The Master and Slave Redemption
Thinking Technology from a Social Justice Perspective

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1 The politics of hypothesis (responsible dealing with scientific perplexity)

2 The real problem (a critical theory of modernity)

3 The idea of socially responsible TA (from a social justice perspective)

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Epidemiology
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Publication Type: [Environmental Epidemiology]
DOI: 10.1097/EDE.0000000000000385
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Thyroid Cancer Detection by Ultrasound Among Residents Ages 18 Years and Younger in Fukushima, Japan: 2011 to 2014

Tsuda, Toshihide; Tokinobu, Akiko; Yamamoto, Eiji; Suzuki, Etsuji

1 The politics of hypothesis (responsible dealing with scientific perplexity)
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"… An excess of thyroid cancer has been detected by ultrasound among children and adolescents in Fukushima Prefecture within 4 years of the release, and is unlikely to be explained by a screening surge. …"

1 The politics of hypothesis (responsible dealing with scientific perplexity)
In post-accident conditions in Fukushima

"… The evidence suggests that the current prevalence of thyroid cancer found by ultrasound screening in Fukushima Prefecture represents a normal finding. - This does not exclude the possibility that a very small number of cancers may be radiation induced. An increase due to radiation will probably be detectable in the future among the youngest-at-exposure group from the most exposed areas, but it will be much smaller than the increase seen after Chernobyl. …"

Williams, D., Cambridge, UK, 2015, Do the thyroid cancer findings after Fukushima represent a radiation related increase or the normal incidence uncovered by screening?



1 The politics of hypothesis (responsible dealing with scientific perplexity)
In post-accident conditions in Fukushima

- Assessment

  Critiques on Tsuda's paper:

  1 too early to draw conclusions
  2 lower radiological impact as compared to Chernobyl
  3 'falsification' of result due to systematic screening

- In Fukushima, the ongoing **scientific discussion** on possible thyroid cancer in children is relevant and needed, but it **would benefit from a serene and accommodating atmosphere**.

  That atmosphere is not present now, and its possibility to emerge is hindered by **power politics** (as well political as commercial) and **distrust**.



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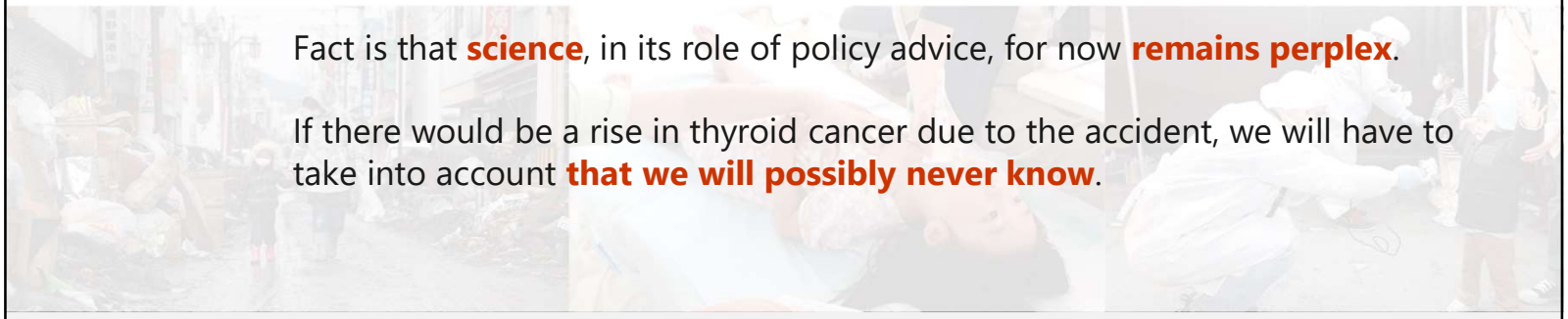

Fact is that **science**, in its role of policy advice, for now **remains perplex**.

