A brief overview of methodologies

Alexei Grinbaum

Constructive technology assessment

Midstream modulation

Narratives

IV. Constructive TA and Socio-Technical Scenarios

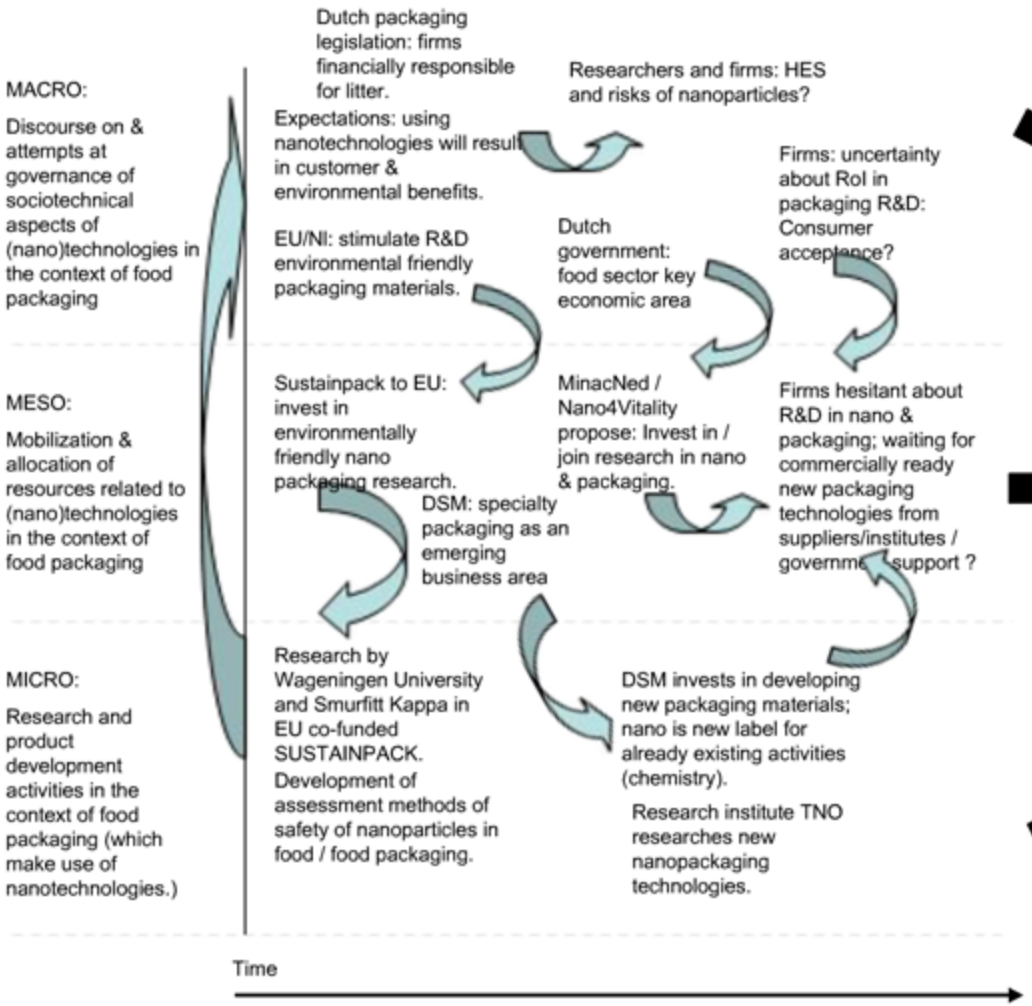
- Approach of CTA: include broader aspects in technological development, anticipate on societal embedding. "Modulation" through interactive articulation.
- For nano ST: Support and orchestrate bridging events, create spaces where interactions occur (taking the structural features into account in the design)

Emerging irreversibilities

"Scenarios reconstruct ongoing and future paths, their rise and fall, and how they become a reference for actors' strategies. Compared with roadmapping exercises, they are open ended: there is no future socio-technological functionality and performance that must be realized and thus becomes the starting point to identify challenges."

