



# Reversibility as a Conceptual Stepping Stone for (Long-Term) Public Participation in Nuclear Waste Governance ?

*Anne Bergmans & Kris Van Berendoncks (UAntwerpen)*

# Content

## Context

### Geological disposal of HLW: a technology in the making

- GD as a sociotechnical imaginary
- Long-term repository governance

## Reversibility

- The case of France

## Conclusions



Context



## Monitoring Developments for safe Repository operation and staged closure

4 year FP7 EURATOM project (2009 – 2013)

Multidisciplinary group:

- 3 partners from **social sciences**, 15 technical partners

General aim:

- Investigate technical feasibility of repository monitoring for geological disposal of HLW or SNF
- Develop a framework for possible development and implementation of monitoring activities and associated stakeholders engagement

# Research Set-up Social Sciences

## Understanding the experts

- Document review and interviews with technical specialists

## Role of monitoring in building public confidence

- Literature review of experiences: published accounts of relationship between stakeholders and monitoring activities in the nuclear sector and other contexts

## Reflection on the notions of vigilance and social trust

- Drawing on literature on relations between experts and citizens
- Focus on institutional arrangements

## Explore potential for citizens to engage in identifying monitoring objectives and strategies

- National workshops (BE, UK, SE) and field trip to Swiss URLs

**International Socio-Technical Challenges for High-level radioactive waste management (RMW) and Geological Disposal (GD)**

3 year (March 2011 – June 2014) social sciences research project, funded under GA 269906 (FP7 – EURATOM)

16 partners (mainly academic) from 11 countries

General aim: show **role of social sciences in RWM debate beyond ‘social problematisation’**

