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**Sites of a Grand Societal
Experiment: A Research
Approach**

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Sites of a Grand Societal Experiment: A Research Approach

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ABSTRACT

I propose a dual methodology, of close, almost ethnographic, study of sites full of tension and struggle, and complemented by an overall contemporary historical-reflexive diagnosis of what is happening in society, as it were a grand societal experiment. The diagnosis informs the analysis and interpretation of the study of the sites, while the dynamics and outcomes of the sites actually contribute to the grand societal experiment. The methodology is illustrated by a discussion of universities and their so-called third mission, and by other cases.

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1. INTRODUCTION

A basic problem in the social sciences (and in society, for that matter) is how changes, in the small and in the large, and on different locations, add up over time. Enduring changes might emerge this way. Sometimes, and in retrospect, they may be called transformations. This label (or its equivalents) can also be used prospectively, by analysts, by idealists, by change agents (these categories are not exclusive). Referring to ongoing, possible transformation allows agents to get a hearing, and exert force. This can lead to a triumphant narrative, as in presentations of the thesis of a Mode2 of knowledge production in and for science (Gibbons et al 1994), which is both an analysis and diagnosis of what is happening, and a change program: Mode 2 is upon us, and we (including you) had better go along with it, or be left behind (Rip 2000, see also Hessels and Van Lente 2008). A dual position, combining retrospective analysis and prospective diagnosis, is unavoidable when discussing ongoing changes, but a triumphant narrative is only one option –even if easily embraced, as for example in Ulrich Beck’s thesis of a second modernity or reflexive modernization (Beck, Giddens and Lash 1994): it is upon us, so don’t resist.¹ There is also a more analytical narrative, as in Schot and Steinmueller’s analysis of three frames of innovation, where the first two are presented retrospectively, as paradigms that emerged and are still with us. The third, however, is ongoing, and in that sense, presented prospectively, selecting encouraging developments as worthy of encouragement and support.² The dual position, even when not presented in a triumphant manner, still tries to create an urgency for change, already in seemingly innocuous phrases like “a next generation”, say of innovation policy: the next generation is not just what comes after the present generation, but it has to come, and it will be shaping the future.³

The retrospective approach is part of the craft of the historian, and of intellectuals more broadly (the categories are not exclusive). The question I want to raise, and explore in this paper, is whether a craft can be developed for a contemporary history, including a prospective component. And without short-circuiting it to the dual argumentation of pointing out trends and developments (somewhat selectively, as is inevitable), and turning them too quickly into guidelines on how to go forward. Thus, this paper aims to identify and develop a research approach. There will be illustrative examples but no presentation of empirical research as such. The methodology proposed will be inspired by some strands in STS, like the co-production approach (Misa, Brey and Feenberg 2003; Jasanoff 2004), and by recent critical anthropology and multi-site ethnography.

¹ Beck and Lau, 2005: 552). They appear to identify with Second Modernity when they discuss only two possibilities: the defensive modernist one – which is doomed to fail because the problems that have to be addressed are caused by modernism – and the reflexive one, which goes for “reflexive solutions”, and is the grand experiment.

² This is visible when the discussion of the third frame shifts from description and analysis to identification of what is required for the envisaged change. And Schot, as well as others in SPRU, are actually working to try and make it happen. (<http://www.transformative-innovation-policy.net>) They also explore a global diagnosis of the changes in terms of “Deep Transitions” (Schot and Kanger 2016). Cf. Schot and Steinmueller (2016: 16): “The magnitude of social and technical changes required for a Second Deep Transition implies entering a new phase in the history of industrialization, industrial capitalism and perhaps even modernity if this third framing is to take hold.”

³ See for example the forthcoming special issue of *Science and Public Policy* on a next generation of innovation policy, in particular Kuhlmann and Rip (forthcoming 2018) on the Challenge of Addressing Grand Challenges. Their analysis of limitations of existing approaches, and presentation of a few examples of interesting approaches turns into a narrative of how to design addressing Grand Challenges and overcome barriers to their realization. It is more an analytical than a triumphant narrative, but the original draft text was still criticized as being insufficiently empirical.