Courtesy of Arie Rip

Three scenarios



Regulation helps

(Top down dynamics)

Thresholds are passed

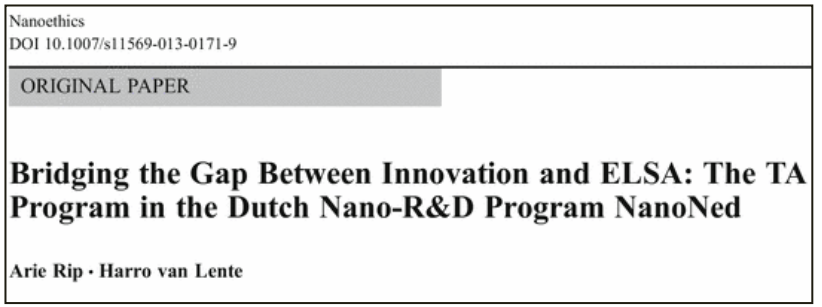
(Linking pin dynamics)

Only Little Nano

(Bottom up dynamics)

Courtesy of Arie Rip

nanonextnl
innovating with micro and nanotechnology


Nanoethics
DOI 10.1007/s11569-013-0171-9

ORIGINAL PAPER

Bridging the Gap Between Innovation and ELSA: The TA Program in the Dutch Nano-R&D Program NanoNed

Arie Rip · Harro van Lente

1C – Technology Assessment
Programme Director: Prof. dr. ir. Harro van Lente (Utrecht)

Anticipation on Societal Embedding of Nanotechnology aims to bridge the gap between the world of science and innovation on the one hand and societal (including broader economic) aspects on the other hand. This is a practical challenge for nanoscientists, technologists, industry, policy makers and societal actors. It is also a challenge for understanding and research, where contributions from different disciplines are necessary, often in interdisciplinary collaboration. The program encompasses science and technology studies, innovation studies, evolutionary economics, marketing and communication studies, political science, governance studies, law and ethics. There will be interesting complementarities with 'risk' studies which anticipate on health, safety and environmental effects. These complementarities will be actively pursued.

The program will do frontier research, for example in new ways of assessing potential effects of nanotechnology developments and their embedding in society. Socio-technical scenario methods, drawing on "endogenous futures" and co-evolution of technology, society and ethics are one important approach. Another example of frontier research is the study of various "soft" law and *de facto* governance approaches, which may eventually link up with the study of public and stakeholder perceptions of nanotechnology which feed into perceptions of legitimacy of governance and regulation.
The relevance of the program relates to different audiences: nanoscientists and other inhabitants of the world of nanotechnology including industry; policy makers and perhaps also politicians and opinion leaders (and media); civil society actors. The program will actively pursue interactions with the first audience, nanoscientists and other inhabitants of the world of nanotechnology, and exploit opportunities to reach the other audiences.

The program consists of three clusters:

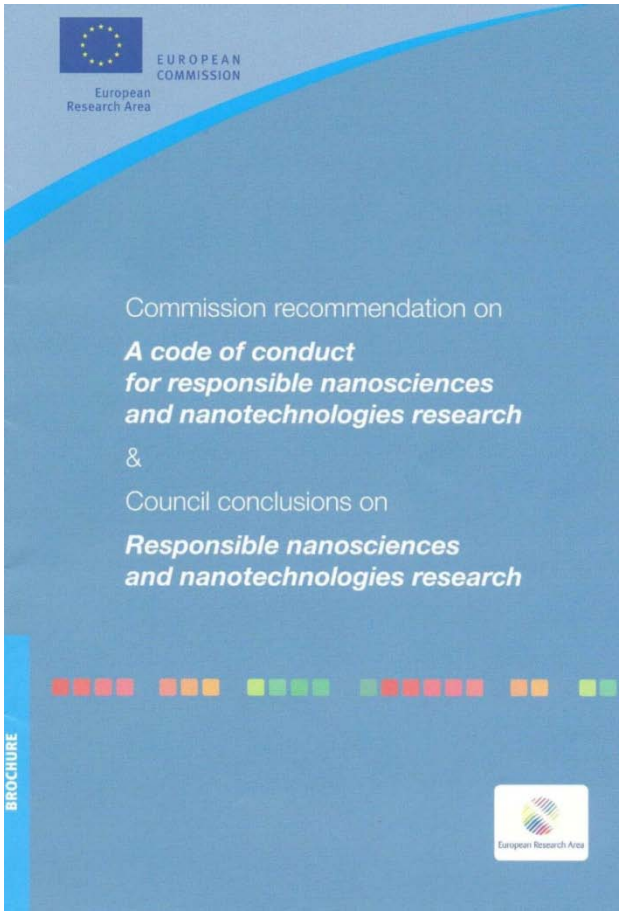
- Cluster A studies the dynamics of scientific and technological developments and inquires into their sectoral and institutional embedding and impacts (economic and otherwise) in society.
- Cluster B starts with society, and includes public perception and public engagement with nanotechnology developments.
- Cluster C focuses on governance questions that are urgent for regulatory and ethical embedding of nanotechnologies

http://www.nanonextnl.nl/themes/risk-analysis-and-technology-assessment/technology-assesment.html

