Improving Science-Society dialogue requires practice
Commentary

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Improving Science-Society dialogue takes practice
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In order to focus attention on the science-society relationship the Ministry for Higher Education and Science organized a conference on Responsible Research and Innovation in December 2014 in collaboration with Maja Horst. This comment explains the background and the outcome of this conference. The comment is not intended as an academic analysis but rather as a normative statement on the ways forward towards a robust knowledge society and a fruitful implementation of the idea of responsible research and innovation.

The theme of social responsibility in science has never been more important. We live in a knowledge society[1] where access to, understanding of, and control over knowledge and technological innovation are crucial. The relationship between science and the rest of society is a very important political issue and highly significant for social cohesion. As a society, we cannot afford to end up in a situation where large parts of the population do not understand the purposes, institutional structure or main principles of science, do not consider it a legitimate part of society and are unable to benefit from its knowledge production.

Improving the dialogue between science and society is not an obligation for researchers alone. Citizens in a democratic society have the right to take part in decisions that have vital influence on the future (Jasanoff 2005). Research takes up a large part of the collective resources in society, and it also has social, ethical, cultural and environmental consequences. Technological development which is not concurrent with significant societal values risks being a wasted investment (Horst 2008). Greater openness about research results and better involvement of stakeholders in the research process will therefore not just benefit society – it can also improve research and innovation by aligning technological development with society's needs and values (Guston 2014).

Creating such a dialogue, however, is not necessarily a simple or straightforward task. Describing the general and long-term consequences of their research, does not always come easy to researchers, just as it can be difficult to describe research in an easy-to-understand manner (Davies 2008). Likewise, publics might be uninterested in the research or think they know too little to be able to take part in the debate (Michael 1996). Media and other communication agents do not always try to explain how research is carried out but focus on more sensational stories (Friedman et al. 1999). Therefore, politicians, scientists, companies and citizens as a whole need to make an extra effort and improve our ability to engage with difficult questions in a manner, which is respectful of other actors' perspectives and inputs. We need to practice our ability to engage in constructive discussions and help each other learn to listen (Stirling 2008). We should be neither blindly fascinated by research, nor keep our distance with biased negative opinions. Rather, it is crucial to achieve a balance between the many considerations and discuss the society that we wish to create. And a good dialogue between society and science is a prerequisite for this balance and for the development of responsible research and innovation.

On this basis, the Danish Ministry for Higher Education and Science decided to focus renewed attention on the dialogue between science and society. In December 2014 the Danish Ministry for Higher Education and Science organized a conference on Responsible Research and Innovation in Copenhagen with broad representation of stakeholders from

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[1] In order to make the following argument we are making sweeping statements about the 'knowledge society'. We also talk generally about 'science' and 'society' as well-defined and discrete phenomena. Of course this is simplifying matters, but for the purpose of the following argument, simplification seems more useful than complexification.

science and society[2]. The objective was to provide international inspiration as well as to discuss current best practices of citizen engagement and RRI implementation (Owen et al. 2012; Sutcliffe and Director 2011).

Key external inputs at the conference came from Richard Owen, who discussed the SPICE project (Macnaghten & Owen 2011) and the development of a policy on Responsible Innovation within the UK Engineering and Physical Sciences Research Council EPSRC (Owen 2014), as well as from Arie Rip, who explored RRI in the context of EU using the 2014 Rome Declaration on Responsible Research and Innovation in Europe (Rome Declaration 2014) as a starting point. In this declaration, RRI is defined as 'the on-going process of aligning research and innovation to the values, needs and expectations of society.' It highlights the need for political institutions, funding organizations and private and public research organizations to build capacity for RRI by promoting and securing resources for RRI. The Declaration also points to the need for integrating and monitoring RRI in the design and implementation of research and innovation programmes.

