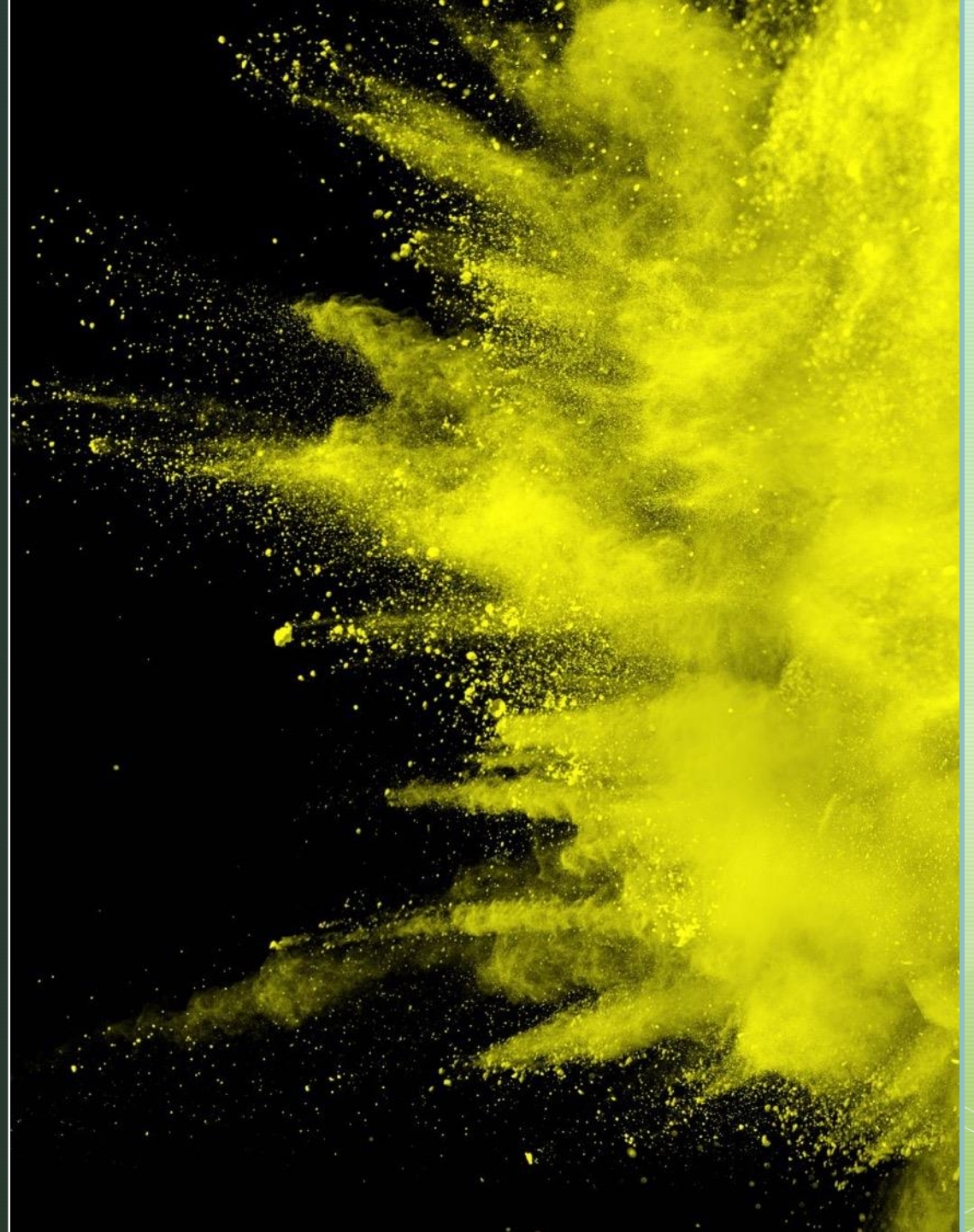


Between Dread and Denial

Social Science in the Nuclear Age

- **Sheila Jasanoff**
- **Harvard University**
- NEA-OECD Workshop
- Nuclear Energy and the Social Sciences
- Paris, December 12-13, 2019



