# Débat public sur les nouvelles technologies : quelques évolutions récentes

Alexei Grinbaum

Philosophy of Science Lab (LARSIM),
French Alternative Energies and Atomic Energy Commission (CEA), Saclay


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

**Monsieur Philippe DESLANDES**
**Président de la Commission Nationale**
**Du Débat Public**
**6 rue du Général CAMOU**
**75007 PARIS**

Paris, le 23 février 2009

Monsieur le Président,

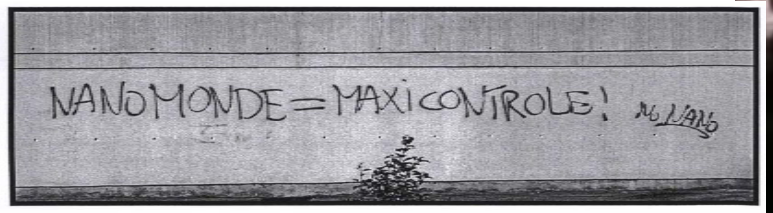
En application des engagements du Grenelle de l'environnement, le Gouvernement souhaite organiser un débat large et transparent sur les risques et conditions de développement des nanotechnologies.

Jean-Louis BORLOO Christine LAGARDE Brice HORTEFEUX Michel BARNIER

Valérie PÉCRESSE Hervé MORIN Roselyne BACHELOT-NARQUIN Chantal JOUANNO

# Plan of the French public debate

| VILLE | DATE PROJETEE | SUJETS TECHNIQUES POSSIBLES<br>Compte tenu des activités locales | THEMES GENERAUX POSSIBLES |
|---|---|---|---|
| Strasbourg | 15 OCTOBRE | Matériaux nanostructurés | Gouvernance européenne |
| Toulouse | 20 OCTOBRE | Transports / Matériaux / Santé-pharmacie | Cycle de vie des produits nanostructurés et protection de l'environnement |
| Orléans | 27 OCTOBRE | Pharma-cosmétologie / énergie | Nanotechnologies et protection des consommateurs |
| Bordeaux | 3 NOVEMBRE | Nanotubes de carbone et applications / Santé | Process industriels/ Nanotechnologies et protection des travailleurs |
| Clermont-ferrand | 10 NOVEMBRE | Pneumatiques / Automobile | Nanoparticules et pollution atmosphérique |
| Lille | 17 NOVEMBRE | Textile / RFID | Nanotechnologies et textile |
| Besançon | 24 NOVEMBRE | Micro-techniques | Nanotechnologies et compétitivité |
| Grenoble | 1ER DECEMBRE | Informatique / Energie / Clinatec | Informatique et libertés individuelles<br>Nano-médecine |
| Caen | 8 DECEMBRE | Nano-electronique /Nano-poudres | Matériaux de construction et applications multi-usages |
| Metz | 15 DECEMBRE | Telecoms / Fibre | Habitat et énergie |
| Rennes | 5 JANVIER | Agro-alimentaire / Matériaux nanostructurés | Nanotechnologie et Sécurité alimentaire |
| Lyon | 12 JANVIER | Applications médicales / Optronique | Nanoparticules dans l'organisme. Etudes sur la toxicité |
| Marseille | 19 JANVIER | Optique / Photonique / SCS | Sécurité intérieure et défense nationale |
| Orsay | 26 JANVIER | Nano-electronique / Biotechnologies | Recherche et développement industriel. Convergence nanotechnologies biotechnologies informatique sciences cognitives |
| Montpellier | 9 FEVRIER | Eau / Alimentaire / Santé | Protection de l'environnement.<br>Développement durable Nord-Sud. |
| Nantes | 16 FEVRIER | Nano-poudres/ aéronautique | Nouveaux matériaux pour les biens d'équipement |
| Paris | 23 FEVRIER | Ethique | et Gouvernance |





