

Essay Review

Give me a Laboratory, and I will raise the . . . Laboratory

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Jean-Paul Gaudillière, *Inventer la biomédecine. La France, l'Amérique et la production des savoirs du vivant (1945–1965)*, Textes à l'appui, série histoire des sciences, Paris, La Découverte, 2002, pp. 392, illus., €33.50 (paperback 2-7071-3607-7).

Jean-Paul Gaudillière's *Inventer la biomédecine* provides a welcome and timely synthesis of his extensive and very detailed investigations into the history of that strange creature that is "biomedicine". Much of this work, which has focused not just on France, but on the United States, Britain and Germany as well, has previously appeared in disparate articles and chapters of edited collections, including *The invisible industrialist* (1998) and *Heredity and infection* (2001), both co-edited by Gaudillière and his long-standing intellectual interlocutor, Ilana Löwy. Here, all this work is finally brought together, to speak of the development of a new "biopolitical" order, wherein the "laboratory" figures as a pivotal institution in the articulation of a "molecular" understanding of biological phenomena, normal and pathological, and the health of the nation. In other words, we are now entering the age of "biomedicine", wherein molecules such as "RU-486", the result of esoteric research into hormonal synthesis and metabolism, mediate between our most intimate, private relationships and the institutional politics of reproduction. The exact relationship between the "molecular" understanding of biological phenomena and the organization of "medicine" is quite unclear,

¹ Bruno Latour, 'The force and the reason of experiment', in H E Le Grand (ed.), *Experimental inquiries: historical, philosophical and social studies of experimentation in science*, Dordrecht, Kluwer, 1990, pp. 49–80, on p.76.

however. Gaudillière thus opens his concluding, "general summary" by asking very pointedly: "What is scientific medicine?" (p. 369). Focusing on the "clinic" rather than the "laboratory", Gaudillière's preferred, and more obviously relevant institution, I have sometimes argued that the answers that he and a number of other historians of the "biomedical sciences" have provided to this most difficult question, difficult for both historical actors and their historians, is less than persuasive. *Inventer la biomédecine* helps to clarify misunderstandings, sharpen points of difference on writing the history of contemporary biopolitics, and raises questions of more general historiographical interest.

In *Inventer la biomédecine*, Gaudillière examines the emergence and consolidation of a "molecular" approach to "medical" problems among French microbiologists, biochemists and physiologists. This process famously reached its culmination in 1965, the closing date of Gaudillière's avowedly "archaeological" excursus. That year, François Jacob and Jacques Monod were awarded the Nobel Prize for Physiology and Medicine for their work on the "lac operon", which brilliantly explained the molecular mechanisms regulating the production of proteins. French biologists thus became important actors in the shaping of "molecular biology". Moreover, during the years leading up to this so important date, Monod, the former Communist member of the Forces Françaises de l'Intérieur, the

“résistance”, had also gained an increasingly prominent role in the Gaullist reorganization of medicine in France. Was this French “biomedicine” in the making? The dependence of Jacob and Monod’s work on the collaboration of two Frenchmen with the American biochemist Arthur Pardee, the “Pa” in the famous “PaJaMa” experimental protocol that Gaudillière explores in considerable detail, should alert us, however, to the intimate relationship between the above and contemporaneous developments in the United States. As the subtitle of *Inventer la biomédecine* suggests, Gaudillière is particularly vexed by this relationship. It is no overstatement to say that, in France, “Americanization” is a very powerful political and cultural trope. Gaudillière sets out to revise our understanding of the fraught relationship between France and the United States by focusing on the “invention of biomedicine”.

Throughout *Inventer la biomédecine*, Gaudillière subtly and systematically draws on the conceptual models developed by Harry Collins, Joan Fujimura, Robert Kohler, Susan Leigh Star and James Griesemer, and, to a lesser extent, on those developed by Bruno Latour and Michel Foucault. Foucault and Latour’s rather ambiguous role in shaping Gaudillière’s “archaeology” perhaps illustrates the often contradictory, French infatuation with Britain and the United States and, more specifically, with Anglo-American “empiricism”. This said, such conceptual apparatus serves Gaudillière well as he tries to persuade his readers that the emergence and consolidation of the “molecular” approach to “medical” problems was a matter of transatlantic “networks” and the “contingencies” of particular people in particular laboratories. That is to say, he shows how the uses of radioactive isotopes, ultra-centrifuges, electron microscopes and genetically homogeneous animal and bacterial strains, materials to which Gaudillière devotes great attention, were used very differently in different localities. Incidentally, Gaudillière brilliantly illustrates how many of these materials mediated the intimate, and some would say too