Phrased this way, it is a general issue for social science and history, as well as for reflection on evolving social orders. My focus will be on science, technology and innovation, and related institutions in modern societies, since we can expect the issues to be visible there because of (1) the mandate of science, technology and innovation to introduce novelties, and (2) the prominent role of science, technology and innovation in modern societies, definitely in debates on directions to go.

A key point is that there will always be struggles to handle tensions and address novel options on location, and that these are actually occasions where larger struggles are played out -- while the outcomes of struggles on location help shape the larger struggles. This is a way to make the general idea of co-production more operational. For the moment, I am not specifying what these larger struggles might be other than that they are open ended, even while there are also patterns in them. I've tried to capture this by speaking of a 'Grand Societal Experiment'.⁴ I will come back to this notion below; at this stage it is primarily an indication of a key component of the methodological program I am developing.

2. EXAMPLES OF SITES OF A GRAND SOCIETAL EXPERIMENT

Empirically, struggles can be traced in recurring debates and problem definition and interest struggles in science and innovation policy and practices. One example are the tensions and struggles around the so-called third mission of universities: these are faced by each concrete university (or more generally, institute of higher education) and choices are made about profiles and directions to go. But these sites are actually part of larger movements in and around higher education and link up with issues of science and technology in society – as well as broader issues of social order and social change.

Thus, the issue of the third mission of universities is more than a question of profiling the university in changing selection environments, and then implementing whatever profile is decided upon. This point has been brought home to me in my involvement, over the last twenty years, in the South-African higher education system and its attempts at science and innovation policy. A key driver has been to overcome the legacy of the apartheid regime, and go from 'redress' to 'transformation', also in higher education. This is visible everywhere, and takes particular forms in the new universities of technology (i.e. upgraded Technikons in the unified system since 2005) which traditionally have strong links with worlds of practice (in industry, agriculture and community orientation), up to a history of awarding diplomas rather than degrees; and could build on those links as a competitive advantage – with strong implications for the mission and profile of the universities of technology.

The debates and struggles in the universities over their third mission mobilize positions and arguments well-known in Europe and North-America, but add, and must add, reference to the transformation of South-African society that is envisaged, and to some extent occurring. In other words, the larger struggles inform, and play out by delegation, what is happening in the universities. To capture this, one can position them as sites of a Grand Societal Experiment in changing South-African society. And what happens on these sites has implications for the evolution of the Experiment.

⁴ To avoid misunderstandings, I hasten to add that my use of the term 'experiment' does not refer to the traditional scientist's view of experiments as try-outs under controlled conditions, nor to the idea of self-experimental societies as discussed by Gross and Krohn (2005), in so far as they take scientific experiments as their point of reference. I am using the notion of experiment in the sense of striking out in new directions, not knowing what you will encounter, but open to opportunities for learning and improving.

A third mission for universities is accepted by now, but struggles continue in terms of orientations and content. The overall pattern actually reproduces what is visible elsewhere: contrasts between an orientation towards economic competition and an orientation towards community; between excellence and relevance; between global and local. There are resonances between the first items of these contrasts and between the second items, as it were a high route versus a low route (as in the Anglican High Church versus Low Church). See Table 1.

“high”	global	excellence	economy
“low”	local	relevance	community

Table 1. Contrasting orientations for the third mission of universities, and more generally.

The categories are not fully exclusionary; for example, there is a tendency to go for global excellence but adding relevance occasionally. There might even be integration, for example when there is redesign of a university in terms of themes and challenges, rather than disciplines (as happened in Arizona State University).

The three contrasts collected in Table 1 under the umbrella terms “high” and “low”, can be seen as spanning up a Grand Societal Experiment, in South Africa and more broadly. I want to make a second, and strong, point that there are more issues in science and innovation policy than the third mission of universities, which can and should be seen as sites of a Grand Societal Experiment. This is not the societal experiment that South Africa is going through, but there are good reasons to think of struggles between dominant neo-liberal narratives and arrangements,⁵ with a focus on techno-economic aspects, and alternative movements and practices addressing collective experimentation (Joly, Rip and Callon 2010), varieties of open innovation, and social innovation (with cities as interesting locations). While there is struggle, the two sides also feed each other.

Sites where new science and technology are developed can be sites of such struggles, as Delvenne (2014) has emphasized, using as examples bio-economy in Latin-American countries, and 3D manufacturing in the North.

