

Chapter 9

Conclusion to the Book



Abstract In this section, we reflect on our combination of methodologies, the implications of our work for the global governance of STI and the international research system, and for RRI practitioners and those who aim to implement RRI in their organisations.

Keywords Methodological pluralism · International research system · Global governance of STI · RRI practitioners

9.1 The Combination of Methodologies

This book has combined two methodologies. In Part I we analysed the structural, cultural and interchange dimensions of RRI implementation in organisations, drawing on neo-institutional theory. In Part II we analysed the national sociotechnical imaginaries of STI systems as both constraining and enabling the uptake of RRI, drawing on Science and Technology Studies. While both methodologies have been chosen to fit their respective units of analysis—the level of organisations and national policy-making respectively—they share commonalities and differences that we expand upon below.

First, what makes this book more than the sum of its parts is the recognition that analyses at the level of organisations and national policy-making are both necessary to understand the barriers and drivers of RRI uptake. Part I noted that organisations do not operate in a vacuum through the importance attached to the interchange dimension, including how national policies can be powerful drivers for organisational change. At the same time, national sociotechnical imaginaries are necessarily a product of institutional work. While the methodology of imaginaries focuses on larger trends and patterns, these can be visibly adjusted by powerful institutions, such as FAPESP in the Brazil case, or even by individuals, such as the distinctive contribution by Vannevar Bush in shaping US science policy after the Second World War through his formative report *Science: the Endless Frontier* (Bush 1945).

Second, there is a distinction in the methodological approaches that warrants consideration. While both approaches seek to analyse *structural* and *cultural* dimensions of governance (in organisations and in national STI systems respectively),

sociotechnical imaginaries are shaped by, but do not explicitly recognise, the *interchange* dimension. Partially, this is because nation-states, which are typically but not exclusively the focus of the imaginary methodology, tend to influence the form and direction of STI activities within national boundaries. Vice versa, ambitious STI projects are often undertaken in the service of strengthening statehood (Jasanoff 2015). Nevertheless, we have found that national sociotechnical imaginaries are shaped by and responsive to international developments, and that an analysis of this interchange dimension is a useful extra tool in the imaginaries toolkit. We reflect further on the role of the international governance role of STI systems below.

9.2 The International Research System

In Parts I and II we described organisational and national conditions for the implementation of RRI. As indicated, national conditions affect organisations through the interchange dimension. However, the wider environment of research organisations—particularly for research conducting organisations—is found not only in national conditions, but also by the institutionalized international research system. When we find so many similarities across organisations from five continents, it is because there are shared institutional norms and values that operate at an international level. Research is inherently international and there is a global labour market for researchers, who win positions based on their merits regarding publications in ‘top’ international journals, commonly defined by metrics such as impact factors. Researchers often have a keen interest in developments in the international research system (see, for example (Reyes-Galindo and Monteiro 2018)), and may adopt norms of research ethics or open access publications, even in the absence of local institutional incentives, to keep up with international standards. Conversely, we find in this book that current high-productivity based notions of excellence are among the greatest barriers to RRI. As long as these remain international standards, organisations and even national STI systems cannot easily change these criteria by themselves.

While we did not study the international research system in the RRI-Practice project, this could be an important next step. Taking an international perspective poses a wider challenge for the ‘RRI model’: while RRI advocates the wider democratic governance of science systems, in our current world democratic systems typically operate at national and local levels. Hence, it is not immediately clear what the democratic governance of science would mean at a global level, and how (new collectives of) institutions could take on this responsibility at this scale in pursuit of RRI. This makes it important to investigate the nature and influence of existing international research governance activities and the models of the relationship between science and society that are implicit in them. International agreements such as the Berlin Declaration on Open Access and Plan S would be clear examples, but also the policies of international institutions such as the OECD, the importance of which is emphasised in the UK report (Pansera and Owen 2018), and UNESCO.

One clear international driver for change may be the current policy focus on sustainability and the Sustainable Development Goals (SDGs). Several national reports mention these as informing national science policy goals, for example, China (Zhao et al. 2018), France (Grinbaum et al. 2018), Germany (Hahn et al. 2018) and India (Srinivas et al. 2018), but they are relevant for processes in the international research system as well. One example is SDG 8 on decent work. If this could stimulate more thorough assessments of the social sustainability of the current research system, with its high proportion of temporary contracts, chronic underfunding (see reports from Brazil (ibid), Bulgaria (Damianova et al. 2018) and Italy (Neresini and Arnaldi 2018)) and high expectations of scholarly publishing alongside normal teaching obligations at universities, this could both contribute to improved mental health among PhD candidates (Woolston 2018) and academic staff, and help align science systems with RRI. As set out in the findings of Part I on organisational barriers, RRI activities are typically seen as an ‘extra’ to mainstream research, teaching and management tasks. When combined with the fact that many researchers are already overworked with their ‘core’ tasks (Åm 2019), this almost ensures limited uptake of RRI ideas. The fundamental challenge that the ‘RRI model’ offers to the ‘science for society’ model holds for the international research system as well: if science and social order fundamentally co-constitute each other, whose social order underlies, and is propagated by, the norms of the global scientific community? Whose interests are served more by those norms, and whose less?