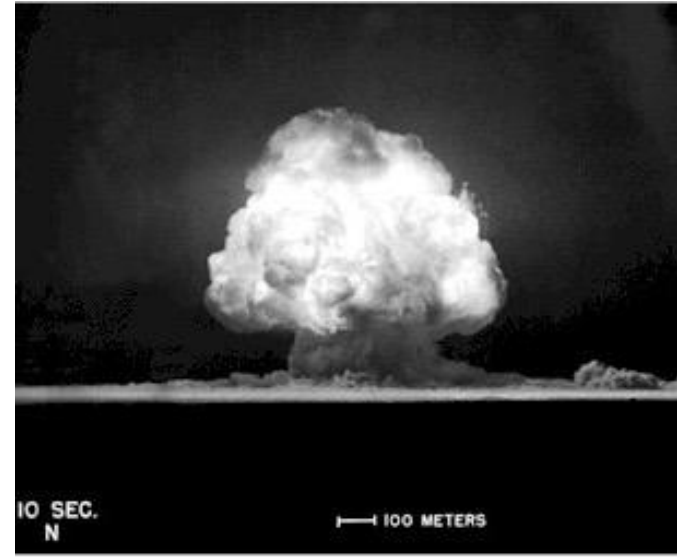
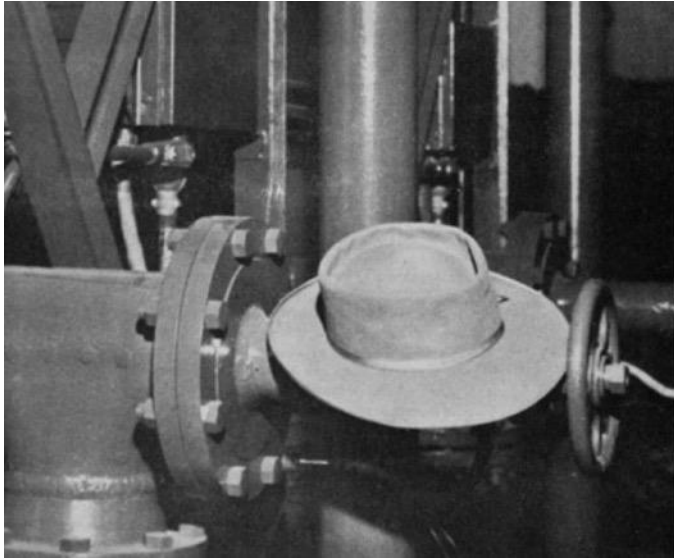
Nuclearity and the Social Sciences: 2 Perspectives

Socializing the Nuclear

- Risk management
- Discourses of Normality
 - Safety culture
 - Waste disposal
- Methods of study
 - Case studies; descriptive law
 - Internal to organizations
- Taming publics
 - “Enthusiastic acceptance”; YIMBI

Nuclearizing Society

- “Anthropological shock”
- Risk society
 - Everyone is in it
 - Beyond sensory perceptions
- Methods of futuring
 - Existential uncertainties
 - Precautionary politics
- Taming experts
 - Democratic accountability



Now I am become Death, the Destroyer of
Worlds

What is a
“society” that
has learned
to think the
unthinkable?

Disruptions

- **Existential risk**
- **Catastrophe and alert**
- **Time scales of destruction**
- **Invisible and uncertain harms: “age of fallout” (Masco)**

Reordering

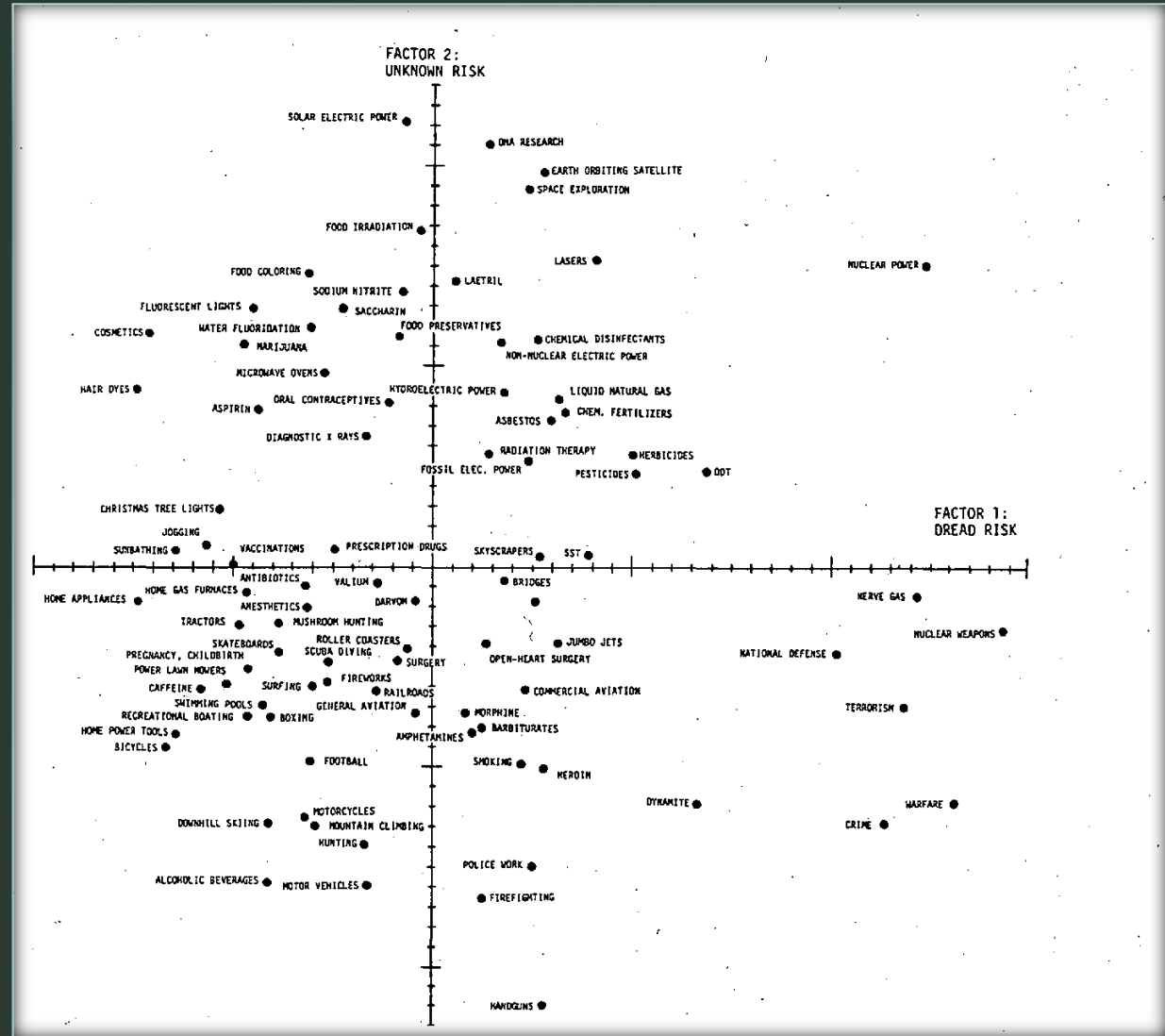
- **Management exercises (containment)**
- **Reasonable and unreasonable subjects**
- **Politics of numbers (accounting)**
- **Anthropocene**