Aujourd'hui le nanomonde

Le site du débat public sur les nanotechnologies

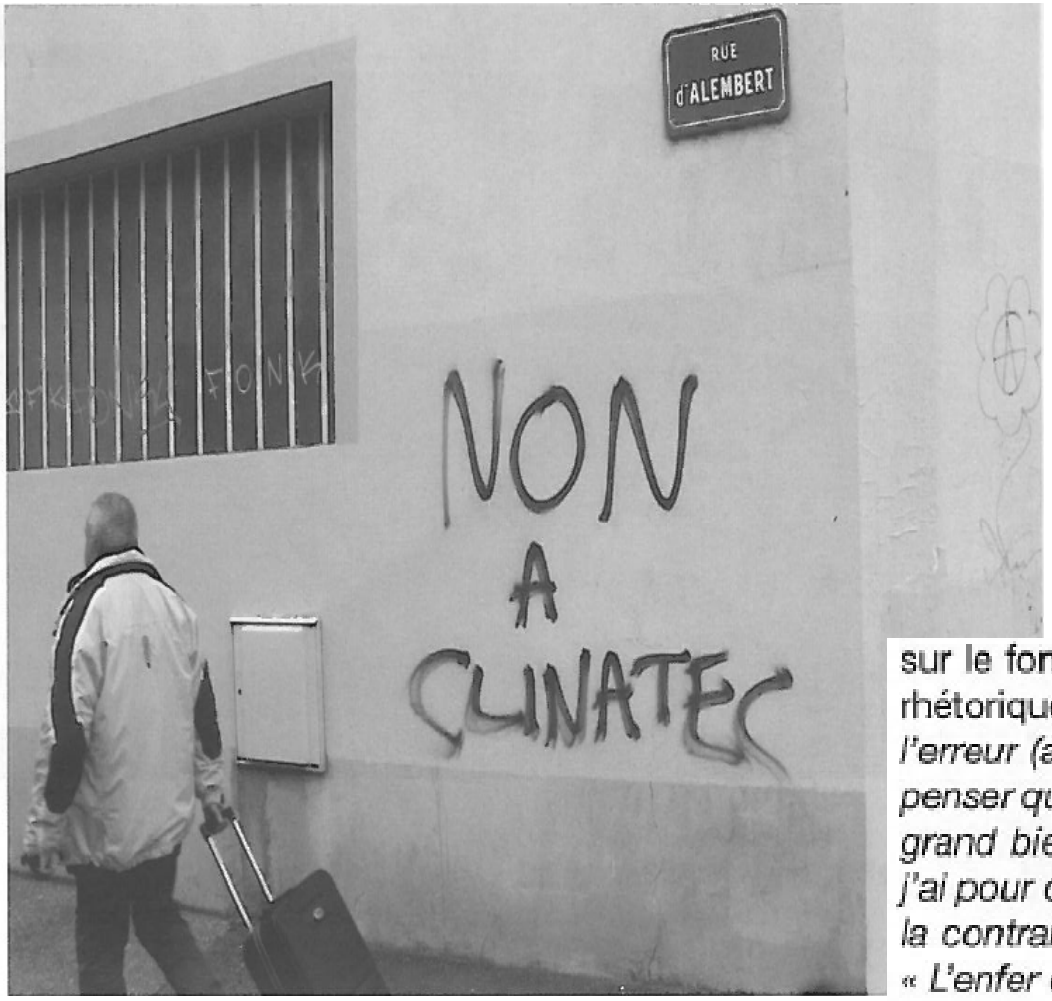
Les Nanotechnologies | Le débat public et la CNDP | Actualité | Agenda

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

**www.nanomonde.org**

Le Postillon | numéro 14 | février-mars 2012

# Clinatec :
# Circulez, y a rien à penser




## Le pire de la démocratie participative

sur le fond, il tentera juste de balayer ses détracteurs par la rhétorique : « *Je peux répondre que vous êtes totalement dans l'erreur (applaudissements nourris). Si ça vous fait plaisir de penser que ma main droite ignore ce que fait ma main gauche, grand bien vous fasse. Si ça vous fait plaisir de penser que j'ai pour objectif de participer à l'avènement d'une société de la contrainte, grand bien vous fasse* ». Un cri dans la salle : « *L'enfer est pavé de bonnes intentions* ».

Pièces et Main d'Oeuvre

Faits divers | Nécrotechnologies | Service compris | Les livres de la coll

## Innovation scientifreak : la biologie de synthèse

lundi 12 novembre 2012 par Frédéric Gaillard

Geneviève Fioraso, aujourd'hui ministre de l'Enseignement supé
recherche, a rendu en février 2012 un long, lourd et filandreux «
*les enjeux de la biologie de synthèse* ». Frédéric Gaillard, l'un de
méritants lecteurs, nous rend ici son rapport sur le rapport. C'est
quand c'est clair, bref et direct.

Voici donc la plus récente création des laboratoires de l'horreur.
monstruosité verbale – biologie de synthèse - répond à la monstr
cette innovation.

