Structural Ignorance in Nuclear Safety and Emergency Preparedness Controversies: Case of Post-Fukushima Japan

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“Policy Reform” in Post-Fukushima Japan: Popular stories

- ✓ “Lessons learned” from the disaster
- ✓ New ‘independent’ regulatory body (NRA)
- ✓ More stringent safety criteria and regulatory practice
- ✓ Rigorous implementation of ‘defense-in-depth’ and other key safety concepts
- ✓ Enhanced voluntary effort of continuous safety improvement by operators
- ✓ More effective and feasible emergency planning

Image: Mainichi Shimbun


Image: Sankei Shimbun

Controversies: How to accept and implement state-of-the-art expertise

- To take advantages of the RIDM (Risk-Informed Decision Making) for better nuclear risk governance, Japanese experts have discussed…
  - Broader and effective use of PRA (Probabilistic Risk Assessment)
  - (Re-) establishment of safety goals
  - Updated emergency preparedness (i.e. protective action planning)
- (Their) reflection on Fukushima: "insufficient acceptance and implementation of the international orthodoxies on nuclear safety"

Episode 1: “scientific” safety goals

- NRA’s decision and their discourses
  - Adding “100TBq accident frequencies” to the conventional safety goals which had not been endorsed unambiguously
  - Misunderstood ‘independence:’
    “We have decided safety goals from a purely scientific and technical standpoint. It has nothing to do with social acceptance.”
    (NRA officer, at the advisory board of an NPP siting prefectural gov’t)

Episode 1: “scientific” safety goals

- NRA’s decision and their discourses (cont’d)
  - Using these numbers inappropriately to demonstrate the risk of NPP is minimized: “Expected emission of the worst-case scenario is 4.7TBq according to the safety review with new stringent criteria, which is clearly below the safety goals”
    (NRA officer, at public meeting of an NPP siting municipality)

Episode 1: “scientific” safety goals

- Neglected international orthodoxy and relevant expertise
  - Not just “scientific” numbers for “public acceptance”
  - Don’t use it to justify the result of particular risk assessment
  - Addressing a so-called trans-scientific question: “how safe is safe enough?”
  - Socio-technical contrivance for straddling a gap between techno-science and societal values

