DE LA RECHERCHE À L'INDUSTRIE

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QUESTIONNEMENT DE LA TECHNIQUE

Alexei Grinbaum
CEA-Saclay/LARSIM

Alexei Grinbaum (CEA/LARSIM)

Nicolas Gué

Quid est veritas ?

Pilate répondit :

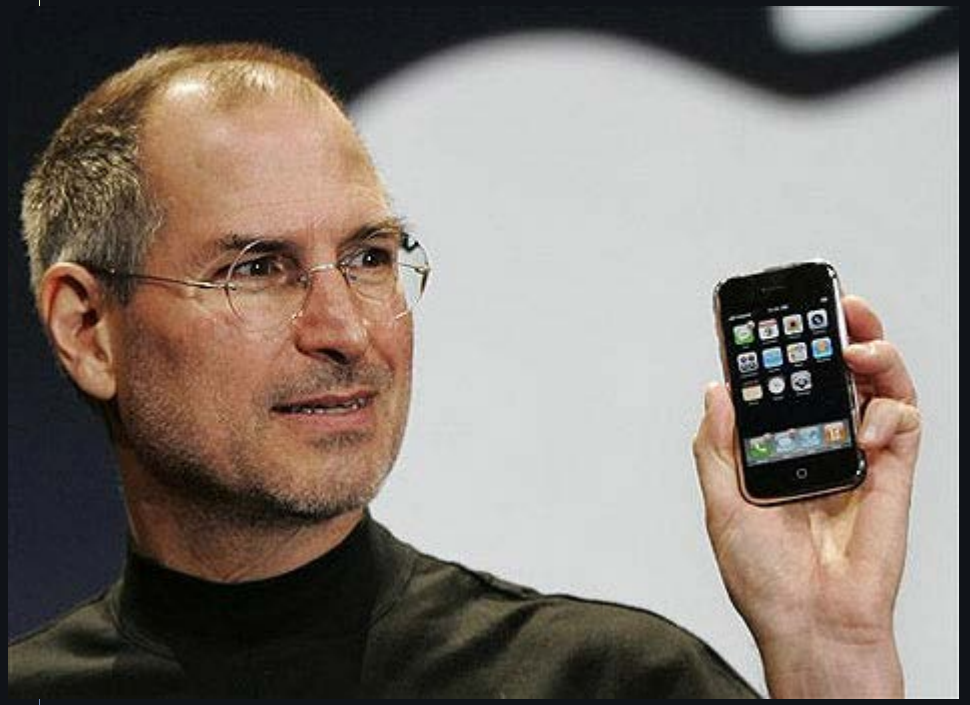
« Moi, suis-je

un expert ?

Les utilisateurs

t'ont livré à moi :

qu'as-tu fait ? »



The Economist

Turmoil at British Airways

Greece on the edge

Wall Street v London v Shanghai

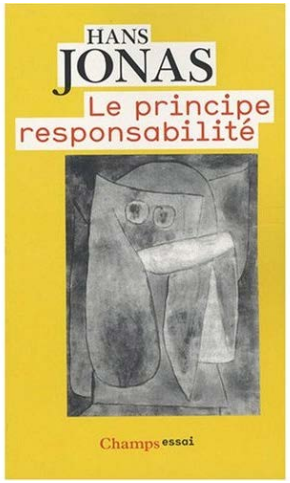
China's control freaks

DECEMBER 19TH 2009–JANUARY 1ST 2010 Economist.com

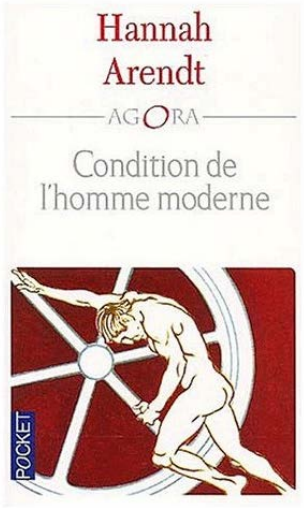
Being foreign | The perfect violin | Going to America | The Harry Potter economy
Amur river, graveyard of hopes | The meaning of rice in Japan | Art of abandonment in Detroit
Gordon Rex, a tragedy | Hedonism and claret | Russia and the Holy Land | Politeness | The joy of dirt
Socrates today | Newspapers under threat | The hardest language | Farewell WW1 | Plus...

Progress and its perils

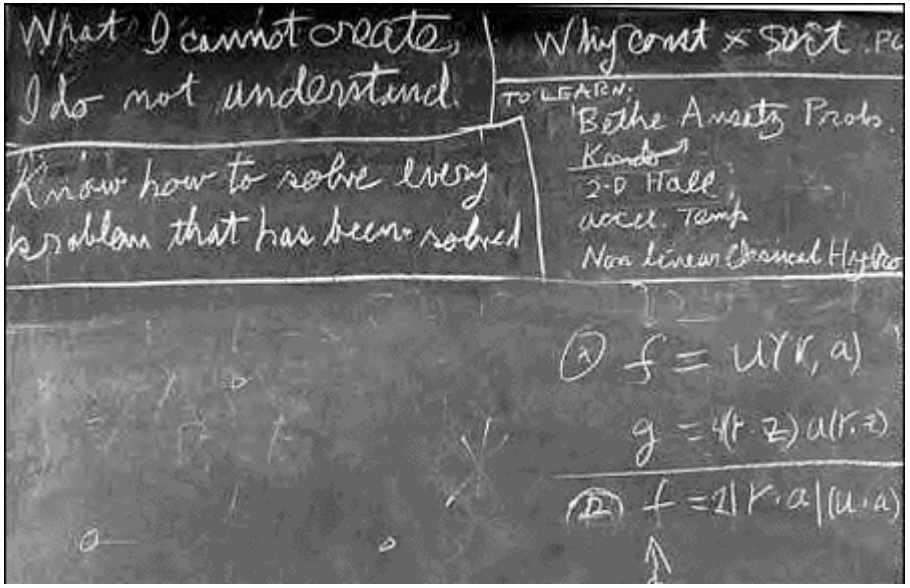
Le pouvoir technique



Aujourd'hui, la puissance humaine *et son excédent* par rapport à toute préconnaissance certaine des conséquences ont pris de telles dimensions que le simple exercice quotidien de notre pouvoir, qui constitue la routine de la civilisation moderne – et dont nous vivons tous –, devient un problème éthique.

