

Sociotechnical Imaginaries as a Lens to Analyze Advances in Biomedicine

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Reorganizing Biomedical Research: Biobanks as Conditions of Possibility for Personalized Medicine.

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Biomedicine has been the focus of numerous studies in the social sciences in the past decades. Scholars from varied fields of research – such as management, organization studies, public policy, and sociology – have investigated the phenomenon from different theoretical and empirical viewpoints. Given the promissory discourses concerning health and wealth around biomedicine, sociologists of science have seen value in analyzing the promotion of biomedical research from the perspective of sociotechnical imaginaries.

Sociotechnical imaginaries, a concept developed by Sheila Jasanoff and Sang-Hyun Kim,

signifies the ways in which visions of scientific and technological progress appear alongside ideas about public purposes, collective futures, and the overall betterment of society and the economy. In their 2009 article published in *Minerva: A Review of Science, Learning and Policy*, Jasanoff and Kim defined sociotechnical imaginaries as “collectively imagined forms of social life and social order reflected in the design and fulfillment of nation-specific scientific and/or technological projects.”

In Dr. Tarkkala’s monograph dissertation titled *Reorganizing Biomedical Research: Biobanks as Conditions of Possibility for Personalized Medicine*, she develops a comprehensive account of biobanking in Finland and the processes involved in designating biobanks as tools for the advancement of personalized medicine. Dr. Tarkkala analyzes personalized medicine as a sociotechnical imaginary and biobanks as a prerequisite for this identified sociotechnical imaginary. The main research question is “what do the expectations related to biobanks as conditions of possibility for personalized medicine tell us about the knowledge production in which biobanks are supposed to participate, and the role biobanks play in it?”

The idea that scientific and tech-

nological projects relate to society more broadly is nothing new in the field of science, technology, and society, or science and technology studies (both abbreviated STS). Since the field’s early days, scholars such as Bruno Latour and Steve Woolgar have argued that the making of scientific knowledge is always social, political, and cultural. Yet, the challenge is *how* to demonstrate these interconnections by analyzing the varied activities, policies, regulations, and stakeholder perspectives that relate to any given case. To get at the complexities associated with scientific and technological projects, then, requires a wide empirical scope that has a clear direction and ability to adjust when necessary. Dr. Tarkkala’s work lives up to the challenge. Describing how the data collection began, she writes, “Whenever biobanks were mentioned, I wanted to be there too.” The dissertation draws on different types of data including observations, interviews, and documents collected over the course of several years. More importantly, Dr. Tarkkala shows how she tracked a research problem across contexts and over time, while also justifying the shifts and turns in the research process and fine-tuning the research question itself.

The analytical process leads to convincing and eloquently expressed research findings on

the emergence of biobanks as a condition for the possibility of personalized medicine in Finland. The expectations associated with sociotechnical imaginaries were particularly visible in three areas: (1) claims made regarding high quality samples in biobanks, (2) ideas associated with the Finnish population as a valuable resource for biomedical research, and (3) the role of biobanking in the making of translational discoveries. The study's main conclusion is that the idea of biobanks is continuously reshaped as new operations, regulations, expectations, and stakeholders are connected to the sociotechnical imaginary of personalized medicine. This in turn influences what kind of knowledge production biobanks can actually foster.

The notion of sociotechnical imaginaries suggests that in order for an emerging scientific and technological project to become a reality, society as a whole needs to be mobilized to foster it. As such, sociotechnical imaginaries can potentially reveal the tensions between what we want to happen and what broader changes are needed for that something to materialize. Dr. Tarkkala demonstrates these tensions around biobanks and personalized medicine well. Throughout the analytical chapters, the

promissory environment and societal visions about a better future are juxtaposed with what personalized medicine looks like from the perspective of biomedical knowledge production.

More broadly speaking, studies that rely on the notion of sociotechnical imaginaries when analyzing emerging scientific and technological projects often times bring to mind failed expectations and wasted resources. Dr. Tarkkala notes in the introduction that, "the researcher herself is not necessarily committed to these visions nor always convinced about their realization in the near future." This raises the question of whether sociotechnical imaginaries are always, by definition, destined to fail. Moreover, what are the roles and responsibilities of STS scholars in the study of such imaginaries? In order to avoid wasting resources on futures we perceive as potentially valuable but that have a hard time emerging, pinpointing the critical moments in their emergence is crucial. For instance, identifying when actors engage in practices that work directly against goals that they have just agreed on would seem valuable. Dr. Tarkkala would have a lot to contribute to such practical implications in the context of biobanking and personalized medicine.

In the very last page, Dr. Tarkkala quotes Barbara Prainsack's article "Research Populations: Biobanks in Israel" published in *New Genetics and Society* in 2007, where the author noted that the "failure or success of biobanks are often located in the social and political field more than in the field of science." While Dr. Tarkkala seems to agree with this – and it aligns with the idea of sociotechnical imaginaries – the analysis shows instances that suggest that the failure, at least partly, relates to the differences in the ways in which different communities of practice gather and use data. The analysis chapter on biobanks and their claimed high-quality samples nicely demonstrates the shift from discipline or field specific ways of collecting, analyzing, and storing data to the current standardized and collective data collection procedures. Such a transition has to deal with differences in knowledge making practices in different fields of research and care. Understanding in what instances and for what reasons biomedical data divide and connect different communities of practice would be an interesting follow-up project.

Finally, I want to advocate the monograph dissertation as an important format and style of writing in the social sciences.

When many departments promote article dissertations, it is important to recognize the qualities of a monograph dissertation that allow for thoroughness and depth in scholarly thinking and writing. Carefully collected and analyzed observations combined with the monograph format allowed Dr. Tarkkala to demonstrate herself as an expert on the role of biobanks in the making of biomedical futures.

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