A Discourse of (Managed) Risk



The Reinvention of Dread



Public Understanding of Science

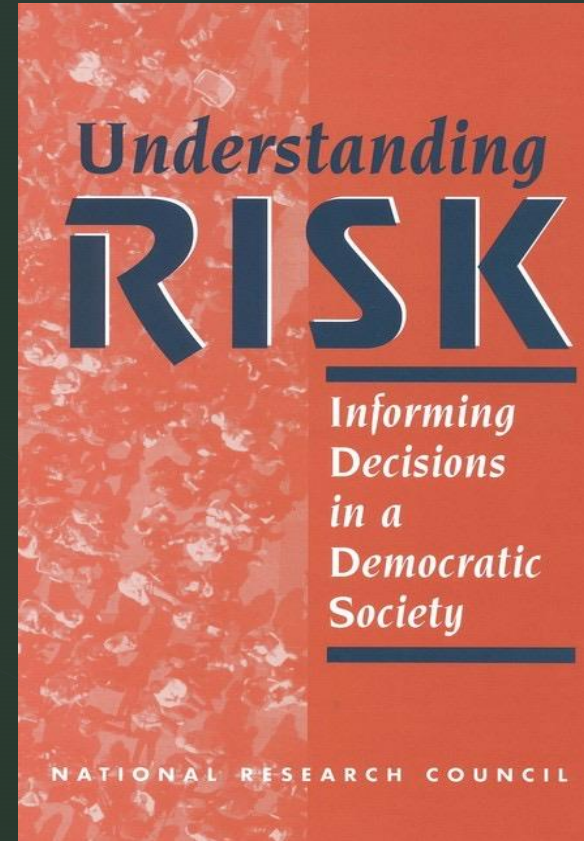
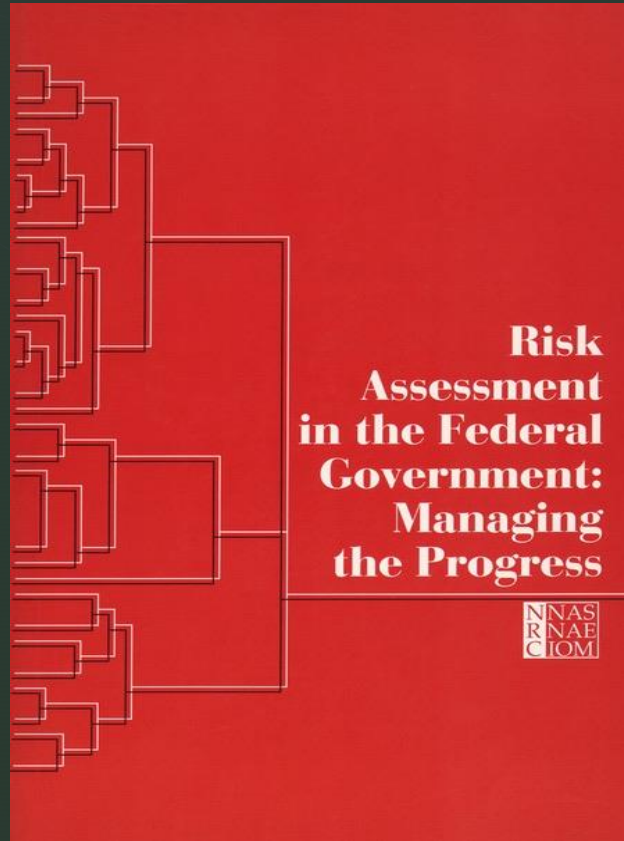
- Conventional wisdom
 - Publics are technically illiterate or poorly informed about very basic scientific facts.
 - Ignorance leads to:
 - “denialism” (e.g., on climate)
 - support for creationism
 - “alternative” beliefs (e.g., in astrology, homeopathy)
 - reduced support for scientific research
 - Scientists should communicate better with the public.
 - We need more monitoring and surveying of PUST