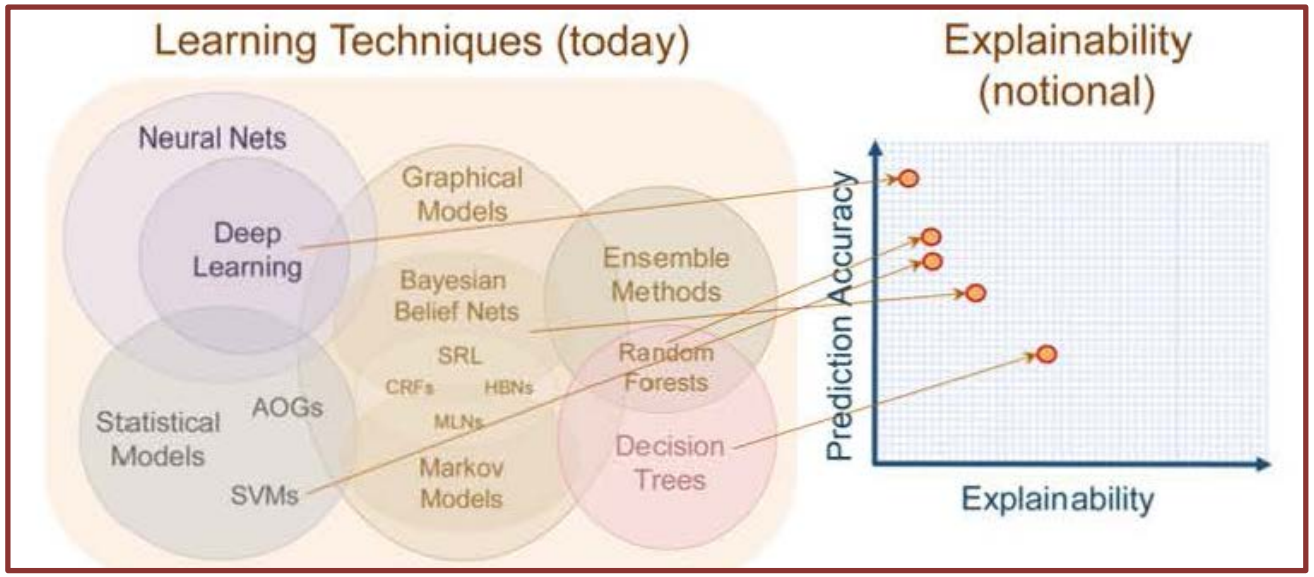


If it should turn out to be true that knowledge (in the modern sense of know-how) and thought have parted company for good, then we would indeed become the helpless slaves, not so much of our machines as of our know-how, thoughtless creatures at the mercy of every gadget which is technically possible, no matter how murderous it is.



"What I cannot create,
I do not understand."

Feynman in 1988, left on his blackboard at time of death



David Gunning

We can create what we cannot understand.

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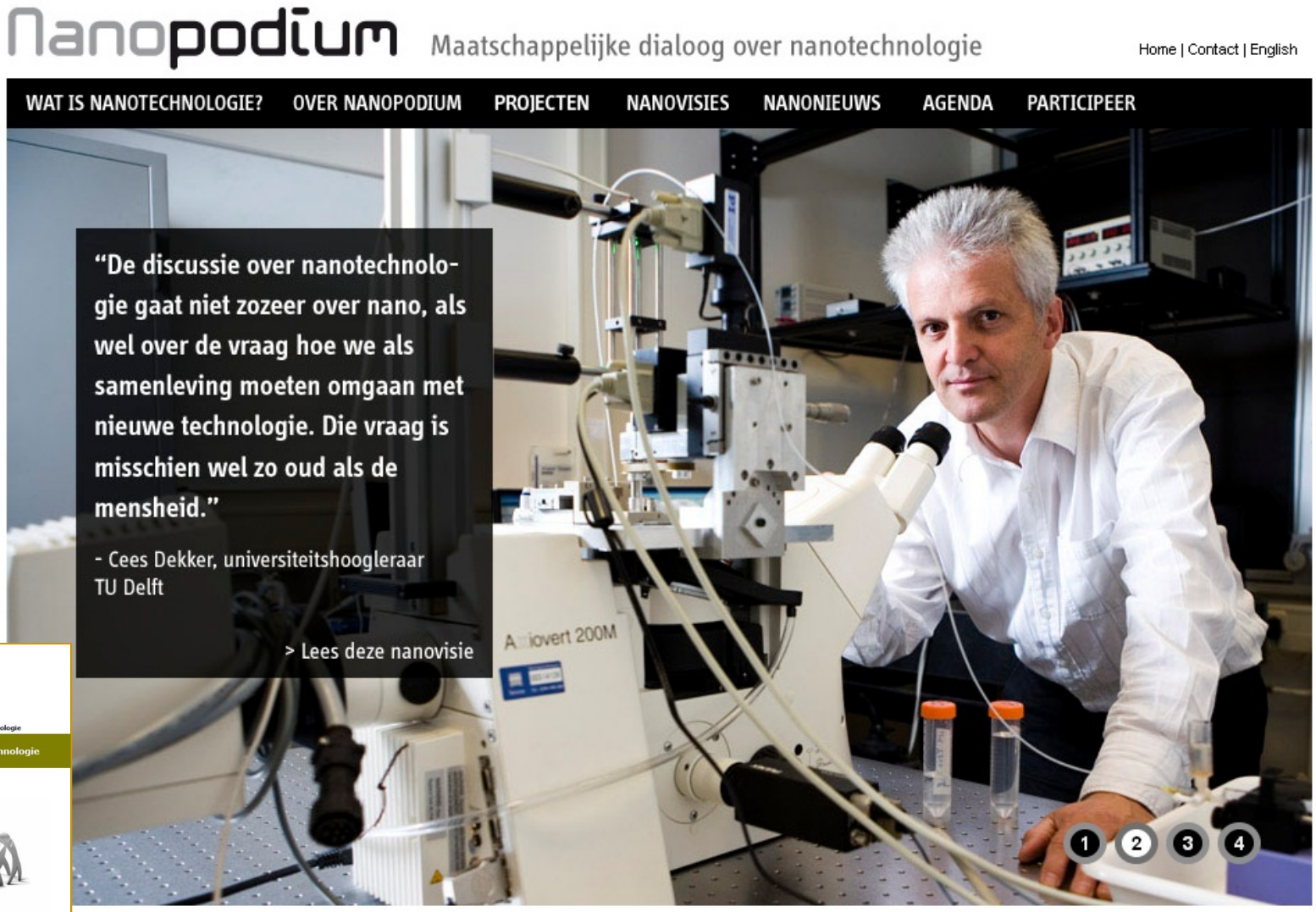
NANO: SCIENCE AND SOCIETY

www.cea.fr

France: debatpublic-nano.org

Netherlands: Nanopodium.nl



UK: nano and me

Rahmen der FachDialoge 2011/2012

Die FachDialoge werden jeweils an zwei aufeinanderfolgenden Tagen in den Räumen des BMU in Berlin stattfinden. Zu jeder Veranstaltung werden ca. 20 Vertreter und Vertreterinnen der Stakeholdergruppen sowie aus Ressorts und Behörden eingeladen. Das BMU wird zu den Themen Berichte publizieren, in denen die Ergebnisse der FachDialoge wiedergegeben werden. Der Schwerpunkt der FachDialoge soll auf der gesellschaftspolitischen Einordnung der jeweiligen Themenstellungen liegen.

Themen und Termine der FachDialoge

Die folgende Tabelle zeigt die vier FachDialoge und ihre geplanten Termine.

