

## The case for adaptation in the governance of emerging technologies – Marc Saner

In this talk I challenge the reliance on a governance-by-control paradigm in the case of certain emerging technologies – in particular those that challenge regulators due to accelerated pace, broad diffusion, or certain ethical issues. In these cases the full suite of governance tools, including measures for societal adaptation, is required.

A classification of the full suite of governance tools is developed and the place for social adaptation is located within this classification:

- Avoidance stances:
  - Deny
  - Avoid
  - Tolerate
- Control stances:
  - Manage
  - Delegate
  - Resist
- Adaptation stance

A total of ten arguments are provided to justify the benefit of considering adaptation in the context of certain emerging technologies:

1. Pessimism with respect to technological foresight entails that social adaptation at a grand scale may be unavoidable.
2. The planning for social adaptation can be more encompassing of benefits than the narrow and legalistic framework of regulation.
3. The practice of public policy almost always targets incremental rather than transformational change. This is an additional limitation beyond the problem of ignorance regarding anticipation.
4. Adaptation is a helpful backstop, even when the ability to anticipate the effects of an emerging technology appears sound. Rules may be carefully drafted based on sound anticipation research, but implementation may be poor.
5. The logic of precaution applies to the context of major emerging technologies because the stakes are very high. Cost-effective measures may be found in the domain of social adaptation.
6. The previous reason could also be expressed as an attitude of humility (Jasanoff).
7. The “resist” stance, to rethink governance models from scratch or to consider moratoria is quite common in the context of emerging technologies, which leads to polarization and paralysis in the ability to debate. Serious efforts on adaptation will address governance needs during paralysis.

8. Adaptation is not just the final step when nothing else works; it can also represent the cure against avoidance, because it offers an alternative to the control paradigm and to mitigation, which may appear intractable.
9. Serious work on adaptation will ultimately (and ironically) improve the quality of control.
10. Adaptation is a useful addition, not a replacement, for the other stances and it is perhaps the best stance to foster holistic thinking.

Furthermore, the case is made that technology governance can mirror challenges seen in climate change adaptation where an initial focus on mitigation is often replaced by a focus on adaptation. The analogy is sufficiently robust to render worthwhile the evaluation of existing climate change adaptation tools in the context of technology governance. Examples are the international climate change adaptation framework, climate change adaptation research, the climate change adaptation fund, and the adaptation private sector initiative.