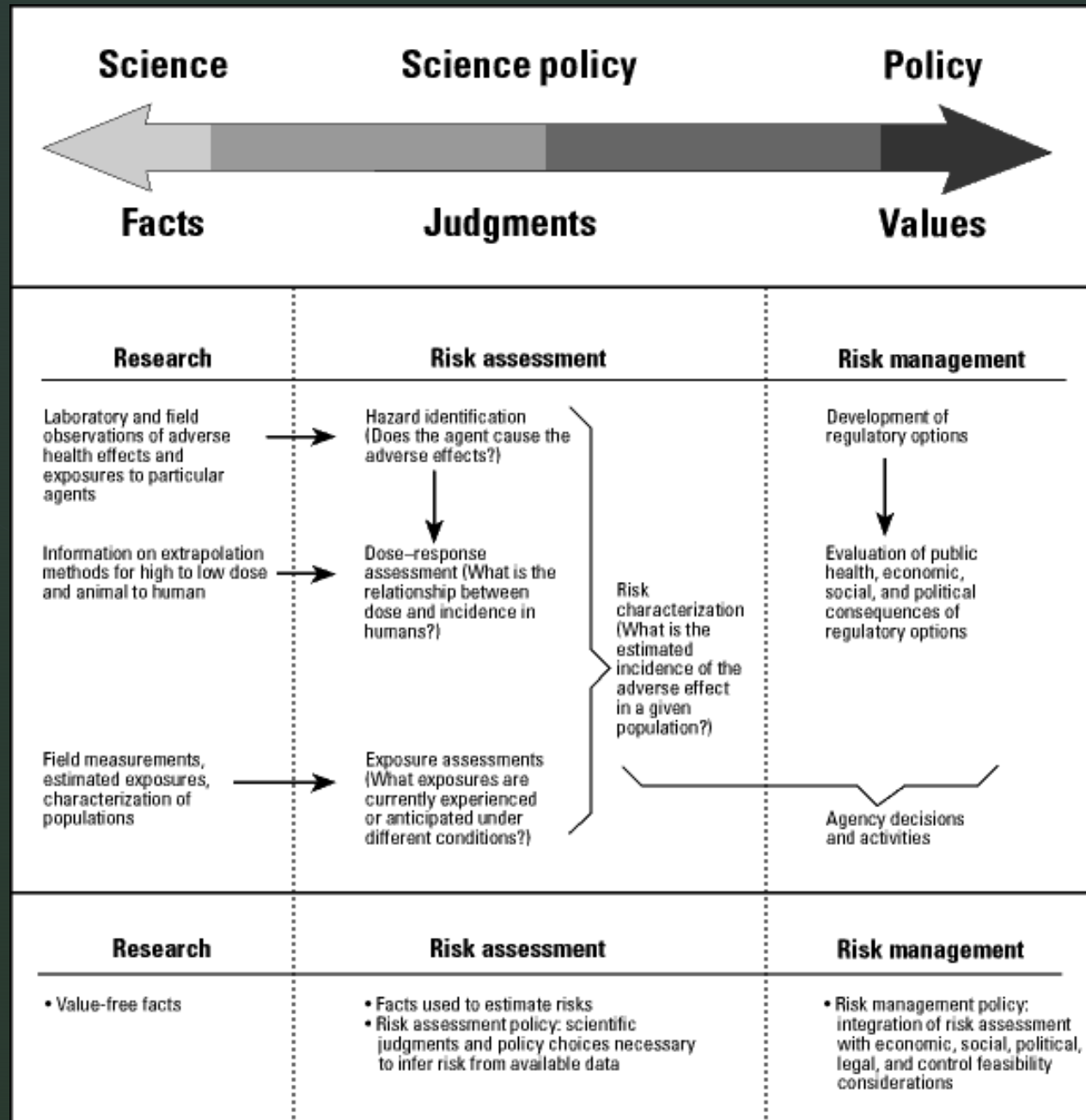
Controlling Reason

- What's rational?
 - “evidence-based”
- But what's evidence?
 - “expert based”
- Then who's the expert?
 - “science based”
- So whose science counts?
 - Sites of controversy (peer review debates; *Red Book on risk assessment*)
 - New regulatory practices



