Elements for a diplomatic approach of 'responsible innovation' in nanotechnologies

François Thoreau

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http://thoreau.be

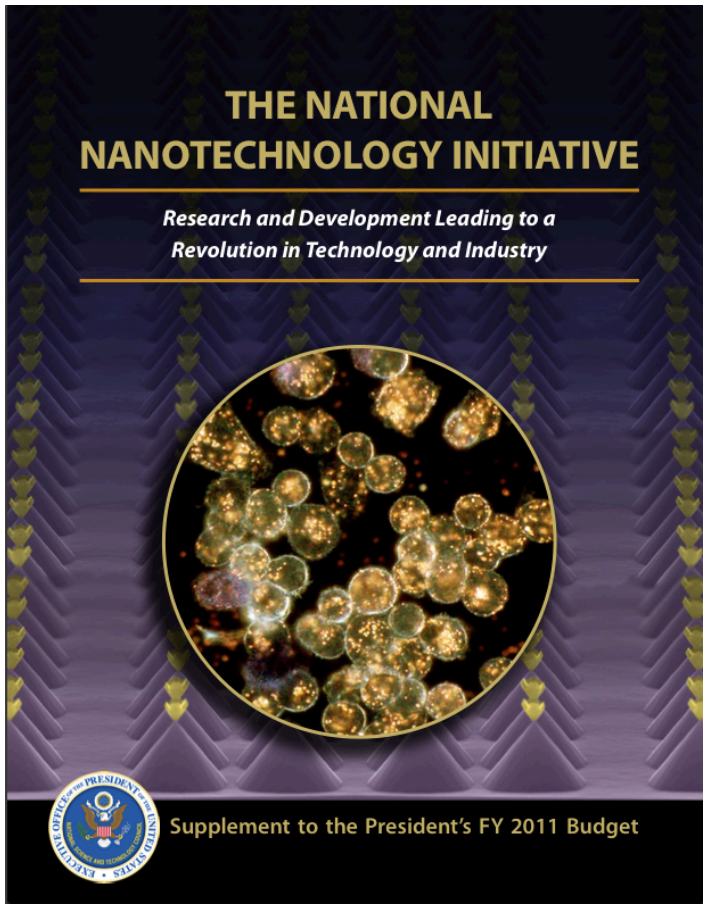
- « This paradox is but an important one: a revolution of details which demands to combine the most disruptive innovation together with the most careful precautions ».

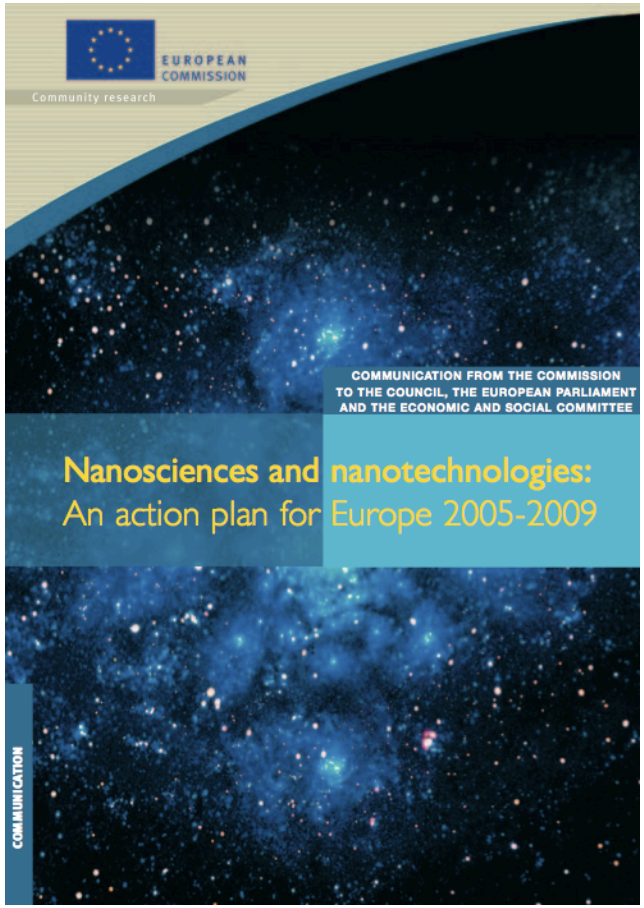
  B. Latour, « En attendant Gaïa », *Libération*, 29 juin 2011 (our translation)

