

Responsible Research and Innovation

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*Multi- und Transdisziplinarität in den Lebenswissenschaften:
Verbundforschung zu Gesundheit und BioÖkonomie in Horizont 2020*

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RRI Concepts (1)

“Responsible innovation means **taking care of the future through collective stewardship of science and innovation** in the present”

(Stilgoe, J., Owen, R., & Macnaghten, P. (2013). Developing a framework for responsible innovation. *Research Policy*, 42(9), 1568-1580.)



RRI Concepts (2)

“Responsible Research and Innovation is a **transparent, interactive process** by which societal actors and innovators become mutually responsive to each other with a view to the **(ethical) acceptability, sustainability and societal desirability** of the **innovation process and its marketable products** (in order to allow a proper embedding of scientific and technological advances in our society).”

(Von Schomberg, R. (2013). A vision of responsible innovation. In R. Owen, M. Heintz & J. Bessant (Eds.), *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society* (pp. 51-74). London: John Wiley.)



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RRI Concepts (3)

“Responsible research and innovation is a **process** for better aligning research and innovation with the values, needs and expectations of society. It implies **close cooperation** between all stakeholders in various strands comprising:

- science education,
- definition of research agendas,
- access to research results and
- the application of new knowledge in full compliance with gender and ethics considerations.”

(Competitiveness Council, 4-5 December 2014; 16505/14, 3353rd Council Meeting)



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Dimensions of RRI

| Stilgoe et al. (2013) | Wickson & Carrew (2015) | European Commission |
|----------------------------------|---|--|
| | Focus on addressing significant socio-ecological needs and challenges | Public Engagement, Gender Equality, Science Literacy and Science Education, Open Access, Ethics and Governance |
| Anticipation (what happens, if?) | A dedicated attempt to anticipate potential problems, assess available alternatives and reflect on underlying values, assumptions and beliefs | |
| Reflexivity | | |
| Inclusion | A commitment to actively engaging a range of stakeholders for the purpose of substantively better decision making and mutual learning | |
| Responsiveness | A willingness among all participants to act and adapt according to these ideas | |

Conceptual problems (1): fuzziness

- Variation across actors and countries regarding the understanding of RRI and “acting responsible”.
- RRI not well known in European countries (A, CZ, D, DK, FIN, GR, H, I, ICE, IRL, LIT, NL, PL, SP, UK).
- It is an opalescent concept with different meanings in different national contexts and covers other concepts as ethics, safety, sustainability, gender, ...
- Dominant narratives differ between countries.
 - In some countries economic growth (RRI, particularly citizen involvement as means to growth) dominant (crisis, catching up)
 - Others emphasise e.g. different societal needs as well.
 - Pristine nature, sustainable, self-sufficient, GMO free, innovative, inclusive, nuclear free country, ...
- RRI is playing a role to different extent and in different ways in different technical areas (biomedicine, reproductive medicine, GMO, nuclear energy, fracking, ...). This also varies across countries (what is considered a problem is none in another).
- It is therefore difficult to define and agree upon a fixed set of qualities of RRI that is globally and universally valid (<http://rritrends.res-agora.eu>).
- Moreover, RRI raises different issues in research and innovation. Both processes have different dynamics and involve different actors and stakeholders; they raise different issues in terms of ethics and societal needs and have different requirements and potentials for anticipatory intelligence.



Conceptual problems (2): workability

“closing down” and defining RRI – if possible ubiquitous – qualities or “keys”

- Understandable need to develop RRI into a workable and manageable concept which can be easily explained, grasped, advocated for, implemented, rolled-out, measured and monitored.
- In this perspective RRI is a fixed ‘object’ with certain qualities and is achieved if certain measurable qualities, rules and standards are met.
- Despite the undeniable merits such a management approach runs the risk that RRI is defined in a top-down fashion, carries little meaning for the shop-floor level and degenerates into shallow tick-boxing activity.

RRI as reflexive activity, keeping it continuously “open”

- Understands RRI as a constant process of inquiry in which actors involved in research and innovation have to continuously and actively engage in.
- This inquiry focuses on qualities of innovation process and its outcome as well as the mutual interdependence between science/technology/innovation and society.
- It is bottom-up oriented, inclusive and case-sensitive; that means it starts from the actors involved in research and innovation, it is situated in concrete and particular research and innovation processes and is flexible and open for new, emerging qualities of RRI and its outcome.



Conceptual problems (3): conflict

- RRI seems to be a concept everybody can agree upon, but actually it is heavily discussed.
- Some **researchers** claim that RRI limits academic freedom and as a consequence impedes innovation (e.g. Wilfried Hinsch, FAZ, 11.05.2016);
- Some **funding organisations** want to keep scientific excellence as sole funding criterion and are reluctant to take societal needs into account in their decisions.
- **Companies** are often not aware of the concept of RRI. Many of them already focus on the well-established Corporate Social Responsibility (CSR), which, however, has quite a different meaning and rarely affects the processes of research and innovation.
- Many enterprises are unwilling/unable to open up their vital – and therefore often secret – research and innovation processes. This protectiveness, however, contradicts the openness called for in RRI.
- Some policy-makers are concerned that RRI **slows down innovation processes**, makes them more expensive and less effective in contributing to economic competitiveness and creating jobs.