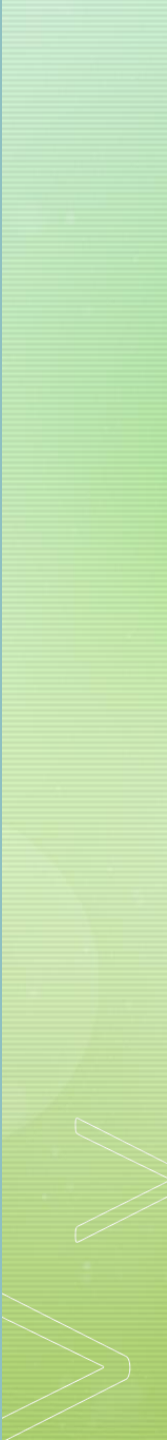
Bookends







Discourses of Time and Futures

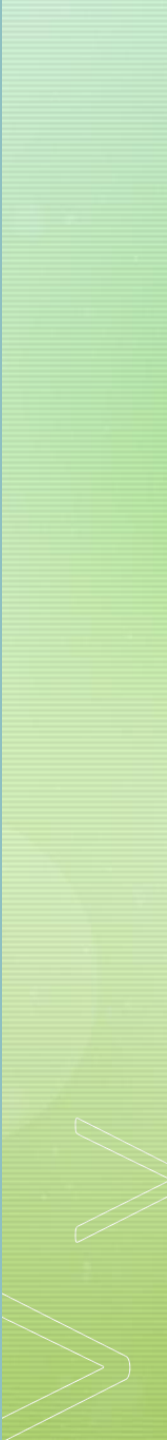




La BD qui signale les déchets nucléaires Ludovic Fery (09/12/08)

- Où serons-nous dans 10 000 ans ? Cette question à laquelle beaucoup préféreraient ne pas répondre, concerne maintenant les scientifiques. En effet, 10 000 ans, c'est la durée de vie de certaines technologies que l'homme produit actuellement. Parmi les plus gênantes, les déchets radioactifs. Les rebus que l'on pense aujourd'hui enterrer ne vont pas pour autant disparaître. 10 000 ans, au bas mot, c'est le temps qu'il nous faut pour rendre ces déchets totalement inoffensifs. Mais comment s'assurer de leur bonne transmission?





CAUTION—DO NOT DIG

BURIED IN THIS AREA IS RADIOACTIVE MATERIAL FROM NUCLEAR RESEARCH CONDUCTED HERE 1943—1949. BURIAL AREA IS MARKED BY SIX CORNER MARKERS 100 FT. FROM THIS CENTER POINT. THERE IS ~~NO~~ DANGER TO VISITORS.

U. S. DEPARTMENT OF ENERGY

1978

(National) Sociotechnical Imaginaries

- Definition and Revision
 - “Collectively imagined and communicated forms of social life that both embed and are embodied in **national** scientific and/or technological projects”
 - “Collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology”

	United States	South Korea	Germany
Framing Risks	Runaway accidents; catastrophic damage	Energy security; dependence	Irresponsible and catastrophic damage
Stakes	Governance of technology	Governance of nation	Governance of state power and risk society
Policy Focus	Controlling radiation	Building national capacity	Increasing transparency
Controversies	Quantitative expert risk assessments	Political inclusion and participation	Inaccessible expert risk assessments
Closures	Court cases; nationalization	Management structures	Political mobilization; legislation