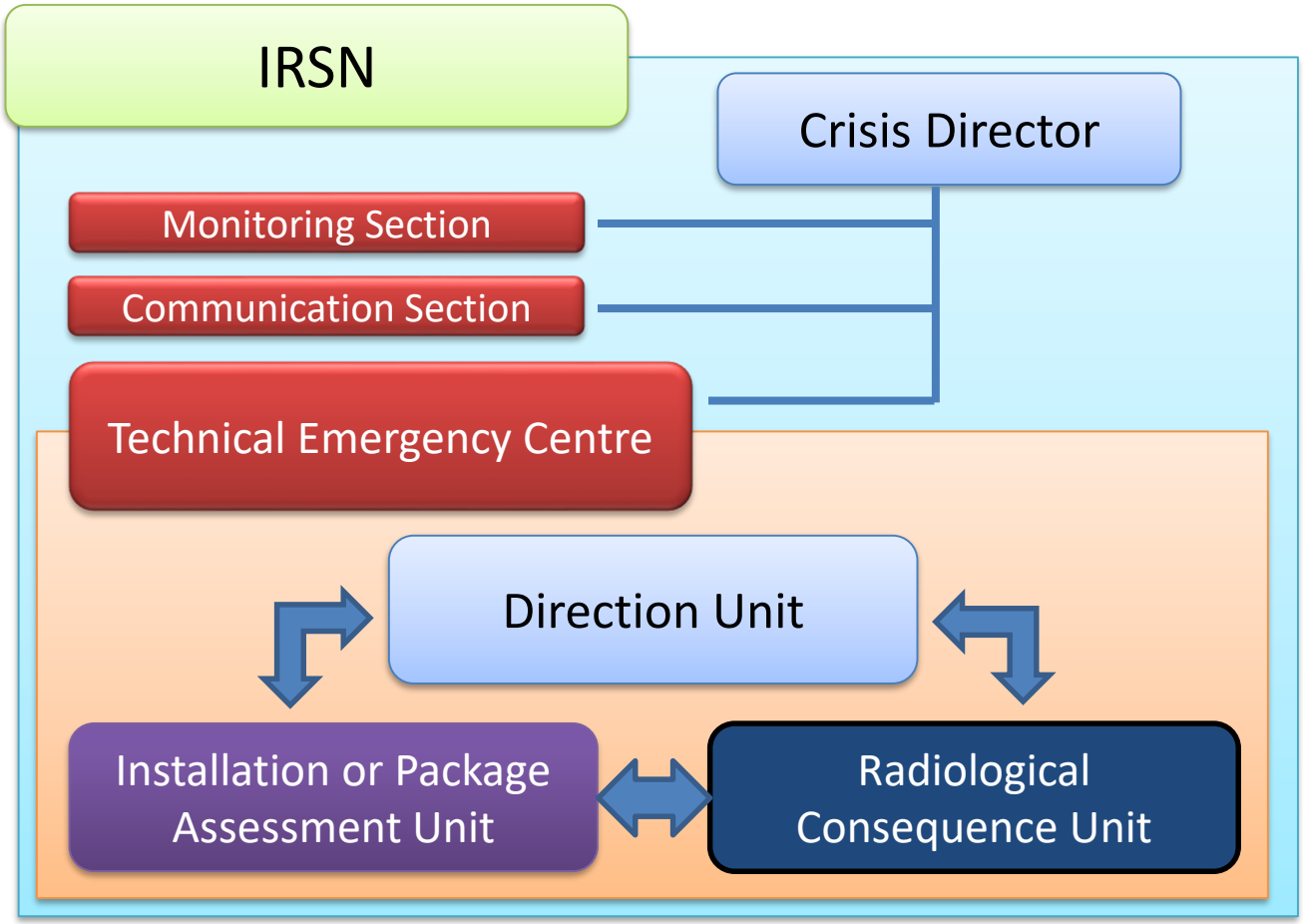
Episode 2: “SPEEDI” dispute

- SPEEDI: “System for Prediction of Environmental Emergency Dose Information”
- Fukushima disaster: it wasn’t used as expected due to its technical limitations and institutional shortcomings
  -> led secrecy scandal and big and long controversy on the use of SPEEDI
  i.e. Gov’t’s and national Diet’s accident reports gave almost contrary arguments

Episode 2: “SPEEDI” dispute

- March 2016: NRA’s total ban on the use of SPEEDI for emergency response
  - “It is impossible to predict the timing of the release of radioactive plume,” so any kind of “dispersion simulation cannot be reliable information”
  - Rather, “it may cause increase of the risk of radiation exposure” due to public panic
  - Instead, protection measures “should be taken based on the prescriptive criteria and methods”
- NRA denied the strategic use of SPEEDI for emergency response at all

French Institutional Framework for Nuclear Emergency and Dispersion Calculation



Expert Advice for relevant authorities

- Regulatory body
- Interior Ministry
- Other ministries
- Prefectural Governor

etc.

Structural ignorance in policy process: not to think about it, but to conclude it

