# Futures in the "Making": Multiple Ways of Engaging the Future

**Kléber Ghimire (ed) (2018) Future Courses of Human Societies: Critical Reflections from the Natural and Social Sciences. Abingdon: Routledge. 274 pages. ISBN: 9781138488915**

**Robert Gianni, John Pearson and Bernard Reber (eds) (2018) Responsible Research and Innovation: From Concepts to Practices. Abingdon: Routledge. 314 pages. ISBN: 9781315457291**

**Gert Verschraegen, Frédéric Vandermoere, Luc Braeckmans and Barbara Segaert (eds) (2017) Imagined Futures in Science, Technology and Society. Routledge: Abingdon. 224 pages. ISBN:9780367890247**

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The 2001 annual meeting theme for Society for Social Studies of Science, "Fashioning the Future: Science, Technology and Visions of Progress," characterized increasing scholarly interest in the concept of 'future' in the STS field. Since then, we have witnessed a flourishing of theoretical concepts and empirical analyses concerning the role of 'future' in the process of knowledge production and innovation (Brown and Michael, 2003; Jasanoff and Kim, 2009; Stilgoe et al., 2013). These three edited volumes published in 2017 or 2018 thus may mark a milestone for these scholarly efforts.

As shown in their titles, 'future' is the central theme of *Future Courses in Human Societies: Critical Reflections from the Natural and Social Sciences* (*Future Courses*) and *Imagined Futures of Science, Technology and Society* (*Imagined Futures*), albeit addressing the relationship between technoscience and 'future' in rather different ways. While *Future Courses* focuses on the assessment of long-term future of technologies and other social arenas, *Imagined Futures* pays more attention to how the imaginaries associated with the future impact and interact with the current development of technoscience. Meanwhile, 'future' also serves as the foundation of *Responsible Research and Innovation: From Concepts to Practices* (*Responsible Research*), a volume specifically about the implementation of the Responsible Research and Innovation (RRI) framework in the European Union policy context. As Robert Gianni and his colleagues point out in the introductory chapter, the emergence of the RRI framework came from the recognition that "it is now time to turn towards more positive processes in order to make

a co-construction of the future that we want and therefore decide what the right impacts are" (*Responsible Research,* p. 2). Juxtaposing these three edited volumes, this review aims to compare how three groups of scholars, with different theoretical groundings, engage with the idea of 'future' and its relationship with science and innovation. I differentiate the perspective of these three books as 'innovation in the future,' 'innovation with the future,' and 'innovation for the future.'

'Innovation in the future' refers to *Future Courses*, which aims to take a realist perspective to study how human future may look like in the long term. The book is written by scholars across natural and social sciences and has only limited connections with mainstream STS theories, judging by references cited. As the editor Kléber Ghimire articulates in the first chapter, the overall goal of this volume is "to comprehend the long-term evolution in human societies in their complexity and multi-dimensionality" (*Future Courses,* p. 5). While setting their primary focus as "the long-term future stretching towards coming centuries and even millennia" (*Future Courses,* p. 5), they also intentionally move away from the quantitative-based tools that, as Ghimire argues, are only suitable for predicting the coming future. Rather, they claim that a qualitative and exploratory methodology is better for the analysis of the distant future. Although these scholars stress that technology alone does not represent the human future, technology remains the primary focus of their inquiry. They analyze the potential development of different kinds of science and technology (physics, energy, nanotechnology, 3D Printing) as well as how technology may influence and interact with the future of other social arenas (such as human labor, economic modernization, democracy, and ethics). They make efforts to demystify overarching promises associated with innovations and counter popular skepticisms of emerging technologies. Overall, with a thoughtful methodological exploration, *Future Courses* nicely untangles the common belief that equates technological advances with the human future.

