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Framings and frameworks: six grand narratives of *de facto* RRI

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3.1 Background and methodology

Our developmental work on the “six narratives” began some years ago (Randles et al. 2013). Back then, it was the authors’ view that before we could credibly address the task of developing a (new) framework to govern responsibility across the full spectrum of research and innovation situations, it was important to undertake a preliminary review of the existing landscape. This review sought to make sense of how actors have through history participated in processes that construct, negotiate, and institutionalise – *in the sense of embed into governance structures and everyday practices* – very particular ideas of what it means to be responsible (responsible to whom and for what)?

Our scope is broad, spanning the full spectrum of research and innovation (R&I) settings and contexts, i.e. stretching beyond the limiting confines of science and technology development to consider innovation occurring in systems of multiple actors working in alternative innovation spaces. Here they are developing new forms and themes of responsible innovation such as political or ethical consumption; considering business-model innovation and new forms of organisational design beyond the individual organisation to multi-organisation complexes; and beyond the dominant narrow focus on product and

process innovation. Crucially, we are also interested in innovations in the governance modes, instruments and methods / techniques themselves.

The central question is what kinds of governance strategies and mechanisms have been designed and operationalized through history, with varying levels of effectiveness, in order to instil a particular vision of responsibility into particular spaces? We examine particular locations and temporal settings from formal research predominantly undertaken in universities and public / private science laboratories and institutes, to innovative activity occurring at the edges of formal settings, such as so-called “garage” innovation, or the emergence of new governance mechanisms to co-ordinate new forms of entrepreneurial multi-actor organisation and action.

Following this opening premise, i.e., that actors have long sought to govern research and innovation processes according to whatever conception of responsibility holds at a given time, our opening method was purely pragmatic. We did a preliminary sweep of the academic literature and secondary and web sources to provide an in-road into how actors themselves construct discourses of responsibility in multi-actor, collective contexts. We identified how these discourses manifest materially as governance

instruments, such as the formation of new, collectively shared “responsibility standards” (think of the European Union’s REACH Regulation [REACH 2006] or the ISO 26000 on Social Responsibility [ISO 2010]). We sought to sketch a preliminary landscape of empirical examples demonstrating the range of ways actors guide, negotiate and formalise normative understandings of responsibility and translate these into instruments or “devices” (Callon et al. 2007) to govern practice, effectively already steering research and innovation processes, according to whatever pre-assumptions or “frames” of responsibility they hold.

In constructing the “stylised” Six Grand Narratives that form the core of this chapter, we drew upon the authors’ knowledge as well as the wider Res-AGorA research community¹ to capture the breadth of existing governance mechanisms incorporating the institutional work behind the development and creation of new standards and Codes of Conduct, the work of ethics committees, parliamentary offices of technology assessment, and new tools and methods to facilitate the participative engagement of civil society actors. We use the term *responsible research and innovation*, or (rri) to define this quest to understand how actors themselves *de facto* frame, and embed understandings of responsibility into the full scope of research and innovation contexts, situations, organisational settings and professional practice. We differentiated it from the recent emergence of new frameworks for Responsible Research and Innovation (RRI) that are intentionally labelled with the acronym in its capitalised form. In this chapter we examine rri and not RRI.

Further, inspired by Rip’s (2010) concept of *de facto governance*, which proposes that governance of research and innovation always combines bottom-up experimental activity with top-down steering – and that this process is an emergent one, shifting and changing over time – we called our empirical, socio-historical and quasi ethno-methodological approach “*de facto governance of responsible innovation*”. We understand it to be unfolding continually over time, as “*responsible-innovation-in-the-making*”. It is a

process that is sometimes stable, at other times contested by different groups, and moving to the rhythms of how the problem of responsibility itself is framed differently through space and time. In earlier decades, responsibility was seen as a problem of the self-regulation of science in elite institutions, away from the prying eyes of wider society. More recently it seems to be accepted as a distributed activity, with other societal actors seeking a place at the table to co-construct the agenda of how research and innovation should respond to societal problems. These are sometimes, but not always, limited to “grand challenges” such as climate change, poverty, food security, the depletion of natural resources, and health and well-being in ways that serve not only the current generation but also those to come.²

The construction and depiction of the Six Narratives should be taken as a continually developing project, not one which is permanently fixed in time.³ This applies in two respects. First, it points to the need to continually monitor empirical cases that support or challenge our six abstract representations. For example, though we have presented six narratives there is no reason why additional empirical cases might not prompt the addition of further “ideal types” lying outside the current six by virtue of new characteristics outside the “family resemblances” of the internal coherences and concomitant features that define and differentiate our proposed six. Indeed, we would expect and actively search for such “outliers” rather than ignore or dismiss them since we understand the continual emergence of new cases that challenge us to modify and refine the existing narratives, or prompt the addition of new one(s) to be a methodological precondition⁴ consistent with understanding that our proposed Six Narratives can, indeed need to be, continually “tested” against new

¹ The work developing and refining the six Grand Narratives of *de facto* Responsible Research and Innovation, continued in tandem with, and was verified, modified and stabilised, by the parallel work on the Res-AGorA case studies, as well as on the case studies which will illuminate Randles and Laredo (eds.) (2016).

