and undercut medical objections to the public health use of antitoxin as the "sure cure."

Finally, Hammonds explores public health efforts during the 1920s to rally the public and Tammany Hall behind an active immunization program. Hammonds argues that the politics of the Tammany Hall machine, known for its widespread use of public jobs for political patronage, caused both the public and the medical community to view public health professionals with skepticism. Her descriptions of the diphtheria-prevention campaigns and immunization experiments that took place in orphan asylums, founding homes, and mental asylums reveal a class-bound initiative that questions the relationship between successful public health measures and the exploitation of human subjects—in this case, children. Despite public skepticism and concerns about class-bound policies, strategies were implemented that revealed underlying keys to achieving

success in future public health campaigns. Economic barriers were reduced by making immunizations affordable and accessible to all populations at risk; campaigns cut across class and ethnic lines, making the immunization program visible; and cultural and language barriers were addressed by producing literature-specific campaign messages and using health care professionals from ethnic groups in specific communities.

Individually, none of these efforts achieved the control of diphtheria. For example, the Department of Health was unable to establish its scientific and administrative authority. Local physicians could incorporate antitoxin into their therapeutic treatment regimens without accepting either bacteriological constructions of diphtheria or the authority of the state. Moreover, the problems of healthy carriers and achieving funding for active immunization highlighted the administrative and political barriers to eradicating diphtheria and underscored the extent to which control of the disease lay outside of science.

However, if evaluated collectively, the three components of the city's campaign contribute not only to a complex story of diphtheria's reduction, if not control, but also to the more important story of establishing the authority of scientific medicine. Hammonds concludes that the control of diphtheria was achieved, first through "the interaction between the professional, factional, and political interests of those who sponsored, enabled, and resisted the application of bacteriology and medicine to public health. Second, it was controlled by the real scientific advances produced by its transformation in the laboratory and the translation of those transformations into effective practices" that made each piece of the decades-long campaign against the scourge seem, in retrospect, "the natural and necessary solution to the problem of diphtheria" (p. 8).

Beginning in 1929, scientific medicine succeeded in virtually eliminating diphtheria from New York City; but as Hammonds describes in her final chapter, the successes of the Diphtheria Prevention Commission depended on political savvy and the ability to mobilize the philanthropic sector as much as on bacteriology.

Diphtheria was controlled because Hermann Biggs led an effort that combined research in the new science of bacteriology with public health policies that applied that research to the broadest possible population. Biggs was aware that a reductionist focus on the detection and eradication of pathogenic bacteria was not the solution to all

the problems associated with diphtheria and other diseases. However, he and his successors held firmly to the belief that once the technical means for the prevention and eradication were available, efforts to control a disease such as diphtheria would be maintained. Unfortunately, the questions of long-term sustainability of immunization programs, public access to immunization, and long-term public financing of vaccine production and distribution were not addressed. The kind of leadership in public health that Biggs and Park provided, and the powerful role that the institution they guided played in disease control, were short-lived. Yet, they left an important legacy, the recognition that infectious diseases pose extraordinary challenges to public health in a multi-ethnic, class-stratified country such as the United States. Thus, the control of these diseases places an extraordinary responsibility on the state to prevent such diseases by all available means, in all segments of the population. In an era when there are increasing demands for the national government to turn over the implementation of public programs to private interests—a time when the notion of any central role of government is suspect—it is important to remember that the public health triumphs described in this book could not have been realized without a serious commitment of resources and leadership by those in the public sector.

Evelynn Hammonds has produced a work very sensitive to both the suffering caused by diphtheria and the successes brought on by advancements in science. Her ability to discover and explain the complexities of the anti-diphtheria crusade and its legacy makes *Childhood's Deadly Scourge* an important book. In analyzing the evolution of medical and public health practices, in highlighting the role of particular individuals such as Biggs and Park, and in describing the significance of bacteriological research in the United States and abroad, she has made a critical contribution to the history of medicine and the understanding of the prevention and treatment of infectious diseases.

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The Ethics of Human Gene Therapy

Leroy Walters and Julie Gage Palmer

New York: Oxford University Press, 1997, 232 pp. US\$36.50 cloth. ISBN 0-19-505955-7. Oxford University Press, 198 Madison Avenue, New York, NY 10016, USA.

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In Chapter 4, authors Leroy Walters and Julie Gage Palmer lay out views fundamental to understanding their enthusiasm for human gene therapy research and their conviction that the ethical objections to it are without much merit:

[W]e should note that a particular perspective on human nature clearly underlies our moral judgments about genetic enhancement. We are dissatisfied with and critical of certain aspects of the human condition as we see it reflected in the world around us and as we experience it. In the physical sphere, we regard disease and disability as evils that should be overcome as quickly and efficiently as possible. In the intellectual and moral sphere we have also identified serious problems that should be addressed in multiple ways, one of which is through the judicious use of genetic technologies. We think that a certain dissatisfaction with human nature as it has developed and as we have inherited it is a prerequisite for intervention to improve human nature. ... [W]e do not view the human race as being fated to accept the current state of affairs. Rather, we accept the possibility of change in human nature and have tried to argue for the ethical acceptability of certain kinds of planned changes in the characteristics of future human beings. In our view, such genetic enhancements are an important part of the overall task of attempting to provide a better life and a better world to our descendants. (p. 133)

Surely most readers will view the desire to provide a better life and a better world to our descendants as a laudable

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aspiration, but is the still-rudimentary capacity to manipulate human genes a wise method of providing correctives to physical, intellectual, and moral problems? Many readers may question the authors' conviction that human gene therapy is worthwhile, but all readers of this clearly written, straightforward, and detail-rich book will learn a good deal about the science of gene therapy and the rationale for pursuing it.