EU Code of Conduct for Nanotechnology

Commission Recommendation on a Code of Conduct for Responsible N&N research

- 7 general **principles** and 27 **guidelines**
- Instrument for Member States, companies, funders, research institutions, all researchers, and civil society organisations for **initiatives and strategies** on responsible nano research



MasterPlan

Issues and Options on the Path Forward
With the European Commission Code of Conduct on
Responsible N&N Research

3.7 Accountability

Researchers and research organisations should remain accountable for the social, environmental and human health impacts that their N&N research may impose on present and future generations.

13. The explicit attribution of accountability to N&N researchers for potential impacts of their research on future generations seems unacceptable. The EU-CoC should be more specific so that it is clear *who needs to do what* to be "accountable". Scientists remain accountable for adopting good scientific practice, but not for what is done with their work by others in the future.

14. It is crucial to recognize that criticism about the understanding of the "Accountability" principle has contributed to an overall rejection of the EU-CoC among a considerable number of N&N stakeholders. Fundamental revision and/or clarification of this principle is therefore pivotal to the success of the revision and further implementation of the EU-CoC. The objecting stakeholders should be included in the revision and reformulation of this principle. Particular care is needed in the translation of the term in the various languages.

3TU.Centre for Ethics and Technology

OUR RESEARCH

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- A Sustainable Ethics for Future Energy Systems
- Accountability for architectures for identity management systems in e-government
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- Ethical aspects of upscaling an innovative water treatment technology
- Ethical dilemmas of nuclear power production and nuclear waste management
- Ethical issues in engineering design: safety and sustainabillity
- Ethics of identity management
- Integrating social and ethical reflection in nanobiotechnological practice
- Molecular diagnostics: towards a realistic form of ethical Technology Assessment
- Moral responsibility in R&D networks
- Normative implications of non-invasive instruments to analyze blood and tissue
- Persuasive technology and social values
- Product Impact: Theory and ethics of behavior steering technology
- Remaking the body and embodiment in tissue engineering:
- On the professional and public responsibility of engineers in body politics
- Responsible early diagnostics for Alzheimer's Disease
- Responsible Innovation in Food Technology: about the intricate web of soft impacts, (ir)responsibilities, and mutual lack of trust
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- Carebots and the good life: An anticipatory ethical analysis of human_robot interaction in (health) care
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- Enhancing Responsibility
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- Ethical Issues of Emerging ICT Applications
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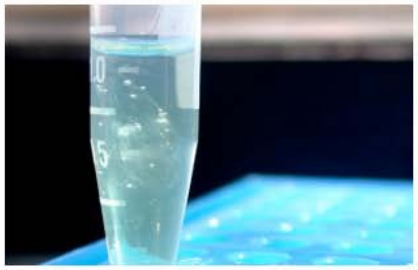
- Towards an Integrated Philosophy of Human-Media Relations
- Moral fitness of military personnel in a networked operational environment
- Neuroethics: ethical, legal and conceptual aspects of neuroscience and neurotechnology
- New Technologies as Social Experiments: Conditions for Morally Responsible Experimentation
- The Brain and the Law
- The ethical consequences of converging technologies

VALUES IN ENGINEERING AND SOCIETY



- Autonomy and technological risk
- Emotions & Technological Risks; Emotions as a Normative Guide in Judging the Moral Acceptability of Technological Risks
- Evaluating the Cultural Quality of New Media:
- Towards an Integrated Philosophy of Human-Media Relations
- Genomics, World Views and Liberal Society
- Moral Emotions and Risk Politics
- Multinational nuclear waste repositories: ethics and acceptability
- SophoLab: Experimental Computational Philosophy
- Technology and Human Development. A Capability Approach
- Technology and the limits of humanity: the ethics and anthropology of posthumanism
- Technology and the Matter of Morality
- The ethics of flood risk management: Reconciling equity and efficiency in flood risk management

