Journal of Law and the Biosciences, 1–6
doi:10.1093/jlb/lsaa088
Introduction

Law, biomedical technoscience, and imaginaries

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This special issue advances understanding of the way in which imaginaries underpin law's engagement with biomedical technologies and science. It is the first collection of law-led interdisciplinary accounts of imaginaries. The articles draw upon examples from biomedical technoscience to illuminate the hitherto unseen or underappreciated roles of imaginaries in the relationships between law and biomedical technoscience. We have conceptualized 'law', 'biomedical technoscience', and 'imaginaries' in broad, inclusive, and dynamic ways. 'Law' and 'biomedical technoscience' (biomedical technology and science) require no further clarification. 'Imaginaries', though, is a relatively novel concept within legal, socio-legal, and regulatory studies scholarship,[1] and as such it requires an introduction. In the following, we introduce imaginaries before explaining how this special issue aims to address the dearth of legal scholarship on them. Subsequently, we note the conceptualizations of imaginaries in the articles, where imaginaries can be found in law and legal discourse, and finally what it is that imaginaries do and why they matter for law.

Conceptualizations of imaginaries are found in several disciplines. Beckert, working within economics, formulates imaginaries as 'imagined futures'.[2] Jasanoff and Kim, from science and technology studies (STS), conceive sociotechnical imaginaries as 'collectively imagined forms of social life and social order reflected in the design and

1 For a broader discussion of 'imaginaries' within wider social science literature, see the respective articles by Flear and Møllebæk, this special issue.

2 Jens Beckert, Imagined Futures: Fictional Expectations and Capitalist Dynamics (2016).

fulfilment of nation-specific scientific and/or technological projects'.[3] In bringing this special issue together, we found it useful to draw upon these conceptions, to shed light on the connection between imaginaries and the co-production of scientific knowledge and society, including law. We agree that the concept of imaginaries, as McNeil and colleagues argue, 'seems to offer new ways to investigate the relationships among science, technology, and society'.[4]

Scholars in these disciplines, and others, also discuss expectations, regimes of hope, promises, visions, narratives, and more.[5] What connects these terms and imaginaries is how, each in their own way, they express the basic idea that technoscientific innovations preexist in both individual and collective imaginations, are future oriented, and that it is necessary to perform them into being. The terms amount to 'temporal trajectories'[6] that provide the rhetorical resources to make this happen. Within socio-legal studies, Riles' work resonates with the latter by exploring how legal technicality includes the 'hopes, ambitions, fantasies and day-dreams of armies of legal engineers'.[7] Emerging work centering law, including from Flear and Pfister, and Pickersgill, and that noted in several of the contributions in this special issue, has begun to draw upon developments in STS and deploy imaginaries through their analyses.[8] Aside from these interventions, there has not yet been a distinct set of law-led accounts on imaginaries and their relevance to law.

This special issue aims to provide several such accounts, progress discussion of imaginaries within the mainstream of legal and socio-legal scholarship, and in doing so catalyze the exchange between them and cognate disciplines. The articles in this special issue come from legal scholars or those working in cognate fields closely related to law. Most analyses of imaginaries within STS in particular have focused on particular nations. The articles in this special issue examine the roles of imaginaries in mediating relations between law and biomedical technoscience. Each article looks at particular sites at the national, supranational, or global level.

In this special issue, we provide space for the application and development of diverse understandings of imaginaries and their roles in law and regulation in the area of

3 Sheila Jasanoff and Sang-Hyun Kim, *Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and South Korea*, 47 Minerva 119 (2009), at 120. Developed in: Sheila Jasanoff, *Future Imperfect: Science, Technology, and the Imaginations of Modernity*, in Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power (Sheila Jasanoff and Sang-Hyun Kim eds., 2015).

4 Maureen C. McNeil et al., *Conceptualising Imaginaries of Science, Technology, and Society*, in The Handbook of Science and Technology Studies (Ulrika Felt et al. eds., 4th ed., 2017).

5 Kornelia Konrad et al., *Performing and Governing the Future in Science and Technology*, in The Handbook of Science and Technology Studies 467 (Ulrika Felt et al. eds., 4th ed., 2017).

6 Rebecca Bryant and Daniel M. Knight, The Anthropology of the Future (2019), at 2. The specific focus in this work is on distinguishing expectations and related concepts including anticipation and hope.

7 Annalise Riles, *A New Agenda for the Cultural Study of Law: Taking on the Technicalities*, 53 Buff. L. R. 973, 975 (2005).