If there would be a rise in thyroid cancer due to the accident, we will have to take into account **that we will possibly never know**.

1 The politics of hypothesis (responsible dealing with scientific perplexity)

In our daily life

The chemical glyphosate is an ingredient in Monsanto's weed killer product Roundup.

The International Agency for Research on Cancer (IARC) concluded in 2015 that glyphosate is "probably carcinogenic to humans".

That conclusion, now the official position of the World Health Organisation, has been scientifically contested (see for example (1)), but the overall uncertainty remains (see, among others, (2)).

Ref (1) Williams, Gary M., Marilyn Aardema, John Acquavella, Sir Colin Berry, David Brusick, Michele M. Burns, Joao Lauro Viana de Camargo, et al. 2016. "A Review of the Carcinogenic Potential of Glyphosate by Four Independent Expert Panels and Comparison to the IARC Assessment." *Critical Reviews in Toxicology* 46 (sup1): 3–20. doi:10.1080/10408444.2016.1214677.

(2) Cressey, Daniel. 2017. "Widely Used Herbicide Linked to Cancer." *Scientific American*. https://www.scientificamerican.com/article/widely-used-herbicide-linked-to-cancer/

1 The politics of hypothesis (responsible dealing with scientific perplexity)

In our daily life

According to the World Health Organisation, there is now "… an extended knowledge of the causal relationship between alcohol consumption and more than 200 health conditions." (1).

The organization advocates strategies to 'reduce the harmful use of alcohol' (2) while other policies suggest that there exists something like a 'responsible consumption of alcohol' (e.g. the EU Alcohol Strategy (3)), eventually expressed in a specific maximum number of 'units' per day for man and women (see, among others, (4)). There remains however uncertainty over whether there is an actual level of 'responsible use' below which there is no effect detectable as compared to not drinking at all.

ref (1) World Health Organization. 2014. *Global Status Report on Alcohol and Health, 2014*. http://www.who.int/substance_abuse/publications/global_alcohol_report/en/

(2) World Health Organization. 2017. "WHO | Global Strategy to Reduce the Harmful Use of Alcohol." http://www.who.int/substance_abuse/publications/global_strategy_reduce_harmful_use_alcohol/en/.

(3) European Commission. 2017. "Alcohol Policy." *Public Health*. https://ec.europa.eu/health/alcohol/policy_en

(4) US Gov MedlinePlus Medical Encyclopedia. 2017. "Responsible Drinking:" https://medlineplus.gov/ency/patientinstructions/000527.htm.

1 The politics of hypothesis (responsible dealing with scientific perplexity)

Visions on science

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Visions on science

Science as a scientific practice 'in tension with society'

Traditional quality criteria: caring for objectivity and independence

However

- We know that the practice of scientific research is influenced by

→ the market
→ political programmes (research funding opportunities, custom-made research)
→ competition

but also by

↘ the ideology of finding and presenting the truth
↗ 'self-organised' quality control (through peer review)

- All this tends to stimulate

→ knowledge brokerage, (delivering knowledge in the 'right form' to the user)
→ tailor-made scientific consultancy
→ political 'science shopping'

1 The politics of hypothesis (responsible dealing with scientific perplexity)

Visions on science

Science as a social practice 'embedded in society'

- Science and the society wherein it operates are no separate worlds. They influence each other.

→ Scientific assessment is not about 'isolating' natural, technical and social facts to objectively guide policy but about **seeing and understanding the bigger picture of the relations between nature, technology and society** in the first place.

→ The recognition and assessment of uncertainty and value pluralism become scientific 'facts' in themselves.

→ Sheila Jasanoff's idea of 'co-production' (of science and social order):

"*… The ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it …*"

Jasanoff et al., *States of Knowledge – The co-production of science and social order*, Routledge, 2006

1 The politics of hypothesis (responsible dealing with scientific perplexity)

Visions on science

Science as the social construction of hypotheses

- Many scientific hypotheses are nowadays **granted with a social, political or commercial function**.

