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## Genetic Explanations: Sense and Nonsense

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Sheldon Krimsky; Jeremy Gruber, eds. *Genetic Explanations: Sense and Nonsense*.

Genetic Explanations: Sense and Nonsense by Sheldon Krimsky; Jeremy Gruber

Review by: Garland E. Allen

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with remarkable maturity and consistency. Not surprisingly, the debate analyzed here foreshadowed some of the arguments later used in Germany's powerful antinuclear movement of the 1970s and 1980s. While the proponents of the reactor cited economic opportunities, national interests, and trust in scientific expertise as strong arguments in favor of the project, the protesters worried about radiation and its effects on human health, water supply, and agriculture. However, the protest failed to stabilize opposition to the project on a long-term basis and quickly subsided after the reactor was built. Indeed, there was apparently no ideological or ecological foundation of any substantial sort that would have provided the stamina and endurance one can observe within Germany's environmental movement in the following decades. The protesters were a politically diverse group in terms of party affiliation, with an overall outlook that was rather conservative and parochial.

With that in mind, the question arises as to what this study could have achieved if its findings had been systematically placed in a larger temporal context. In the introduction the authors point to the lack of scholarly interest in the protests against civil nuclear reactors during the 1950s. As a conclusion they maintain that "the early citizens' protest movement remained an episode quickly blocked from collective memory, not just by those affected" (p. 116; my translation). With that in mind, the reader would have liked to learn more about the differences between these protests and the massive antinuclear movement of the 1970s, which would change the entire German nation and its political landscape for good. Notwithstanding some references here and there, this pivotal development appears to stand as the elephant in the room. The scope of the local protests around Karlsruhe in the 1950s could have been much more precisely defined if the authors had offered more comparative discussion of what this apparently was not: an overarching attack on the legitimacy of technocratic rule, fueled by a sense of global crisis and a profound distrust of the political order and its elites as such. Although traces of such notions are occasionally observable among the protagonists of this study, the call for a fundamental ecological turnaround is barely perceptible; thus the very aspect that would lead to the founding of the Green Party in 1980—coincidentally, in the city of Karlsruhe—was conspicuously missing. Ultimately the 1950s protests seem to be little more than NIMBY activism, albeit analyzed here with care and attention to detail and a laudable intention of the authors to differentiate the circumstances. More insight

into continuities and discontinuities regarding later developments might have been aimed for, given that considerable scholarship has been and is still being produced with regard to the sea change of the 1970s.

In terms of diction and style, the focus on a close reading of local sources makes *Fortschrittsfeinde im Atomzeitalter?* a cumbersome read, as the narrative sometimes has difficulties in emancipating itself from the historical material. Finally, a note to the publisher: the outward appearance of the book (the typesetting, etc.) leaves much to be desired.

MICHAEL SCHÜRING

**Sheldon Krimsky; Jeremy Gruber** (Editors). *Genetic Explanations: Sense and Nonsense*. xi + 368 pp., index. Cambridge, Mass.: Harvard University Press, 2013. \$45 (cloth).

In her essay in this volume, Susan Lindee, paraphrasing Theodosius Dobzhansky, states one of the book's two major themes: "Nothing makes sense in biology except in the light of the marketplace" (p. 186). The other theme is the bankruptcy of theories of genetic determinism as espoused in the 1960s–1990s. As one of the most recent challenges to claims for a genetic basis for everything from psychiatric disorders to criminal violence, aggression, and thrill seeking, the various essays included here provide evidence, much of it from molecular biology and genomics, that increasing recognition of gene–gene and gene–environment interactions undermines the likelihood of tracing any simple causal path from genotype to phenotype. It is a welcome summary of evidence from the era of molecular genetics and genomics, though it will likely infuriate those who still want to pursue the search for genetic causation of human psychiatric and behavioral traits.

The book opens with a foreword by Richard Lewontin that describes the seductive and often misleading power of metaphors in science, particularly persistent genetic metaphors: DNA as a "blueprint"; the genome as the "book of life"; genes functioning as "machinery." The introduction, by coeditor Sheldon Krimsky, introduces the reader to the array of issues—specific traits and methodologies—treated in the following chapters.