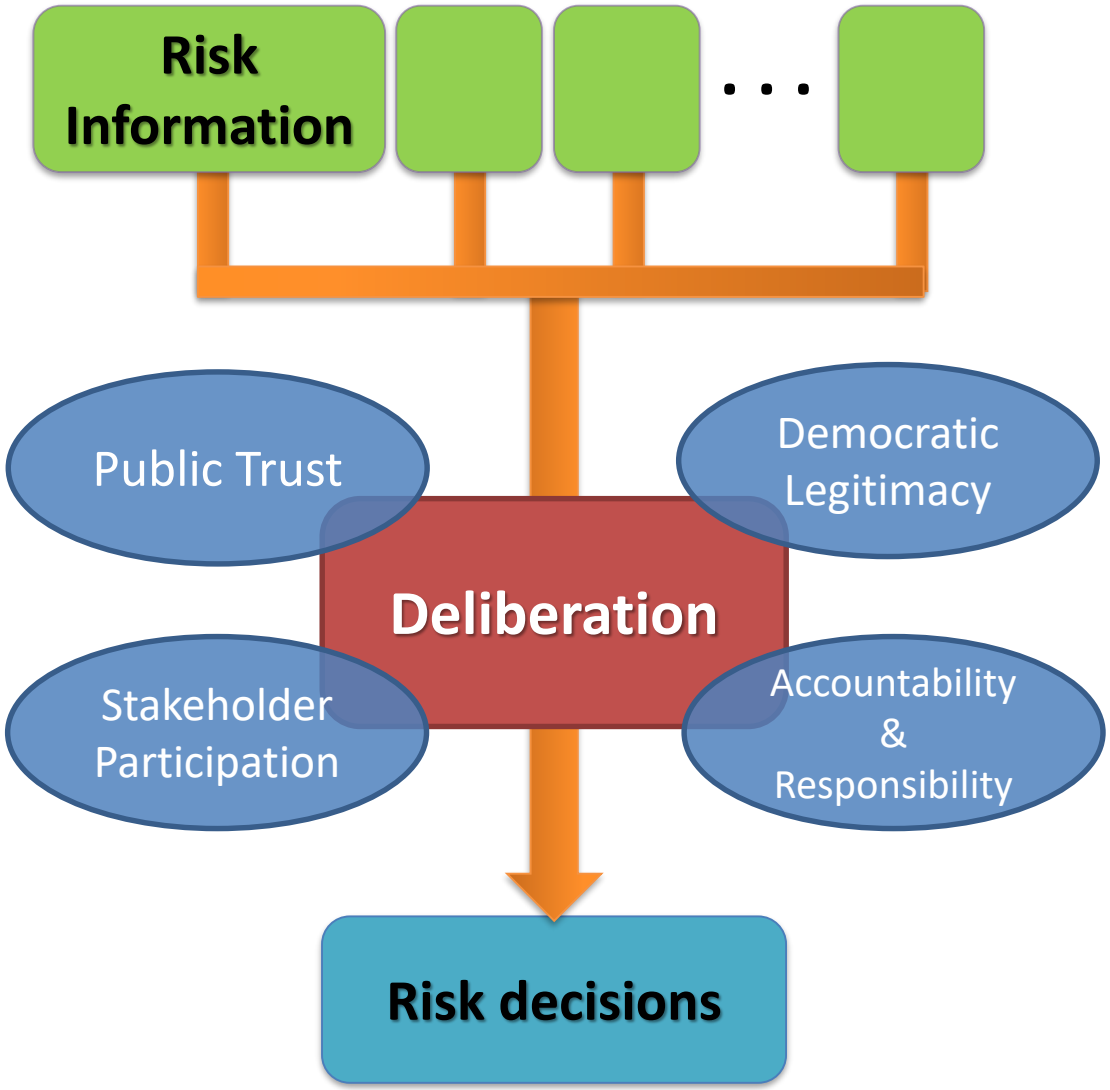
- Our qualitative survey (mainly semi-structured interview) shows that almost all of these shortcomings were recognized among the ‘core’ experts
  - Their typical excuse discourses: “better than nothing” “first step” “to be improved later”
- Policy makers’ motivation: to promote the policy (i.e. restart of safety-upgraded NPPs) without any difficulties and delays

Reality of RIDM implementation: Not to decide it, but to automate it?