² For a detailed account of RRI’s distinctive approach to the issue of responsibility in relation to other paradigmatic understandings of responsibility, see Chapter 2.

³ Indeed, latterly, our Six Narratives work has benefitted from the scientometric analysis of the RRI literature undertaken by our IFRIS colleagues of creating a “genealogy” of Responsible Research and Innovation (RRI), see Chapter 4.

⁴ In this sense the broad methodological approach followed in the Six Narratives is that of abduction – the continual search for new empirical material which confronts and forces change to the theoretical propositions (temporarily) put forward, whilst the theoretical proposition that we propose is the best explanation we can offer (i.e. neither causally deductive nor empirically inductive) at the present time.

empirical cases. Second, consistent with our proposition of responsibility in R&I as itself an emergent and continually evolving phenomenon, we would expect it to generate new manifestations of responsibility – the consequence of new R&I situations and responsibility “problem framings” that we have not, indeed cannot, anticipate. Thus, we would not expect the Six Narratives to remain a permanent capture of this emergent process. On the contrary, we merely hold that the six abstract “types” provide a plausible theoretical schema of *de facto* responsible research and innovation (rri), here and now in the first half of the 21st century.

3.2 The Six Grand Narratives: a brief overview of each

In summary our Six Grand Narratives are:

- A** Republic of Science
- B** Technological Progress: Weighing Risks and Harms as well as Benefits of New and Emerging Technologies
- C** Participation Society
- D** The Citizen Firm
- E** Moral Globalisation
- F** Research and Innovation With / for Society

Below we provide a brief overview of the narratives, highlighting their focus on specific values and framings of the “good” way to progress research and innovation with consequential implications for responsibility: responsibility to whom, for what, and how (in terms of which actors are involved), and what governance mechanisms and instruments are designed and deployed to materially manifest that responsibility.

Narrative A: “Republic of science”

As articulated by Michael Polanyi in 1962, this narrative revolves around the self-regulation of scientific activity, by, with and for scientists, to freely and independently identify and pursue their own problems, as members of a closely knit organisation. The implications for responsibility lie in the conditions for maintaining these freedoms, set primarily by the main funding body, the State. In exchange for such freedoms, the scientific enterprise must comply with certain guarantees thus creating a *de facto* Science-

State contract. A number of dimensions sit at the heart of this contract. A first is to make research results a public commons through peer-review publication in scientific journals. A second is to guard against fraud and other deviances which would undermine trust in the scientific establishment, such as the misrepresentation of results, linked to a requirement to provide clear and replicable details on research methodology. A third relates to an ethics of care around the treatment of objects of research (whether human or non-human): how experimental objects are obtained and maintained, including how animal welfare is ensured and testing conditions regulated. A fourth relates to the maintenance and reproduction of the scientists’ own field of operation: from health and safety in the laboratory to the training and support of young scientists and would-be scientists, most recently stretched to issues of gender and diversity within the scientific community. The identification and achievement of each of these “responsibility aims”, is today negotiated between the scientific community and agents of the state such as funding research councils, and drives the evolving governance of practice in this narrative. Most recently, Arnaldi and Bianchi (2015) provide an elaborated account of the opposition between Narrative A: *Republic of Science* and Narrative F: *Research and Innovation with / for Society*.

Narrative B: “Technological progress: weighing risks and harms as well as benefits of new and emerging technologies”

How best to govern the uncertainties of new and emerging technologies is an age-old question, which over the past decades has generated multiple forms of institutionalised responses such as risk mitigation, remediation insurance, and evaluation techniques under conditions of uncertainty (including Foresight methods). The central question is how to balance the opportunities and benefits afforded by new technologies with uncertain technology-induced risks and harms. The narrative extends already firmly institutionalised rights and regulations (protecting the health and safety of workforce and users) to those “in close proximity” of facilities such as local residents. The management of such risks and the balancing of harms and benefits are addressed via both voluntary instruments and law, exemplified / accelerated in the aftermath of disasters, with some ubiquity around chemical catastrophes (Chernobyl, Bhopal). The precautionary principle extends this care to

unforeseen and unforeseeable risks. The constituency of actors now expands, bringing in a central role for business alongside scientists and technologists, and the state as regulator. A long trend addressing these concerns can be traced for example to the establishment of the Club of Rome in 1968⁵ and is more recently illustrated by the highly significant development and implementation of the European Union Chemicals Directive, REACH (2006) which regulates the specification, usage, production and distribution of chemicals. An important regulatory extension within this narrative involves the emergence of “soft law”, or voluntary measures to govern such risks, such as ELSA⁶ assessments and reflections; and the EU Code of Conduct for Nanosciences and Nanotechnologies (EC 2009). This narrative is all about the precautions that are required in the steering and anticipation of technological development; and the mechanisms and methods that can be put into place to reflect upon, and then mobilise the results of such reflections, into the next rounds of development of new and emerging technologies.