'Innovation with the future' refers to *Imagined Futures*, which explores a performative perspective of technological development. The book came out of a workshop held at the University of Antwerp and focused on the interaction between scientific imagination and the development of society. These researchers draw on the framework of 'sociotechnical imaginaries' (Jasanoff and Kim, 2009) and explore "how scientific and technological imaginations matter in the formation of human, ecological and societal futures" (*Imagined Futures,* p. 2) and "what various actors such as scientists, companies or states imagine the future to be like and how they act upon that imagination" (*Imagined Futures*, p. 2). Cases analyzed in this book are then organized into three main themes, including human (bioethics, epigenetics, functional food), technology (genetic engineering, sustainability science, electric car), and society (population census, science fiction, proactionary principle). These researchers approach various types of scientific knowledge or innovations with historical or comparative analysis and unveil the kinds of future imagined along with technoscientific development. In this sense, instead of treating 'future' as a potential reality, these researchers recognize 'future' as a discursive tool that possesses the power to impact advances of science and innovation in the present. Overall, *Imagined Futures* portrays how the current technoscientific development may be co-produced with various visions and projections of the future.

'Innovation for the future' refers to *Responsible Research*, which holds a prescriptive perspective of technological development. Written by European scholars, this book treats the European Commission's (EC) adoption of RRI in 2010 as the case for study and serves as a review and evaluation of the implementation of the RRI framework in the EU policy context. Since the EC is the most prominent promoter of the RRI framework in the international policy arena, this volume provides invaluable insights on how such a framework may work out in practice. While some researchers critically assess and clarity what the RRI framework entails and re-theorize its ethical implications, others consider how the framework may be modified or expanded and illustrate ways to avoid proceduralism and instrumentation when adopting the framework. Their analysis suggests that in contrast to traditional technological management and assessment in the EU policy context, the RRI framework foregrounds the issue of technolog-

ical uncertainty, promotes a proactive agenda to conquering "grand societal challenges" identified by the EC, and highlights the importance of responsibility. The critical issue then becomes how to define and create the kind of desirable future assumed underlying the RRI framework and how to take and distribute the responsibility amid the indeterminacy of innovations' future consequences. Overall, this volume unveils how the RRI framework favors and promotes innovations for achieving a particular version of the future.

These three collections speak to each other in multiple ways and shed light on each other's analysis. For example, while it is possible to see the RRI framework as a specific type of sociotechnical imaginary, the study of the European Commission's adoption of the RRI framework also demonstrates how particular versions of future may be realized and how relevant the imaginary of future may be. Additionally, the realist perspective and analysis provided by scholars in *Future Courses* not only help reveal the status quo of technological development without considering alternative or specific visions, but their methodological concern that projections of the future may be limited to the perspective of the present also serves as a reminder for any attempts to proactively anticipate the future. *Imagined Futures* and *Responsible Research* both point to one question that *Future Courses* ignores — What is the significance of comprehending the future and what implications follow? Eventually, the different focuses among these three volumes point to the thin line between anticipating and predicting or fore-telling and forecasting the future, especially in the policy planning context.

The other outstanding issue concerns the idea of technological 'uncertainty' toward the future. While these three collections all highlight 'uncertainty' as one key issue, they perceive uncertainty in different ways, which reflects their different engagement with the future. In *Future Courses*, 'uncertainty' is one of their discoveries after the analysis. As Ghimire mentions, "this uncertainty is all the more palpable when it comes to the consideration of distant and far-off periods (*Future Courses,* p.7); thus, "it is clearly impossible to affirm any specific future technological trajectory or outcome" (*Future Courses,* p. 8). In contrast, Gert Verschraegen and Frédéric Vandermoere argue in *Imagined Futures* that imaginaries of the future are "crucial in overcoming the uncertainty stemming from the inherent openness of the future" (*Imagined futures,* p. 6) and provide directions for collective actions. Similarly, some researchers in *Responsible Research* highlight the relation between the uncertainty of the future and responsibility at present as one of the significant challenges that the RRI framework needs to address.

Despite the theoretical and empirical richness of these three volumes, readers may find a gap remains in the literature — there are very few clues concerning the future-making of countries in the Global South. While RRI is mainly focused on the European policy context, most of the cases discussed in *Future Courses* and *Imagined Futures* are also advanced technologies or related policies in the Global North. More research may be required to explore how countries in different parts of the world engage with the 'future' and how innovations developed in the Global South interact with 'future-making' (Poonam et al., 2020).

The fact that these three volumes come from different academic communities not only indicates the popularity of the concept of 'future' but also entails that this concept — as a potential reality that society longs for — becomes a question that opens for debate and begs for answers. More importantly, these three volumes all suggest the responsibility and ability of the current generation to make the future a better reality than the present, while demonstrating multiple ways of engaging the future, particularly regarding the development of technoscience.

## References

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