Comparing Nuclear Imaginaries

Building the US Imaginary of Containment

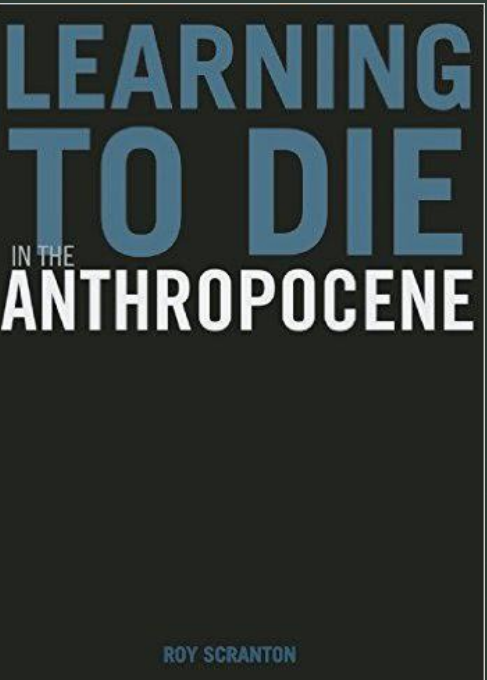
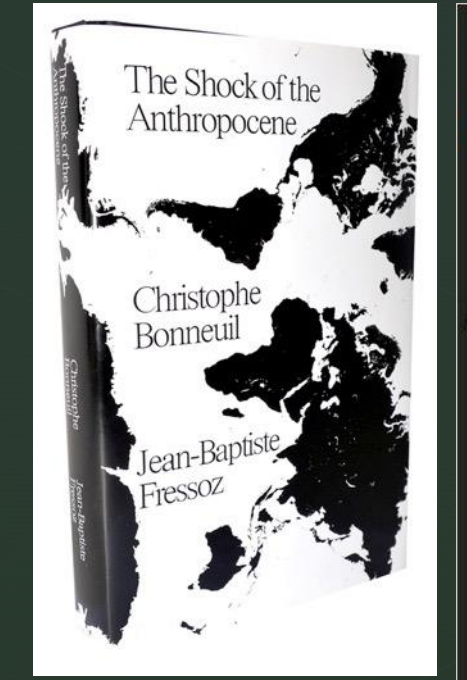
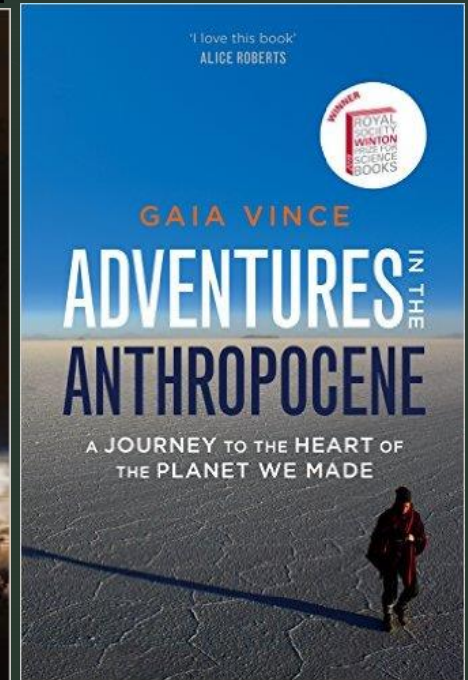
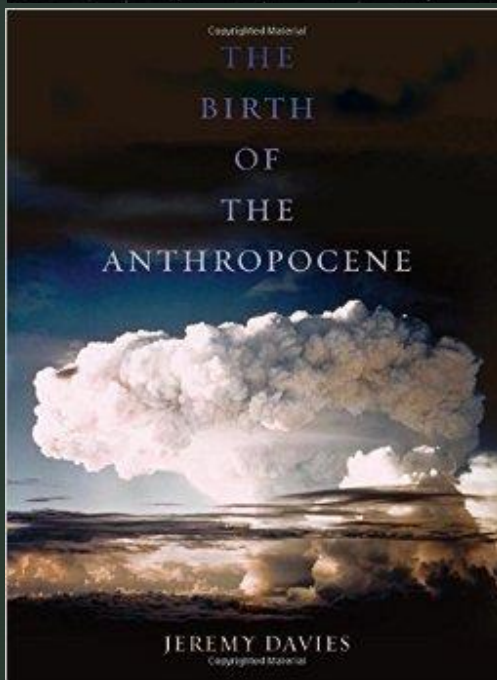
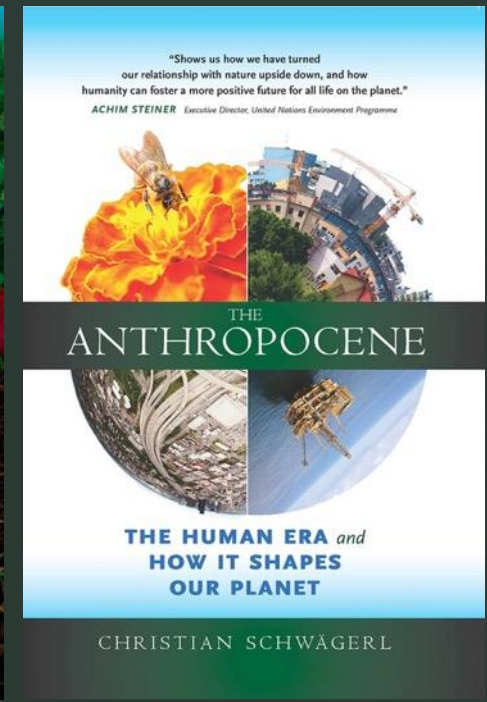
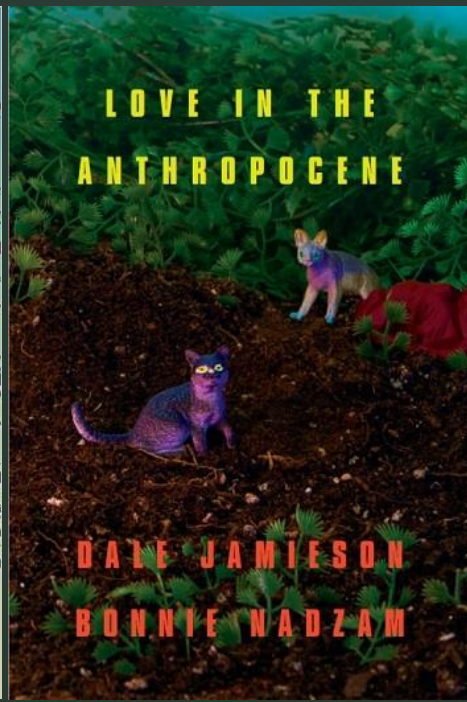
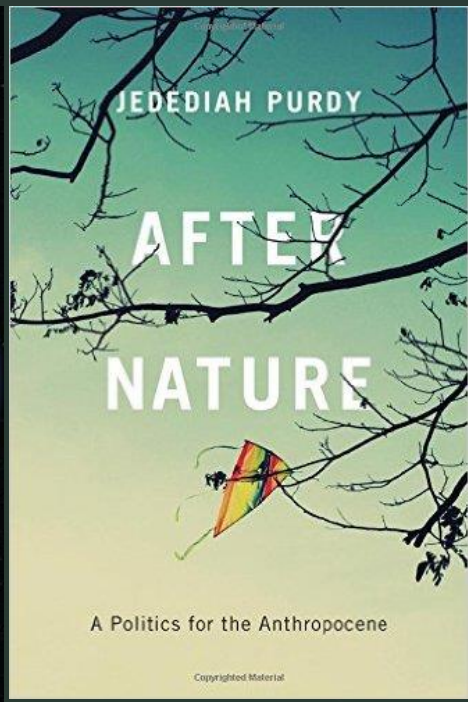
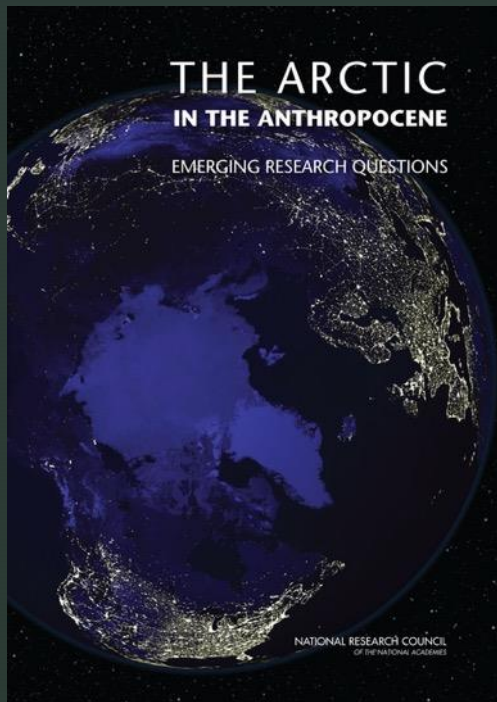
- **Atoms for Peace**
 - Containing the United States: peace not war, life not death, history
- **Price Anderson Act**
 - Containing liability through national assumption of risk
- **AEC to NRC (and EPA)**
 - Containing promotion, by eliminating conflict of interest
- **NEPA challenges**
 - Containing back end of fuel cycle (*Vermont Yankee*)
 - Containing challenges to agency discretion (*Baltimore Gas*)
- **Three Mile Island**
 - Containing “nuclear fear” (*Met Ed v. PANE*, 460 U.S. 766, 1983)
- **Yucca Mountain**
 - Containing high-level radioactive waste

