



# WHICH ETHICS FOR POST-NORMAL SCIENCE?

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# Today's program

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- Case study: REE as a post-normal issue
  - ▣ Uncertainty
  - ▣ Values in dispute
  - ▣ High Stakes
  - ▣ Urgent Decisions
- Theoretical wanderings: What political and ethical consequences?
  - ▣ Post-normal Politics?
  - ▣ Post-normal Ethics?

# Rare Earth Elements: Quick Overview

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Among metals, REE constitute a very specific case for at least six reasons :

- Tremendous raise in extraction and consumption
  - ▣ Multiplied by 14 between 1965 and 2010
- Substitutes currently inferior or unknown, and recycling highly problematic
- Major concern about environmental damages and possible radioactive contamination with tailings containing thorium.

- Of key importance for various ranges of technology, including
  - ▣ Smaller sized technology (laptop computers, cell phones, etc.)
  - ▣ Green technologies (wind power turbines, hybrid vehicles, etc.),
  - ▣ The defense industry (cruise missiles, precision guided munitions, etc.)
- Low concentration in exploitable ore deposits, and the extraction process is longer, more complex, costly and energy-consuming than for other metals
- The world's supply comes from only a few sources.

Are we in presence of a “post-normal” issue?

# Uncertainty

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- “Such ‘estimations’ and especially the future extrapolations in the next step concerning technical developments, extraction effort and yield rates are naturally highly uncertain.” (vonGleich 2006, p.20)
- “Given such uncertainty, we simply do not know whether mineral commodities 200 hundred years hence will be more or less expensive, more or less available.” (Tilton 2002)
- 4 possible causes to depletion, all depending on highly uncertain factors:
  - ▣ Physical Depletion
  - ▣ Depletion by lack of energy to go through the mining process
  - ▣ Depletion because of excessive environmental impacts
  - ▣ Economic scarcity : increasing costs will make mining too expensive

# Values in dispute

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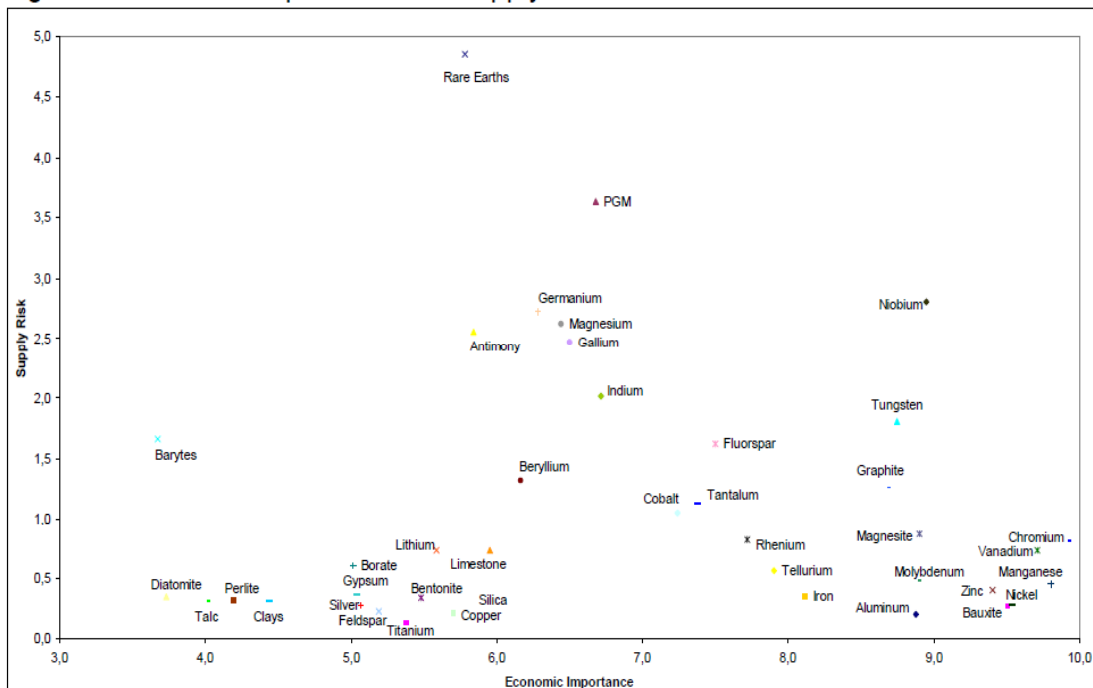
- Pessimistics vs Optimistics (Cornucopians)
  - ▣ Fixed cost paradigm vs Dynamic assessment
  - ▣ Market
  - ▣ Technology

# High Stakes

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## □ Economic Stakes

- Economic importance and supply risk of the 41 materials (European Commission, Critical Raw Materials for the EU)



## □ Environmental stakes

## □ Geopolitical stakes

- China vs Japan?
- USA, EU, Mexico vs China; WTO
- A curse for Inner Mongolia?