Fachdialog	Thema	Termin
FD 1	"Risikomanagement in der Nanowelt"	01.12. - 02.12.2011
FD 2	"Rückverfolgbarkeit von Nanomaterialien"	21.02. - 22.02.2012
FD 3	"Nachhaltigkeit von Nanotechnologien - green nano"	12.06. - 13.06.2012
FD 4	"Potenziale der Forschung als Standortfaktor"	16.10. - 17.10.2012

Source: *Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit*

Débat public sur les nanos 2009-2010

Aujourd'hui le nanomonde
Le site du débat public sur les nanotechnologies

Les Nanotechnologies | Le débat public et la CNDP | Actualité | Agenda

Le nanomonde, c'est maintenant qu'il faut le combattre

www.nanomonde.org

Alexei Grinbaum (CEA/LARSIM)

Alexei Grinbaum (CEA/LARSIM)

http://www.slate.fr/france/83845/les-activistes-anti-techno-de-pmo-nous-expliquent-leur-strategie

TOUJOURS PIRE ! Alerte à
LA BIOLOGIE DE SYNTHESE
& aux *aliens* de demain

L'ORGANISATION D'UN DÉBAT PUBLIC SUR DES QUESTIONS SCIENTIFIQUES OU TECHNIQUES EST IMPOSSIBLE. A CAUSE D'EUX

Les actions de boycottage d'un groupe d'activistes baptisé Pièces et Main d'Œuvre (PMO) ont rendu impossible l'organisation d'un débat public en France sur des questions scientifiques ou techniques. Anonymes, ses membres refusent toute participation aux émissions de radio et de télévision. Ils répondent à trois questions de Slate.fr.

PMO : « S'il y a débat sur les OGM, le nucléaire ou les nanotechnologies, c'est que des individus ou des groupes ont exprimé sans permission leur opposition politique à ces projets politiques. »

Comme il descendait sur la rive pour se laver les pieds, voici qu'un énorme poisson s'élança pour le dévorer. Effrayé, Tobie poussa un grand cri, en disant: « Seigneur, il se jette sur moi! » L'ange lui dit: « Prends-le par les ouïes et tire-le à toi. » Ce qu'ayant fait, il le tira sur la terre sèche, et le poisson se débattit à ses pieds. L'ange lui dit: « Vide ce poisson, et conserves-en le cœur, le fiel et le foie, car ils sont employés comme d'utiles remèdes. »
Tobie 6:2-5

Cognitive Barriers in Perception of Nanotechnology

Alexei Grinbaum

Filippino Lippi, National Gallery, Washington

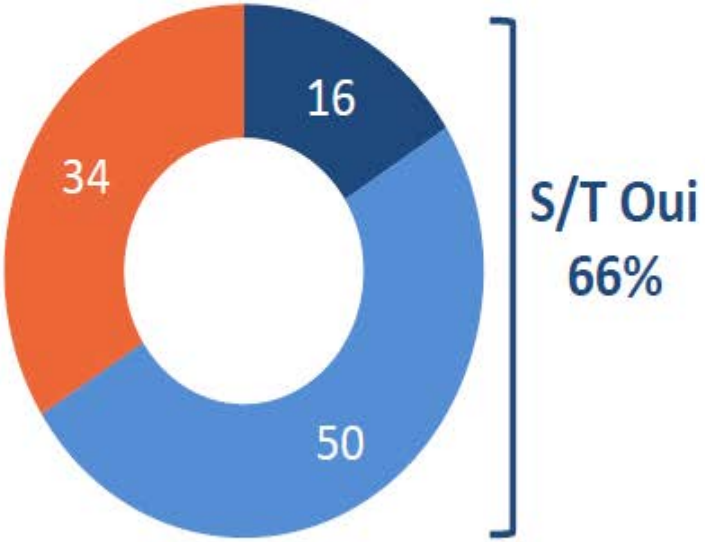
Niveau de connaissance des nanosciences et des nanotechnologies

Question *: Avez-vous entendu parler des nanosciences ou des nanotechnologies ?*

~~PEUR DE LA~~ NOUVEAUTÉ

Base : A tous

Novembre 2015



Evolution du "S/T Oui" depuis 2006

- Oui, et vous savez précisément de quoi il s'agit
- Oui, mais vous ne savez pas précisément de quoi il s'agit
- Non, vous n'en avez pas entendu parler

DE LA RECHERCHE À L'INDUSTRIE

NANO ETHICS

www.cea.fr

Ethique des nanos : un champ complexe

- Questions complexes qui n'ont pas de réponse vraie ou fausse.
- Pas ou peu de questions nouvelles, mais des problèmes déjà posés pour les générations précédentes des technologies.
- Nouvelle situation dans les relations science-société : après l'amiante, le sang contaminé, les OGM, Tchernobyl…

L'imaginaire :
Quel rôle pour les visions et les fictions ? Sont-elles utiles ?

La responsabilité du chercheur :
Comment la penser, l'exercer dans la nouvelle configuration science-société ?

Questions à traiter au cas par cas :
- Nanobioéthique : la frontière entre nature et artifice, corps humain et machine.
- Ethique des nanotechnologies de l'information : libertés individuelles, le « droit et besoin de savoir ».
- Question des technologies à double usage.

Besoin d'une veille continue :
- Si on agit trop tôt, on risque de se tromper car l'incertitude est grande.
- Mais si on attend, il sera trop tard pour agir.

nature nanotechnology Vol.2 No.1 January 2007 www.nature.com/naturenanotechnology

Beware of big brother

Security and surveillance are emerging as major and sometimes controversial applications of nanotechnology, especially in the United States. Although some of these applications are to be welcomed, others should be handled with care.

As the Tuesday night poster session was getting started at the Materials Research Society (MRS) meeting in Boston at the end of November 2006, a rather different event was in full flow at the Museum of Science elsewhere in the city. A panel of 12 people with very different backgrounds — including three leading nanotechnology researchers— was taking part in a seminar called 'Nanotechnology: The Power of Small'. This event was interesting for many reasons, including the way in which it reinforced the impression that nanotechnology is much more closely associated with security and defence in the United States than it is anywhere else in the world. The number of symposia at the MRS meeting sponsored by the US Army Research Office and other simila bodies adds to this perception, althou gh the US military has a long track reco d of supporting basic research, much of w hich gets presented at meetings and publis ed in the literature.

implanting nano-enabled tracking devices into the arms of elderly people living on their own so that their families could keep track of them. Other scenarios discussed during the seminar included a hypothetical smart credit card that collects enormous amounts of information about the lives and spending habits of teenagers, and the possible introduction of airport-style security into everyday train travel. Finally, the whole event was filmed and will be broadcast on American television as a 'Fred Friendly Seminar'.

The underlying assumption — which no one challenged — was that nanotechnology would make it easy (and cheap) to collect, store and process vast amounts of personal data that could be

It is in no one's interest for nano to be seen primarily as a 'big brother' technology.

technology (for example, CCTV cameras and DNA evidence) to investigate crimes, including acts of terrorism. However, advances in technological performance combined with the increased threat of terrorism have led to a new emphasis on the use of technology to detect crimes and acts of terrorism in advance.