8 Mark L. Flear and Thomas Pfister, *Contingent Participation: Imaginaries of Sustainable Technoscientific Innovation in the European Union*, in Knowledge, Technology and Law (Emilie Cloatre and Martyn Pickersgill eds., 2014); Martyn Pickersgill, *Connecting Neuroscience and Law: Anticipatory Discourse and the Role of Sociotechnical Imaginaries*, 30 New Genet. Soc. 27 (2011). In a connected vein, see Carla Rice et al., *Imagining Disability Futurities*, 32(2) Hypatia 213 (2017). The work of Jasanoff and Kim, *supra* note 3, has proven particularly influential in law-led analyses.

biomedical technoscience. As such, the contributors to this special issue have been free to utilize various conceptualizations of imaginaries. Beckert's understanding of imaginaries as 'imagined futures' is central to two contributions. Flear examines the imagined future underpinning the governance and global bioethics standards of the International Council on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH). Mahalatchimy, Lau, Li and Flear look at the imagined future built through legal regulation of gene-editing technologies at the European Union (EU) level of governance.

Most of the contributions draw to varying extents—usually implicitly or more loosely—on Jasanoff and Kim's concept of sociotechnical imaginaries. Two articles center this iteration of imaginaries within their analyses. Pickersgill examines the ways in which representations of particular sociotechnical imaginaries, regulatory, and biomedical regimes in Japan, within United Kingdom (UK) legal and policy discourses, are constructed as at once familiar and other. The imaginaries in these representations function to enroll readers in transnational therapeutic development. Karpin and Mykitiuk draw upon sociotechnical imaginaries to reflect on the role that regulation should play, if any, in donor selection for assisted reproductive technologies (ARTs), and the broader role of law and medicine in imposing their own imaginaries of disability in this field.

The special issue as a whole shows imaginaries may be found in the framing and detailed texts of legal and policy documents. Several contributions in particular also point to imaginaries within the wider social context and explain their relevance to law. Karpin and Mykitiuk use interview data to uncover some of the ways in which disability is understood, imagined, and even embraced in the context of the formation of families, both within and beyond the framework provided by law and the broader social imaginary underpinning it. In this way, the users of ARTs are seen to resist the broader social imaginary. These users deploy their own counter-imaginary to navigate the legal framework and craft an alternative future.

Sorbie, Gueddana, Laurie and Townend look at the role of the social imaginary of data ownership, and specifically not taking it into account, as a factor that may explain the limited success in promoting data sharing in biomedicine and all that is promised to come about through it. Through doctrinal and empirical research methods, the article offers an account of the social imaginary of ownership in explaining the uptake and relative failure of health data sharing thus far. Mahalatchimy, Lau, Li and Flear note how the imaginary built into the framing and legitimating EU-level legal regulation of gene-editing technologies emerges from a shared strong desire among EU Member States to avoid a repeat of the horrors of eugenics and human experimentation. Møllebæk examines the possible rearticulation of the imaginary of universal access to healthcare found across Scandinavian societies. He does so using the example of a specific decision of the Danish Medicines Council to deny access to a medicine for the treatment of a rare neuromuscular disorder primarily in children.

Each of the detailed discussions in the special issue underscores how states and organizations establish and shape imaginaries. Two of these articles, Karpin and Mykitiuk's, and Sorbie, Gueddana, Laurie and Townend's, also show how imaginaries are not only or solely the constructions of states or organizations. These chime with Jasanoff's observation that imaginaries 'can originate in the visions of

single individuals or small collectives, gaining traction through blatant exercises of power or sustained acts of coalition building'.[9] All of the contributions make clear, as Kim points out, 'institutions of governance' are particularly adept at selecting and propelling imaginaries,[10] whatever their source (the state, organizations, or society).

More important, perhaps, is what imaginaries actually do and why they matter to law. In this regard, we draw three key insights from the special issue as a whole. First, imaginaries are a key resource and tool for ensuring law continues to connect with and shape novel and innovative technoscience. The importance of imaginaries in this regard has, until now, been largely overlooked in legal, socio-legal, and regulatory studies scholarship, including that on law and technology.[11] Each of the contributions attests to the importance of imaginaries to maintaining law's effectiveness as a regulatory tool—and not just by reacting when things go wrong. Imaginaries govern, in part, by enabling and shaping certain political and policy conversations, while disabling others, which in turn helps to determine the selection and effectiveness of legal and regulatory tools, processes, and discourses.