Narrative C: “Participation society”

The main argument in this narrative, as articulated by Beck, (1992 [1986]), is that since we exist increasingly as a knowledge society, a heightened appreciation of an uncertain future opens the right for a wider constituency of actors to participate in the analysis of specific technological debates and questions around the shaping of the innovation future that unfolds. *Participation society* acts as an adjunct and additional support to the modes of decision making under contemporary models of representative democracy. Particularly, this narrative demands a place at the table of research and innovation futures and at the origination and design stages of research and innovation processes, for civil society organisations and other organised constituencies of actors such as user groups, before decisions and trajectories become “locked in”. The demand therefore is not just about inclusivity of a wider and more diverse range of perspectives, but that inclusion follows a co-construction ambition, quite different from linear processes associated with conventional

science communications, outreach, or “make and then consult” approaches since all of these modes negate the possibility of wider interests participating in the framing of research, innovation, and responsibility “problems”. This narrative represents a research and political agenda championed by sociologists of science and technology studies (STS), who seek to define and operationalize progress towards the normative objectives and governance mechanisms that define Narrative C (e.g. citizen juries), creating a distinct line in the academic literature (Tancoigne et al. 2015).

Narrative D: “The citizen firm”

The normative questioning of the role of business in society links to a historical reflection on the firm as a social as well as an economic actor. To date, the concept of “Corporate Social Responsibility (CSR)” has been mainstreamed and standardised, mainly by individual (large) companies and latterly stabilised for practitioners (if not academia) through voluntary instruments for corporate responsibility. However, this stable conceptual interpretation, which according to Carroll (1999) originated in the 1950s, but which in fact we can trace to Doham (1927) has evolved and been contested over seven decades (Carroll 1999), only recently finding institutional stability as represented by the ISO 26000 standard on Social Responsibility. In terms of the scope of appropriate activities, investments and the roles, relationships and division of responsibilities between the firm and other organisations (called “stakeholders” in this narrative), this is opened again through new debates on planetary stress, climate change and the depletion of natural resources. Covered also are the implications for management practice of embedding social dimensions into the fabric of the organisation, and quantitative and qualitative evaluations of the stakes at stake, the diversity of forms, and the difference it makes, to be a highly developed socially transformative and innovative *citizen firm*. Work within management sciences has produced a large corpus of literature on CSR, business ethics, and sustainability, responding to the changing implications on / by the *citizen firm* and managerial responses to it.

Narrative E: “Moral globalisation”

Moral globalisation witnesses the engagement of Civil Society Organisations (CSO) in the (re)introduction of moral

⁵ Founded in 1968, the Club of Rome is an association of independent leading personalities from politics, business and science, sharing a common concern for the future of humanity and the planet: <http://www.clubofrome.org/>.

⁶ Ethical Legal and Societal Aspects of the emergence of new technologies.

dimensions and ethical values calling for the remediation of adverse conditions of production through the mechanism of collective governance of global value chains. It introduces us to the ethical consumer, and intervenes on innovation system trajectories via international economic exchange and markets. Coalitions of co-ordinated actors including but going beyond CSOs invest in the formulation of governance instruments (such as environmental and ethical labels and standards: fair-trade, marine stewardship and protection, sustainable forests and palm oil), accompanied by certification processes seeking to embed social and environmental values and transformation into international economic activity (via supply chains and markets). In a certain way, action in this domain compensates for the failures of inter-governmental regulatory bodies. These new modes of intervention connect places of (distant) production to sites of consumption, putting centre stage the role and force of a new actor, the “political consumer”.

Narrative F: “Research and innovation with / for society”

Finally, the actuality of *Research and innovation with / for society* beyond an intellectual ideal to its manifestation in practice, incorporates the normative rationales of narratives B–E above, but importantly stands at a 180 degree turn – an inversion of and opposition to Narrative A *Republic of science*. The central argument is that research, technological development, and ultimately entire innovation complexes are too important a domain to be delegated to a narrow group of actors. It is for wider and more diverse collectives to co-construct with scientists and researchers, the societal problems and orientations that science and research should address (including but not exclusively “grand challenges”). The focus is first on societal outcomes, with processes such as deliberation or participatory governance aiding this outcome, not being ends in themselves. At present, Narrative F is far from institutionalised, in the sense of existing in an integrated cohesive form which is systematically routinized, historically stable, and supported by discourse, resources and action. Nevertheless, Narrative F seeks to put in place assurances that those who are tasked with and have received investments from wider society (tax and fiscal returns) to develop the specialist knowledge to carry out the important science / research; work on behalf of society, do

so in such a way that benefits society by addressing and solving societal problems and taking co-responsibility for societal impact. Science, research and innovation exist to serve society. To be effective, according to this narrative, processes must include wider publics in the definitions of societal problems and challenges and co-construct with scientists and researchers the technological and innovation pathways that shape those futures.