There is no doubt that developing new nanosensors to detect nuclear, chemical and biological weapons is to be welcomed, and real progress is being made on the detection of everything from gamma-rays and neutrons to anthrax and other pathogens. However, when nano and other technologies are used to collect and store more and more information about individuals in the name of security, the benefits are not so obvious because design flaws (or determination on the part of a terrorist) will mean that no system is ever 100% reliable. If complete reliability were possible there might be a case for trading-in some civil liberties but, in general, they should not be given

Nature Nanotechnology 2, 2007

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3. NANOS : LES IMAGES

www.cea.fr

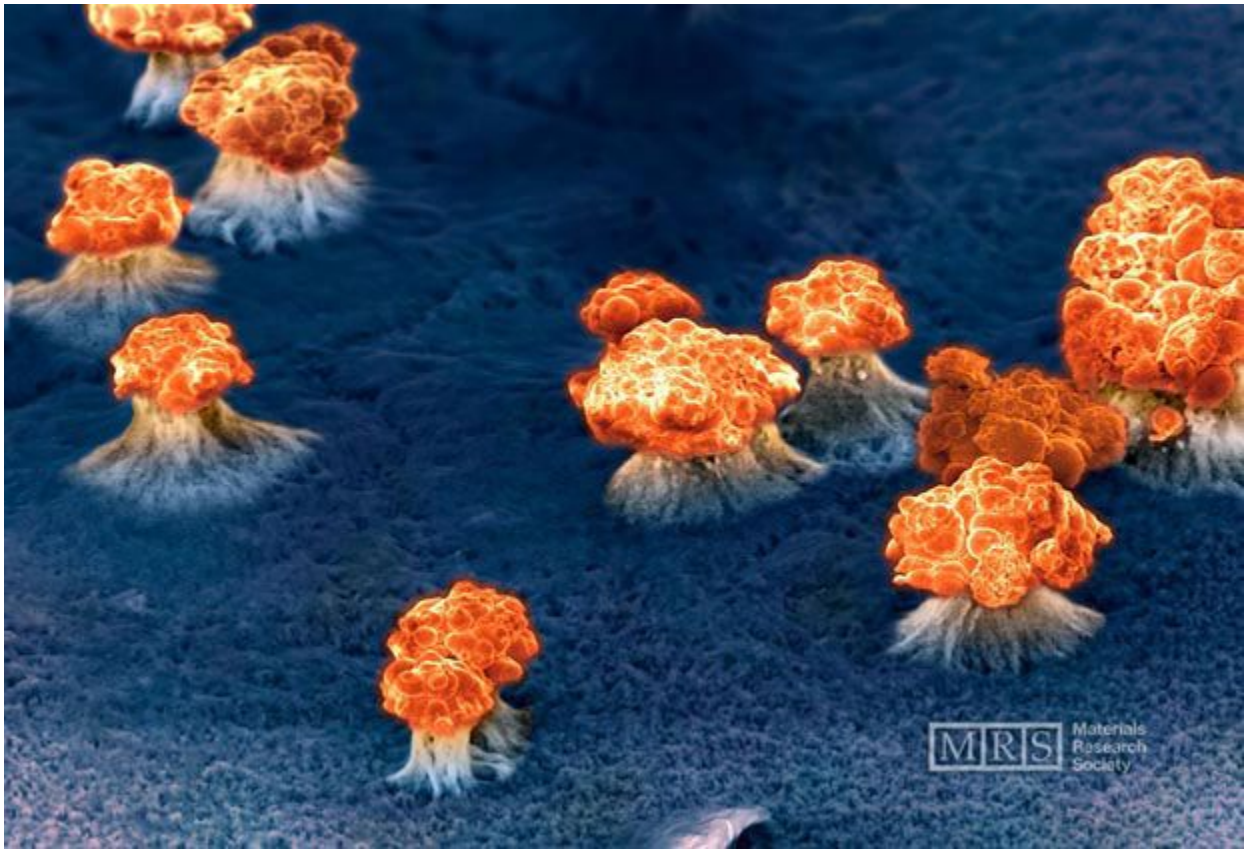
Image and narrative

F. Beron

O. Cibois

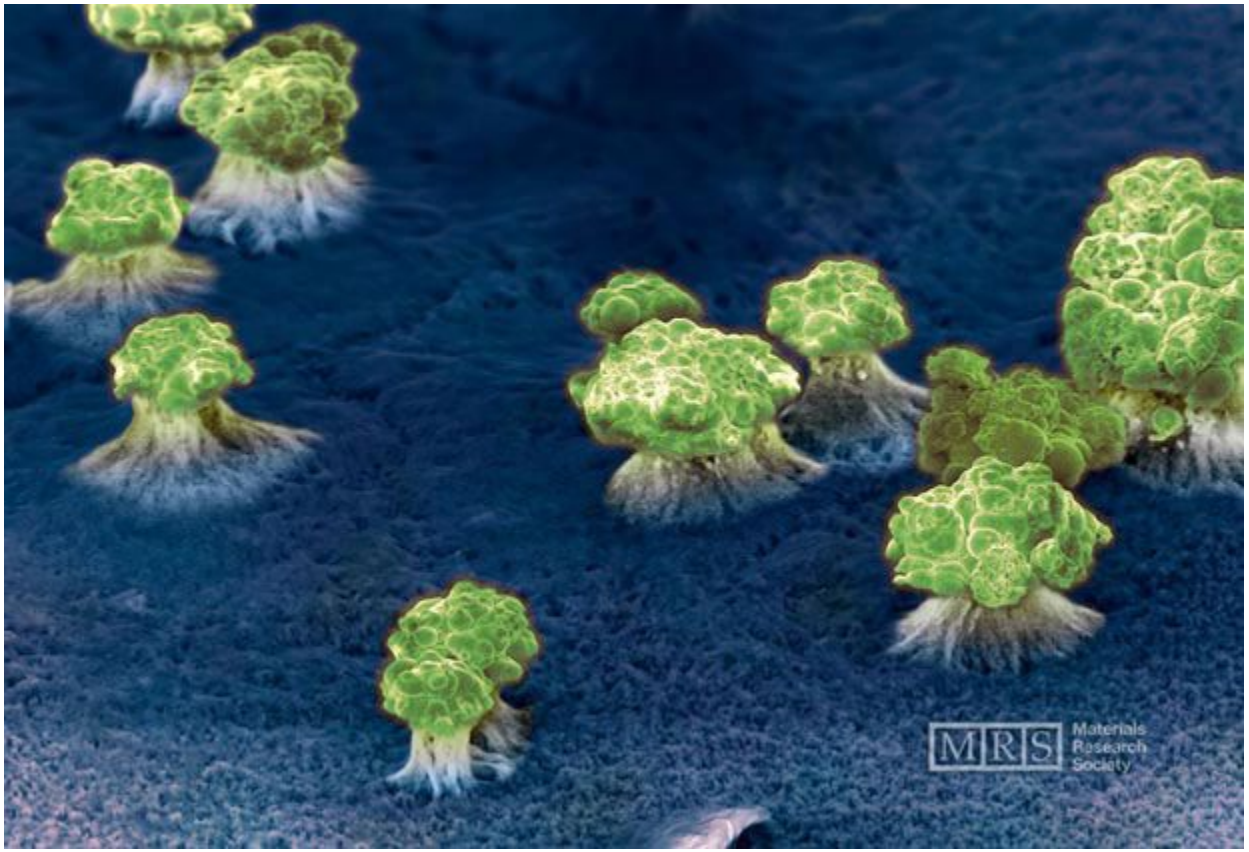
Electron scanning micrograph to record the overloading of a CoFeB magnetic array