Richard Owen demonstrated especially how we need to move towards research assessment models that allow the social and political context of projects like SPICE to be reflected and deliberated upon by a larger set of social actors, including citizens, consumers and politicians. For this to happen he stressed that the institutions need to 'think more about care than liability'. He also stressed that the implementation of RRI has to be done with and by researchers, rather than being a set of rules imposed from the outside. Arie Rip argued that it is important to acknowledge that the focus on RRI is an opportunity for opening up research and technological agenda and enhancing reflexivity. He advocated the need to create 'safe spaces' that allowed researchers and

other stakeholders to explore and reflect on possibilities, risks and benefits in a non-judgmental way. He also stated that the most important outcome could be institutional changes that foster RRI in and for public and private research organizations. Even if the focus of the EU commission might move away from the RRI agenda in the future, one significant outcome could be important changes in the national research systems, funding structures and research organizations. Although the UK EPSRC policy on Responsible Innovation discussed by Richard Owen was not simply an outcome of the EU focus, it serves to exemplify such institutional changes at a national level. In addition to these two keynote speakers, the conference included two panel discussions on public engagement and the implementation of RRI into everyday research practice.[3]

The panel discussion on public engagement revealed that Denmark has a long tradition for public engagement, which should not be forgotten (Horst and Irwin 2010). Denmark also has a cultural and institutional infrastructure that supports public engagement and this should be used as a strong comparative benefit within global competition. Open Access is seen as a good tool, but in itself it might just give publics access to a lot of information, without helping them interpret this information. One suggestion might be to work more actively with partnerships between producers and users of knowledge – techniques such as crowd funding and crowd sourcing were suggested as ways of further developing this.

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[2] The Conference was held at University of Copenhagen, 11 December 2014 and had 150 delegates from parliament, civil service, universities, research organizations, business, foundations and NGOs. More information about the conference can be found here:
http://ufm.dk/aktuelt/arrangementer/2014/konference-om-socialt-ansvarlig-forskning

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[3] Members of panel about citizen engagement: Centre Director Niels Mejlgaard, Danish Centre for Studies in Research and Research Policy, Senior Vice President Global Development Kim Domela Kjøller, LEO Pharma A/S, Director Lars Klüver, The Danish Board of Technology, Development Director Stine Carsten Kendal, iBureauet at Information and Professor Alan Irwin, Copenhagen Business School. Members of the panel about implementation of RRI into everyday research practice was Professor Birger Lindberg Møller, Center for Synthetic Biology at University of Copenhagen, Professor Susan Stipp, NanoGeoScience at University of Copenhagen, Marie Curie Research Fellow Sarah R. Davies, Department of Media, Cognition and Communication at University of Copenhagen and Director of Research Anne-Marie Engel, Lundbeck Foundation.

It was also stressed that there are a lot of resources available on methods for public engagement – not least in a number of European projects, which have collected best practice and good examples (one example is the Engage2020 project: http://engage2020.eu/results-description/). Utilizing these resources, however, necessitates that we 'mainstream' engagement at the same time as we invest in designated organizational spearheads that can serve as a driving force. Public engagement, however, should only be done when decision-makers are actually willing to listen to the outcomes since otherwise it can lead to significant disillusionment and criticism.

The panel discussion on how to implement RRI into everyday research practice suggested that most researchers want to contribute to solving problems and make a better society. Very few scientists have heard about the policy documents and discussions of RRI, but they DO have nuanced and well-developed ideas about their responsibility as scientists. First and foremost, they feel responsible for their research group and its ability to do good science – for instance through generating grants and working on worthwhile research projects. If RRI is to make sense for researchers, it has to be developed as something that is meaningful for them and fits with their research practice.

