

**Vincenzo Pavone and Joanna Goven (eds) (2017) *Bioeconomies: Life, Technology, and Capital in the 21st Century*. Cham : Palgrave Macmillan. 350 pages. ISBN 978-3-319-55650-5**

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Biomedical sciences and biotechnologies are one of the most important areas of contemporary science. Not only are they producing the biggest share of global scientific publications but, since the beginning of this century, they have become the main destination of public funds for R&D in many countries (NSF, 2018). But besides scientific outputs and funding allocation, some authors see them as representing the vanguard of a new historical regime in the social organization of science: the *globalized privatization regime*, born in the 80's and characterized by a new constellation of links between science, the state, and industry (Mirowski, 2011).

Vincenzo Pavone and Joanna Goven's edited volume focuses on present biomedical sciences and biotechnologies through the lens of *bioeconomy*: a notion that has become a large umbrella under which many different phenomena, practices, projects and technologies are usually grouped, often in a rather confusing and heterogeneous way, but which seems to be leading public policies, institutional developments and broad visions of the future across the world with the promise of linking *economic growth*, *global competitiveness* and *health improvement* in new and disruptive ways. In fact, much of the work presented in the book is intended to disentangling the tensions, contradictions and conflicts involved in that very notion - which the editors use in plural (bioeconomies) in order to

stress its diverse coinages and meanings - while confronting promises and policy expectations with actual developments in particular initiatives and projects.

In the best STS tradition, the book is a canonical instance of deep theoretical work based on rich and systematic empirical research. All chapters analyze - using different standard qualitative methods - and discuss in great detail specific case studies, ranging from particular technologies, initiatives and projects, to the specific sites, institutions and contexts where they are developed or put to work. Regenerative medicine, reproductive genetics, surrogacy, genetically-modified soy, red blood cells manufacturing, egg donation, research on the collective microbiome and different forms of biobanking are among the specific techniques and areas explored, always through particular projects and initiatives. Though most case studies concentrate in European and US experiences, there are some chapters presenting empirical analysis in other parts of the globe: from Singapore and India, to Argentine and Australia. The initiatives analysed range from broad and generously funded supranational projects like IMI (the *Innovative Medicines Initiative*, the world's largest public-private partnership in the life sciences, launched by the European Commission in 2008) to very specific R&D projects of a smaller scale and more limited ambitions.

The book is structured in four sections. The first one deals with *institutional* transformations and explores the way bioeconomies are already changing the roles and responsibilities of the state, scientific research and institutions and citizens. The second section addresses the question of *value* - a much discussed issue in previous scholarship on biotechnologies - and includes works investigating how different kinds of value - without restricting to the economic - are generated, appropriated and distributed in bioeconomy projects. The third one focuses on conflicts and resistance, while the fourth analyzes the interplay of structural inequalities and altruistic acts in areas such as assisted reproduction, stem cells, pharmaceutical development and cultured red blood cells.

The book's basic argument, explicitly stated in most chapters, is that the bioeconomy is not simply a neutral, interest-free economic project but the "core axis of a full-fledged *political project*" with a clear neoliberal orientation (p. 94). It is already apparent that biosciences and biotechnologies have been increasingly intertwined with the power of capital and with modes of governance during the last decades. But the new general framework of bioeconomy is fostering policies that encourage the commercialization of science, giving public support for private commercial actors and adapting existing regulations to the needs of innovators and commercializers. While in the liberal frame the state has only got a residual role in compensating for market failures, in the neoliberal landscape the state is granted a key role in reshaping old markets and creating new ones. Neoliberalism is not only about privatizing but mainly about actively extending the market logic to all sorts of new social realms, a task for which governments and policy measures are constantly being mobilized.

Many of the bioeconomy initiatives and projects analysed in the book share a similar pattern of interaction between government, industrial corporations and scientific research. Basically, the state is required to fund the early stages of new therapies and health products - where failure is common and risks and costs are high - and, eventually, must purchase them - if they prove to be successful - through their public health systems (p.

30). Under this supply-side neoliberal approach, bioeconomy projects end up socializing risk and privatizing benefits. For that purpose, a double identification is previously performed: public interest is equated to innovation and innovation itself is interpreted as entailing the commercialization of products. In this active role as innovation facilitator, the state must remove regulatory barriers - in many instances limiting governance to preserving the safety of new therapies or medicines - and promote public acceptance of biotechnology. Interestingly, and autonomously, science is often instrumentalized in order to turn social contestation as irrelevant. The political authority of scientific expertise is used to overcome social dissent in the name of government responsibilities (p. 62).

Most of the chapters in this volume provide specific examples of this general strategy behind bioeconomies, while analyzing the different ways in which it is enacted and identifying intended and unintended implications for particular collectives and social groups: from migration policies to new forms of gendered and racial discrimination in assisted reproduction. If bioeconomy is supposed to improve both "wealth and health" the authors of this volume ask themselves whose wealth and health is really involved, and who is left out.

The different pieces of work rely, sometimes simultaneously, on standard middle-range STS analytical approaches - from co-production and sociotechnical imaginaries, to social contract theory and feminist approaches - and on a more political economy framework. Though this pluralistic - almost binary - theoretical stance is not necessarily a drawback, some readers might expect a more explicit discussion of the possible tensions between these two areas of scholarship. In that line chapter 12 provided an interesting confrontation between the two different ways in which patients' participation is conceptualized in both paradigms. Fortunately, the final concluding chapter does a very useful wrap-up task for the reader, synthesising the most important arguments deployed along the volume, linking the different topics that have shown up and suggesting lines and questions for future research.

The volume is indeed an excellent piece of solid academic work. It is certainly of much interest for STS scholars in general, but more specifically for those working on present biomedical sciences and biotechnologies. It could also be very useful and inspiring for scholars from related fields like political science, public administration, manage-

ment and economics, interested in health policies and current changes in the health system. Finally, practitioners - from biomedical researchers to health professionals - and patients and people involved as subjects or objects of biotechnological developments, could also benefit a lot from its reading.

## **References**

Mirowski P (2011) *Science-mart. Privatizing American Science*. Cambridge, Mass.: Harvard University Press.

National Science Foundation (2018) *Science and Engineering Indicators 2018*. Alexandria, VA. Available at: <https://www.nsf.gov/statistics/2018/nsb20181/report> (accessed 9.8.2019).