Electron scanning micrograph to record the overloading of a CoFeB magnetic array



F. Beron

Electron scanning micrograph to record the overloading of a CoFeB magnetic array



O. Cibois

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LA RESPONSABILITÉ

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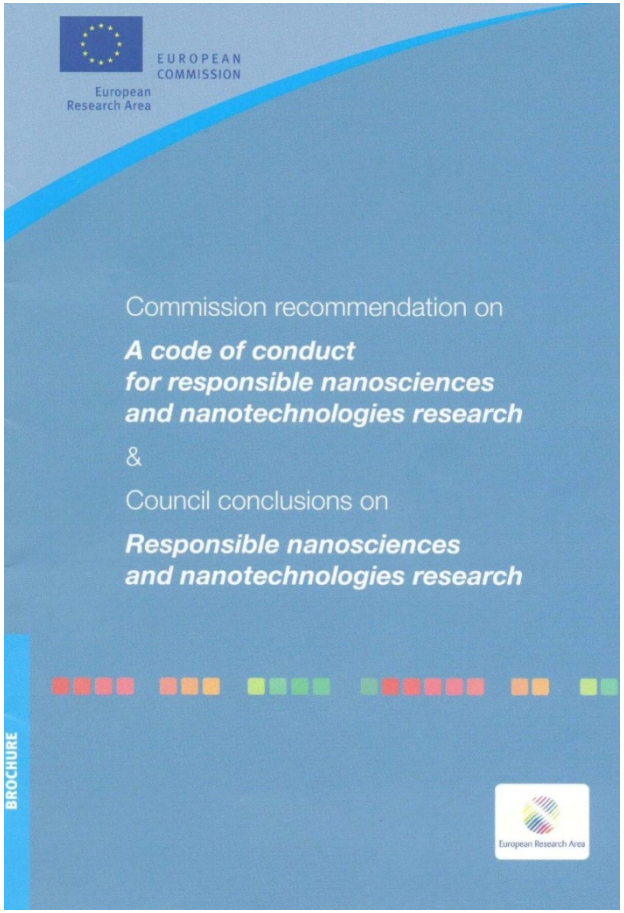
ambitions
Innovation
values
aspirations
solutions
policy
science
Society
engagement
societal
innovative
Responsible
responsible
construction
connection
needs
community
challenges
inclusive
European
Science
participatory
Research
engaging
scientific
civil
citizens
expectations
engaged
public
actors
dialogue
foster
creation
society

Deontological ethics

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



European code of conduct

MasterPlan

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

NANO CODE

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.

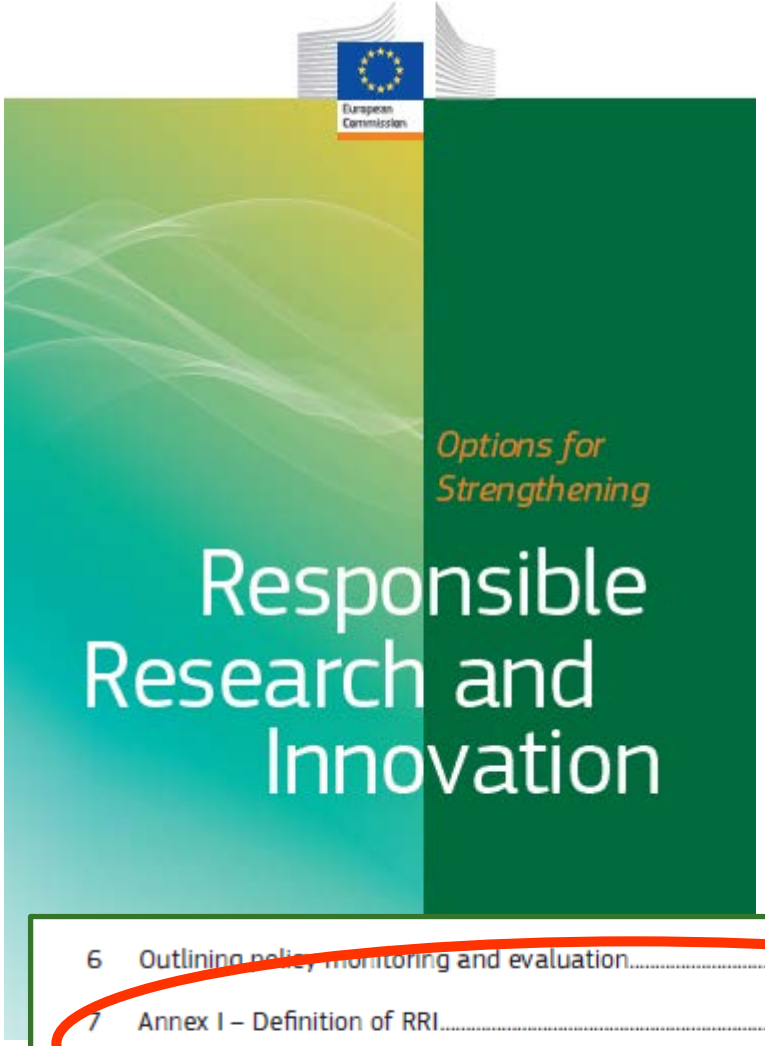


Table 1 - Process dimension: values, tools and methods for RRI (examples)

R&I (voluntary) initiatives

- Codes of conduct.
- Standards, certification/accreditation schemes, labels.
- (Precautionary) risk management systems
- Corporate social responsibility.
- Novel inclusive/participatory processes to conduct R&I.
- Ethics and safety by design.

R&I policies

- Funding of novel research programs on RRI (both social and natural science).
- Regulation oversight.
- Ethical reviews (e.g. biomedical field).
- Technology assessment/foresight tools including evaluation of ethical, societal impacts.
- Participatory processes, stakeholders and public ("upstream") engagement for policy priority setting.
- Ethical, social, safety observatories.
- Supporting ethical reflection in education.
- Supporting of open access to scientific information.

6 Outlining policy monitoring and evaluation 51

7 Annex I – Definition of RRI 55

8 Annex II – Examples of contested innovations 59

8.1 Smart energy meters and privacy 59

8.2 CCS and safety concerns 60

8.3 Patient cards in the netherlands and concerns of privacy 63

RECHERCHE ET INNOVATION RESPONSABLES

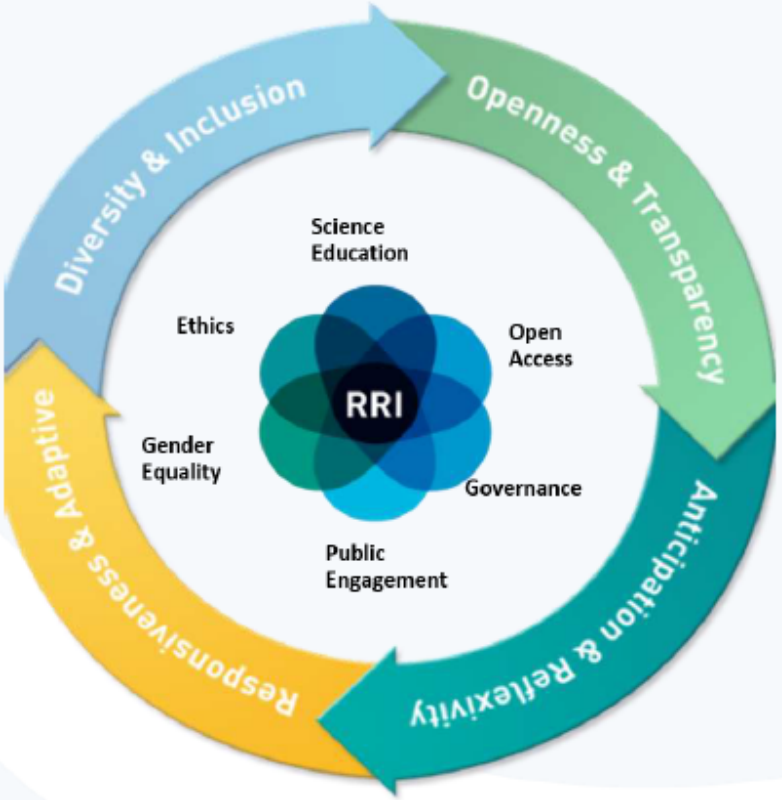
RRI Tools

Critères d'analyse

- <u>6 priorités clés:</u>
- Engagement des publics
- Education aux sciences
- Egalité des genres
- Ethique
- Accès aux données

