ESSAYS ON SCIENCE AND SOCIETY

Frankenstein in the Land of *Dichter* and *Denker*

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"Social scientists [in Germany] tend to associate 'selection' with Auschwitz, whereas natural scientists think foremost of Darwin's book." This quotation from developmental biologist and Nobel Laureate Christiane Nüsslein-Volhard captures in a nutshell the problems one faces when discussing questions of biology and biotechnology in Germany.* What most distinguishes the "two cultures" in Germany is their different understanding of certain key concepts of science and history. Here, more than in other countries, the past is a continuous presence that shapes intellectual debates. And the close association of Nazi ideology with the language of biology still hangs like a shadow over any discussion of the implications of modern biology and biotechnology.

A heightened sensitivity for the consequences of modern biology is not intrinsically a bad thing, of course, and neither is an intense public debate of such matters. There is no need to go as far as Jim Watson, who suggests that "it is time to put Hitler behind us" when making decisions about biotechnology today.† However, there is a serious problem when the public debate about biotechnology is dominated by philosophers, social scientists, and commentators more concerned with ideological agendas and the horrors of history than with biotechnological realities.

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In Germany, the bone of contention in the latest round of public uproar against the "brave new world" of genetic technology is Karlsruhe philosopher Peter Sloterdijk's attempt to reinterpret Plato, Nietzsche, and Heidegger in the light of what he calls future and past "anthropo-technologies." In his recent, widely attacked paper, "Rules for the human farm,"‡ Sloterdijk refers to human "breeding" and "domestication" as alternatives to the "failure of humanism" in education. His metaphorical model is animal husbandry, in which generations of breeders have been very successful in creating docile races of wild animals. According to Sloterdijk, it is a humanistic illusion to believe that traditional "nurture" is enough when it comes to taming the bestial dimension of man's nature—from the Roman circus to modern video games.

Sloterdijk shares the cavalier attitude of many German public intellectuals toward science. His references to "selection," "breeding," "human farms," "domestication," and other anthropo-technologies have the flair of literary metaphors, yet are employed in the context of an expected future "age of biotechnology." Equally irritating is Sloterdijk's unanswered question, which he attributes to Plato, whether it is the philosopher's role to devise "rules for human farms" devoted to the "breeding of an elite."

Not surprisingly, Sloterdijk's text has caused an uproar, and ever since its publication, German papers have been full of responses of variable quality. Whereas some dealt with Sloterdijk's arguments in a calm manner, others sounded more alarmist tunes. But in general, Sloterdijk's interpretation of philosophy is reviled as dangerous, his motives are branded as suspect, and his call for a human bio-utopia is considered naïve and mistaken. Sloterdijk's arguments themselves are taken to illustrate the horrors of biotechnology that loom just around the corner. Sloterdijk (and by implication all who have hopes that the future of mankind might be improved through biotechnology) is essentially accused of harboring fascist ideas.

An outside observer might wonder what the fuss over the misguided yet calculated ruminations of this one philosopher is all about. And should that observer possess even the most rudimentary knowledge of modern biotechnology, he or she might want to point out that the self-declared postmodern "emperor Sloterdijk" has no clothes. But the situation is more complicated. The Sloterdijk affair has to be seen in the context of other recent intellectual and political debates about Germany's problematic history and the future intellectual orientation of the new "Berlin Republic." The common theme in many of these debates is the relation between present-day Germany and its Nazi past. In the *Historikerstreit* of the 1980s, the comparability of Nazism with other totalitarian systems was hotly debated,§ and the more recent Walser affair, triggered by a speech by renowned writer Martin Walser, raised the difficult question of whether the memory of Nazism needs to be evoked to the extent that it is in modern political debates including matters of biotechnology.‖ What both of these controversies have in common with the Sloterdijk debate is that the same chorus of public intellectuals, led by philosopher Jürgen Habermas, continues to proclaim that Germany's history must invariably be the moral compass for its future.

This historical focus can pose a problem for an open debate about biotechnology in

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*C. Nüsslein-Volhard, "Menschenzucht ist weder wünschenswert noch machbar," interview with *Der Tagesspiegel*, 27 September 1999.

†J. D. Watson, keynote address to a molecular medicine congress in Berlin, reported by R. Koenig, *Science* **276**, 892 (1997).

‡P. Sloterdijk, *Regeln für den Menschenpark* (Suhrkamp, Frankfurt am Main, 1999).

§P. Jürgen, *Der Historikerstreit und die Suche nach einer nationalen Identität der achtziger Jahre* (Peter Lang, Frankfurt, 1995).

‖R. Leicht, "Warum Walser irrt," *Zeit* (no. 50), 1 (1998); J. Ross, "Aus Auschwitz lernen," *Zeit* (no. 49), 3 (1998).

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Germany. Since the language of biology was part of the Nazi ideology, in the name of which the most horrible crimes have been committed, and since the moral imperative derived from German history is "never again," the answer is clear: Hands off from genetic engineering and biotechnology. This is indeed the widespread consensus among German intellectuals and many in the German population.