Le *bios*, le vivant, c'est ce qui nait – d'où le mot de nature -, et no
qu'on fabrique, artefacts, artifices, parce que faits de l'art. Ce qu'
ne vit pas, mais fonctionne.

TOUJOURS PIRE !

# Alerte à LA BIOLOGIE DE SYNTHESE & aux *aliens* de demain


PARTICIPER
C'EST
À LA VIE

# 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

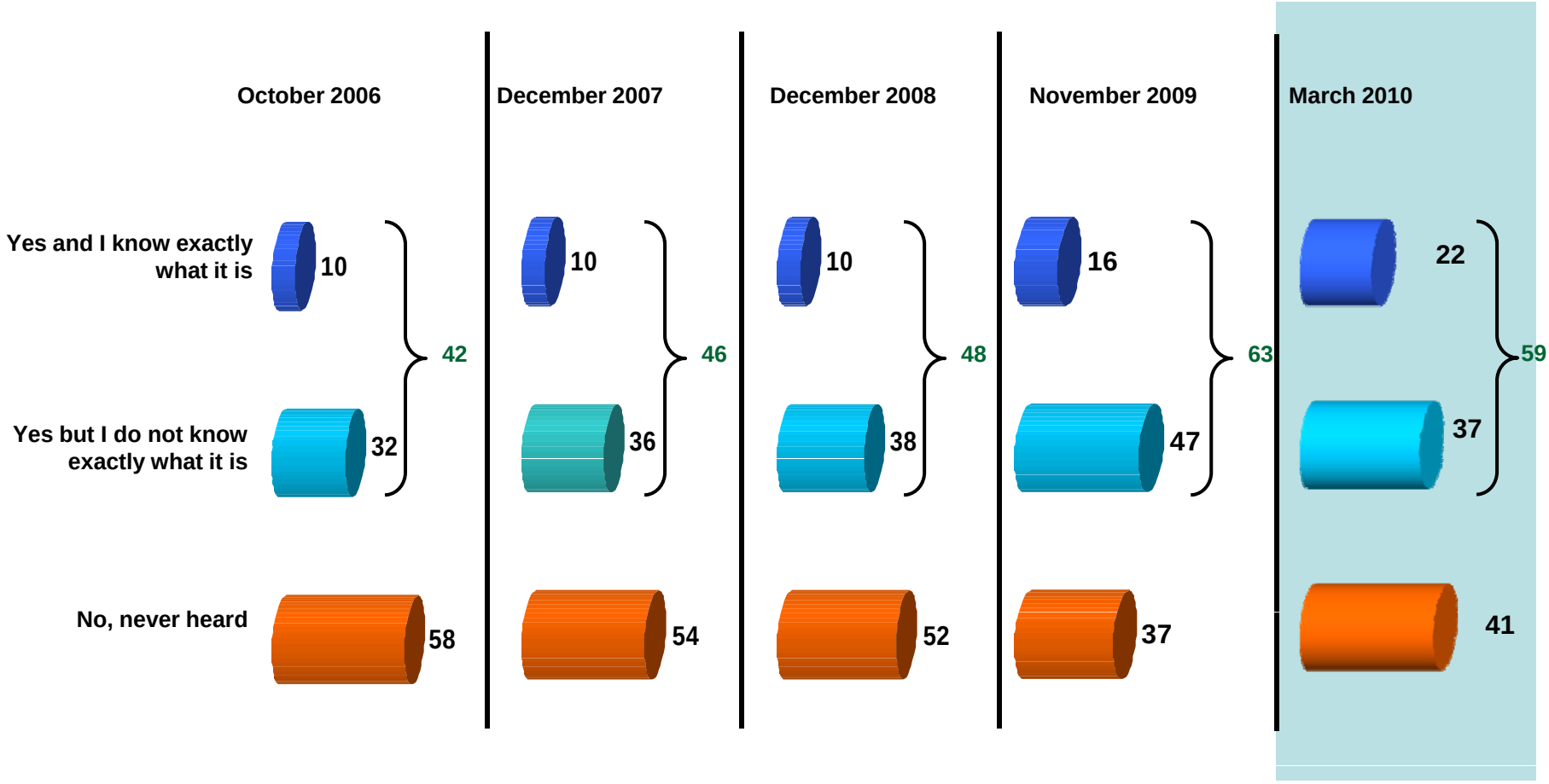
Die folgende Tabelle zeigt die vier FachDialoge und ihre geplanten Termine.