# Social problematisation: persistency of the 'technical fallacy'

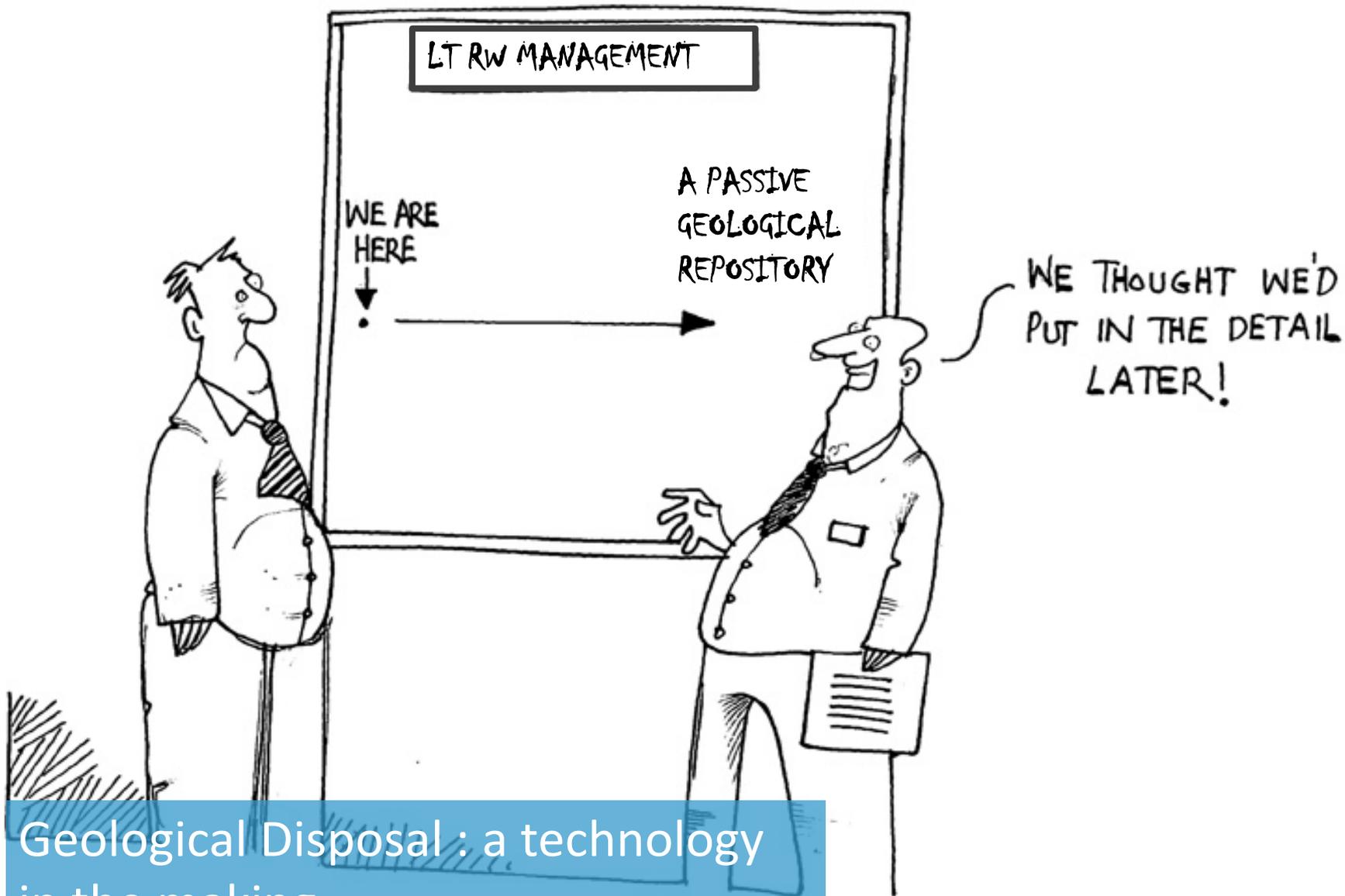
## THE TECHNICAL FALLACY

*...The notion that thorough and rigorous technical analysis is sufficient to implement a solution.*

Experience Shows, the Biggest Obstacles Are...

- ◆ Social
- ◆ Institutional
- ◆ Community Relations/  
Public Acceptance





Geological Disposal : a technology in the making

# GD as an ongoing sociotechnical experiment

[cf. Van de Poel (2011) : a social experiment in technology]

A (scientifically) controlled, open-ended exploration towards a possible solution

- Process of testing a techno-scientific idea
  - Final goal of passive safety cannot be guaranteed today and will not be reached in the next generations
- ⇒ long-term relationship between the surface and the underground
- ⇒ long-term relationship between the facility and its host community : at least 100 years needed before closure

# A sociotechnical imaginary

Jasanoff & Kim (2009)