intimate, relationship between industry and publicly funded “fundamental” biomedical research, which characterizes the distinctive organization of contemporary “medicine”, and “health care” more generally. More importantly, however, Gaudillière argues that the above differences simply do not map onto the canonical contrasts between the United States and France, respectively as the home of private enterprise, in the guise of an alliance of “universities, voluntary hospitals, charities, and industry” (p. 315), and as the home of the interventionist state. As he notes, the crucial role of the National Cancer Institute, a publicly funded institution, in the evolution of cancer research in the United States is a healthy reminder that the interventionist state is far from an alien feature of American politics. The converse is true of France: if French journalists could boast, in 1954, that Pierre Lépine had devised a “French” vaccine against polio that was “superior to the American vaccine” (p. 115), this was not the fruit of state enterprise, but of the self-funded and entrepreneurial Institut Pasteur. At best, the history of the Franco-American engagement over the three decades covered by *Inventer la biomédecine* might then be periodized in the following terms. The 1940s were characterized by French exploratory missions to the United States, and by American exports of expertise in the manufacture of technical equipment and industrial processes, such as the mass production of penicillin, and, through the ubiquitous Rockefeller Foundation, of “models” for the modernization of French medical research. The 1950s, however, were a matter of a far more selective adaptation of imported materials and knowledge to local circumstances: Monod’s relationship to his American counterparts was far from slavish. As his correspondence with Pardee and Joshua Lederberg illustrates, Monod’s relationship is instead better characterized as deliberately choosing between different partners in the light of ever changing local considerations. The same can be said of Lépine and the many other French biomedical entrepreneurs who frame the various chapters of *Inventer la biomédecine*. Through

their work, the reader is introduced to the ways in which all these local considerations not only shaped the contours of a “molecular” understanding of biological phenomena, but also the organization of cancer research, whether experimental or epidemiological, as well as a distinctive approach to the production of a “French” vaccine against polio. Finally, the 1960s were marked by both the Gaullist nationalization of developing infrastructures of medical research and the “banalization” of exchanges of personnel between France and the United States. The former set in place something resembling state control over “biomedical research” and “medicine”, supposedly linked hierarchically, by the “planned” articulation of “fundamental research” and “clinical application”. The canonical contrast between France and the United States finally materializes. The latter meant instead that a French researcher spending some time in an American laboratory, and vice versa, became a mundane matter that is better understood in terms of transatlantic, if not international, hybridization, than in terms of distinctive “national” structuring of “biomedical” research. In sum, as Gaudillière puts it, “bio-politics in the French style was less an affair of state than a politics of singularities” (p. 378). To put it in yet another way, Gaudillière’s conclusion is that the exact form that the emergence and consolidation of a “molecular” approach to “medical” problems took in France was a profoundly “historical” affair.

One might note that, if the canonical contrast between France and the United States is a historiographical artefact, and Gaudillière demonstrates this quite persuasively, such discursive artefacts are not exactly devoid of agency, but I run ahead of myself . . . My most immediate reaction to *Inventer la biomédecine* was to notice instead the tacit prominence of Anglo-French exchanges. I repeatedly found myself questioning the generalizations that Gaudillière avoids with respect to France and the United States, but abound with respect to Britain. I am less than convinced that the canonical construction of French enterprise as “statist” is any more applicable to the relationship

between the Medical Research Council and the National Health Service than it is to that between the Sécurité Sociale and the Institut National de la Santé et la Recherche Médicale, one of the many biomedical institutions to emerge from the events that are the stuff of Gaudillière’s narrative. On the other hand, Gaudillière can readily draw on Lily Kay’s *The molecular vision of life* (1993) and *Who wrote the book of life?* (2000) to characterize Franco-American relationships as subtly as he does, but there is no equivalent work on which to base a more subtle assessment of Anglo-French relationships. At best, Gaudillière can draw on Soraya de Chadarevian’s work, recently summarized in *Designs for life* (2002), but her remit is in no way comparable to that shaping *Inventer la biomédecine*, *The molecular vision of life* and *Who wrote the book of life?* The best that is on offer then is Edward Yoxen’s now dated *The gene business* (1983). *Inventer la biomédecine* might therefore be read as a clarion call for a more sustained and expansive study of the emergence and consolidation of a “molecular” approach to “medical” problems in Britain. It is to be hoped that the project on the history of cancer research, currently being directed by John Pickstone, will fill the yawning historiographical gap that *Inventer la biomédecine* makes more than obvious. If I am trying to convince that this book needs to be read very widely and attentively, and not just by those readers interested in either the history of “biomedicine” in France or the history of the fraught relationship between the United States and France, to my mind, such reading must also raise questions about what exactly is “medical” about “biomedicine”.