The panel discussion also stressed that it is important to distinguish between different forms of research since some are more obviously candidates for public discussion, whereas others are far away from any form of implementation. It was, however, also pointed out that many research topics include RRI aspects. One way of developing these is to support long-term interdisciplinary collaboration between humanities, natural and social science. Currently, it was argued, there is too much of a zero-risk culture within universities that stifles collaboration with innovative partners outside universities, for instance the DIY-biology movement which is a valuable partner to researchers in synthetic biology. It was claimed that society should respect researchers as experts in identifying the most relevant research questions within their fields – but also that researchers have a moral obligation to engage in discussion about the use of that research. Not because it is their sole respon-

sibility to consider how the results of their research is used in society – such discussions and decisions should be made by citizens, policymakers and politicians - but because researchers have to contribute to the debate about it. It is important that researchers practice talking to publics and that they are able to explain what they are doing in a non-technical language. Finally, it was discussed that there is no general need for more regulations, as there are already plenty of rules and demands on researchers. It might however be valuable to discuss whether the right regulations are in place.

Conclusions and Recommendations

Based on the wide-ranging conference discussions, we have synthetized the following overall points and recommendations for future efforts to improve science-society dialogue and create a sound platform for Responsible Research and Innovation in Denmark and elsewhere:

- **We need to practice dialogue and reflexivity with courage.** Having an open dialogue is not simple, easy or straightforward. We need to be generous and willing to let each other make mistakes.
- **Public dialogues and engagement should be symmetrical.** All parties need to be able to listen and learn as well as having respect for each others' standpoints.
- **Researchers should play an active role in the practical construction of RRI.** Researchers are not going to engage constructively with RRI if it is imposed from the outside and in a form that is not meaningful to researchers themselves.
- **Questions about RRI can be an important resource.** Research organizations and funding bodies might therefore implement RRI by posing questions and facilitating and supporting researchers in reflecting about them.

- **RRI is not just about natural science it includes all forms of research.** For instance economists have been asked about their responsibilities in relation to the financial crisis.
- **Make RRI part of the curriculum.** Engagement training and RRI considerations should be an integrated part of the education at gymnasium, BA, MA and PhD level.

The research system and its policy actors should work towards the following recommendations:
- We should recognize and utilize the **Danish tradition for engagemen**t which gives us a comparative benefit (cultural and institutional infrastructure)
- Denmark can take leadership but also needs to play an active part in **European and international cooperation** towards RRI
- **Public engagement** requires support and capacity-building for active interventions if we want it to make a difference to the research system.
- We should develop **notions of excellence in research that embrace RRI**
- We need to pay particular attention to the **linking of research AND innovation**, as this is crucial from a public perspective

Universities, businesses and other research organizations should work towards the following recommendations:
- It is necessary to develop **explicit strategies** for Responsible Research and Innovation which go beyond the current focus on commercialization
- Research organizations should develop **societal partnerships** by being open to collaboration, recognizing opportunities and building long-term relationships
- Public and private research organizations should collaborate to find ways of **giving Open Access to publics and stakeholders in a meaningful way**

- University leadership should ensure that **academic career structures** positively support wider social responsibility
- Research organizations should **develop safe spaces for reflection** and do away with the current zero-risk culture.
- Funding bodies should integrate RRI considerations in their **application procedures** – and explicitly state how these are evaluated within the process

The following recommendations apply to individual researchers but should be supported by the research community
- Researchers should accept the responsibility of **taking part in societal discussions** about how research is developed and used
- Researchers should learn to communicate with publics, stakeholders and research subjects in order to be able to **learn from their comments and questions**
- Researchers should be **courageous in the face of public scepticism** and they should support each other in engaging in public dialogue

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Biographical note

Maja Horst is Professor of Science Communication and Head of Department of Media, Cognition and Communication at University of Copenhagen. She has published widely within the field of STS. She is a member of the Academy of Technical Sciences and of the Danish Council for Research and Innovation Policy.

Sofie Carsten Nielsen is Minister for Higher Education and Science (since February 2014) in Denmark and has been member of the Danish Parliament for the Social Liberal Party since 2011. She has a MA in European politics and administration from the College of Europe and MSc in political science from University of Copenhagen.