Another site is the presently fashionable reference to Grand Challenges, and the need for a challenge-orientation of research. If taken seriously, this requires more than further priority setting and related funding programs (but new constellations of actors and concertation, cf. Kuhlmann & Rip 2014). Some of the struggles are visible in the revisited Lund Declaration of December 2015, e.g. the curious ‘return to excellence’ as the direction to go.

A third type of site is the increasing attention for inclusive innovation and “collective experimentation” (Joly, Rip and Callon 2010), also “frugal innovation” (e.g. Bhatti 2012) and “Bottom of the Pyramid” (Prahalad 2004). One could add the fashionable interest in Responsible Research and Innovation, where one also sees reactions warning about negative consequences.⁶

⁵ There are varieties of neo-liberalism, just as there are “varieties of capitalism”.

⁶ This occurs already within the Horizon 2020 Advisory Group on SwafS (Science with and for Society) and RRI: “If European societies make legitimate choices that are too different from those made in other countries, and if these choices are institutionalised in political and legislative decisions that do not encourage innovation, but instead are focused on keeping some of the fundamental values that are important to a majority of European societies (e.g. data protection, privacy, ethical values), this will impact, perhaps negatively, European global eco-

It will be clear that there are many sites, and that there are recurrent types of struggles, in the small and in the large. While it is an empirical task to characterize the patterns and emerging outcomes, for the moment, the illustrations offered above are sufficient to show a program of work to be done. I advocate both a program of empirical research (of sites of struggles and temporary outcomes, informed by a reference to an ongoing societal experiment) and a program of analysis and reflection about what is essentially an intellectual diagnosis of the evolving state of the world (with particular reference to issues of science, technology and innovation, but not limited to them). The diagnosis is that of a Grand Societal Experiment, or perhaps intersecting smaller and larger Societal Experiments.

3. AGONISTIC (GRAND) SOCIETAL EXPERIMENTS

The larger struggle is not just a struggle of existing interests (as may happen in particular sites), but actually an open-ended transformation, partly because of the novelties and opportunities (and concerns) introduced by science, technology and innovation, which may redefine or at least put pressure on existing interests and positions. Over time, there may be some accommodation, what one might call partial “settlements” of the struggles.

My earlier terminology may have suggested a heroic struggle between neo-liberal narratives and practices on the one hand, and local and bottom-up activities and experiments, often community-based, on the other hand.⁷ History (and sociology) is more complex, even if it is sometimes easy to use stories of heroic struggles, up to reproducing archetypal stories like David versus Goliath (cf. Stuver 2008). I am not saying that there is no heroism in earlier and present struggles, and narratives of capitalist domination potentially undermined by labour action, and now by environmental action, have their value. But there are risks, intellectually and socio-politically, in reifying such movements upfront.⁸ Instead, one can think in terms of ongoing Societal Experiments, in which elements of these movements are visible, but in an open-ended societal transformation including partial settlements.

Still, there is the recurrent reference to struggles. To avoid the focus on who is going to win, and keep the overall process of open-ended societal transformations visible, I will introduce the notion of agonistic learning. As I have argued for controversies (Rip 1986), struggles lead to open-ended and agonistic learning at the collective level: a repertoire of facts, arguments, values, positions is articulated and becomes forceful. There need not be consensus, but actors can't go against the repertoire anymore (or have to find work-arounds, cf. smoking-cancer controversy, where cigarette producers shifted to an argument about free choice). This is one way how the struggles and partial settlements in the various sites add up to a (Grand Societal) Experiment.

One example is how the reference to ‘green energy’ (and to ‘green’ as a qualifier more generally) have become accepted and forceful – and can now be used in advertisements of companies like Royal Shell,

conomic competitiveness.” (written comment from one of the Advisory Group members, part of the internal discussion of the Advisory Group) One can read the quote as indicating a trade-off, but it is also a move in the ongoing struggles that constitute the Grand Societal Experiment. One sees similar struggles when the question is raised whether one can have an inclusive and competitive research and innovation system – particularly in developing countries (STIAS-Wallenberg Round Table on Innovation for Prosperity in Sub-Saharan Countries, Stellenbosch, 22-23 February 2016).