Significantly, Gaudillière argues that researchers such as Monod so thoroughly redefined the practices and organization of microbiological, biochemical, and physiological research, once appendages to the study of medicine and pharmacy, that they were effectively “demedicalized”. Moreover, the implicit distinction between “fundamental” and “clinical” research was then formalized and institutionalized by those Gaullist reformers of the French state, “technocrats”, who included

health care within their broader remit to “modernize” France. Consequently, as Gaudillière puts it, perhaps disclosing his tacit critique of the contemporary “bio-political” order, “biomedical research . . . largely profited the development of biology and far less the intellectual and technical resources of health care” (p. 377). Oddly, however, France is now seen as the model for the “modernization” of British health care in the age of “biomedicine”, arguably a product of the emergence and consolidation of a “molecular” approach to “medical” problems, so something important must have been happening within the clinical context as well. Admittedly, Gaudillière devotes two chapters to “medical genetics” and “epidemiology”, as examples of the attempted “modernization” of French clinical practice by introducing the principle of “randomization”, in the one field, and practices of “genetic counselling” in the other. This effort, however, does not seem to have succeeded nearly as greatly as it would appear to have done in the United States and Britain. Thus, if American and British practices of “genetic counselling” and developments emerging from the “molecularization” of genetics were well integrated, the “clinical genetics” that emerged from Raymond Turpin’s and Maurice Lamy’s respective research groups, in the Hôpital Trousseau and the Hôpital Enfants-Malades, was not shaped by any contacts with the geneticists in the Centre National de la Recherche Scientifique, the Institut de Biologie Physico-Chimique or the Institut Pasteur, let alone by any contacts with those across the Channel or the Atlantic Ocean. I then wonder how exactly I should understand Gaudillière’s otherwise compelling claim about the “demedicalization” of the “biomedical sciences”.

Strikingly, Gaudillière’s historiographical method changes quite perceptibly as he exits the primal, founding scene of the “laboratory”, an undoubtedly important feature of contemporary “health care”. “Networks” mediated by “material exchanges”, problems of “calibration” in the ascertainment that results of interventions are not “artefacts”, and

“boundary objects” mediating social relationships, all disappear. The critique of the “agency” usually attributed to language and discourse, which Gaudillière advances in the chapters on the “laboratory”, gives way to a more conventional narrative. Thus, where the nature of a “virus” is concerned, Gaudillière provides an exceptionally detailed portrayal of the negotiations that shaped the resolution of differences between the data obtained by electron microscopy and that obtained by ultra-centrifugation. Similar problems of calibration between the epidemiological findings of a strong association between smoking and lung cancer, on the one hand, and biochemical research that, on the other hand, was consistently unable to offer a plausible physiological mechanism for the above association, and whose failure was first attributed to the use of inadequate laboratory methods and then to the poor skills of the biochemists responsible, however, are simply not on offer. Instead, the differential success of epidemiology in Britain and France is explained by recourse to a presumed, pre-determining “populational” orientation of the National Health Service. Arguably, however, the emergence of this “populational” approach was as much the contingent product of negotiation between biochemists, epidemiologists, the Medical Research Council, the Royal Colleges of Surgeons and Physicians and the National Health Service, as was the eventual agreement over the nature of a “virus”. It seems to me that, if “naturalistic” explanations appealing to some intrinsic nature of viruses are debarred, the same should apply to “structuralist” explanations that appeal to some intrinsic nature of British bio-political discourse. Furthermore, Gaudillière does not appeal to the now tired distinction between “reforming biomedical researchers” and “conservative clinicians”, but something very similar is in play when he describes how Monod and other similarly minded biomedical researchers mobilized their political connections, for example with Robert Debré, “reforming clinician” at the Hôpital Enfants-Malades and eventual author of the “réforme Debré”, to create a niche for

“fundamental” research. This was not their original intention, apparently formed instead around an idealized version of a productive relationship between the Medical Research Council and the National Health Service, but the result of accommodation with an inert medical profession and allied structures of state. What did these so inert powers make of the reformers’ evocation of the Medical Research Council and the National Health Service? How did they negotiate their way around this . . . “boundary object”? We are not told. In other words, “structural” explanation and conventional notions of “agency” have no place in the “laboratory”, but, outside its confines, they would appear to hold sway. Perhaps unfairly, because it “falls outside the remit of [*Inventer la biomédecine*]” (p. 312), I am tempted to say that what is missing is a sustained examination of the contemporaneous, synergic transformations of both the “laboratory” and the “clinic”, notwithstanding the formal split between “fundamental research” and “clinical application”. In the absence of such a symmetric account, one cannot but wonder about the origins of the extraordinarily supple articulation of the contemporary French biomedical complex to be gleaned from Löwy’s *Between bench and bedside* (1996), Paul Rabinow’s *French DNA* (1999), and Vololona Rabeharisoa and Michel Callon’s *Le pouvoir des malades* (1999).

