

show that there has been made progress since concerning some European countries and particular aspects of the chemical industry. Yet, the field still offers ample opportunities. It may be added that the reviewer was sometimes wondering about the choice of countries represented in this volume – for example, the absence of France. Overall, this is a very stimulating book that presents us important results of research by historians of science and technology and economic historians on the European chemical industry in the first half of the 20th century.

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PAUL RABINOW, *French DNA: Trouble in Purgatory*, University of Chicago Press, Chicago, 1999, viii + 201 pp. (ISBN: 0-226-70150-6)

Paul Rabinow's *French DNA: Trouble in Purgatory* picks up where he left off at the end of his *Making PCR: A Story of Biotechnology* (reviewed in this journal Vol. 4, No. 2). After his study of the Cetus Corporation (which became Roche Molecular Systems), Rabinow was invited by Daniel Cohen to be a "philosophical observer" at CEPH (Centre d'Etude du Polymorphisme Humaine) a partially independent French research group which had ties with the AFM (Association Française contre les Myopathies), a patients organization similar to the American MDA (Muscular Dystrophy Association). Cohen led the CEPH to the first physical map of the human genome in 1993. Financial backing for this project was partially funded by the AFM, which saw that the genetic level was the next battleground in the study of the dystrophies. As there were already sociologists at AFM, Rabinow studied these relationships from the CEPH primarily. Cohen was also a co-founder of an American biotechnology start-up, Millennium Pharmaceuticals. Millennium and CEPH were to start a collaborative effort to work on the genetic basis of diabetes. It is this failed collaboration that prompted Rabinow's book to be an ethnography of failure rather than success.

It is from this failure that the book gets its title. The collaboration was eventually stymied because of genetic material that had been collected from a large number of French families. When one of the scientists, Phillippe Frougel, who was running CEPH's diabetes project, realized that his role in the Millennium collaboration would be very small, he balked, and leaked information to the government and the press. The government, which had already approved the collaboration in principle, reversed itself. The rhetoric was couched in terms of not

letting Americans steal and profit from French DNA.

Rabinow's book is a tour-de-force combination of history, sociology, philosophy, and anthropology of science. In his "Introduction", Rabinow sets the stage for his own involvement in the project, particularly the fact that he happened to be there during this "multidimensional crisis in 1994" (p. 4). Chapter 1, "Life as We Know It", introduces the French stance on not paying for blood donations, but instead relying on the virtue of benevolence. It is also in this chapter that Rabinow explains the subtitle of his book, "Trouble in Purgatory". The concept of purgatory in Catholicism arose to take into account new situations. In particular, it was the phenomenon of rich people wanting to get into heaven and a "chronic sense that future is at stake" (p. 17). Rabinow, drawing on the work of historians Jacques Le Goff, Michel Vovelle, Benjamin Nelson, and Michel de Certeau, sees the relationship developing between French research, venture capital, and the virtue of benevolence as another purgatorial compromise – an attempt to find "solidarity and hope" in a difficult time (p. 23).

The history of CEPH and its complicated relationship with the AFM is sketched in Chapter 2, "Genomic Assemblages". Rabinow arrived at CEPH in January 1994, less than a month after the announcement of the completion of the physical map of the human genome. In Chapter 3, "Field Notes: The CEPH after its Victory", he reports on the mood at CEPH, its plans with Millennium Pharmaceuticals, and the other projects underway at the center, fulfilling his role as "philosophical observer". A more difficult discussion takes place in Chapter 4, "Life: Dignity and Value". Here, Rabinow explains the detailed history of the French attitudes and laws about human biological research and how the French decry the role of money in the American way of things (especially paying people for their blood). In the scope of this discussion, he also deals with the history of the monetary, moral, and legal issues

raised in the case of the transfusion blood tainted with AIDS in the mid-eighties, as compared to the American handling of the same crisis. The relationship between concepts of 'body' and 'personhood' are difficult to separate.

Chapter 5, "Millennium Comes to Paris", provides an account of the breakdown of the collaboration attempt from February to April 1994, and Chapter 6, "Normalization", explains what happens to the key players in the aftermath of the French DNA crisis. This is followed by an epilogue, "The Anthropological Contemporary", in which Rabinow reflects on his own role in this matter. One issue he addresses in the epilogue is determining what the book is about. One thing he sees is that the book is about competing forms. That is, the different approaches taken by American and French companies, and their governmental and academic counterparts. He had already addressed the changes in the American relationships in *Making PCR*. The competition between these value systems will shape the future of biotechnological research:

One is for or against abortion, for or against immigration, for or against the commerce in blood, for or against surrogacy, for or against patenting of life forms [...]. Not many people, after all, would respond in an opinion survey that they are against scientific progress, health, dignity, or human rights. However, alongside such a consensus [...] and the divers clusters of practices that seek to embody beliefs lies a more obscured terrain (p. 178).

Further, as with *Making PCR*, he is wary of using 'totalizing' concepts and instead favors more limited concepts. Thus, there can be an epilogue, but no *conclusion*.

French DNA serves as a reminder that the rhetoric of science can mask as it informs, that scientific communication still has a culture barrier even if the language barrier is not as great, and that money is still not the only motivation. We still need to pay close attention to the similarities and differences between what sci-

entists say and what they do. Structures can affect the development of science in ways that are not predictable. *French DNA* is a relatively short book that is very readable and informs as well as provokes. I recommend it to all who would find an anthropology of the contemporary by a 'philosophic observer' to be meaningful. As with *Making PCR*, though, there is no index.

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Pioneering Ideas for the Physical and Chemical Sciences. Josef Loschmidt's Contributions and Modern Developments in Structural Organic Chemistry, Atomistics, and Statistical Mechanics, ed. by W. FLEISCHHACKER & T. SCHÖNFELD, Plenum Press, New York, 1997, pp. 320 (ISBN 0-306-45684-2)

The long subtitle clarifies the scope and aims of the 33 contributions to the volume in honor of Josef Loschmidt (1821-1895), edited by Wilhelm Fleischhacker and Thomas Schönfeld from the Institutes for Pharmaceutical Chemistry and Inorganic Chemistry, respectively, at the University of Vienna. The papers are grouped according to three topics: "Organic Structural Chemistry" (12 papers); "Physics and Physical Chemistry" (14 papers); and finally "Loschmidt's Biography, Loschmidt's World" (7 papers). The declared heterogeneity of research interests ranges over philosophical and historical issues as well as today's experimental and theoretical approaches to molecular reality.

On a commemorative occasion, such diversity is not without danger, but for our purpose it is welcome because the reader may find also a few papers and several passages of interest concerning philosophy of chemistry. Papers and passages may be discussed with reference to two principal topics. Not surprisingly, the first topic regards Loschmidt's own philosophy and the philosophy of science of his times; surprising is rather the shaky quality of many assessments of Loschmidt's place in the history of chemical thought. The second topic regards aspects of the philosophy of chemistry as today's scientists propose it. Many papers could be interesting for an attentive reader because one can see, just under the surface level of the texts, the militant philosophy and applied epistemology of the authors. However, this textual level is implicit, and as such it will remain outside the scope of the present review.