| 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*

# Question : Have you heard about nanosciences and nanotechnologies ?

*Source: IPSOS « Les Français et les nanotechnologies », mars 2010. Sondage de 1013 personnes, constituant un échantillon national représentatif de la population française âgée de 15 ans et plus.*



# Nanotechnologies from the consumers' point of view

What consumers know and what they would like to know

March 2012

Even though the knowledge about all fields of application has decreased, particularly striking is the decline in the fields of surface coatings, construction materials and environmental engineering. In sum, it can be hypothesised that consumer communication on the part of product manufacturers has decreased considerably, or that the information does not reach the target group to the same extent. The public knowledge on nanotechnologies has become more abstract.

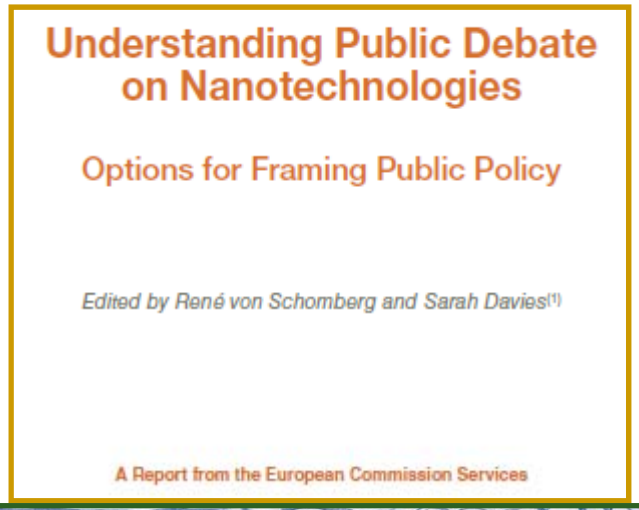
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