Gouvernance

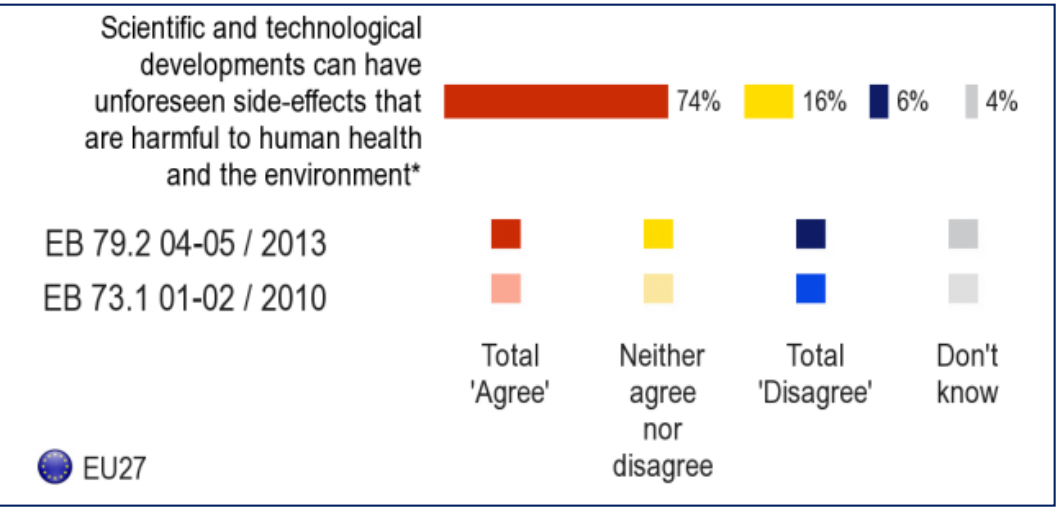
- <u>RRI Tools: 4 approches « Science avec et pour la société »</u>
- Diversité et inclusion
- Ouverture et transparence
- Anticipation et Réflexivité
- Réactivité et adaptation



Consequentialism

Consequentialism is an ethical doctrine based on the obligation to act in ways that produce the best consequences.

Consider available options, predict which one will likely lead to the best outcome and then choose a preference. For this, specify weights (costs and benefits) of relevant consequences and use a utility function.



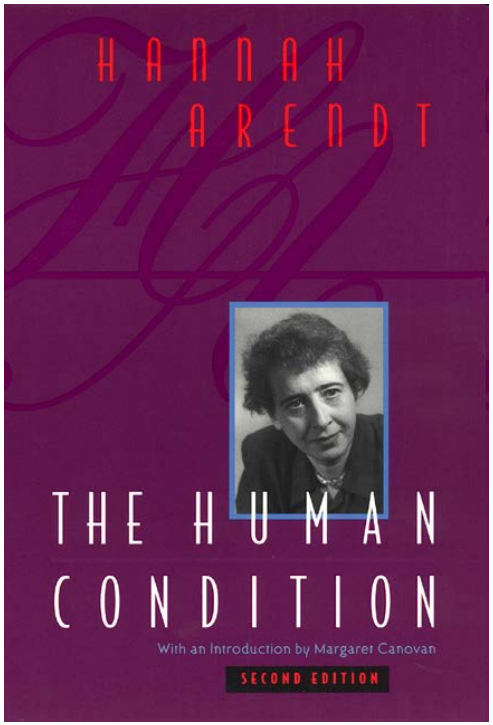
Source: Eurobarometer 2013

Precautionary Principle

"The absence of certainties, given the current state of scientific and technological knowledge, must not delay the adoption of effective and proportionate preventive measures aimed at forestalling a risk of grave and irreversible damage to the environment at an economically acceptable cost." EU Maastricht Treaty

Alexei Grinbaum and Jean-Pierre Dupuy, "Living with Uncertainty: Toward the Ongoing Normative Assessment of Nanotechnology", *Techné* **8**, 4–25, 2004.

Uncertainty



"Processes are started whose outcome is unpredictable, so that uncertainty rather than frailty becomes the decisive character of human affairs"

Risk: we know both the probabilities of possible harmful events, and their associated kinds and levels of damage.

Uncertainty: we know the types and scales of possible harms, but not their probabilities.

Ambiguity: measurement, characterization aggregation or meanings of the different issues are themselves unclear.

Ignorance: we don't have complete knowledge over all the possible forms of harm themselves. We 'don't know what we don't know' – facing the possibility of surprise.

Indeterminacy: the possibilities for different social 'framings' depend 'reflexively' on complex interactions and path dependencies in the co-evolution of social, technological and natural systems.

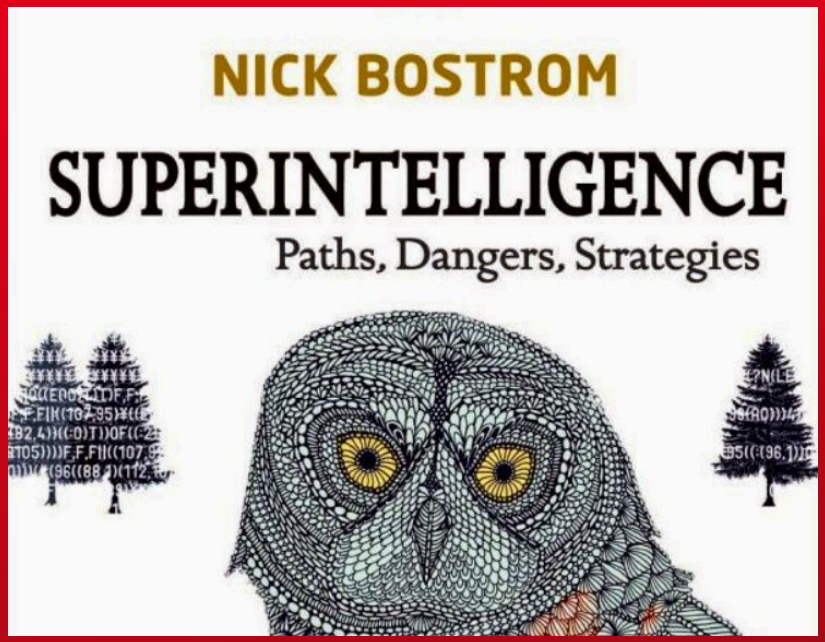
↳Moral luck

Paradoxe de l'intelligence artificielle

Rivalité ?

Imitation.

Risque existentiel



Oxford University Press, 2015

No limits for knowledge and passion

"... Nature rewards

Perilous leaps. The prudent atom

Simply insists upon its safety now,

Security at all costs."

