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Book Reviews

Innovation and its enemies: Why people resist new technologies

By Calestous Juma. New York, NY: University of Oxford Press, 2016, 432 pages, $29.95 (Hardback). ISBN 9780190467036

Our understanding of the role of innovation in economic growth has been deepening since the pioneering work of Schumpeter. In Schumpeter's view, innovative entry by entrepreneurs is the disruptive force that sustains economic growth. Particularly, innovation drives economic growth in a process of creative destruction, with the growth of emerging firms often challenging the dominance of established companies. Given the significance of the tensions between innovation and incumbency, it is surprising that little literature has explored the topic. This gap in the literature has clearly been noted by the author, stating that 'Much of the subject matter in this book is not the focus of academic research. Science and technology studies only make passing references to the topic. Similarly, social studies of technology pay occasional attention to resistance to innovation. Most marketing studies view the topic as adoption failures.' In this sense, *Innovation and Its Enemies* has contributed to the literature by developing this field as a distinctive area of scholarly endeavour.

I agree with the author that understanding resistance to innovation is an important but underexplored topic. On the one hand, much of the innovation literature tends to take the adoption of new technologies as given and focus consequently on the potential benefits brought by those technologies. While the book does not deny, in any way, the benefits of innovation, it seeks to provide a more balanced narrative on both the risks and benefits of new technologies. On the other hand, the case studies presented in the book go well beyond a simple rivalry between entrepreneurs (who commercialize new technologies and challenge existing technologies) and incumbents (who profit from existing technologies and suppress new technologies) and take into account also the role of other influential parties such as the governments, industry associations, as well as the general public. As a result, tensions arise not only between entrepreneurs and incumbents but also among different groups that perceive risks and benefits rather differently, making the understanding of the topic both more complex.

The book consists of three parts. Part I—Introduction and Chapter 1—outlines the rationale for the research and explains the structure of the book. It should be noted that although innovation could be identified in various forms, the author has specifically focused on technological innovation. From his own experience, the author has observed great divergence among countries in the way they perceive the risks and benefits of a new technology, suggesting that there are dynamics of social opposition to innovation. To explore these dynamics, the book draws from 600 years of technology history and 'identifies the tension between the need for innovation and the pressure to maintain continuity, social order, and stability'. In its attempt to explain the multilayered dimensions of socio-political resistance faced by new technologies, which are often intertwined, the book understandably adopts case study as the primary research method. Indeed, the main strength of the book lies in both its breadth (technologies that represent different centuries) and depth (case studies on specific technologies).

Part II, which includes Chapters 2–10, presents in detail the stories of nine specific new technologies, namely the coffee brewing, printing press, margarine, farm mechanization, electricity, mechanical refrigeration, recorded sound, transgenic crops, and genetically-engineered salmon. The specific contexts surrounding these technologies are rather different, e.g. culture, religion, and industrial setting, but some common themes emerge. First, the loss of employment as a result of technological advances is frequently used against new technologies. Often, economic concerns are hidden behind safety and ethical arguments, e.g. in the opposition to transgenic crops and fish. Secondly, it occurs that we have 'a general tendency to maintain the status

quo in the face of uncertainty'. This tendency results in an unbalanced assessment of risks and benefits of new technologies, of which incumbents often take advantage. Thirdly, regulations can serve as a stimulus for innovation, especially when new technologies have large room for improvement in terms of efficiency and effectiveness.

In Part III—Chapter 11—the book synthesizes the findings from the previous chapters and discusses their implications for current debates. According to the author, technological innovation will play 'an even greater role in the search for solutions to the global grand challenges' that dominate our world. Given the pivotal role of technological innovation in the face of grand challenges, we have to build deeper understanding of the tensions between innovation and incumbency and strive towards an inclusion economy. In essence, an inclusion economy should include both mature technologies that create jobs and profits at the moment and new technologies that provide opportunities for future jobs and profits. To take a long-term view of technological innovation and societal development is recommended for all the groups, but in reality, this remains a challenging task. Finally, the author has suggested that new technologies themselves also have to be inclusive to succeed; in particular, the product, its retailing and support, the micro-enterprises that provide these demand-side services, and the wider context must be effective.

On the critical side, I would argue that although the book presents detailed and useful case studies throughout the past few centuries, it falls short at outlining a comprehensive theoretical framework, which could be built upon by future studies. In my point of view, the author's idea for developing this field as a distinctive area of scholarly endeavour would have been more hopeful if the book provides a more thorough analysis of the similarities and differences between the cases examined. As it stands, we seem to learn more about the adoption of technologies in the history than about what to do in the future. Of course, more case studies on specific technologies in specific contexts are of importance, but without an analytical framework the collective strength of the work might be weakened. Overall, the book focuses on an important but underexplored topic, provides detailed and interesting historical case studies, and offers insightful lessons for many academic subjects. More studies will surely follow its suggestions to further broaden the field, namely the adoption of new technologies.

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Models of innovation: The history of an idea

By Benoît Godin, The MIT Press, Cambridge, MA and London, 2017, 344 pages, $37.00 (hard cover)
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The book under review investigates the history of thinking about innovation throughout the 20th century. Innovation has been a long research interest of the author of the book under scrutiny, Benoît Godin, professor at the *Institut national de la recherche scientifique* in Montreal, Canada. Thus, it comes as no surprise that Godin masters the bumpy territories of thought with ease and guides the reader to those places that offer a clear view on the core features of each approach he discusses. Most thinking about innovation, Godin argues, has taken the form of constructing models–indeed, models of innovation gave 'social existence to a theoretical construct' (p. 2) and contributed to making this construct visible within a field.

The book sets out to achieve two objectives. The first objective was to write a history that helps to understand why specific models of innovation came into existence and, after some time, occasionally disappeared. The second objective was to challenge some of the standard genealogical narratives put forth by proponents of specific models. Some pioneers were neglected or ignored, some 'mythic fathers' invented, Godin claims (p. 3). While the second objective is certainly of concern for scholars working in science, technology, and innovation studies, the first objective appears to be of more general interest—even more so since Godin interweaves the history of models of innovation with a reflection on the nature and capacities of models.

The narrative structure that Godin uses consists of a succession of three types of models—although, as Godin repeatedly stresses (p. 51), it was not until the 1960s that these schematic forms were called models. The earliest