Learning from history is indispensable. However, history can also become an excuse for avoiding critical and important questions. Genetics today is not the same as eugenics and racial hygiene in the 1930s, which were more concerned with technocratic solutions on the level of whole populations than with any detailed understanding of the role of genes in development and disease. This is not to say that modern genetics does not pose serious challenges and that a society should not have the right to establish limits as to what it finds acceptable. But such a decision should only be made after an informed discussion based on a proper understanding of the scientific issues and the relevant historical background. Framing the debate exclusively in the context of literary images (Mary Shelley's *Frankenstein*, Aldous Huxley's *A Brave New World*, Goethe's *Faust*, or Nietzsche's *Thus Spoke Zarathustra*) or the crimes and ideology of the Nazi period is not enough. The common theme in the literary models evoked in this debate is that man will give in to temptation and will try whatever is possible, inevitably leading to disaster. History, and in particular the Nazi period, then only serves to confirm these fears and leads to fatalistic attitudes toward biotechnology.

"Aktion. 1973" by Jannis Kounellis

Railing against the dangers of biotechnology from a position of presumed moral authority will not ensure that the practice and governance of modern biotechnology becomes any more democratic. The benefits of biotechnology, in particular its medical applications, are clearly visible to everybody, but there are also indisputable problems, especially when economic interests are at stake. As the recent controversies over agricultural practices (mad cow disease and dioxin) and genetically manipulated food demonstrate, ignoring concerns about safety or traditional values inevitably leads to a backlash. This is even more the case in areas that involve questions of morality and human self-understanding, such as stem-cell research and germ-cell therapy. Here it is especially important to abstain from moralistic or economic grandstanding and to consider both the factual realities and the concerns of citizens when making policy decisions.

Informed (public) discussion requires informed (public) participants. But whose responsibility is it to educate the general public about the admittedly complicated issues of modern biology and biotechnology? In the United States, not a single month passes that does not bring us another piece of bad news about the state of affairs in science education. The recent decision by the Kansas Board of Education to eliminate evolution as a required subject in state exams represents only the tip of an iceberg. Clearly this situation poses a challenge to scientists. To counteract these trends, the national academies and various scientific societies in the United States have initiated programs to encourage scientific literacy. Similar efforts are under way in Germany.

Equally important are efforts to popularize science in order to reach a wider audience. Scientists need to speak out on matters of importance for society and politics. But on this last issue, the attitudes of scientists in the United States and Germany clearly differ. U.S. scientists are generally quite willing to popularize their results and to express their views in popular media; the archetypal "German professor," by contrast, remains enshrined in the ivory tower of pure science. There are, of course, exceptions—such as Hubert Markl, the president of the Max Planck Society. But, simply put, there is no Stephen Jay Gould or Richard Lewontin presently in Germany who could meet the "public intellectuals"—Habermas *et al.*—on their own turf and bring a certain level of scientific expertise to these public discussions.

Scientists such as Christiane Nüsslein-Volhard often express their dislike for a public discourse that "rewards scientific ignorance" and only values "knowledge of dead languages." Unfortunately, they tend to look at this situation with a certain amount of historical fatalism. We should recall, however, that in the past, German scientists have had a more prominent position in German intellectual life than they have now. In the 19th century, a large number of renowned scientists (such as Rudolf Virchow and Hermann von Helmholtz) were associated with liberal politics and the industrialization and modernization of Germany. And at the beginning of the 20th century, scientists such as Ernst Haeckel and Max Verworn participated in the "culture wars" of their time and were successful at popularizing their knowledge. Philosophers such as Ernst Cassirer were in constant dialogue with leading scientists, and tried to integrate the results of science into their work. Subsequent generations of scientists were an integral part of the "hothouse of intellectual life" that we associate with the Weimar Republic.

The Nazi years changed all that. Large numbers of scientists and students were killed or forced to emigrate, retreated into "pure science," or were compromised by the odd mixture of reaction and modernism that characterized the Nazi attitude toward science. After World War II, the intellectual foundations of the new Federal Republic were laid by philosophers and social scientists, in particular by the so-called Frankfurt School, which stressed the critical evaluation of the past as the sine qua non for intellectual life. In the context of this discourse, human genetics and any other form of "biologism" were considered particularly dangerous. The German Green party, a major force in the opposition against the unquestioned application of biotechnology, also has its roots in the intellectual tradition of the "Critical Theory" of the Frankfurt School.

The Sloterdijk debate is, above all, about the future of intellectual discourse in Germany. Up to now Germany has escaped the (rather sterile, in my view) "science wars," triggered by Alan Sokal's hoax, that have encumbered discussions in the United States. Sloterdijk, at 52, represents a generation that has begun to challenge the dominance of social science and Critical Theory in German intellectual life. What does this generation of public intellectuals offer to scientists who hope that their concerns will be represented in a more balanced way? Judging from what has been said so far, not much. But with his call to consider, rather than ignore, the biological nature of humanity when asking philosophical and political questions, even though his own knowledge of biology is limited, Sloterdijk does (inadvertently) open a door to an older and vibrant German intellectual tradition that goes back at least to Leibniz and Kant and continues into the early 20th century.

It would be in the interest of scientists to recapture the position they once had in German intellectual life. Maybe the present intellectual struggle offers us that opportunity, if we are willing to enter a dialogue. And maybe we are beginning to see a separation of fact from fiction in discussions in Germany about biology and biotechnology.

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