→ They are prematurely released from the laboratory, without full support from empirical evidence but with a specific task:

to warn the world about dangerous situations or evolutions,

or **to inform it about promising trends and capacities**.

→ And, whether in the area of environmental protection, health or technology assessment, in many cases, they are produced as 'if-then' hypotheses upon explicit request from politics or the market.

1 The politics of hypothesis (responsible dealing with scientific perplexity)

Visions on science

Science as the social construction of hypotheses

- Confronted with the need to deal with incomplete and speculative knowledge and value pluralism in providing policy advice on issues of social well-being, **the challenge of science** is not the production of credible proofs, it **is the construction of credible hypotheses**.





1 The politics of hypothesis (responsible dealing with scientific perplexity)
The ethics of scientific assessment

- Today, living with climate change and low doses of glyphosate, radioactivity, electromagnetic radiation, fine dust, flame retardants, arsenic, food preservatives, hormone additives, trans fats, sugar and alcohol is **living with the scientific uncertainty** troubling the understanding and prediction of their true health effects

- We have to face the fact that **science**, in its role to advise politics what to do in these cases, **will remain perplex for a time to come**, and that, in many cases, it will possibly never be able to find the truth.

- The **perplexity of science** aiming to advise policy **is a major overlooked challenge** next to the current economic, political and ecological malaises.

1 The politics of hypothesis (responsible dealing with scientific perplexity)
The ethics of scientific assessment

- From an ethical perspective, in the general interest of rendering hypotheses with credibility (and the potential to generate societal trust), **science has no choice but to 'open up its method'** towards society.

- **The ethics of scientific assessment:**

↓ [objectivity and independence]

→ Recognising uncertainty, value pluralism, contingency & potential misuse (of 'products of science' (technologies))

→ opening up the scientific method for transdisciplinarity and public involvement

- The aim of this ethically inspired 'relativism' is not to undermine the scientific (and engineering) practice but to make it stronger

→ more resilient against pressure from politics and the market to deliver evidence it cannot deliver

2 The real problem (a critical theory of modernity)

The real problem (a critical theory of modernity)
Science, risk and fairness

Topical socio-economic reports / expert viewpoints

[…]

"Risk governance:
What is an acceptable level of (nuclear) risk for the public at large?"

my answer:

There exists no objective (scientific, economic, social, political or philosophical) rationale for the determination of the acceptable level of nuclear risk for the public at large.

An acceptable nuclear risk is simply a risk that an informed democratic society justifies as acceptable.

http://www.eesc.europa.eu/?i=portal.en.events-and-activities-symposium-on-nuclear-fission-papers

2 The real problem (a critical theory of modernity)
Science, risk and fairness

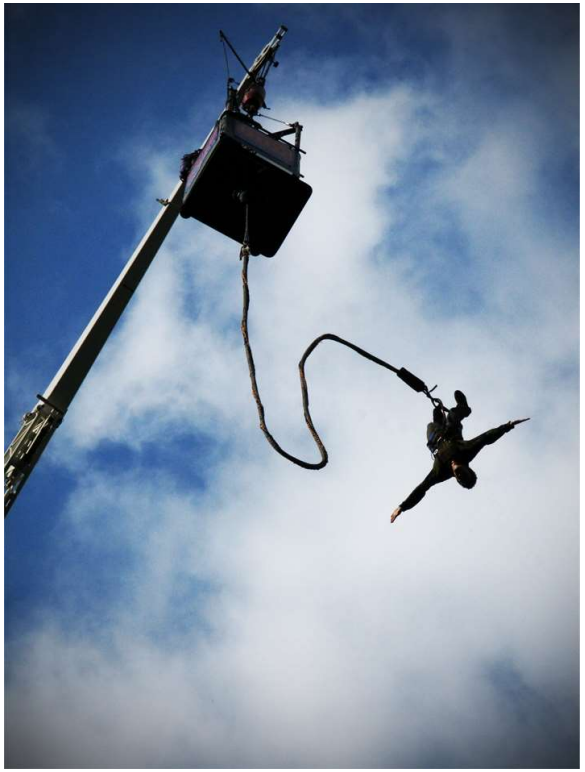
- risk justification

- Technocracy is still among us

  it may have good intentions,
  it doesn't rule as such,
  but it functions at the service of politics.