⁷ In July, Rip and Callon (2010) we could not avoid a narrative of an innovation regime of “high” techno-economic promises versus an emerging innovation regime of “collective experimentation” from the bottom up, but warned the reader we were not simply batting for the latter against the former. Eventually, we argued that the promises of “collective experimentation” were not sufficiently recognized, so deserved to be emphasized.

⁸ In our project on the history of technology in the Netherlands in the 20th century, we tried to do better in our analysis of contested modernization (see Schot and Rip 2010).

to serve their own interests while introducing credibility constraints on them. A similar point can be made of the rise of the reference to 'responsible', as in the ease with which the World Wildlife Fund can refer in their advertisements to the necessity of 'responsible tourism'.⁹ Still, the contestation does not disappear, as in the case of the Round Table for Responsible Soy (Rip 2017).

Adding up to an agonistic Grand Societal Experiment and shaping outcomes across sites is not just a matter of more or less forceful repertoires, however important these are. There is the shaping of science and technology in and through the struggles, of course, but the performance of science and technology (what they are able to do) will also shape the ongoing struggles and eventual partial settlements. An important route to such co-production is the role of "devices" like ICT codes (see for example Pelizza 2017) or Environmental Impact Assessment requirements (see for example Baya-Laffite 2015). A further example, now in the area of social innovation, is how experiments in sharing economy, like Über's alternative to taxis, depend on enabling platform to allow services to be exchanged (or rented out). There is more freedom for the service providers (who are not employed), but also new forms of exploitation – the two sides of neo-liberalism (cf. also FabLabs and 3D Manufacturing).

There are more foundational reflections as well: Grand Societal Experiments are part of the 'human condition' – so there is a tragic aspect. Like opening up, which inevitably also contains the seeds of later closing down (cf. Stirling 2008).

4. IN CONCLUSION

In this paper I proposed a research and reflection program: on specific sites and issues, and on overall diagnosis of changes and challenges. And I have offered a methodology to connect the two levels, or styles of research. I focused on a specific format (Grand Societal Experiment), and sites of struggles. But my methodological argument/proposal does not depend on these specifics. It stands in a tradition of addressing the conundrums of micro-level phenomena and practices and their connection to macro-level patterns and dynamics (Knorr and Cicourel 1981, Misa, Brey and Feenberg 2010). And it addresses the notion of 'co-production' more seriously than in Jasanoff (2004).¹⁰

In the background, there are concerns about ongoing and desirable as well undesirable changes/transformations – up to perhaps a second 'deep transition'. But it is important to avoid the triumphant mode, because it eclipses understanding of ongoing processes, ambiguities and complexities, and the possibilities of (agonistic) learning.

⁹ See also the op-ed piece by Carter Roberts, President of the World Wild Life Fund, *Time Magazine*, 25 July 2016, 21. "Its goal is to produce rubber responsibly, working in places like Indonesia's Thirty Hills region to design wildlife-friendly plantations that offer sustainable income for local communities. The move comes on the heels of the U.N.'s 2014 Climate Summit in New York City, where 53 of the world's largest companies – sans the rubber industry – pledged to eliminate deforestation from their supply chains."

¹⁰ but see July 2015 for another attempt

BIBLIOGRAPHY

Baya-Laffite, N. (2015) Gouverner par la promesse du développement durable. Évaluation d'impact environnemental et meilleures techniques disponibles dans le conflit des usines de pâte à papier sur le fleuve Uruguay. PhD Thesis, Paris, École des Hautes Études en Sciences Sociales, defended 1 April 2015

Beck U., Bonß W. and Lau C. (2003) The Theory of Reflexive Modernization: Problematic, Hypotheses and Research Programme. *Theory, Culture & Society* 20(2): 1-33.

Beck U., Giddens A. and Lash S. (1994) *Reflexive Modernization*. Cambridge: Polity Press.

Beck U. and Lau C. (2005) Second Modernity as a Research Agenda: Theoretical and Empirical Explorations in the 'Meta-Change' of Modern Society. *British Journal of Sociology* 99(4): 525-557.

Delvenne, P. The co-production of new technologies and politico-economic orders: the domains of biotechnologies and 3D printing. Ongoing postdoc project, University of Liège.