Sci Eng Ethics (2011) 17:769–788
DOI 10.1007/s11948-011-9317-8

What happens in the Lab: Applying Midstream Modulation to Enhance Critical Reflection in the Laboratory

Daan Schuurbiers

Sci Eng Ethics (2009) 15:97–110
DOI 10.1007/s11948-008-9079-0

OpenAccess

ORIGINAL PAPER

Imagining the Future of Photoacoustic Mammography

Simone van der Burg

STIR
SocioTechnical Integration Research
International Laboratory Engagement Study

"An 'embedded' social or human scientist interacts with laboratory practitioners by closely following and documenting their research, attending laboratory meetings, holding regular interviews and collaboratively articulating decisions"

Causing a STIR

DR ERIK FISHER

Dr Erik Fisher discusses the collaborative crossover project Socio-Technical Integration Research (STIR), which is bridging the gap between ethics and scientific endeavour, policy and the lab

Policies for 'responsible innovation' and 'upstream public engagement', which are found throughout the industrialised world, have called for this kind of responsiveness. STIR aims to provide an empirical basis for designing and evaluating effective programmes based on these policies. The project also explores the reproducibility and generalisability of a novel set of techniques for fostering socio-technical integration and collaboration.

Your initial Laboratory Engagement Study established a protocol from which further investigation has developed. Why do you believe there has been so much interest?

I think researchers and innovators recognise

culture or a single scientific field; they appear across diverse pairings of natural and social science in multiple laboratories within multiple countries.

What have been the greatest challenges?

Usually, they come at the beginning of the studies, when the lab is still deciding what to make of the 'outsider' who has joined them. The 'STIRers', as I like to call them, often have to put up with a lot of suspicion and misunderstanding, at least initially. They have been called 'the politician', 'the shadow', 'the psychoanalyst' and 'spies' among other things. These initial tensions are usually diffused once the embedded scholar proves to the rest of the group that he or she is actually

cns.asu.edu/research/stir

http://www.youtube.com/watch?v=feOOT2iI16o

SURF

Focus areas

SURF focuses on a number of themes that promote ICT innovation in higher education and research. Each theme brings together knowledge and activities in this field, usually categorised according to specific areas of attention.

Digital Rights
Innovations in e-learning and e-science are frequently hampered by digital rights issues. SURF provides advice and support for higher education and research regarding digital rights.
Read more

Green ICT
The enormous increase in the number of ICT applications consumes energy and produces CO2 emissions, also in the higher education institutions. SURF is working with the higher education institutions to find ways of reducing ICT-related energy consumption in the sector.
Read more

Innovation in Education
Together with institutions in the field, SURF encourages innovation in higher education through the use of ICT. It does so by financing projects, knowledge-sharing and professionalization, by identifying trends, and by developing new expertise.
Read more

Organising with ICT
For education and research to be as effective as possible, high-quality support processes are necessary. SURF therefore focuses on providing support for process design and organisation at higher education institutions.
Read more

Cloud computing
It is important for higher education institutions to give careful consideration to just how they utilise the power of cloud computing. Working together in the context of SURF means they can reap the benefits on a much greater scale and can combine their purchasing power.
Read more

Collaboration infrastructure
Students, researchers, and staff at educational institutions are increasingly using the Internet to exchange information and to collaborate. SURFnet provides a variety of services for online collaboration in the higher education and research sector.
Read more

Network infrastructure
SURFnet's hybrid network is one of the fastest and most innovative networks in the world. It offers both Internet via IP and fixed and dynamic lightpaths.
Read more

Research
ICT opens up a wide array of possibilities for research. The Netherlands' national e-infrastructure, administered by SURF, offers advanced ICT services specifically for researchers.
Read more

Security and privacy
Educational institutions wish to protect their information and applications against unauthorised access, but they also need to ensure that these can be accessed by students. SURF and SURFnet put a great deal of effort into security.
Read more