2 The real problem (a critical theory of modernity)
Science, risk and fairness

do we need calculation
to support informed consent?



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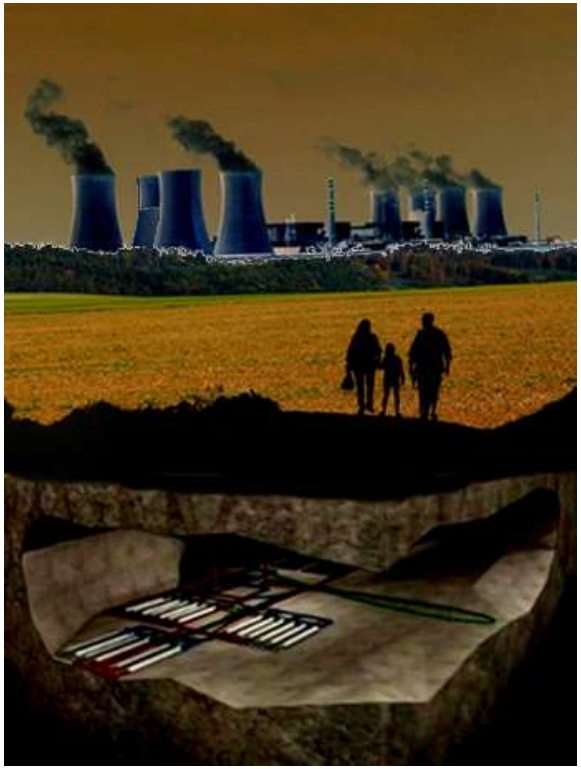

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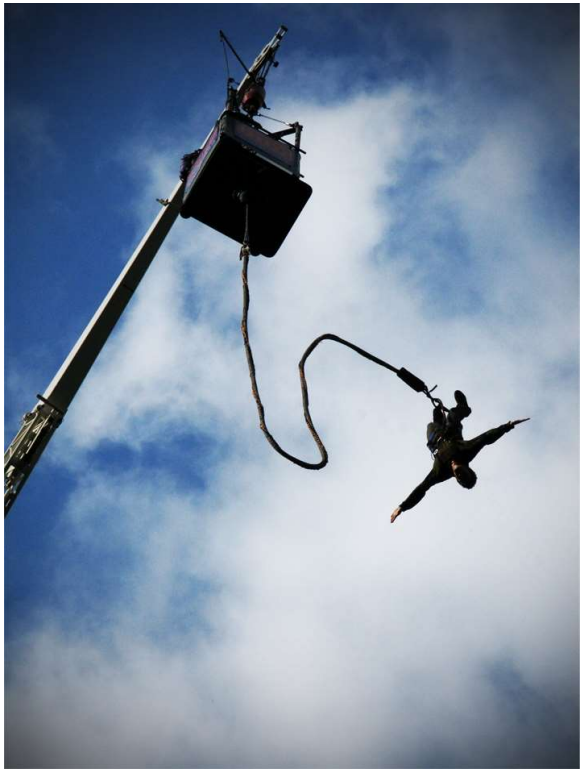