Gross, M. and Krohn, W. (2005) Society as Experiment: sociological foundations for a self-experimental society. *History of the Human Sciences* 18(2) pp. 63-86.

Hessels, L.K. and van Lente, H. (2008) Re-thinking new knowledge production: A literature review and a research agenda. *Research Policy* 37(4), 740-760.

Jasanoff, S. (ed.) (2004) *States of Knowledge. The co-production of science and social order*. London: Routledge.

Joly, P.-B., Rip, A. and Callon, M. (2010) 'Reinventing Innovation', chapter in Maarten Arentsen, Wouter van Rossum, and Bert Steenge (eds.), *Governance of Innovation*, Cheltenham: Edward Elgar, 19-32.

Joly, P.-B. (2015) Governing emerging technologies. The need to think outside the (black) box. In: Hilgartner, S., Miller, C.A., Hagendijk, R. (eds.) (2015) *Science and Democracy. Making knowledge and making power in the biosciences and beyond*. London: Routledge, 133-155.

Knorr-Cetina, K. and Cicourel, A.V. (eds.) (1981) *Advances in Social Theory and Methodology: Toward an Integration of Micro and Macro Sociologies*, London, Routledge & Kegan Paul.

Kuhlmann, S. and Rip, A. (2014) The Challenge of Addressing Grand Challenges. Report to the European Research and Innovation Area Board, https://ec.europa.eu/research/innovation-union/pdf/expert-groups/The_challenge_of_addressing_Grand_Challenges.pdf

Lund Declaration 2015, <https://www.vr.se/download/18.43a2830b15168a067b9dac74/1454326776513/The+Lund+Declaration+2015.pdf> (downloaded 14 February 2016)

Misa, T.J., Brey, P. and Feenberg, A. (eds) (2003), *Modernity and Technology*. MIT Press, Cambridge (Mass).

Pelizza, A. (2017) Processing Citizenship. Digital registration of migrants as co-production of individuals and Europe. *EASST Review* 36(4).

Prahalad, C.K. (2004) *Fortune at the bottom of the pyramid: Eradicating poverty through profits*. Upper Saddle River, NJ: Prentice Hall.

- Rip, A. (1986) Controversies as Informal Technology Assessment, *Knowledge* 8(2), 349-371.
- Rip, A. (2006) A Co-Evolutionary Approach to Reflexive Governance – and Its Ironies, in: Voß, J.P., Bauknecht, D., Kemp, R. (eds.) (2006), *Reflexive Governance for Sustainable Development*. Edward Elgar, 2006, 82-100.
- Rip, A. (2000) Fashions, Lock-Ins, and the Heterogeneity of Knowledge Production, in Jacob, M. and Hellström, T. (eds.), *The Future of Knowledge Production in the Academy*. Buckingham: Open University Press, 28-39.
- Rip, A. (2017) Division of Moral Labour as an Element in the Governance of Emerging Technologies, in: Diana M. Bowman, Elen Stokes, and Arie Rip (eds), *Embedding New Technologies into Society: A Regulatory, Ethical and Societal Perspective*, Singapore, Pan Stanford, November, 115-129.
- Rip, A. and Groen, A. (2001) Many visible hands, in: Coombs, R., Green, K., Walsh, V., and Richards, A. (eds.), *Technology and the Market. Demands, Users and Innovation*. Cheltenham: Edward Elgar, 12-37.
- Schot, J. and Kanger, L. (2016) *Deep Transitions: Emergence, Acceleration, Stabilization and Directionality*. University of Sussex, SPRU, Working Paper, September 2016
- Schot, J., Rip, A. and Lintsen, H. (2010) (eds.), *Technology and the Making of the Netherlands. The Age of Contested Modernization, 1890-1970*. Cambridge, Mass.: MIT Press.
- Schot, J. and Steinmueller, W.E. (2016) *Framing Innovation Policy for Transformative Change: Innovation Policy 3.0*. University of Sussex, SPRU, Working Paper, October 2016.
- Stuiver, M. (2008) *Regime Change and Storylines. A sociological analysis of manure practices in contemporary Dutch dairy farming*, PhD Thesis, Wageningen University, defended 29 February 2008.



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