Arguably, this historiographical impasse is a result of a peculiar preoccupation with the “laboratory”, and, possibly, a misunderstanding of the Latourian, if not Pasteurian, aphorism “Give me a laboratory, and I will raise the world”.¹ Gaudillière, reprising the arguments of the many historians who now attend to the material practices that underpin a common understanding of genetic processes as the processing of “information”, argues that the infatuation with this metaphor is an example of

the failures of accounting for technical development by reference to language and discourse, as opposed to material practice. With respect to Monod, Gaudillière contends, the language of “information” was not integral to the development of the “lac operon” model, but appeared more as a post-facto legitimating, discursive device (p. 289). Gaudillière does not explicitly say as much, because to do so might create problems not just for his use of Collins’ sociological models of “discovery”, as he would then appear to somehow separate contexts of “discovery” and “justification”, but also for his implicit critique of Foucault and “discourse”. Contrary to Gaudillière’s implicit suggestion, it is a fundamental tenet of the latter’s work that there is no pre-established order or logic that links disparate developments at the micro-social level (cf. pp. 315–17). This, however, does not invalidate, but in fact sustains the deeper significance of “discourse” and its “agency”. Not only has Griesemer recently provided a brilliant example of the co-constitution of material practice and the discourse of “information”, my sense also is that what is in fact offered by *Inventer la biomédecine*, and many other “laboratory studies” of biomedical science, is an unreflective privileging of the “laboratory” and its supposed special significance for a “materialist”, as opposed to “idealist”, explanation of scientific and technological change. It undoubtedly offers a different narrative, but as an inversion of an “intellectualist” one, as the circulation of “ideas” is replaced by the circulation of “instruments and practices” (p. 287). Ironically, such inversion was the stuff of Foucault’s trenchant criticism of Gilles Deleuze’s supposed subversion of Platonism.² This said, Deleuze, that other admirer of Anglo-American “empiricism”, strove to articulate the effects of “truth” outside the confines of the world

¹ Bruno Latour, ‘The force and the reason of experiment’, in H E Le Grand (ed.), *Experimental inquiries: historical, philosophical and social studies of experimentation in science*, Dordrecht, Kluwer, 1990, pp. 49–80, on p. 76.

² Michel Foucault, ‘Theatrum philosophicum [1970]’, in J Faubion (ed.), *Essential works of Michel Foucault, 1954–1984*, London, Penguin, 1998–2000, vol. 2, pp. 343–68.

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within which such “truth” was produced and then transformed into “Truth”. In other words, I do not disagree with Gaudillière’s emphasis on materiality and process, but, if we are to understand the distinctive contemporary organization of “bio-politics”, we need to understand how the “laboratory”, undoubtedly the contemporary “obligatory passage point”, reconstituted the entire fabric of contemporary “biopolitics”. In doing so, I suspect that we would discover that the “laboratory” is indeed an “obligatory passage point”, but far from a “necessary” and “sufficient” agent of change. In other words, what we would discover is a mutual dependence of “actor” and “network” that enabled a “demedicalized” “biomedicine” to be simultaneously removed and central to the biopolitical organization of contemporary society. Betraying my own infatuation with France, I cannot but ask for a bit more Foucault, if not Deleuze and Latour, please!

In sum, *Inventer la biomédecine* offers a peculiar duplication of the process of “demedicalization”, insofar as narrating the history of the emergence and consolidation of a “molecular” approach to “medical” problems splits asunder the history of science and the history of medicine, both empirically and methodologically. Consequently, like many other books on the topic, it answers many questions about the making of a “molecular” understanding of “medical” problems, but also begs far more questions about the emergence of “biomedicine” and how to best understand its contemporary impact in places far removed from the laboratory. Finally, if I seem overly critical, I would note that my thinking about how the above challenge should be confronted owes much to Gaudillière and *Inventer la biomédecine*. In this sense, I will close by saying that *Inventer la biomédecine* is a truly provocative book, well worth reading. I look forward to its eventual translation.