# Urgent decisions

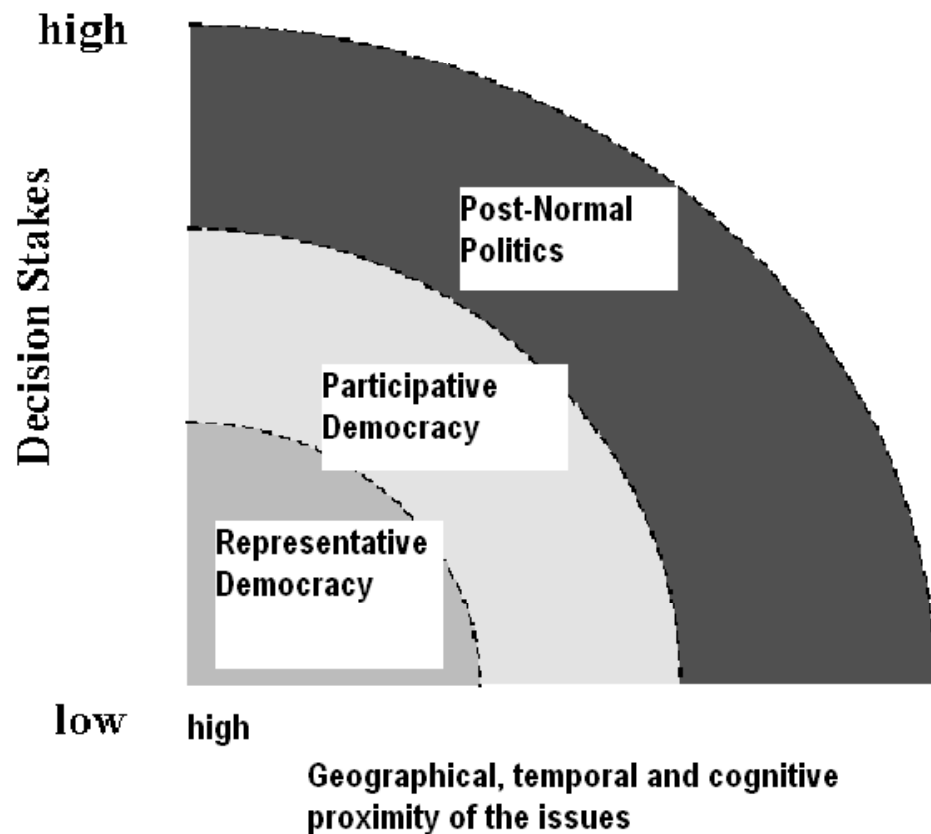
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- “Scarcity of minerals is an issue that needs urgent attention of policy-makers.” (Kooroshy et al. 2010)
- Decisions from who?
  - ▣ China: exportation rates
  - ▣ US and EU: intensifying the political pressure?
  - ▣ Scientists and mining companies: increasing the exploration process, investing more in R&D, etc.
  - ▣ Everybody! → Post-normal Politics and need for participation?