- Policy-makers and stakeholders have tried to use “state-of-the-art” expertise not to make their decision better, but…
  - To avoid critical conflicts
  - To make decisions “automated”
  - To overlook something crucial (maybe) deliberately
- These three motives might be (unwittingly) shared by the stakeholders in civil society
  - It makes the matter “structural”: no negative feedback to stop the failure trajectory

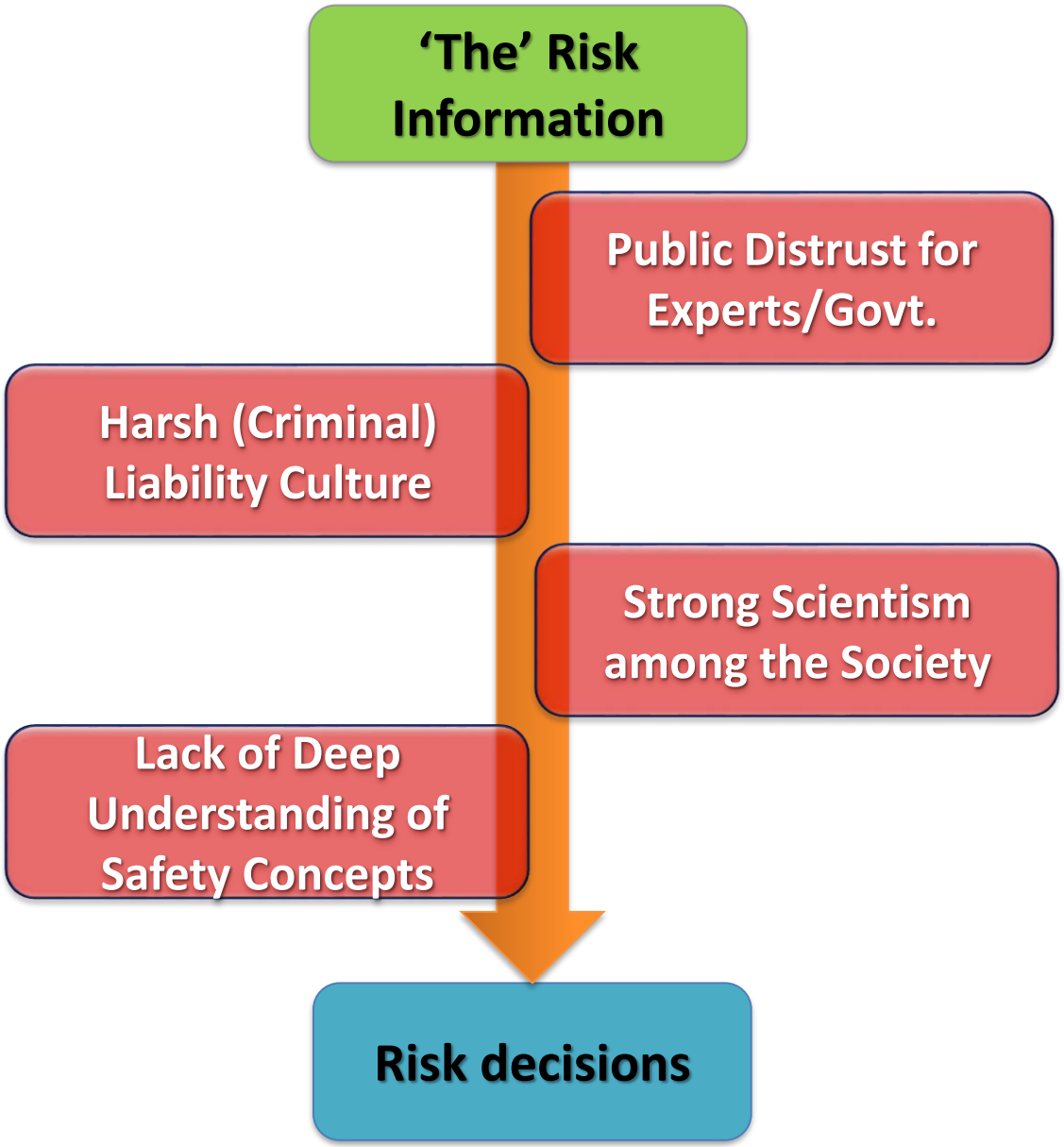
"Experts' ideal" of RIDM

- ✓ **Integrating assorted information**
- ✓ **Need for careful Interpretation**
- ✓ **To be strategic**
- ✓ **Trust for rational decision**
- ✓ **Responsibility and Accountability**
- ✓ **Fundamental basis of the concept: "modernity"**