3.3 Crossing the divides: struggle, consolidation, blurred lines, bridges and boundary work across the six narratives

The six narratives are depicted as variously stable and porous. Experimentation and evolution is seen in all of them, simultaneously. Moreover, *boundary-crossing* between the six is evident. Looking to the future an interesting question is how the existing institutionalised pattern might shift. Clearly an objective of RRI is to (de)institutionalise Narrative A and deepen the institutionalisation of Narrative F. But, if this is so, who would do the institutional work to cross these boundaries by embarking on projects and experiments at the intersections of the narratives?

Some clues can be found in the preliminary findings of our Res-AGorA “Voices” research on institutional entrepreneurs of *de facto* rri (Randles et al. 2015c; Randles and Laredo 2016). One of the interesting findings from this project so far is the extent to which our participants in “Voices” are engaged in boundary work, crossing the divides or connecting two or more of the six narratives. For example, *Erik Fisher’s* Socio-Technical Integration Research (STIR) project located a social scientist next to the bench scientist, in a number of diverse institutional settings and over an extended period of time, in order to see whether the continual probing of the basis for decisions of the natural scientists, taken in the context of the everyday practices of the lab, created however temporarily natural scientists who were more critically and societally reflexive, in the sense of self-questioning, than they had been at the beginning of the experiment. Fisher concluded that it did (Fisher 2010). This experiment, precisely opens up Narrative A to critical reflection, and can be seen as an experiment located at the interface of

Narrative A *The republic of science* and Narrative F *Research and innovation for / with society*.

In terms of taking the level of institutionalisation deeper, *John Goddard*, an early pioneer of an inter-disciplinary research institute oriented to addressing urban and regional economic development, CURDS, at the University of Newcastle, UK has latterly articulated his vision of the Civic University (Goddard 2009) which breaks into the “triple helix” of academic-business-government by inserting civil society as a fourth actor participating in the framing and co-construction of research and innovation processes orienting towards societal grand challenges, via the conduit of changes to the institutional structures and *modus operandi* of the University. Thus Goddard challenges both Narrative A and Narrative B, and seeks to institutionalise Narrative F. Similarly, *Michael Crow*, President of Arizona State University (ASU), has been at the helm of the twelve year, and still evolving, re-design of ASU to the “New American University”, premised on the pillars of:

- A access to the full demographic of students to mirror the demographic of Arizona State,
- B maintenance of academic excellence, and
- C societal impact, again challenging Narrative A by demonstrating an organisational case study of Narrative F (Crow and Dunbars 2015).

Elsewhere, the Netherlands “Voices” participants *Anne-mieke Reebook* and *Merijn Everaarts* describe projects of social and business model innovation which connect Narrative D *The citizen firm*, Narrative E *Moral globalisation* and Narrative F *Research and innovation with / for society*. All these people, through their personal stories, visions and actions, provide some hints as to how the shifting sands and re-institutionalisation of the six narratives might practically occur.

3.4 Conclusion: linking the six narratives to the transformative ambition of the Res-AGorA Responsibility Navigator

In this chapter we have identified a small number of clustered narratives of *de facto* responsibility in research and innovation settings, and find congruence as well as conflict and contestation, across and within the Six Narratives. In so-doing we have confirmed that there already exists an evolving *de facto* governance landscape of responsibility in research and innovation “out there”, and that contemporary instantiations of responsibility governance have emerged from this history. This is a necessary start point, in our view, to the construction of any new governance instrument seeking to influence or transform the *de facto* prior institutionalised landscape.

The *Responsibility Navigator* (Chapter 11) is an instrument of this kind. It represents the culmination of Res-AGorA’s work and offers a practice-oriented governance tool to assist multiplexes of strategic decision-makers move towards responsabilisation and deep institutionalisation (Chapter 5 and Chapter 7) steered by collectively negotiated normative visions of responsibility through a dialogue-facilitated co-construction workshop methodology (Chapter 6). In this respect the “Navigator” is a contemporary governance innovation of the kind we have been discussing under each of the six narratives. Taken in the round, the *Responsibility Navigator* with its transformative ambition, and other practitioner tools like it, sit within pre-existing and continually evolving systems of hard (law) and soft (voluntary) regulation spaces. New instruments such as the *Responsibility Navigator* play an important role in shaking up, altering and potentially re-instituting the six narratives.