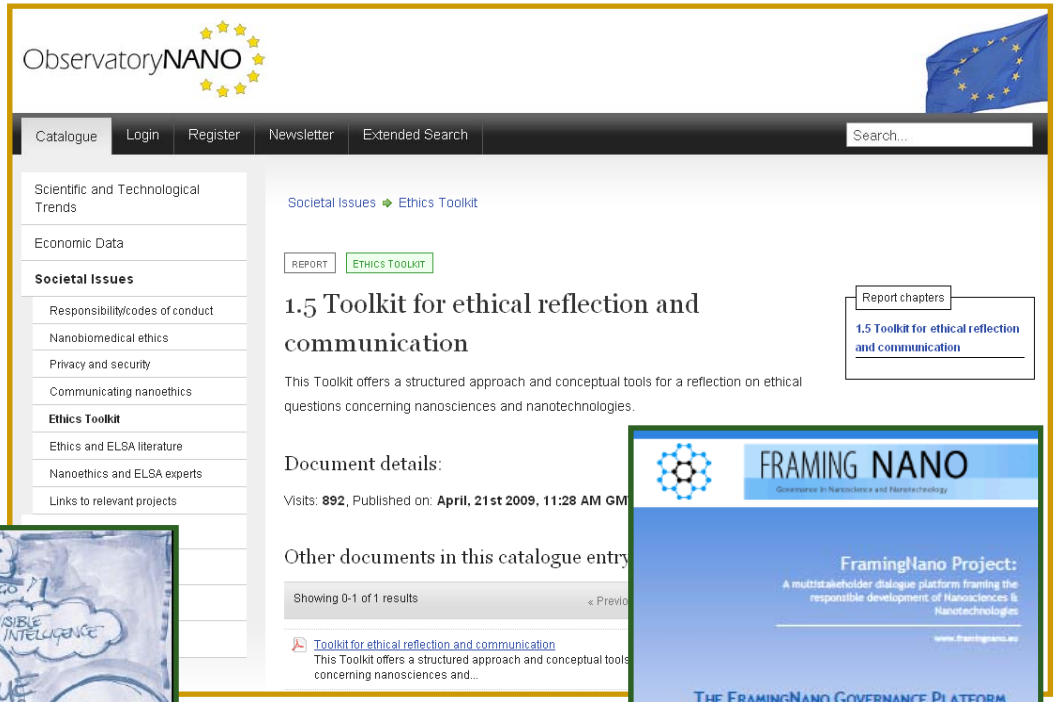
Swiss Confederation

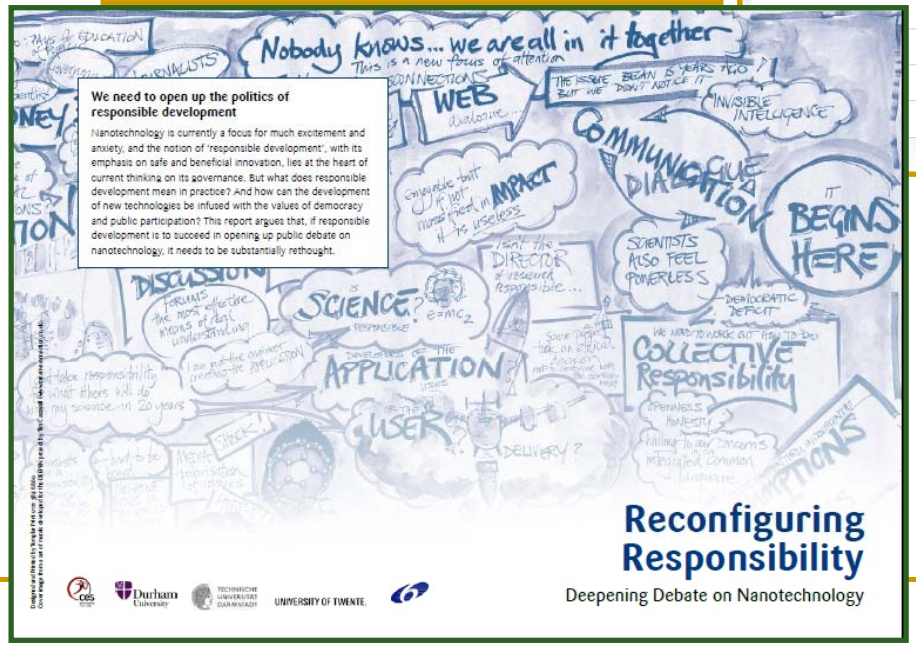
Federal Department of Home Affairs FDHA
**Federal Office of Public Health FOPH**

STIFTUNG
**RISIKO-DIALOG**
ST.GALLEN

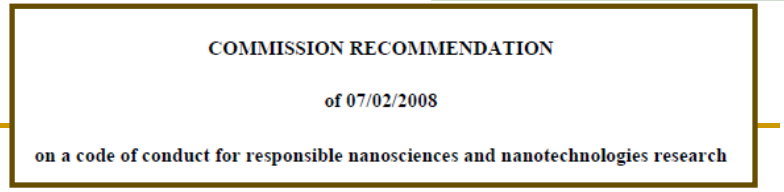
# European reports on ethical questions of nano



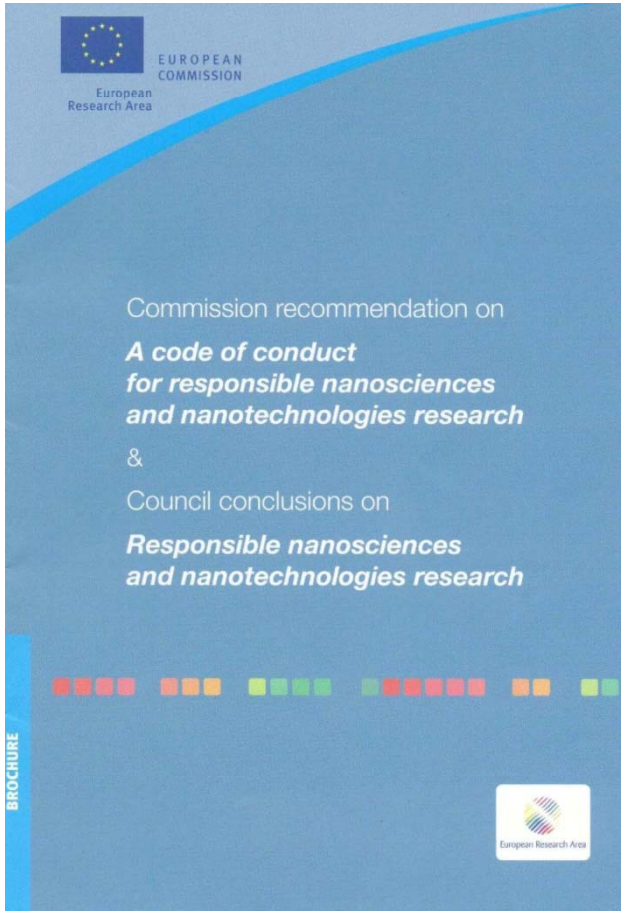


# Deontological ethics

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.