Reality of post-Fukushima Japan

- ✓ **Excluding arbitrary filtering by elites**
- ✓ **To "Automate" decision-making (aversion to decision-making)**
- ✓ **To be decisive**
- ✓ **Deep distrust for human judgment**
- ✓ **Part of "reflexive modernization?"**



Concluding remarks

- In the post-Fukushima safety controversies in Japan, the relevant international orthodoxy has been neglected
  - RIDM have been used not to deliberate risk decision-making, but to avert it
  - NRA's behavior is a typical example, but it is a consequence of a socio-political structure at the interface of technology and society
  - After the tragic disaster and its serious damage, no actor would (could) take the responsibility of ”decision”

Concluding remarks

- This is partially because of Japanese particular context, however, it seems to imply the deeper fundamental problem for us all
  - “Key safety principles, concepts, logics and any other relevant expertise is still valid under ’post-truth’ flux age?”
  - It could withstand the multitude of backlashes?
- Interdisciplinary social scientific scholarship on nuclear risk is a possible breakthrough to cope with the challenges

Thank you for your attention.

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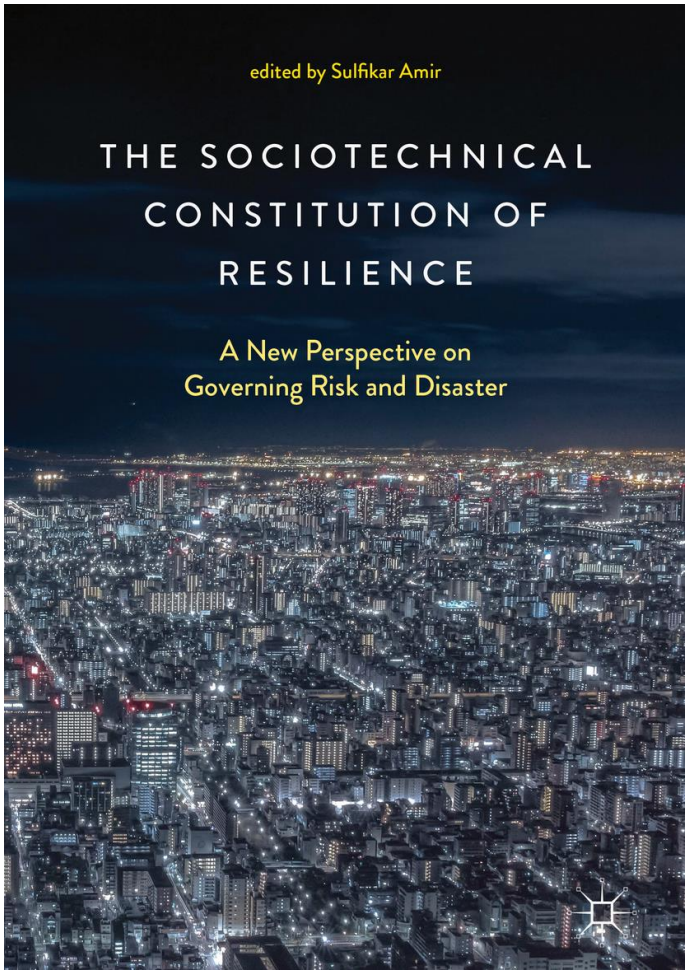
S. Sugawara and K. Juraku “Post-Fukushima Controversy on SPEEDI System: Contested Imaginary of Real-time Simulation Technology for Emergency Radiation Protection,” S. Amir (ed.), *The Sociotechnical Constitution of Resilience: A New Perspective on Governing Risk and Disaster*, Palgrave Macmillan, 2018.



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