In spite of (explicit) goal-directed policy agenda

- cf. EC Directive 19 July 2011

Imagined (distant) future

Vision of a good and desirable future

Portayed as feasible

Portrayed as the only possible future

# Implications for participation: **LONG TERM TA PROCESS**

In R&D

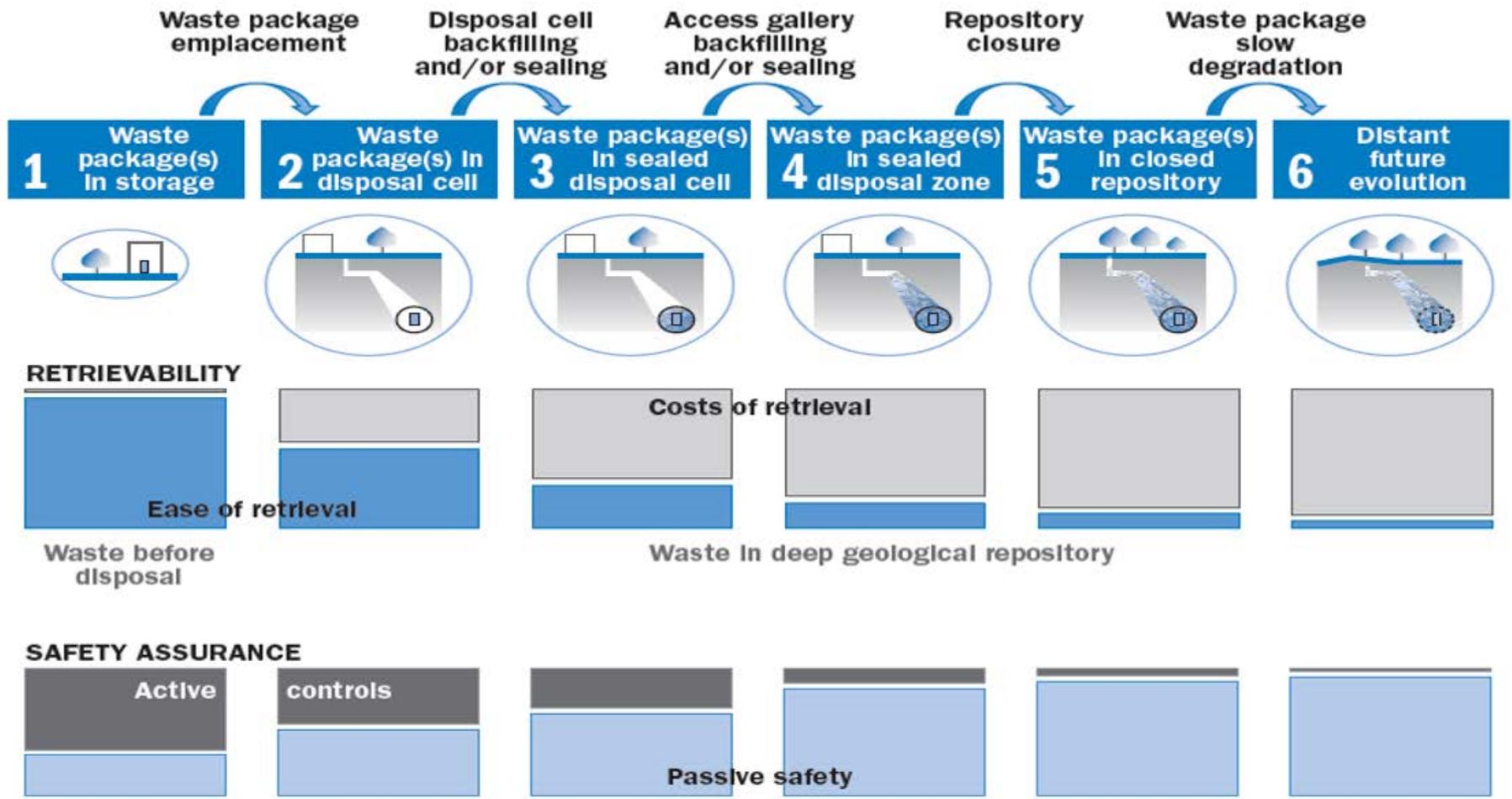
For facility siting

During construction, operation, closure, active memory keeping, ...

Not practicing 'acceptology'

- Conflicts are not a priori bad
- Contestation feeds technical democracy
- Complexity fosters creativity

⇒ Engaging in GD (or any other alternative) is about **'buying into' a process, not a product**  
⇒ France: opportunity in notion of 'reversibility' as a policy tool



# Reversibility



# NEA's definitions

(OECD- NEA 2012)

## Reversibility

- the **ability in principle to reverse decisions** taken during the progressive implementation of a disposal system
- reversal is the actual action of going back on (changing) a previous decision
- by changing direction and by restoring the situation that existed prior to that decision

## Retrievability

- the **ability in principle to recover** waste or entire waste packages once they have been emplaced
- retrieval is the concrete action of removing the waste

# NEA's definitions

Both reversibility and retrievability imply **making provisions** in order to allow reversal/retrieval should it be required

⇒ very much expert driven definitions to fit the ruling sociotechnical imaginary

# Reversibility in France

Approach taken by ANDRA seems to incorporate both R&R as defined by NEA

But: no official definition yet

Public debate on CIGÉO shows varying interpretations are still in competition

- Some examples from stakeholders' position papers (*cahiers d'acteurs*)