http://www.surf.nl

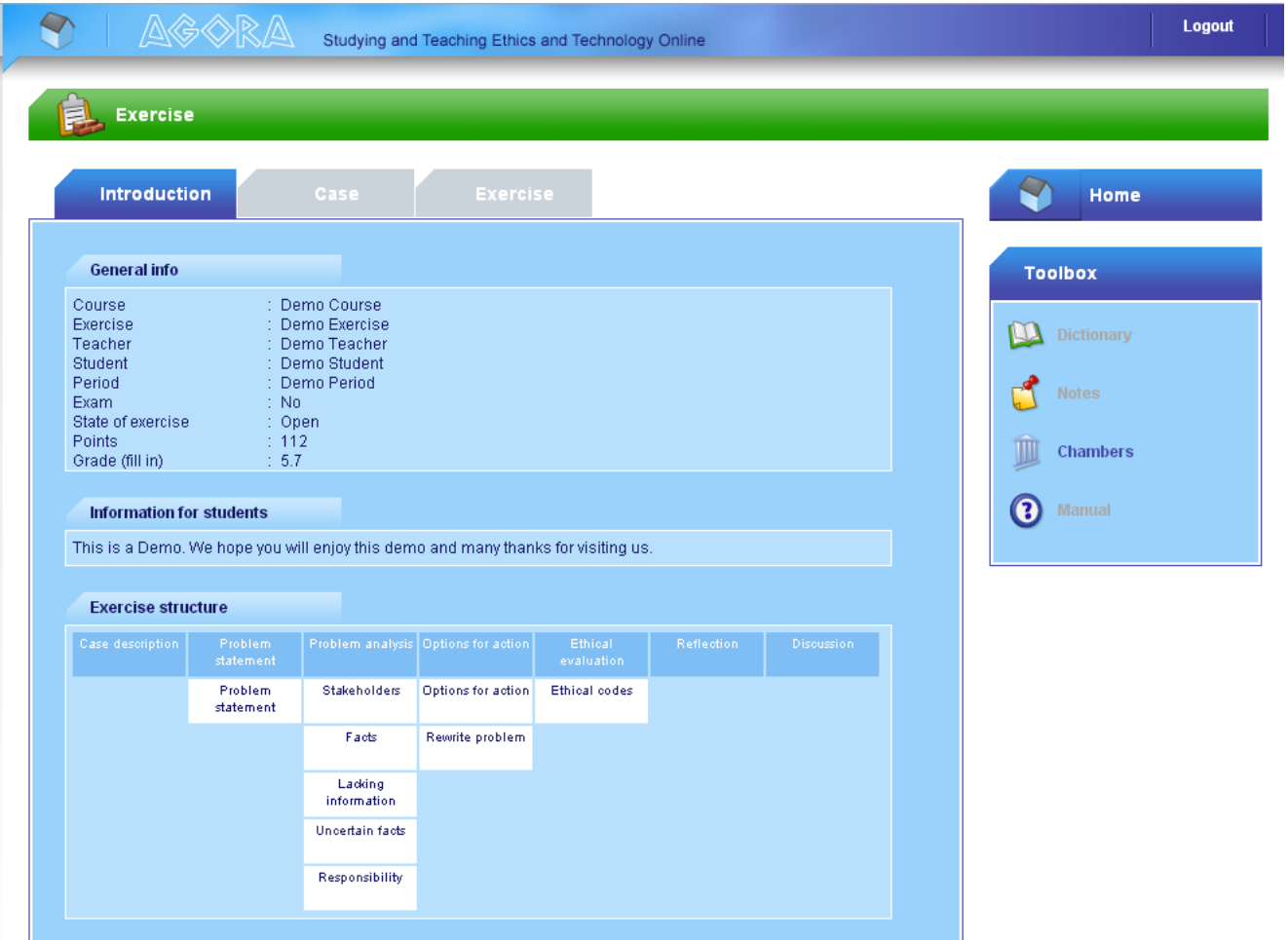
Science and Engineering Ethics (2005) 11, 277-297

Teaching Ethics and Technology with *Agora*, an Electronic Tool

Simone van der Burg[δ] and **Ibo van de Poel**[γ]
[δ]*University of Technology Eindhoven;* [γ]*Delft University of Technology*

Keywords: teaching ethics, engineering ethics, applied ethics, web-based computer tools, ethics and technology

www.ethicsandtechnology.com



Toolkit for ethical reflection and communication

1. Introduction
2. Classifying ethical and societal issues
3. Thinking with the help of ethical concepts
4. Responsible communication
5. Narratives of nanotech
6. Glossary

5. Narratives of nanotech

I. Prometheus
II. The Golem of Jeremiah
III. Frankenstein
IV. A positive Prometheus?
V. Pandora's box
VI. Daedalus
VII. The Matrix

Ambivalence of technology

Technology and politics

Technology and hubris