The body of the book is divided into three parts. Part 1, "New Understanding of Genetic Science," deals with more general problems associated with thinking of genes as independent causal agents in the study of genetic transmission, embryogenesis, and evolution. Essays by

Ruth Hubbard, Stuart Newman, Evelyn Fox Keller, David Moore, and Steven Talbott make the point that in order to function at the molecular level, segments of DNA require a whole host of interactions—control elements, enzymes for replication, transcription and translation, other molecules and gene products, as well as agents and conditions external to the organism. Genes do not produce anything by themselves but are embedded in a large environmental matrix that extends from the cell cytoplasm to the ecosystem, a series of connections traditionally ignored or downplayed by classical and molecular geneticists—and particularly genetic determinists.

Part 2 is devoted to “Medical Genetics,” particularly the failed program for disease prognosis and treatment based on genetic/genomic information; it offers essays by Eva Jablonka, Carlos Sonnenschein and Ana Soto, Jay Joseph and Carl Ratner, Carl Cranor, Martha Herbert, and David Jones. A main theme of this section is that despite three or more decades of well-funded research, the prospects of medical therapeutics, especially in regard to psychiatric conditions such as schizophrenia, criminality, or autism, and the more recent promises of racially based or “personalized” medicine have not been realized to any significant degree. The problem lies, the various authors suggest, in an oversimplified view of causality in what Cranor calls a “multicausal world.” The failure of all the various studies over the last twenty to thirty years to be replicated or to have localized a single gene or set of genes that can be unambiguously said to be related to the conditions it was supposed to influence again underscores that one of the main problems of this “genocentric” view of the world is that it has led researchers away from studying in more detail the environmental factors that affect the development of the organism.

Part 3, “Genetics in Human Behavior and Culture,” contains essays by Jonathan Beckwith, Susan Lindee, Shirley Shalev, William C. Thompson, and Mae-Wan Ho. It covers topics such as the new industry of determining your own genetic identity, the quest for breeding “better babies,” the myth of “infallibility” in using DNA evidence in forensics, and how environmental effects, especially in early animal (including human) development, can influence gene expression; these are effects that can under certain conditions be passed on to the infant’s own offspring. A summary essay by coeditor Jeremy Gruber, entitled “The Unfulfilled Promise of Genomics,” concludes the volume.

In such a collection, it is inevitable that the breadth and depth of the articles vary. I can highlight only a few. Beckwith’s survey of failed theories of genetic determinism (Ch. 12) presents a particularly useful historical survey of the problems surrounding cases such as the purported relationship of the XYY chromosome complement to crime (1960s), putative genetic differences between males and females in mathematical ability (1980s), the relationship of monoamine oxidase deficiencies and violent behavior (1990s), and, finally, claims for a genetic basis for brain evolution (2005). Beckwith, along with other writers in the volume, such as Lindee, speaks to the sensational way the news media has reported claims for such causal effects of genes over the years, along with a deficiency in public science literacy, as one means by which a genocentric view of the world has persisted. Lindee hits it more directly when she notes that much of modern genomics—medicine as well as home genetic identity kits and the like—is driven by market forces, based on exaggerated claims.

Another particularly useful essay is Joseph and Ratner’s “The Fruitless Search for Genes in Psychiatry and Psychology,” which dissects the basic methodologies on which such studies have traditionally been based—twins (monozygotic and dizygotic) raised apart and adoptions—showing how inadequate they are to separate the supposed effects of genetics and environment. Behind all these investigations is the dilemma Evelyn Fox Keller points to in her essay, “Genes as Difference Makers”—namely, that traditional genetic studies have relied on looking at *differences* in a trait based on a variant (mutant) form and inferring from this difference the way the wild-type trait is formed. This approach, one of the central methodologies of genetics from the beginning, tells more about what a variant doesn’t do than what the nonvariant actually does. An associated issue is that this approach has traditionally bypassed the process of embryonic development completely.