# As seen by the European Commission

**Area 5.1.2.1 Broader engagement on science related questions**

**SiS.2012.1.2.1-1: International Coordination in the field of Responsible Research and Innovation (RRI)**

*Responsible Research and Innovation is a transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view on 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)*

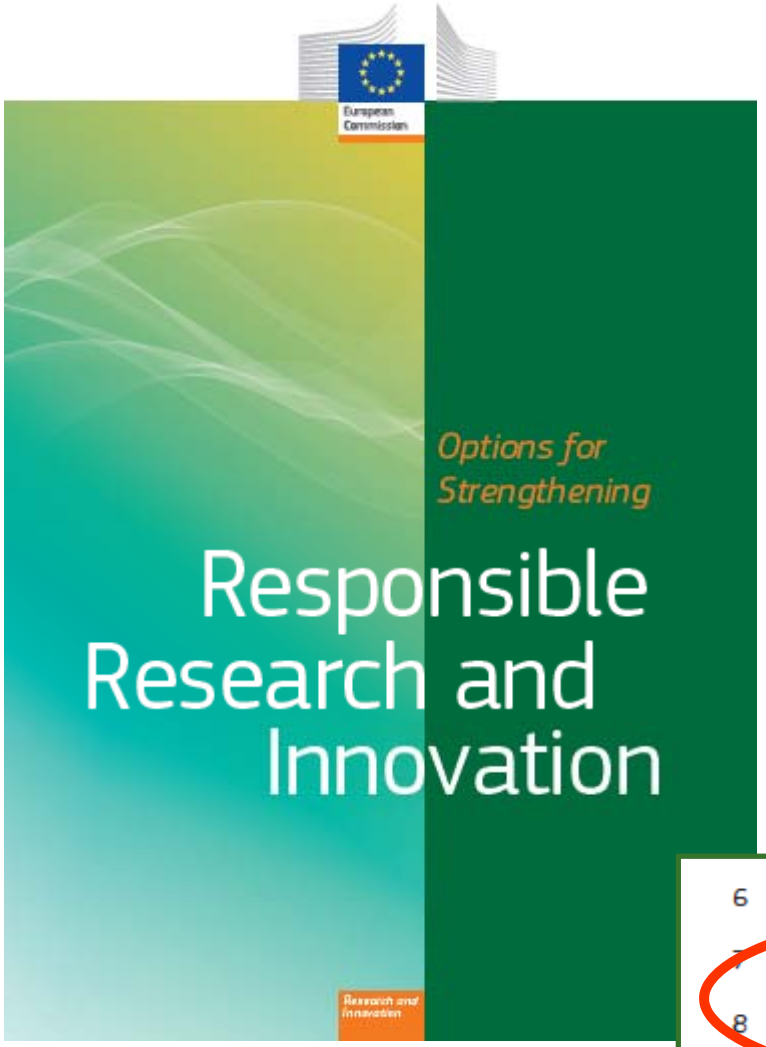
**Table 1 - Process dimension: values, tools and methods for RRI (examples)**

**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.



# 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.

## 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.

# Responsible innovation

- Individual vs collective responsibility
- Liability (legal) vs accountability (moral)
- Responsibility and vulnerability
- 'Role responsibility' and its limits
- 'Responsible for being responsible'
- Taking responsibility vs being held responsible

- ✓ "Parental" individual responsibility
- ✓ Political collective responsibility
- ✓ Passion beyond prudence
- ✓ Teaching ethical complexity through narratives

A. Grinbaum and C. Groves, "What is 'responsible' about responsible innovation? Understanding the Ethical Issues",
In: **Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society,** Wiley, 2013, pp. 119-142.

# The return of collective responsibility

"O opportunity, thy guilt is great"

Shakespeare, *The Rape of Lucrece*

- 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.