# ANDRA's conception

Delineation in time: reversibility ends with final closure

Measures to ensure physical capability to retrieve

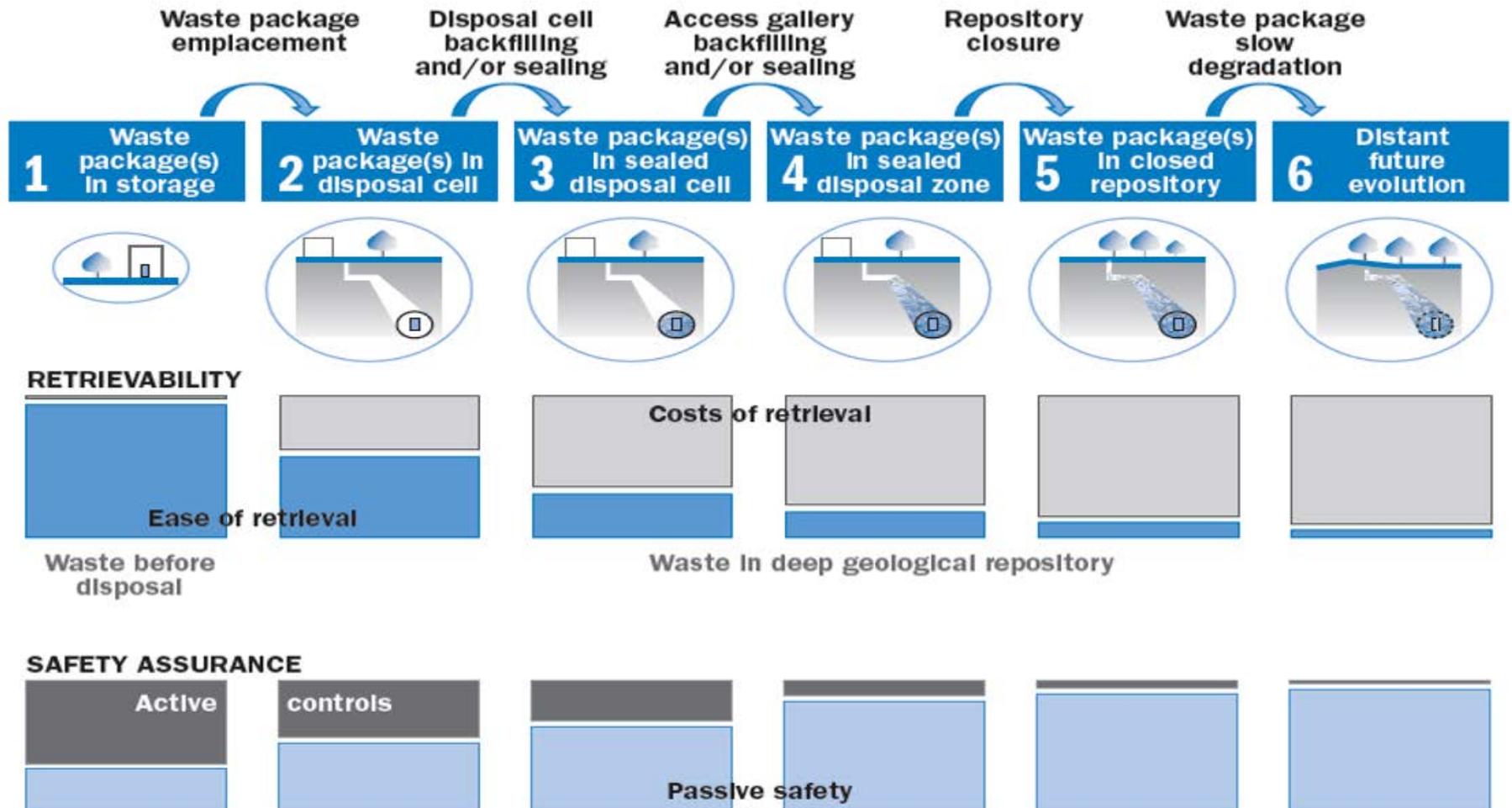
- Packaging & waste containers
- Non-definite sealing of galleries (for radioprotection)
- Technical maintenance of connecting galleries during pre-closure phase

Repository monitoring

Modular construction and adaptable design

# ANDRA's conception

## Stepwise approach towards closure



# Cahiers d'acteurs: some examples

## Precautionary measure on neighbours' demand

- ANCLI – Groupe Permanente « Matières et déchets radioactifs »

## R = R , and current concept is neither

- Cahier d'acteur n°17 – CLIS

## Avoiding lock-in

- Cahier d'acteur n°18 - Groupe des Elus de Gauche au Conseil Général de la Meuse