Political Foundations of Imaginaries

	United States	Germany
Governmental legitimacy	Constitutional democracy	Constitutional democracy
Policy style	Pluralist	Corporatist
Expert role	Boundary work to produce objectivity	Inclusion to produce right reason
Public role	Stakeholders	Representatives of key social positions
Political & social risks	Over-regulation; health and safety threats	Uncertainty in law and policy; uncontrolled risks
Benefits	Innovation, novelty	Risk avoidance, social cohesion



Discourses of Stewardship: Blurring the Boundaries of Nature and Culture



Voices in Opposition



Enduring Binaries: Hope and Fear

Techno optimism/enviro modernism

- Promise and conquest
- Science, expertise
- Control
- Precision technologies
- Exponential power

Techno Pessimism/catastrophism

- Hubris
- Complexity, reflection
- Lack of foresight
- Unintended consequences
- Disaster

“We” and Our Environment

- Latour (Love Your Monsters)
- Today we can fold ourselves into the molecular machinery of soil bacteria through our sciences and technologies. We run robots on Mars. We photograph and dream of further galaxies. And yet we fear that the climate could destroy us.
- Beck (Anthropological Shock)
- In matters of risk, we *have been* disenfranchised. In nuclear democracy, we the citizens have lost sovereignty over our senses, and thus the residual sovereignty over our judgment

Costs and Benefits

- Latour
- Like France's parks, all of Nature needs our constant care, our undivided attention, our costly instruments, our hundreds of thousands of scientists, our huge institutions, our careful funding.
- Beck
- ...not just in the nuclear age, but with the industrial universalization of chemical poisons in the air, the water, and foodstuffs as well, our relation to reality has been fundamentally transformed.