Layout

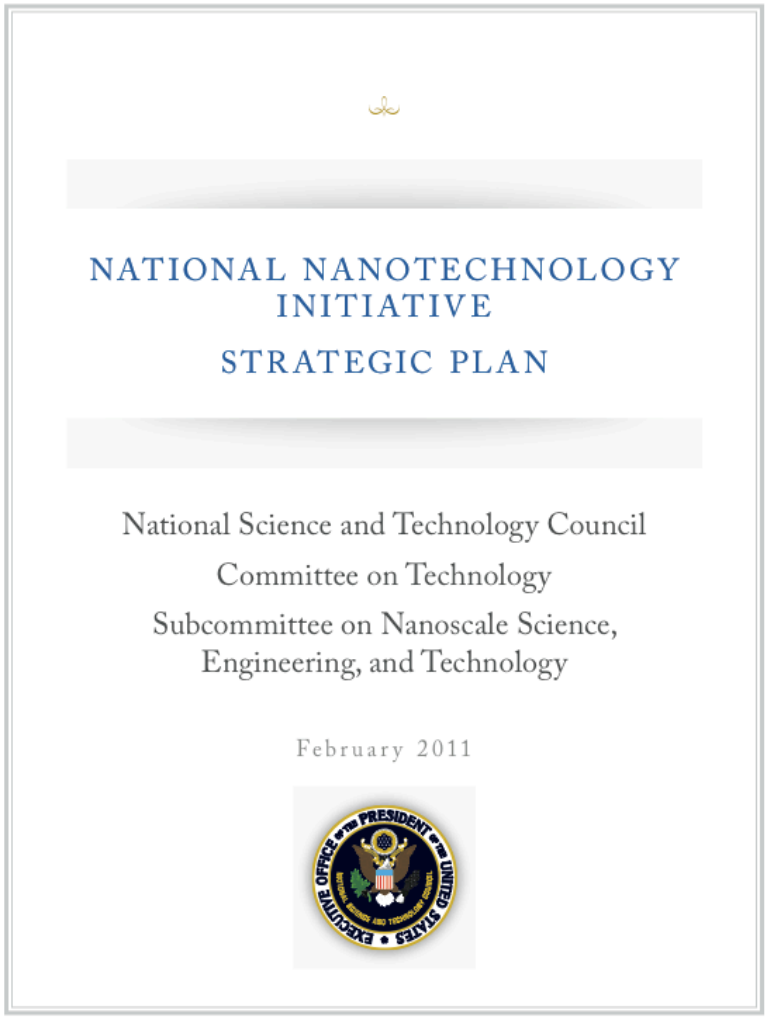
- Intro: nano and responsible innovation (RI) — some background
- The case of «integration» research
- Conclusion: homonyms rather than synonyms

Intro: nano and RI





In 2011...



NATIONAL NANOTECHNOLOGY INITIATIVE

STRATEGIC PLAN

National Science and Technology Council

Committee on Technology

Subcommittee on Nanoscale Science, Engineering, and Technology

February 2011

Funding

USA

A decade of funding

14 billions $

2011

1,8 billions $

EU

approx. 1,3 billions €

+ MS = approx. 3 billions €

US Nano R&D Act, 2003

- (c) STUDY ON THE RESPONSIBLE DEVELOPMENT OF NANOTECH- NOLOGY.—As part of the first triennial review conducted in accord- ance with subsection (a), the National Research Council shall conduct a one-time study to assess the **need for standards, guidelines, or strategies for ensuring the responsible development** of nanotechnology, including, but not limited to —
  (1) self-replicating nanoscale machines or devices;
  (2) the release of such machines in natural environments;
  (3) encryption;
  (4) the development of defensive technologies;
  (5) the use of nanotechnology in the enhancement of human intelligence;
  (6) the use of nanotechnology in developing artificial intelligence.

Three years later...

