A Powerless Classification System?
When the Geological Disposal Option (re)defines Radioactive Waste Categories

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Background

• Political Scientist
• Science and Technology Studies Approach.
• Comparative Analysis
Outline

1. STS Theoretically Insights (Jasanoff 2014 and Bowker and Star 2000)
2. Characteristics of Every Nuclear Classification System (Bowker and Star 2000)
3. Top-down Classification System and their imperfections
4. Reversing the dynamic: the management option to redefine the radioactive waste category?
1. STS Theoretically Insights
2. Characteristics of Every Nuclear Classification System

“The classification of radioactive waste is considered a prerequisite for the development of a strategy to manage these wastes” (IAEA, 2009b, p. 19).

They enable bureaucratic action and cooperation between different actors “across different social worlds” (Bowker and Star 2000: 10). The classification has it done, it coordinates, it includes, and it excludes.

They also affect the technological design, the size of the repository, the conditioning of the waste and its management period over time (IAEA, 1994), the economic and geological dimensions of a management project (Miller and Wong, 2013) or the volumes to be considered.
2. Top-down Nuclear Classification System to manage

Figure 1 — Suggested classifications of IAEA in 1994 and in 2009, source: IAEA.
2. Characteristics of Every Nuclear Classification System

In principle;
• Consistent and operational
• Mutually exclusive
• Total coverage

In practice; imperfections remain!
3. Top-down Classification System and their imperfections

- The « blurring » categories

“The boundaries between the classes are not intended to be seen as hard lines, but rather as transition zones [emphasis added] whose precise determination will depend on the particular situation in each State” (IAEA, 2009b, p. 20).
3. Top-down Classification System: imperfections

- Powerless of classification system

<table>
<thead>
<tr>
<th>Number of defined categories</th>
<th>Belgium</th>
<th>France</th>
<th>Canada</th>
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<tbody>
<tr>
<td></td>
<td>3 categories</td>
<td>6 categories</td>
<td>4 categories</td>
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Classification according to half-life and level of activity

- **Belgium**
  - B (equiv. ILW IAEA 2009)
  - C (equiv. HLW IAEA 2009)
- **France**
  - MA-VL (equiv. ILW IAEA 2009)
  - HA-VL (equiv. HLW 2009)
- **Canada**
  - HLW (equiv. IAEA 2009) including spent fuel

"Blurring categories"

- **Belgium**
  - NORM, T-NORM
  - radium-bearing waste
  - Waste for Future Remediation
  - Spent Fuel
  - Spent Fuel MOX
- **France**
  - NORM
  - Waste without “filières” residues left over from uranium mines
  - Spent Fuel MOX
- **Canada**
  - /

Category combination for management

- **Belgium**
  - Categories B and C managed together
- **France**
  - MA-VL and HAVL categories managed together (Cigeo Project)
- **Canada**
  - HLW: full-fledged project (APM project of NWMO)
4. Reversing the dynamic: the management option to redefine classification system?

• “a disposal site’s waste acceptance criteria are the final words on disposition of wastes at that site and are therefore effectively the final words on waste classification at that location” (Lowenthal, 1997, p. 13)”
4. Reversing the dynamic: the management option to redefine classification system?

(... what is the current definition of low-level waste? It is not the waste of such and such activity, the definition is, it is the waste that can go to the [French] Morvilliers Center. We reverse the mechanics. Ultimately, what is high-level waste? Those wastes that can go to the storage. You reverse the mechanics by a match between the categorization and the reception center (French Regulatory Body interview 2014).

- Then, the question is: according to a predefined long-term management solution, which categories should be included or excluded?
Conclusions

• Powerless of top down nuclear classification system and its consequences
• Interest for revealing uncertainties and imperfections for
  1. First, shifting the focus of attention away: from HLR categories to geological repository
  2. Opening up the building of nuclear classification system
Thank you for your attention

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