

## Editorial

Our double issue of *BioSocieties* examines some of the central terms and concepts that have been the focus of analyses of ‘cultures’ in social studies of the life sciences. These include some that are conventionally ‘social’—nation, society, network, community, group, laboratory, hospital—and some that think of culture in a different register, such as the Petri-dish. In these articles, many of these concepts are elaborated, differentiated and queried for their analytical utility and their stability. We begin with the most familiar use of the term ‘culture’—as a reference to a specific national context. Kato and Sleeboom-Faulkner’s article on genetic testing in Japan reminds us that although we may debate definitions of culture at the most general level—for example, whether Japan is a ‘traditional’ culture, or whether it is a ‘collectivist’ culture—the fact remains that matters of shared communal practices within a given national context are inevitable and integral dimensions in the take-up, integration and interpretation of biomedical innovations. Through an empirically rich and substantive analysis of marriage and reproduction in Japan, the authors show the extent to which embedded cultural expectations about genetic fitness come to be articulated in the presence of disorder and the possibility of genetic testing for future generations.

This article contributes to a growing body of sociological and anthropological work that analyses the intersection of biomedical innovations and culture through detailed investigations of individual, clinical and political practices in different national contexts. When transported into the laboratory, however, ‘culture’ and ‘context’ take on different forms and meanings. The culture of the Petri-dish is central to the life and world-making activities of many research scientists. Scientific discussions of these Petri-dish worlds usually describe events that are created and cultured and confined and refined through processes that have little reference to human actors and events within or beyond the laboratory. As Evelyn Fox Keller reminds us, while asking “what does synthetic biology have to do with biology”, the ‘technoscience’ movement was a response to this appearance of a pure, objective science untouched by human culture and society—it seeks to show that these apparently technical procedures are rich with these other forms of culture—a fact which does not undermine the findings derived from them, but on the contrary, shows how human cultures provide the conditions, the means, the models and the metaphors that make these ‘natural’ technical cultures possible and meaningful.

Synthetic biology is one of several areas in contemporary biomedicine where the work of basic science, and the activities of basic biological research, has become linked up with the activities of social scientists and ethicists. For many reasons, funding for many such endeavours is now awarded on the condition that it is subject to the gaze of interdisciplinary observers—a gaze that not only penetrates laboratory cultures, but increasingly interacts with the formation of scientific questions, research priorities and knowledge in the life sciences. Many hope that this interaction, often termed ‘upstream engagement’ will help shape scientific progress, innovation and translation for human benefit. In this issue of *BioSocieties*, we examine these issues in synthetic biology in a number of ways. In their paper, Molyneux-Hodgson and Meyer explore the mechanisms of interdisciplinary ‘community-making’ within synthetic biology networks: will such networks be durable, will they have the capacity to become a true communities of practice, what is at stake in this explicit ‘performance’ of community in the emerging field of synthetic biology?

Writing as part of the forum on synthetic biology, Filippa Lentzos similarly describes the community building activities in the UK synthetic biology scene, and examines the ways in which public engagement seems to be regarded, in Europe and in the United States, as critical to the success of synthetic biology. Indeed, the choice of the term “synthetic biology” to describe this field of activities may be important to its public reception and hence to its success or failure. But there are many different pathways within synthetic biology. In our forum, Pamela Silver and Jay Kiesling, two of the world’s leading scientists, working at the frontier of systems biology and metabolic engineering, illuminate the different approaches that make up the field of synthetic biology, and illustrate the potential applications of emerging technologies, including bioenergy and anti-malarial drugs. We have already referred to the work of Evelyn Fox Keller, a distinguished scientist, and an historian and philosopher of the life sciences: in this article on synthetic biology, based on a provocative public lecture, she asks whether this work on the potential practical applications of synthetic biology—which are astonishing and wide ranging—will contribute to our understanding of life itself: what does the ability to engineer forms of life contribute to our understanding of the biology of vital organisms?

Engineering life is a feature of another area of interdisciplinary network-building—that which concerns trans-species and transgenic animals. Much of the focus of social concern here has been on the limits of the permissible, on the legal and ethical regulation of what can be done in laboratories, work which has inescapably required those involved to try to classify the new forms of life that laboratory cultures create. Two articles, one by Nik Brown, the other by Tora Holmberg and Malin Ideland, describe the complex interactions between and among human and biological actors and substances that occur among those engaged in regulation in this area. Brown describes the debate within the UK parliament over legislation on human tissues and embryos, pointing to contradictory moral definitions and tensions that underlie the debate over trans-species human-animal embryos. Holmberg and Ideland, writing about how lab workers and animal ethics committee members handle dilemmas and research related to transgenic animals, also point to a fundamental contradiction in classificatory discourse, that of transgenic mice as ‘ordinary treasures’. Perhaps such contradictions and tensions are inevitable when interdisciplinary groups come together to try to regulate scientific and biomedical innovations. However, as Marli Huijer shows in her analysis of the Dutch discussion on embryo selection for hereditary breast cancer, sometimes a simple, even old fashioned intervention—stories told by those suffering from illness, whose lives are fundamentally dependent upon the medical innovations resulting from scientific research—can inject a much needed dose of reality into debates, and overcome political and regulatory stalemates.

This issue of *BioSocieties* also presents a group of articles that articulate a different ground for study in social studies of life sciences—risk and bio-waste. Two articles query the relationships between risk and disposability. Katherine Angel’s analysis of disposable medical sharps in the UK context convincingly argues that sharps are not defined as clinical waste because of their sharpness, or their infectious risk, but because they are disposable; as Angel writes, there is a ‘moral imperative’ to waste what can be wasted. Angel’s concern is with the ethical tension between this moral imperative to waste, and the environmental burden to which this waste contributes. Klaus Hoeyer’s article on tradable body parts similarly turns on an analysis of ‘waste’ and ‘risk’, in this case, the ‘waste’ involved is the

post-incineration remnants of bone and metal prosthetic devices that retain commercial value; and the 'risk' is the moral risk of exchanging human body parts and materials that originate in human bodies for money. A third article by Erika Mansnerus, covers a more familiar ground of bio-risk—that of infectious diseases, specifically *Haemophilus influenzae* type b bacteria (Hib). Mansnerus demonstrates the power of applying a 'life history' approach to the analysis of facts about population disease transmission. Facts do not take a linear course once they leave the lab or the research paper: Mansnerus describes a developmental process in which facts are mobilized, evolve and change over time, thereby continually re-shaping what is publicly known about the risks of infectious disease transmission.

The final article in this issue reminds us that we may be on the brink of creating artificial life, but we are still humbled by some fundamental human limitations, such as the need for sleep. As Matthew Wolf-Meyer illustrates in a fascinating analysis that moves between military experiments, sports and science fiction, the 'race' to alter biologies, including human biologies, will force us to confront our limits and contemplate the extremes to which we will go in order to overcome them.

Finally, this issue of *BioSocieties* contains a wide-ranging Books Forum, which offers reviews of Hannah Landecker's *Culturing Life*, Melinda Cooper's *Life as Surplus*, Priscila Wald's *Contagious*, and Beatriz da Costa and Kavita Philip's edited collection of articles on *Tactical Biopolitics*. Javier Lezaun describes this collection of books as confirmation of the 'bewildering potentialities of life in its multiple biological forms.' We can think of no more fitting conclusion to a remarkable double issue of *BioSocieties*.