# Post-Normal Politics: hitting the wall?

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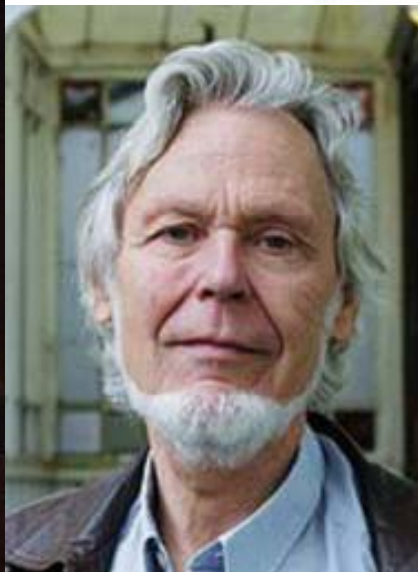
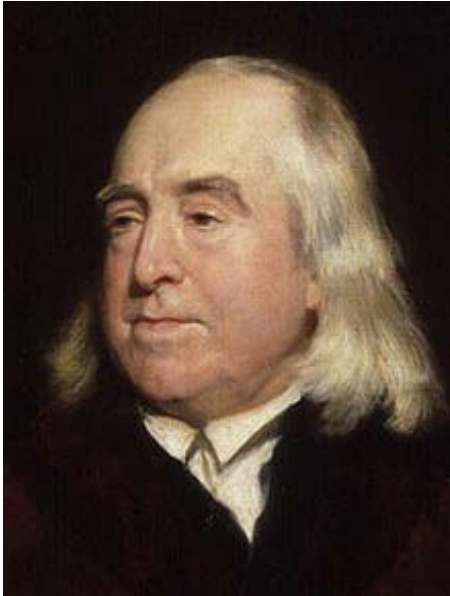
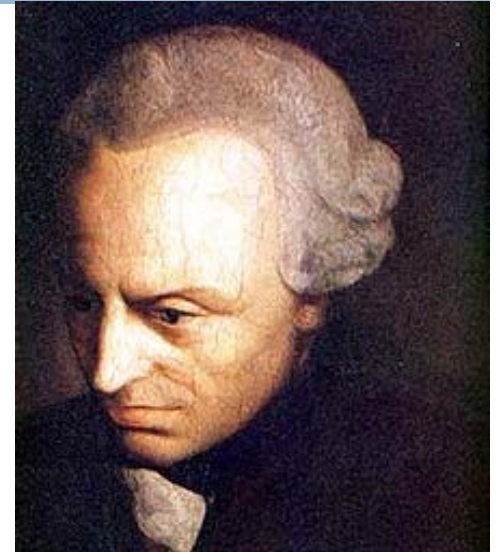


- The paradox of Post-Normal Politics would be that, whereas issues are becoming less directly discernible by laypersons, and more urgent, they require, at the same time, a longer process, with a bigger and sounder involvement of these same lay-persons in the decision-making processes.

□ Cf. Scott “Do we want more responsibility?” → Rather “are we capable”?

# Ethical implications: What the hell are we doing in the same Powerpoint???

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# « Ethics 101... »

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Virtue Ethics

Consequentialism

Deontology

(Pragmatic Ethics)

# Are there no other alternatives out there?

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- Yes! Different possible approaches:
  - ▣ Capabilities (A. Sen)
  - ▣ Gradualism (G. Skirbekk)
  - ▣ Historical symmetry: how much would we have wanted the past generations to think about our sake?
  - ▣ Focus on transition stage
- But are they so different?
- Here's a wild hypothesis: what if, in fact, all ethical systems were somehow consequentialist? 2 illustrations:
  - ▣ The father of deontology: Kant
  - ▣ Religious statements: Buddha

# Kant and the right of lying

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- Response to Benjamin Constant in *On a supposed right to lie because of philanthropic concerns* (1797)
  - ▣ « To be truthful (honest) in all declarations is, therefore, a sacred and unconditionally commanding law of reason that admits of no expediency whatsoever”
  - ▣ But he justifies it partly by considering the (unlikely) consequences!

# Buddha's eightfold path: deontology or consequentialism?

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- Buddha's eightfold could seem to be composed of normative, deontological principles, such as
  - ▣ Right action: not killing, stealing, or indulging in irresponsible sexual behaviour
  - ▣ Right Livelihood: not engaging in a profession that brings harm to others
- BUT all the principles are, are the end, a mean, « a path of mindful living » aiming at reducing the causes of suffering.

# Can we be ethical without being consequentialist at all?

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- ▣ My hypothesis is that this difference arise from different beliefs about what's the most efficient to head towards right, not how to define right in itself. Deontology could then be seen as a *heuristics* in the realm of ethics.
- ▣ Is it possible to find a deontological system (except from the three main monotheist religions) which is not, *in fine*, based on the consideration of consequences?

# Ethical implications for REE management: hitting the wall *bis*?

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- Take into account the consequences we can know about, which is *present* consequences
  - ▣ Improving working conditions of miners?
  - ▣ Preventing pollution of water and soils, specifically by thorium?
  - ▣ Preventing smuggling?
  - ▣ Think about today's applications: military vs medical etc.?
  - ▣ Ensuring access for everyone and not just producers countries?
- But what about the future?



Many thanks for your attention  
and please feel most welcomed to defend  
any other ethical perspective!