Two articles stand out in this regard. Sorbie, Gueddana, Laurie and Townend illuminate the implications for funders and data custodians of not taking imaginaries into account: the long-term effectiveness of an open access ideology that fails to take account of these subtleties is in jeopardy. The emergent regulatory framework offers a model for understanding the manifold subtleties of how appeals to ownership (in a broad sense) are deployed by a range of stakeholders in the data sharing endeavor, and also how data sharing practices and policies might better accommodate diverse data sharing behaviors and expectations. Pickersgill explains how the construction of sociotechnical otherness in representations of Japan within Anglophonic discourse suggests barriers to the production of transnational biomedical knowledge and technologies, which in turn provide the basis for increasing investments, including in legal and policy frameworks and discourse, that ensure they are reduced in importance or even overcome.

The second key insight is that imaginaries have an important role to play in mediating the boundaries of responsibility and accountability. Sorbie, Gueddana, Laurie and Townend explain the importance of the social imaginary of data ownership in shaping ideas of responsible stewardship of health data and how this should shape the approach taken. Responsibility and accountability figure even more largely in Flear's account of the imaginary the ICH constructs through the expectations (ie strong beliefs of what can happen) that flow from its mission of 'harmonisation for better health'. The expectations and imaginary that flow from this mission also mediate responsibility and accountability, ie by determining the ICH is responsible for 'harmonisation for better health' and accountable in the event it fails to deliver this. However, as Flear also explains, imaginaries, and the responsibility and accountability they engender,

9 Jasanoff, *supra* note 3, at 4.

10 Sang-Hyun Kim, *The Politics of Human Embryonic Stem Cell Research in South Korea: Contesting National Sociotechnical Imaginaries*, 23 Sci. Cul. 293 (2014), at 296.

11 Although the importance of reimagining the role of law in this technological age is a developing concern, see Roger Brownsword, *Law, Technology, and Society: In a State of Delicate Tension*, 36(137) Notizie Di Politeia 26 (2020).

can also be made more specific and narrower. In the case of the ICH, implementation through governance and regulatory interventions gradually narrows 'harmonisation for better health'. In this way the mission becomes about technological development of pharmaceuticals and its achievement consistent with principles of individual ethical conduct. This reflects the dominant focus within bioethics. Flear stresses that, as a key implication, this focus sidelines wider societal values. Yet, as Flear also explains, and the contributors who point to imaginaries within the wider social context imply, marginalizing social context and wider values may also ultimately undermine the effectiveness and wider public legitimacy of legal and regulatory arrangements.

The third and final key insight on what it is imaginaries do relates precisely to the legitimation of those arrangements. This is central to Flear's argument in respect of the ICH: the expectations and imaginary flowing from its mission help to legitimate its governance and global bioethics standards. Legitimation of these by the expectations and imaginary enables reference to the standards in the law of ICH Members. Through these references the global bioethics standards become de facto binding. Providing legitimation is a key role of the imaginary found in the framing and content of legal regulation of gene-editing technologies at the EU level of governance, as Mahalatchimy, Lau, Li and Flear discuss. Legitimation also figures in Møllebæk's examination of the Danish Medicines Council's decision to deny access to a pediatric medicine and what it indicates about the rearticulation of the Scandinavian imaginary of universal access to care. This analysis, similar to those other contributions, underlines the importance of understanding the imaginaries that inform and legitimate governance and regulation. Both Møllebæk and Flear make clear that imaginaries are part of what organizations relay through their efforts at transparency and communication, and through these efforts organizations aim to generate public legitimation.

We have organized the articles in this special issue by level of governance, going from global (ICH), to regional (EU), and national (UK (two articles), Australia and Denmark). Overall, this special issue sheds new light on the key roles of imaginaries in relation to law. These roles are integral to law, and they may become more important in areas where technoscientific innovation pushes ahead, seeming to leave law behind, or at least struggling to keep up. It is in these areas that questions about the effectiveness of law, ensuring and mediating the boundaries of responsibility and accountability, and the legitimation of law and regulation, seem to be even more pressing. We believe it is essential that imaginaries figure more centrally in addressing these questions, and that law, encompassing legal and regulatory arrangements and discourse, takes a more central place in discussion on imaginaries. Imaginaries are central to investigating and resolving the 'state of delicate tension' between law, technology, and society.[12] It is with this in mind that we hope this special issue spurs further discussion.

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12 See further, Brownsword, *supra* note 11.

ACKNOWLEDGMENTS

Mark L. Flear would like to acknowledge support for this special issue and his contributions to it from the Economic and Social Research Council for the project 'Health Governance after Brexit: Law, Language and Legitimacy' (ES/S00730X/1).