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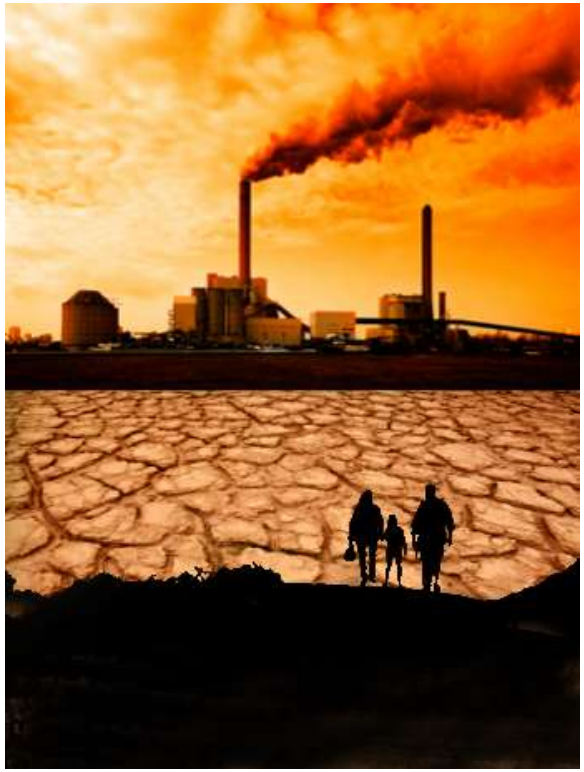

2 The real problem (a critical theory of modernity)

The assessment of what is an acceptable risk for society is not a matter of science; it is a matter of justice

- A risk is not a mathematical formula; it is a potential harm that
  → you cannot completely know and
  → you cannot fully control
- Acceptable risk?
  People will accept a risk they cannot completely know and that they cannot fully control simply when they **trust** that its justification is **marked by fairness**.

Fairness: the **possibility of self-determination** ensured by 'the right to be responsible'

risk for society
↑
the right to be responsible
↓
risk taken by an individual

the right to co-decide
the freedom to hurt yourself

- For any health risk that comes with the application of technology and that has a wider impact on society, 'the right to be responsible' equals 'the right to co-decide'. **As a principle of justice, this right should be enabled in decision making.**

2 The real problem (a critical theory of modernity)

The social problems we face today are ultimately complex

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Taking this complexity serious, the idea is that the traditional governing methods of international politics, representative democracy, the market and science are not longer able to grasp the complexity of these social problems.

2 The real problem (a critical theory of modernity)
There is a need for new governance methods

There is a need for new governance methods that would allow

- the recognition of uncertainty and moral pluralism

  → **transdisciplinarity** and **critical context thinking** in education and science

- informed consent

  → **public participation** in political decision making

- precaution & confrontation of rationales & accountability to next generations

  → **deliberation** in politics

3 The idea of socially responsible TA (from a social justice perspective)

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First thoughts

- Thinking technology is a form of dualistic thinking

  technology (promising capacities) < > technology (acceptable risks)

  Innovation: focus on promising capacities, in response to specific needs

- TA relevant

→ retroactive (Fukushime post-accident)

→ dealing with the present (Roundup)

→ proactive (human genome editing)

- Problems coming with technology

→ health risk & environmental burden

→ privacy deprivation & social control

- What about military technology?

→ What is the TA stance towards the defense paradigm?

→ Do we need a special 'type' of TA for military technology?

3 The idea of socially responsible TA (from a social justice perspective)
The real problem with technology is the problem of power

- Technology is in our hands. We will always be able to decide what to do with it, and it will never overtake us, if we want. But we need to do this 'together'.

- The fundamental problem with technology is not the health risk, the environmental burden, the commercial exploitation or the social control that might come with it.

  The real problem with technology is **the problem of power**: who owns the technology, and for what reason.

- The real owners of technology should be a democratic society, constituted of its influensive, capable and resilient citizenry.

→ All pragmatically 'doable' models of decision making should start from that ideal perspective.