- «With respect to responsible development of nanotechnology, the committee **focused on tangible concerns** related to environmental, health, and safety issues and also touched on the importance of **broadly targeted efforts in communication** on and education about societal concerns»
  National Research Council, 2006, p. X

Responsible innovation in EU

Nanotechnology must be developed in a safe and responsible manner. Ethical principles must be adhered to and potential health, safety or environmental risks scientifically studied, also in order to prepare for possible regulation. Societal impacts need to be examined and taken into account. Dialogue with the public is essential to focus attention on issues of real concern rather than "science fiction" scenarios.

European Commission, 2004

Code of Conduct (2008)

- ... for '**responsible**' nanoscience and nanotechnologies
- Science in Society programme: 1,2 million €
- process-based (not an end in itself nor a means)
- '*invites all stakeholders to act responsibly*'
- '*is voluntary*'
- '*offers a set of general principles and guidelines*'

Some questions about RI

- Individual or collective responsibility?
- Room for uncertainty? Science-based answers or debate? Consensus or dissensus?
- Direct or indirect responsibility?

Contested meanings of «innovation» and «responsibility»

- Innovation: technological, social, product-based, process-based, systemic, linear, ...
- Responsibility
  - etymology: «to answer for...»
  - the state or fact of having a *duty* to deal with something or of having *control* over someone
  - the state or fact of being *accountable* or *to blame* for something
  - the opportunity or ability *to act independently* and make decisions without authorization

Questionning the association

- an ‘oxymoron’ (Meheust, 2009)?
- or... a tautology (every innovation *is* or *must be* responsible)
- ... a mere slogan?
- ... a broadening of the debate (as Callon suggests, as compared with «public acceptance of technologies», see interview 2011)?

What to do?

- Grant a term with a meaning = perform a translation
- Series of translations => uncontested meaning — comparable meanings
    - Question : what is RI?
- Versions: allow for multiplicity of meanings, series of translation that recognize different ways to possible => divergences
    - Question : to which extent may RI be engaging and challenging to us ?

Anticipatory governance

- Institutionalizing forms of responsability for new and emerging technologies
- 'RTTA' and 'CTA' approaches
  Guston & Sarewitz, 2002; Schot & Rip,1997
- The 'anticipatory governance' of nanotechnologies : Foresight, Engagement, **Integration**

  Barben & al., 2008

Integration

- Integration?
  Action *of integrating:* ***Combine*** *one thing with the other so that they become a* ***whole***
- Tentative definition *Transdisciplinary collaboration that aims to integrate the societal dimensions of new and emerging technologies within R&D processes (*"*into ongoing sociotechnical processes to shape their eventual outcomes*"*)*
- Theory *Trading zones and Interactional Expertise*
  Galison 1997; Collins & Evans 2002; Gorman, al. 2004

Some meanings of responsibility

- Speak to SHS: Organized irresponsibility (Beck) or ethics of responsibility (Jonas)
- *«All of this is not responsible at all, it has to be accounted for... I don't know, the consequences of a development! It's like Frankenstein, like we create a monster then we back out 'yes but no, I did not put it on the market!'»*
  All right!
- *«But most of the people in this department are conviced environmentalists!»* [they come by bicycle or bus, they recycle and so on]
  Explicit link between the citizen and the scientist

(...) continued

- *«I'm not... 100 % pro-nuclear. It is to be a source of energy, like, just like others. But we have to be very careful, but I wouldn't put myself upfront, or do some pro-nuclear militancy (...). Fukushima happened... From time to time, journalists want some interviews and the academic authorities asked me whether they could interview me. I did not say no. But I did not wanted to (...) I did not want to put myself upfront, because I'm not 100 % pro-nuclear»* [as a citizen].
  - Decoupling citizen / scientist and the responsibility of the scientist

(... continued)

- *«Society desires better laptops and long-lasting batteries. Isn't that why you bought that computer?»*
  Eventually, end-of-pipe consumer is responsible of whatever technological innovations are put on the market
- *What matters to me is to leave a greener planet to my kids and I insist not to use bactericides in surface chemistry*
- *«My responsability as a scientist is to prepare society for the new technologies I elaborate»*
- *«There are things not to be spoken of»*

Concluding thoughts

- Not an attempt to define RI
- Allow for plurality of versions = art of diplomacy (Latour, Stengers, Despret)
- Not about creating a shared language
- Ability to hear and make exist diverging but equally 'true' situated meanings
- Where does that leave us in terms of governance? But what alternative?