Table 2

Four dimensions of responsible innovation.

| Dimension | Indicative techniques and approaches | Factors affecting implementation |
|----------------|---|---|
| Anticipation | Foresight Technology assessment Horizon scanning Scenarios Vision assessment Socio-literary techniques | Engaging with existing imaginaries Participation rather than prediction Plausibility Investment in scenario-building Scientific autonomy and reluctance to anticipate |
| Reflexivity | Multidisciplinary collaboration and training Embedded social scientists and ethicists in laboratories Ethical technology assessment Codes of conduct Moratoriums | Rethinking moral division of labour Enlarging or redefining role responsibilities Reflexive capacity among scientists and within institutions Connections made between research practice and governance |
| Inclusion | Consensus conferences Citizens' juries and panels Focus groups Science shops Deliberative mapping Deliberative polling Lay membership of expert bodies User-centred design Open innovation | Questionable legitimacy of deliberative exercises Need for clarity about purposes of and motivation for dialogue Deliberation on framing assumptions Ability to consider power imbalances Ability to interrogate the social and ethical stakes associated with new science and technology Quality of dialogue as a learning exercise |
| Responsiveness | Constitution of grand challenges and thematic research programmes Regulation Standards Open access and other mechanisms of transparency Niche management ^a Value-sensitive design Moratoriums Stage-gates ^b Alternative intellectual property regimes | Strategic policies and technology 'roadmaps' Science-policy culture Institutional structure Prevailing policy discourses Institutional cultures Institutional leadership Openness and transparency Intellectual property regimes Technological standards |

^a Schot and Geels (2008).^b See below and Macnaghten and Owen (2011) for an example of this.

(Stilgoe et al., 2013, p. 1573)



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Example: transdisciplinary research on xenotransplantation

- Transplantation of cells, tissues, and organs across species
- Strategy to overcome organ shortage (artificial organs, stem cells)
- Safety (xeno-zoonosis)
- Ethical issues:
 - genetic modification of animals, involves animal testing (non-human primates), radical change of animal use (quantitative and qualitative)
 - Whose informed consent?
 - Privacy and human rights
 - Psychological effects, human identity, ...
- Great promises around the millennium did not come true but research continues (islet transplantation)



Accomplishments

1. ELSA were actually addressed in the project (patient rights, informed consent). That's already an accomplishment!
2. Ethicists/theologians could autonomously define their project
3. Atmosphere of cooperation and support between the two "worlds", cooperation worked in concrete projects.
4. Public was informed about xenotransplantation via media, symposia, a citizen jury is planned.
5. Involvement also contributed to public acceptance.
6. Learning experiences of researchers:
 - To use state of the art research as basis for ethical reflection
 - Scientists act responsible and think about ethics as well
 - Ethical questions sometimes to remote from research practice
 - Aspects of the existing informed consent unacceptable



Challenges

- Unclear role of ethicists/theologians in the project:
 - ~~Ethicists as supervisor~~ (ethicists are not a public authority)
 - ~~Ethicists are not the better scientists~~
 - Taking up public concerns (potential conflict with project objective)
 - Stimulating reflection within science (not formulated in the proposal)
 - Disciplinary reflection (danger of avoiding transdisciplinary learning)



Suggestions for change (1)

- Clarify the roles of both groups.
- Ethicists should not take a reserved attitude and should not act passively, but address scientists, demand discussions, attend meetings, and visit research sites.
- Emphasise the importance of cooperation between both groups to promote learning.
- Address the ambivalence of close collaboration between scientists and ethicists (whitewashing versus ethical know it all).
- Create trust between the two groups and try to overcome the division between the two groups.



Suggestions for change (2)

- Create institutionalised fora of exchange which enable dialogue. An example could be symposia lasting more than one day which allow an in-depth investigation of ethical, legal, and social questions posed in and by research projects (“classical” formats do not encourage exchange).
- Initiate reflective thinking by exchange between the two groups. This should enable both groups to reflect their own work and the ethical/societal problems involved. This could create new research agendas grown from and to be addressed within the project.
- Provide additional financial means for those research projects that plan for such a structure.



Suggestions for change (3)

- Ethical reflection of science should not be based on individual preferences, but should add to and further the careers of young scientists (ethical impact points).
- Create a platform where scientists and ELSA researchers can meet and find each other.
- Training for scientists to understand ELSA research.
- Create tools (recommendations) and document best practices how to structure RRI in interdisciplinary research.
- Involve ELSA researcher in project evaluation of research projects and proposal. Not as judges but as advisors which point out potential questions of responsible research and innovation.



RRI is not new fad and will not go away...

- ...because it responds to societal critique on and problems of science and innovation
 - Research integrity and research ethics, bioethics
 - Ethical, legal and social aspects (ELSA) of technology development (biomedicine)
 - Technology Assessment (expert, participatory, upstream, constructive)
 - Science and Technology Studies
 - Public engagement activities (protests)



What RRI does definitely not mean...

- That researchers or organisations dealing with research and innovation have been acting or acted per se irresponsible if they did not apply the concept.
- That research and innovation should be forced into a corset.



Thank you for your attention!

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