In five chapters and five appendices, Walters and Palmer lay out the scientific breakthroughs up to the mid-1990s and sketch the questions posed by developments in somatic cell gene therapy, the potential for germ-line gene therapy, and the fantasies of genetic "enhancement" (quotations mine). The book does a good job of differentiating somatic cell from germ-line manipulations, the former intended to affect only one individual, the latter intended to affect all the descendants of that individual. Walters and Palmer then distinguish gene "therapy" from genetic "enhancement" by arguing that the former corrects impairments of function that put the individual below what is species-typical, whereas the latter actually would increase an individual's physical stature, cognitive capacity, or memory. In the "enhancement" category are speculations about improving the genetic endowment of individuals and the genetic endowment of the species. In the first scenario, individuals who are now average might become people who would currently be considered superior (every child would be beautiful *and* strong *and* smart); species enhancements would actually change what we now think of as "species-typical," so that people would live longer, sleep less, comprehend more, and be saintlike.

The book admirably states the authors' enthusiasm for genetic science as a key to human betterment and can provoke lively discussion of the desirability of undertaking such activities as creating humans who need little or no sleep and live to 200 years of age. But as a book to examine ethical questions, this volume is very disappointing. Terms such as "harms" and "benefits" are never defined. Why is disability "an evil to be eradicated," for example? Twenty years of recent scholarship and law on disability argue that many of the problems once thought to reside in physiology can be traced to society, but Walters and Palmer are oblivious to such a possibility. What is wrong with our human nature as it is, and what convinces Walters and

Palmer that genes are the dominant influences in such characteristics as cognitive ability or kindness? (There is plenty to question about the claims of behavioral genetics, but skeptics of the science are not cited.)

Lack of citation and analysis of the arguments in existing citations brings me to my last major concern about the text. Even if one shared the authors' excitement about the potential of genetics to improve our lives and the lives of our grandchildren, knowing about the substantial ethical uncertainty posed especially by germ-line techniques and by interest in individual or species enhancement is crucial for an adequate discussion of this fascinating subject. Walters and Palmer acknowledge but do not fully address concerns of skeptics of germ-line modification, and individual and species enhancement. In saying that "[j]ust as parents are at liberty to employ *environmental* measures to enhance the overall academic achievement of their children, so parents should be free, within limits, within reasonable limits, to select *genetic* means to achieve the same goal" (p. 141), Walters and Palmer leave unanswered two key questions: (1) Are genetic means of identical moral significance to tutoring or selecting superior schools for children? and (2) What are the "reasonable limits" of parental efforts to manipulate the characteristics of their children? Why should those people society might deem could benefit from "moral enhancement" (should such genetic manipulation ever become feasible) actually want it or accept it, a necessary condition according to the authors for the receipt of such interventions? How will it benefit society for the species-typical but less strong or tall or athletic or intelligent to acquire more of a prized quality? Will such an individual still be less endowed than someone who had more of that quality to start with and then supplemented it with a genetic intervention? Society will still have to learn, as it must learn now, how to deal with diversity in the endowments and talents of human beings and how to appreciate human capacity and limitation without stigmatizing people based on their characteristics and making those it considers unfortunate also unworthy.

Listing arguments is not the same as grappling with them. In an issue of the *Journal of Medicine and Philosophy* deal-

ing with the topic of germ-line gene therapy, Eric Juengst (1991) pointed out how the questions posed by genetic interventions represented some of those most central to all of bioethics. Walters and Palmer cite this article, but to my mind, fail to engage these questions with the depth and seriousness they warrant because they do not truly understand the concerns of those who suspect that our human condition requires appreciation of imperfection as well as striving for improvement. I quote a passage from Juengst that Walters and Palmer might well have engaged with in a thorough examination of the ethics of human gene therapy:

What sort of "reproductive health problems" fall within the proper domain of medicine? How far into the pool of potential future generations can the concept of "patient," and the obligations it implies, reasonably extend? ...[Are] bioethical topics like germ-line gene therapy... better approached as primarily questions of professional ethics for the scientific and medical communities, or ... as matters of public social policy [?] (1991: p. 591)

Although this book is not all that I would like in an examination of this new technology, it clearly and provocatively states its position; thus, I look forward to using it with students to stimulate exploration of the relevant moral and social distinctions between somatic and germ-line interventions, between therapy and enhancement, between improving individual characteristics and changing what is typical of all humankind. We can thank Walters and Palmer for providing us with a very useful explication of a position and hope that others will just as clearly and fervently articulate what might be its limitations.

References

- Juengst, E. T. (1991). "Germ-Line Gene Therapy: Back to Basics." *Journal of Medicine and Philosophy* 16 (6):587-92.