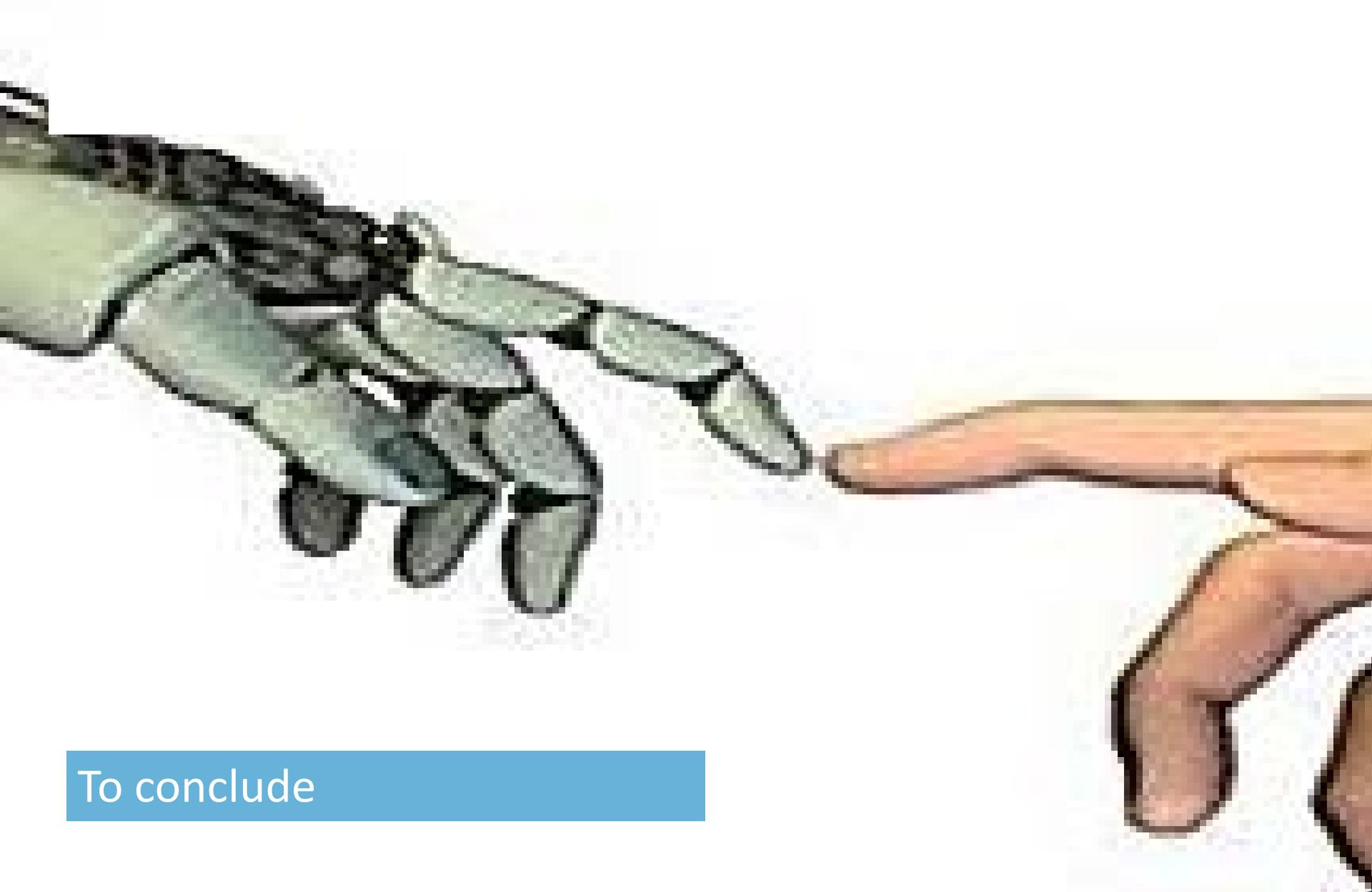
## A mode of governance

- Cahier d'acteur n°15 - CR CGT Champagne-Ardenne et Lorraine

# Reversibility the French way

## Reversibility as a political tool to deal with uncertainty

- Focus on processes and ‘governance’, on keeping options open
- Flexibility of waste inventory as main (official) argument for R(&R)
- Final closure as a political decision



To conclude

# Reversible / Retrievable GD: challenging the concept of GD from within?

An open ended future as a new imaginary ?

Potential for participatory LT RW governance:

- Avoiding lock-in/keep options open/have a plan B
- Creation of 'hold points'/milestone moments to reassess the technology
- Opportunity for inclusiveness and flexibility in decision-making

⇒ **continuous process of Technology Assessment**

