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Technology Assessment

Governance of Social and Ethical Impacts of SynBio

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Governance of emerging technologies



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- Governance of *opportunities*: how to develop synthetic biology for the public good?
- Governance of *concerns*: how to deal with potential social and ethical implications?

“This technology, we cannot afford to let it fail in any sense, not in a political sense at least, so something should be done about it” (Huib de Vriend quoted by Scerer & Seiringer in *Syst Synth Biol* 2009)

- Governance of concerns as an important pre-condition for the governance of opportunities: ‘making the most of synthetic biology’

Our role in the governance of SynBio



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Publications

- *Constructing Life. Early social reflections on the emerging field of SB* (2006)
- SB and the role of civil society organisations. Shaping the agenda and the arena of the public debate (2009)
(*Synthetic Biology. The technoscience and its societal consequences* Schmidt et al.)
- *Life as a do-it-yourself kit* (2009)
(*NanoEthics* Vol 3, No 3)
- *Ten Lessons for a nanodialogue* (2008)

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Activities

- SB for Human Health: ethical and legal issues (SYBHEL: 2009-2012)
- Exploring SB in Japan (2010)
(Dutch Embassy. Office of Science and Technology)
- Making Perfect Life: Bioengineering (in) the 21st century (2009-2011)
(STOA project European Parliament)
- Synthetic Genomics: Scientist's understanding of society's concerns; society's understanding of the science and scientists (2009-2010)
(J. Craig Venter Institute, US)

Governance of concerns: what is the challenge?



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Potentially disruptive nature of new and emerging S&T, challenging:

- established regimes of regulation
- normative and symbolic conceptions in society

Governance of concerns make take two different forms:

- Reconsidering *issues of regulation*: from the 'simple and known' to the 'complex' and 'unknown' (risk governance)
- *Sense making processes* in terms of established and diverse values and public understandings: how converging technologies challenge our concepts

Reconsidering issues of regulation



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To what extent can we trust established regimes of regulation in governing synthetic biology?

Biosafety

Biological Machines
(COGEM 2008):

For the time being no need for new safety legislation...future developments may challenge current risk analysis methods

EGE (2009): initiate study on current risk assessment procedures

New Life, Old Bottles: risk research urgent requirement parallel to product development (Rodemeyer 2009)

Biosecurity

Code of conduct for biosecurity (KNAW 2008):

Many of the rules of the code of conduct already implemented by virtue of biosafety measures?!

- Dual-use research
- Regulating DNA synthesis
- Do-it-yourself biology as a new context

EGE (2009): define comprehensive security framework for SB

Patenting

Patenting system as a challenge for SB
(Oye & Wellhausen 2009):

- Problem of 'anti-commons'
- How to draw a line between public sharing and private ownership of biological parts and design principles?

EGE (2009): launch debate on most appropriate ways to ensure public access to results of SB

Making sense of SynBio in society



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Parens et al. *Ethical Issues in Synthetic Biology* (2009)

- Two categories of concerns, relating to 'hard' impacts (physical harms) and 'soft' impacts (non-physical harms)
- Policy-makers are required to consider hard impacts through regulatory measures, but **remain largely silent about soft impacts**.
- Lack of appropriate governance mechanisms to deal with soft impacts: public engagement as the answer?

Conceptions of fairness and equality

Who controls access to knowledge and technologies?

To what extent can natural, living entities be owned?

EGE (2009): avoid new gaps between EU and developing and emerging countries

Conceptions of nature and ourselves

To what extent do we want to remake the world around us and ourselves?

Nature as a machine?

EGE (2009): shift in understanding concepts of life has to be addressed in open intercultural forum, including philosophical and religious input

Lessons for governance of SynBio



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Three lessons:

1. Regulatory concerns should be actively addressed by the government: lack of public trust and confidence in the way in which **risks** are governed will undermine public support for the opportunities of SB.
2. Broaden the agenda of the public debate to the **opportunities** of SB: create ways to involve various stakeholders, civil society organisations, and the public in discussions about societal priorities of research and development ('social pathway engineering')
3. Make sense of broader **concerns** in society about 'soft impacts':
 - in the context of particular opportunities and fields of application of SB (energy, food, medicine, ...) and in relation to already existing discussions
 - in the context of more general developments and trends (converging technologies, increasing 'makeability' of life itself, ...)

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