W. H. Auden, *The Age of Anxiety*

"O Opportunity,
thy guilt is great"

Shakespeare,
The Rape of Lucrece

Paolo Veronese,
Kunsthistorisches
Museum, Vienna

Responsible innovation

- Individual vs collective responsibility
- Liability (legal) vs accountability (moral)
- ‘Role responsibility’
- ‘Responsible for being responsible’
- Taking responsibility vs being held responsible

— “Parental” individual responsibility

— Political collective responsibility

Vulnerability

- The responsibilities of innovators derive from the vulnerability of future people (incl. future users) to their actions.

Collective responsibility

	Individual	Collective
Legal	☑	☒
Moral	☑	?

- Jaspers: collective guilt
- Arendt: collective responsibility

1) A person is held responsible for something she has not done.
2) The reason for her responsibility is her membership in a group which no voluntary act of hers can dissolve.

Collective responsibility is a political phenomenon.

Responsible Innovation

"We cannot expect that trying to decide how to proceed on a rule derived from decision theory, based on exploring the rationality of different ways of weighing benefits against risks, can be an adequate response, even if the decision rule we come up with is beautifully precautionary in nature. What is needed is a recognition that our situation, although technologically unprecedented in the history of humanity, is not ethically unprecedented." Grinbaum&Groves chapter

La responsabilité des créateurs est purement morale ? Faux.

Responsabilité noxale

La responsabilité du parent dont l'enfant commet une faute : que l'enfant soit un individu libre et autonome n'efface pas la responsabilité du parent.

Pour les Anciens, la responsabilité noxale existe car l'enfant n'est pas un sujet du droit.

Pour nous, ces non-sujets juridiques sont un smartphone ou un robot, eux aussi « autonomes » et « intelligents ».

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Constructive technology assessment

Midstream modulation

Narratives

Alexei Grinbaum, CEA-Saclay/LARSIM

Welcome to the TRREE on-line training programme on the ethics and regulation of health research involving human participants. Read More »

ALLEA
ALL European Academies

Ethics Education in Science

Statement by the ALLEA Permanent Working Group on Science and Ethics

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

FORMATION ET RESSOURCES POUR L'ÉVALUATION ÉTHIQUE DE LA RECHERCHE

E-Learning Modules

Log-in Required

a web-based learning program and certification

- **Module 1** Introduction to Research Ethics [EN] [FR] [DE] [PT] [PL]
- **Module 2.1** Research Ethics Evaluation [EN] [FR] [DE] [PT] [PL]
- **Module 3.1** Informed Consent [EN] [FR] [DE] [PT] [PL]
- **Module 3.2** Good Clinical Practice [EN] [FR] [DE] [PT] [PL]
- **Module 3.3** HIV Vaccine Trials [EN]
- **Module 3.4** Adolescent involvement in HIV prevention trials [EN]

3TU.Centre for Ethics and Technology

OUR RESEARCH

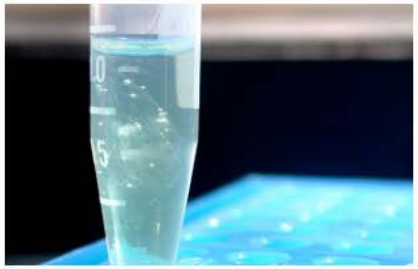
MORAL ISSUES IN ENGINEERING DESIGN AND R&D

- A Sustainable Ethics for Future Energy Systems
- Accountability for architectures for identity management systems in e-government
- Biofuels: sustainable innovation or gold rush?
- Communication Support & its Ethics to Improve Patient-Centred Health Care
- 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
- Technology and Human Development _ A Capability Approach
- Telecare at home: Anticipating conflicting norms in telemonitoring technologies for chronic patients
- Value Sensitive Design for IT Governance: an Intercultural Perspective

MORAL ISSUES IN THE USE AND REGULATION OF TECHNOLOGY

- Accountability, the use of advanced medical images and the design of hospital picture archive systems
- Acting with Artefacts
- Biosecurity and dual use research
- Carebots and the good life: An anticipatory ethical analysis of human_robot interaction in (health) care
- Developing scenarios of moral controversies concerning new biomedical technologies
- Enhancing Responsibility
- Ethical and regulatory issues raised by synthetic biology
- Ethical Issues of Emerging ICT Applications
- Evaluating the Cultural Quality of New Media:
- 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

OPINION | STEVEN PINKER

The moral imperative for bioethics

The Boston Globe

Biomedical research, then, promises vast increases in life, health, and flourishing. Just imagine how much happier you would be if a prematurely deceased loved one were alive, or a debilitated one were vigorous — and multiply that good by several billion, in perpetuity. Given this potential bonanza, the primary moral goal for today's bioethics can be summarized in a single sentence.

Get out of the way.

Cell

Scientific Life

Scientists Should Oppose the Drive of Postmodern Ideology

Marcel Kuntz[1,*]

Shifting Views on Science and Society

Nobody objects to PE where it is understood as 'sharing knowledge'. PE becomes problematic when it becomes a 'mode of governance' of research.

IV. Constructive TA and Socio-Technical Scenarios

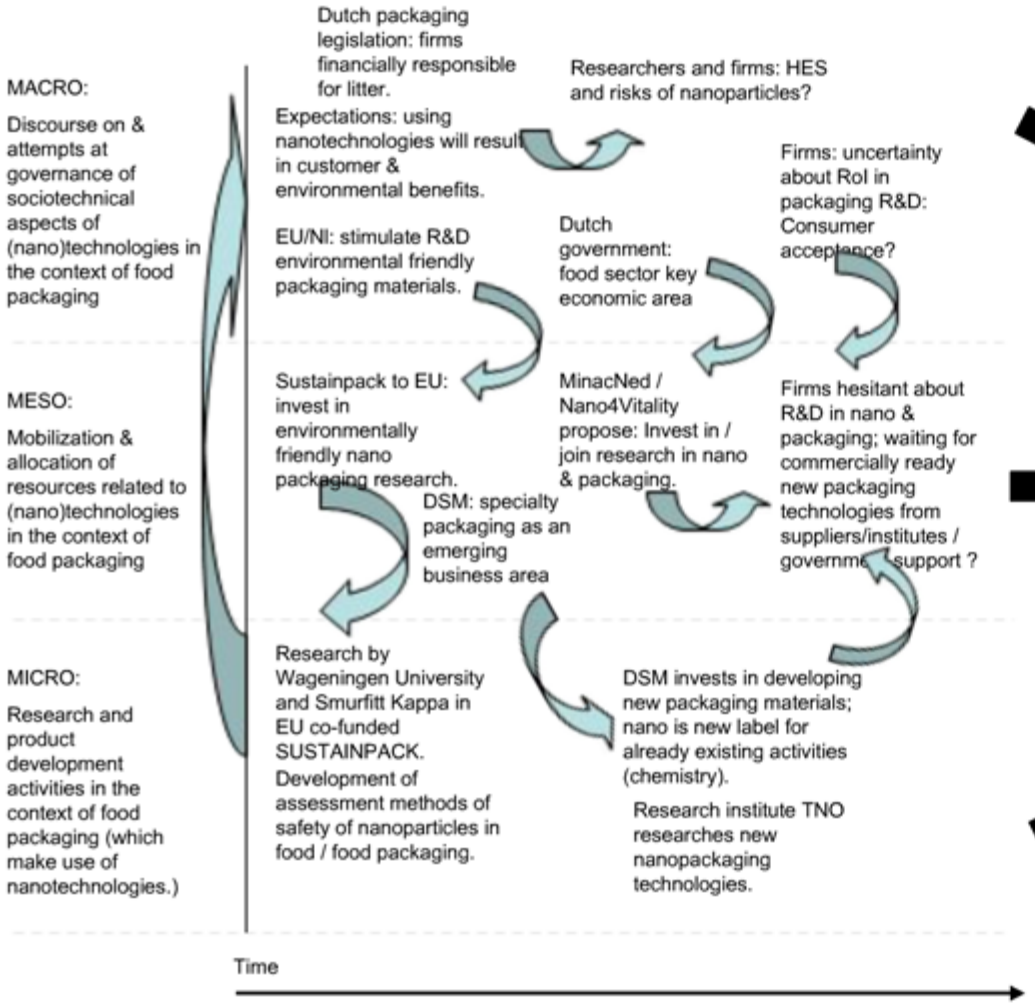
- Approach of CTA: include broader aspects in technological development, anticipate on societal embedding. "Modulation" through interactive articulation.
- For nano ST: Support and orchestrate bridging events, create spaces where interactions occur (taking the structural features into account in the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