One well-documented phenomenon is the conflation of ‘global’ with ‘Western’ norms and interests, excluding or marginalising work from the global South (see Rathore 2017; Katzav and Vaesen 2017). To illustrate this point, reports from the US (Doezema and Guston 2018), Brazil and India all note that the EC conceptualisation of RRI through the RRI keys does not address some of their key priorities, such as socio-economic or ethnic inequalities. As Part I notes, the EC could learn a lot about diversity from those countries, which have been grappling with the issue for centuries. This raises a paradox for RRI, namely that if we insist on a model of co-creation for RRI, in which RRI and social order are inevitably intertwined, RRI cannot be straightforwardly implemented by universal edit, but has to be adapted to the local context (and vice versa), to enable ‘RRI’ to work effectively. Doezema et al. (2019, p. 324) describe this as a process of transduction rather than translation: *“Transduction highlights the ways that the introduction of a term, tool, technology or concept into a different context creates new meanings around that entity, transforming both the object and context at the same time.[...] In this sense, transduction of RRI does not only involve the production of new concepts but also the (potential) transformation of practices in institutions such as funding bodies and universities in context-dependent ways not prescribed as part of RRI, but as an outcome of local engagement with the questions RRI inspires.”* Not coincidentally, there is not only a lack of ethnic diversity in the international research system, but there are also severe gender imbalances, especially at the upper management level (see, Hennen et al. (2018) on the Gender Equality and Diversity key). While these issues go beyond the scope of this book, they reinforce the point that the current international research

system has constructed a rather one-sided and biased social order; it is also structurally biased (though not necessarily intentionally) towards particular interests as well.

9.3 Implications for RRI Practitioners

The assumption that science and social order fundamentally co-constitute each other has implications for what it means to be an RRI practitioner. Most importantly, it shows that being a change agent in an organisation is not an instrumental role, in the sense of getting policy prescriptions implemented as efficiently as possible, but rather a political¹ and normative one. Even if some changes are not perceived as political, this is not because they are not, but likely because they align with the dominant social order within the organisation, or with established norms external to the organisation. Here we discuss three specific implications for RRI practitioners.

Considering the lessons learned from the organisational and national studies, RRI practitioners must take the organisational and national contexts into account when implementing RRI ideas. The first important consideration is to negotiate the extent to which local contexts need to be changed to fit RRI, and how much the RRI ideas need to be changed to fit the context. As the book shows, RRI can mean different things for different national science systems, and different systems offer different opportunities for RRI implementation. Different strategies carry different opportunities and risks: as we found, changing organisations to fit RRI is a long, intensive and difficult process that may well provoke resistance and encounter inertia. We need a theory of change tailored to local circumstances, and a keen eye for opportunities to align institutions with RRI, such as the capacity to learn from crises or to develop new policy priorities. Alternatively, we need targeted mobilisation efforts aimed at aligning top management with influential stakeholders in the institution, and capitalising on narratives or ideas external to the institution that can be framed as relevant for (aspects of) RRI by change agents. Adapting RRI ideas to national and organisational contexts promotes change and is to some degree necessary. However, the risk, well-documented in neo-institutional research, is that ideas are adopted in a superficial way and decoupled from actual research practices, while being rhetorically broadcasted as reform efforts and used to legitimise business as usual.

A second consideration is whether RRI requires incremental improvements or transformative changes to STI systems. The risks are similar to the above: transformative change is more difficult to and more likely to provoke resistance; while incremental change is easier to bring about and it remains uncertain if they accumulate and add up to the more transformative change envisioned by the 'RRI model'. Here, again, an appropriate theory of change is needed, and a vision on what change is needed, which may be specific to national styles of policymaking. This theory of change

¹If we understand 'political' in a general sense, as having an influence on existing power structures, rather than in the specific sense of being affiliated with some political party.

becomes much more complex, however, because it requires many different organisations to change in ways that are somewhat in unison, and—crucially—requires a change of taken for granted assumptions of proper conduct at a societal level.

A third consideration concerns the relation that RRI practitioners seek to forge between the demands of RRI and those of the international science system. As the RRI-Practice project shows, the RRI model can and has provoked resistance among researchers. This is partly because of structural features of organisations (such as a lack of incentives to engage in public engagement), but it is also partly rooted in the values underlying the international science system. In RRI-Practice, value concerns included concerns that RRI could threaten scientific autonomy and delegitimise fundamental and curiosity-driven research. An encouraging finding was that RRI may appear to be better aligned than imagined with Enlightenment ideals about the role of science in cultivating engaged and critical citizens, for example in the notion of ‘Bildung.’ This shows that, while RRI practitioners should take those value concerns seriously, there is quite some common ground between them and RRI values. Proper engagement with these concerns, however, requires theoretical and practical reflection, and there is still much research to be done on how all these considerations for RRI practitioners could best be addressed.

In Part I, we examined barriers to and drivers for the uptake of RRI in research conducting and funding organisations. In Part II, we examined the potential for the uptake of RRI in different national contexts. One clear lesson of our research has been that, even in the presence of powerful drivers (such as funding programmes for organisations and public distrust in science for national STI systems), implementing RRI is never straightforward, nor a matter of changing the context to fit the concept. At both levels there are *coordination issues*, such as between organisational departments, or between innovation and research policies, and *tensions between goals*, such as between doing excellent science and creating societal value for researchers. This makes implementing RRI a strategic puzzle, but also one that necessitates discussions about the values underlying institutional arrangements, that may lead to an adaptation of the concept as well as the context. It requires anticipating concerns and relevant developments, including relevant stakeholders, reflecting on values and goals and being responsive to external developments. In short, there is no implementing RRI without doing RRI.

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