3 The idea of socially responsible TA (from a social justice perspective)
TA as participatory TA in the interest of general societal well-being

- The cases of Fukushima and Roundup, or decisions on nuclear energy, leave us with the question:

  Whatever the role we prescribe for TA ('neutral', honest broker, issue advocacy, action research, …), how to deal with these cases in practice in the interest of general societal well-being?

→ For sure, we will not solve them with 'armchair TA'

- TA in practice is people coming together to discuss a technology-related issue in a specific (application) context.

→ A **socially responsible TA** is a TA that situates not only conceptually 'at the science-policy interface' but that also organizes itself as **a deliberative research practice involving science, policy and society**.

3 The idea of socially responsible TA (from a social justice perspective)
A normative-reflexive TA promoting values for risk governance

- TA should be inspired by **deeper spiritual thinking** about who we are as humans and humanity in relation to (our) nature as well as by **critical thinking** about the situations in which technology is nothing but a tool at the service of power and profit.

- TA could **generate ('co-create') critical-ethical reflections and advice** on how to better deal with science and technology from a social justice perspective, in the interest of our individual and general well-being,

  thereby promoting the (application context independent) values of

→ **precaution** (as a normative consequence of 'the fact of' scientific perplexity)

→ **inclusion** (stakeholders, indigenous knowledge)

→ **distributive justice**

- The **'objectivity' and independency** of TA as a policy-supportive research practice can simply be guaranteed **by its participatory and deliberative character**.

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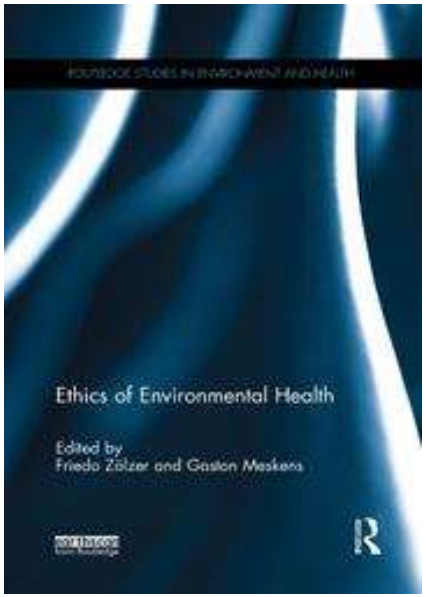

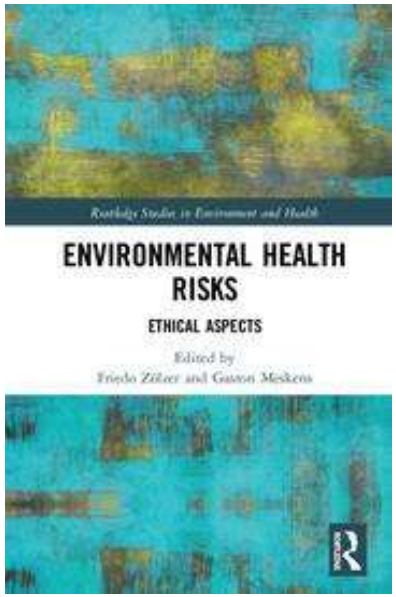

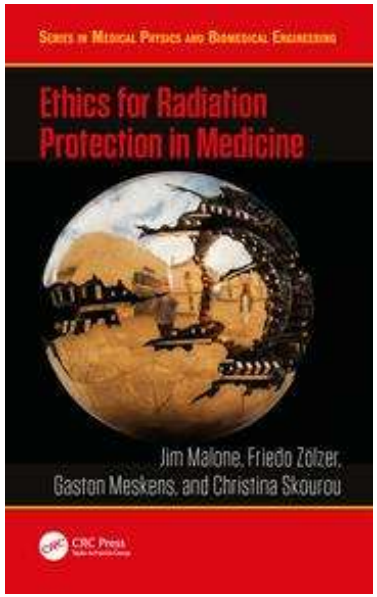

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