Overall, *Genetic Explanations: Sense and Nonsense* is useful in bringing the problems of older, persistently deterministic views of genetics into the modern era of genomics, indicating how the much greater complexity of components and processes that have been revealed in recent years (modular organization of the genome, alternative splicing, genetic control elements) has pulled the rug out from under any simplistic notion of genetic causality. It is instructive to note that even in cases where clear genetic relationships are known for human diseases, such as phenylketonuria or cystic fibrosis,

predictions of degrees of severity and paths to possible therapies have proven largely irrelevant or inadequate. This book summarizes clearly the deficiencies in the traditional claims for genetic determinism. On the other hand, it would have been interesting to have included at least one essay from one of the more committed determinists to see how they have reacted to the modern evidence that undermines their claims.

GARLAND E. ALLEN

**Stefan Sperling.** *Reasons of Conscience: The Bioethics Debate in Germany.* 333 pp., bibl., index. Chicago/London: University of Chicago Press, 2013. \$32.50 (paper).

This book, written by a trained ethnologist, explores the most recent bioethics debates by tackling lively discussions between bioethics experts, life scientists, politicians, and laypeople. The main subjects are modern stem-cell research and experimentation with embryos in the unified Federal Republic of Germany (FRG), as well as the reworking (*Aufarbeitung*) of science and medicine under the Communist regime in the German Democratic Republic (GDR). This multitude of (bio-)ethical subjects already suggests the vast scope (in only 289 pages) and major problem of the book: the preselected character of the issues at stake and their quite unrelated nature.

Between 2001 and 2003, Stefan Sperling interned as a U.S.-based researcher in the headquarters of the parliamentary Enquete Kommission on Law and Ethics in Modern Medicine (EK), where he conducted “ethnographic” studies on the experts and administrators of this prominent ethics board in order to analyze the intricate relations between scientific research, political decision making, and the impact of historical memory in recently unified Germany (pp. 15–18). As regards its methodology, the book builds on “several months of participant-observation fieldwork with the parliamentary ethics commission. . . . It was as if, despite all their efforts to make the commission’s workings transparent to me, I kept running into unwritten rules like invisible glass walls” (p. 62). Much of the author’s confusion might nevertheless originate from the fact that the “ethnomethodology” of the research project is barely made explicit in this volume. The best definition, which readers are provided with under the rubric of “Ethnography of Transparency” (p. 112 ff), emphasizes that “as an anthropologist of public morality, I am interested in how people use transparency in specific cultural contexts,” while relating this

perspective to the book’s narrative that “Germans almost seem to hold lack of transparency accountable for the circumstances that permitted the Nazis to take control of the German parliament” (p. 112) in 1933. The author repeats this main assumption further without clearly analyzing how the assumed lack of transparency became a central, if not the key, factor in the political developments of the 1930s. With regard to the historical perspectives provided, the book remains rather superficial—and only glancingly references the historical and political literature on the subject (providing 5 pages of bibliographic references; pp. 311–315)—while also falling short of more elaborate answers as to how the political and cultural context of the Weimar Republic and the Nazi period influenced modern bioethics discourse in Germany.

On the positive side, *Reasons of Conscience* provides North American and international readers with sufficient information about three major ethics debates as they unfolded in the actual setting of policy making in the vicinity of the German Parliament (Deutscher Bundestag). All of this is related through the unique—though equally idiosyncratic—perspective of a U.S. researcher marginally embedded in one of the federal ethics committees, one that was dissolved in 2008 when a new central advisory council, the German Ethics Council (Deutscher Ethikrat), was formed. On the one hand, the book’s thematic attempt is quite valuable, while on the other it raises more questions than it answers: How did Germany’s past really influence new ways of pursuing transparency in political decision making? In what ways were the debates a reflection of philosophical trends (despite frequent allusions to Immanuel Kant [p. 154], Jürgen Habermas [p. 102], and Odo Marquard [p. 103], this remains largely unexplored in the book)? How does the German case compare to other international developments (e.g., the stem-cell debate in the United States) or, with regard to the topic of science and medicine in the GDR, to the situation in other post-Communist countries? The author is certainly in a unique position, regarding his training in North America, his family and professional backgrounds in Germany, and his use of interdisciplinary scholarship, to answer such questions in fruitful ways; yet *Reasons of Conscience* itself only scratches the surface of “the cultural context” of the bioethics debate in Germany (p. 141). Given that this review is provided for the readership of *ISIS*, I should note that historians of science, technology, and medicine might find Sperling’s personal accounts of the “ethnography” of EK’s and NER’s (the Ger-