Responsibility

- Latour
- God is so attached and dependent upon His Creation that he is continually forced (convinced? willing?) to save it. Once again, the sin is not to wish to have dominion over Nature, but to believe that this dominion means emancipation and not attachment.
- Beck
- ...the law of latent side-effects, which burdens us with the risks, must be broken by insisting that those who create the risks take responsibility for them. Capitalist firms, for instance, would thus be confronted with the necessity of demonstrating the harmlessness of their materials and their products before they are introduced into circulation.



Bringing Democracy Back In: Sovereignty, Power, Constitutionalism, Citizenship

Questioning Conventional Wisdom

- Technology is neutral.
- Technology shapes society.
- Harmful consequences are unintended and could be avoided through risk assessment.
- Technological solutions avoid the “human trap” and can be more easily implemented.
- In a time of looming catastrophe, innovation and disruption offer the best (or only) answers.
- Technology has values.
- Society designs technology.
- Unintended consequences are the result of assumptions that were naturalized.
- Technological solutions always entail social choices. Who decides?
- Technological innovation creates winners and losers; we need “technologies of humility.”
- Who benefits? Who is hurt? Who is responsible?

Nuclearity and Governance

- Post-colonial legacies
- The “Nuclear Club” – UN structures
- Military-industrial complex
- “Radiance of France”
- Self-sufficiency (energy)
- Figure of the. Expert (e.g., US science advisers)
- Governing technology | Government by technology

Knowledge-able Citizens under US Law

- Increasing knowledge rights for citizens:
 - Right to know
 - Of exposure to risks
 - For informed consumption
 - To level the economic, social, and legal playing fields
 - Right to give informed consent
 - Right to demand reasons
 - Right to participate and offer expertise
 - Right to challenge irrational decisions
 - Right to appeal

The Analytic-Deliberative Model (1996 NRC Report)

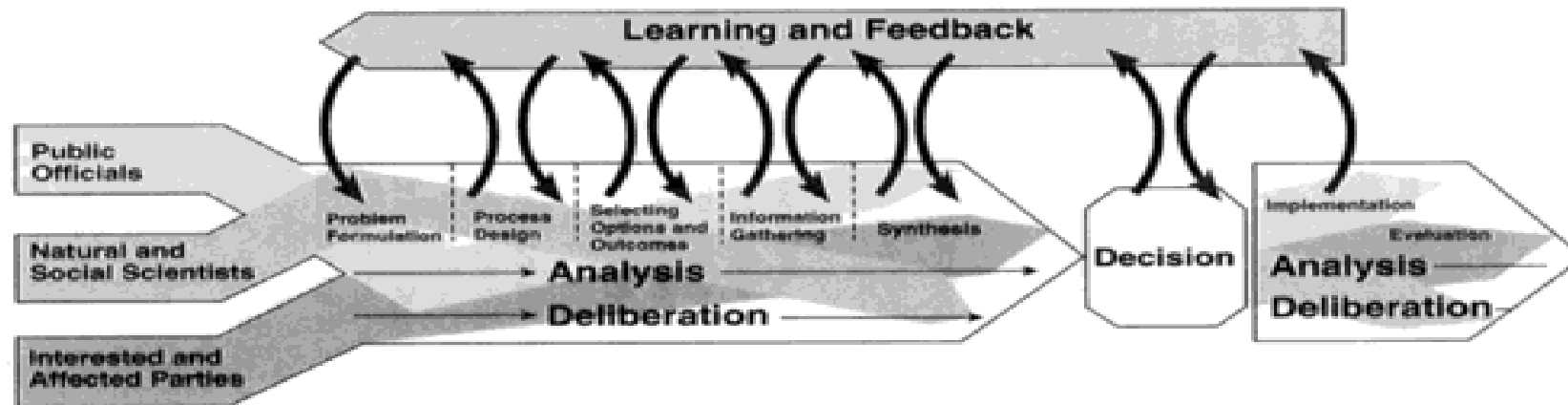


FIGURE 1-2. A schematic representation of the risk decision process.

Reasons for Wider Citizen Involvement

- Inadequate use of lay knowledge
- Incorrect assumptions of lay ignorance; failure to respect public values
- Inadequate inclusion in governance decisions
- Inadequate remedies
- Demonstration of democratic competence

“Technologies of Humility”

- Account for social as well as material risks
 - Threats to culture, community, responsibility
- Engage in retrospective as well as prospective analysis
 - Historical experiences of vulnerability and resilience
- Perform ethical as well as technical analysis
 - Distribution, fairness, justice
- Design participatory as well as preventive policies
 - Political institutions and resources

Thank you!