# Toolkit for ethical reflection and communication


ObservatoryNANO

observatoryNano:
European observatory for science-based and economic expert analysis of nanotechnologies

Work package 4: Ethical and societal impacts

TOOLKIT FOR ETHICAL REFLECTION AND COMMUNICATION

(DELIVERABLES D4.4.1 AND D4.4.2)

CEA-LARSIM

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

75 pages, can be downloaded from www.observatorynano.eu

# 2. Classifying ethical and societal issues

1. Nanobiotechnology
2. Nanomedicine
3. Food and cosmetics nanotechnology
4. Information and communication technology
5. Nanotechnology in the military: questions of dual use
6. Questions relative to risk and uncertainty
7. Questions relative to public communication on nanotechnology
8. Questions relative to visions and fictions
9. Questions of social justice
10. Questions of responsibility
11. Questions of epistemology

# 5. Narratives of nanotech

Introduction: What is a myth? Why does it matter for science?

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

# 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

# 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

Prometheus becomes the hero of the American engineer

Jan Cossiers, *Prometheus Carrying Fire*, 1637 (Madrid)

Paul Manship, *Prometheus, Teacher in Every Art,* 1934 (Rockefeller Centre)

# 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

- Making life from death
- Blindness to ethical consequences
- Social status of artefacts

# 5. Narratives of nanotech

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

# 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

- Science, tinkering and rationality
- Technology and values
- The scientist and other humans

# 5. Narratives of nanotech

I. Prometheus
II. The Golem of Jeremiah
III. Frankenstein
IV. A positive Prometheus?
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VI. Daedalus
VII. The Matrix

Knowing is making

Intermediate status of technical objects

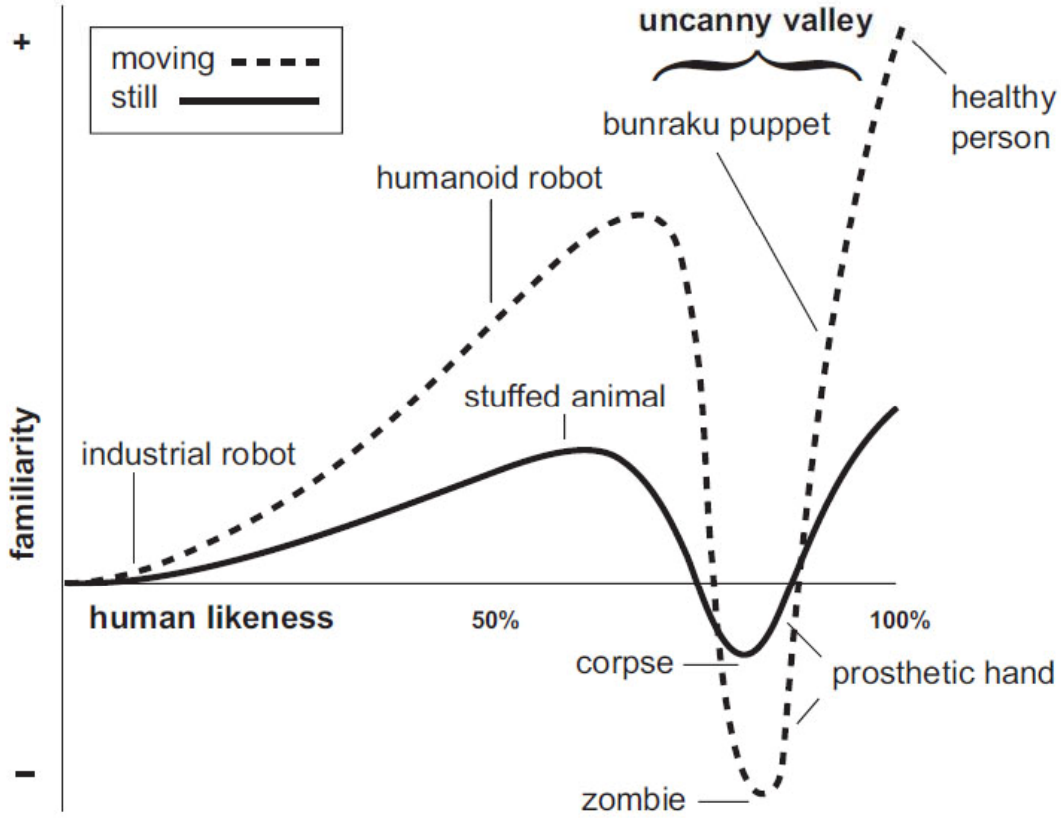
Nanoethics (2010) 4:191–198
DOI 10.1007/s11569-010-0103-x

ORIGINAL PAPER

# The nanotechnological golem

**Alexei Grinbaum**

# Uncanny valley



# Uncanny valley explained by Girard's theory