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
Socio Technical 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

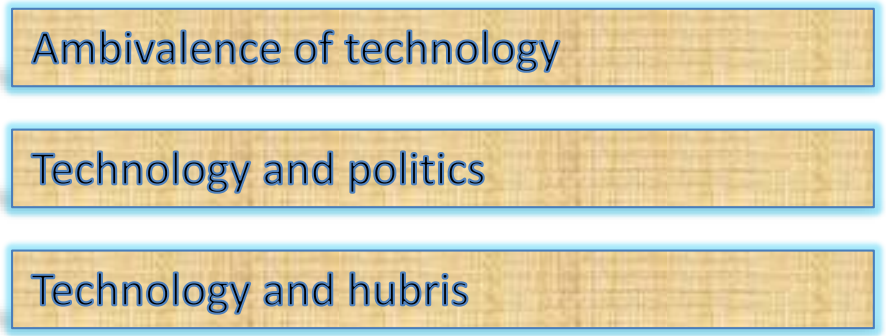
http://www.youtube.com/watch?v=feOOT2iI16o

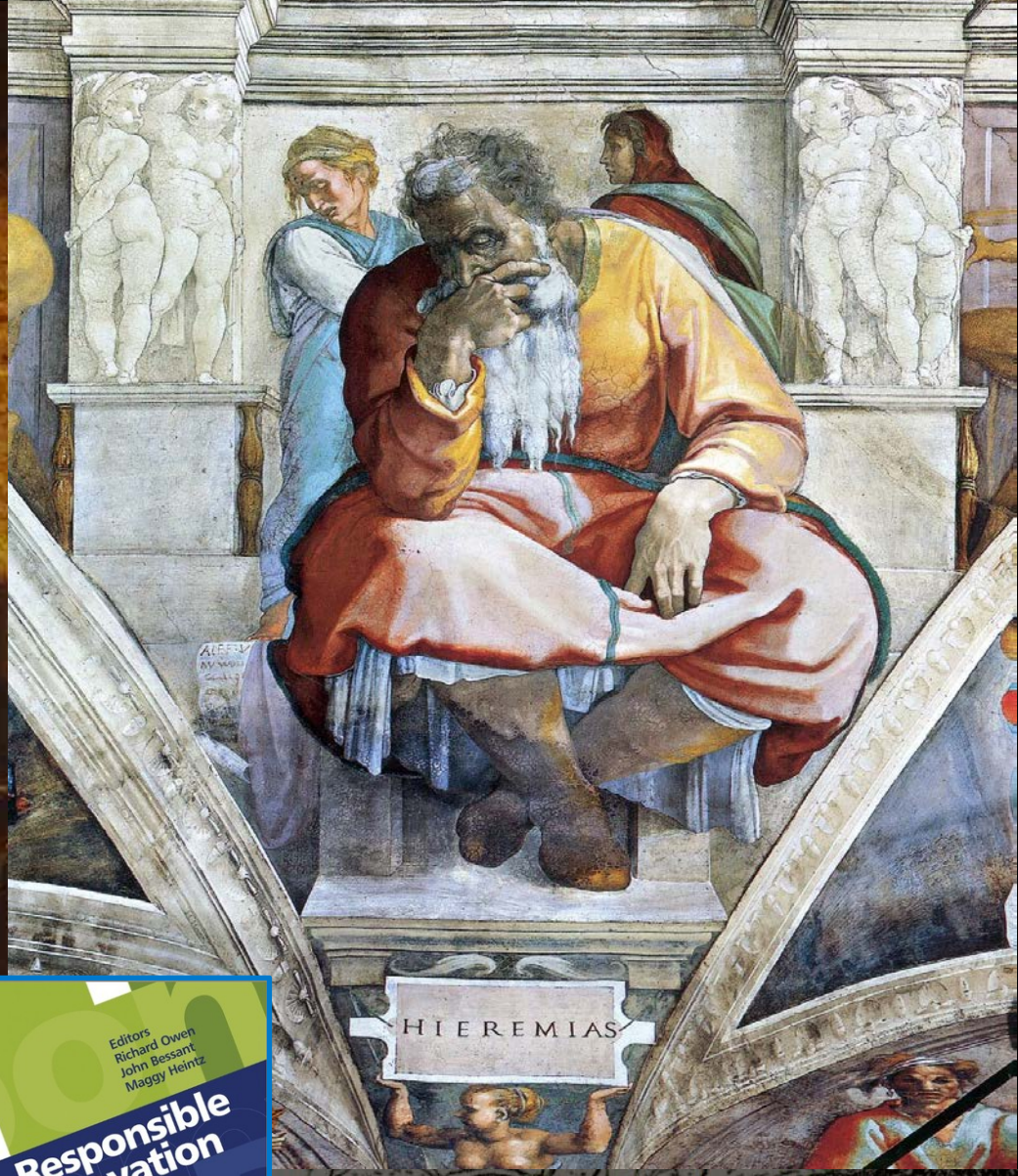
Toolkit for ethical reflection and communication

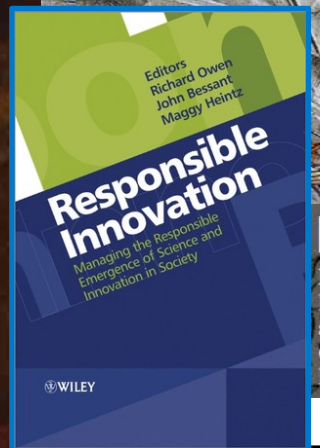
1. Introduction
2. Classifying ethical and societal issues
3. Thinking with the help of ethical concepts
4. Responsible communication
5. Narratives of nanotech
6. Glossary

Narratives

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







Notre perception du vivant évolue

La possibilité de créer la vie en laboratoire a radicalement modifié la façon qu'ont les hommes de percevoir et d'interpréter ce qui est vivant, autant du point de vue scientifique que philosophique. Et le débat ne touche pas que les tenants de doctrines contradictoires en biologie. Il imprègne aussi toute la société, qui renvoie les concepteurs à leurs responsabilités.

Alexei Grinbaum (CEA/LARSIM)