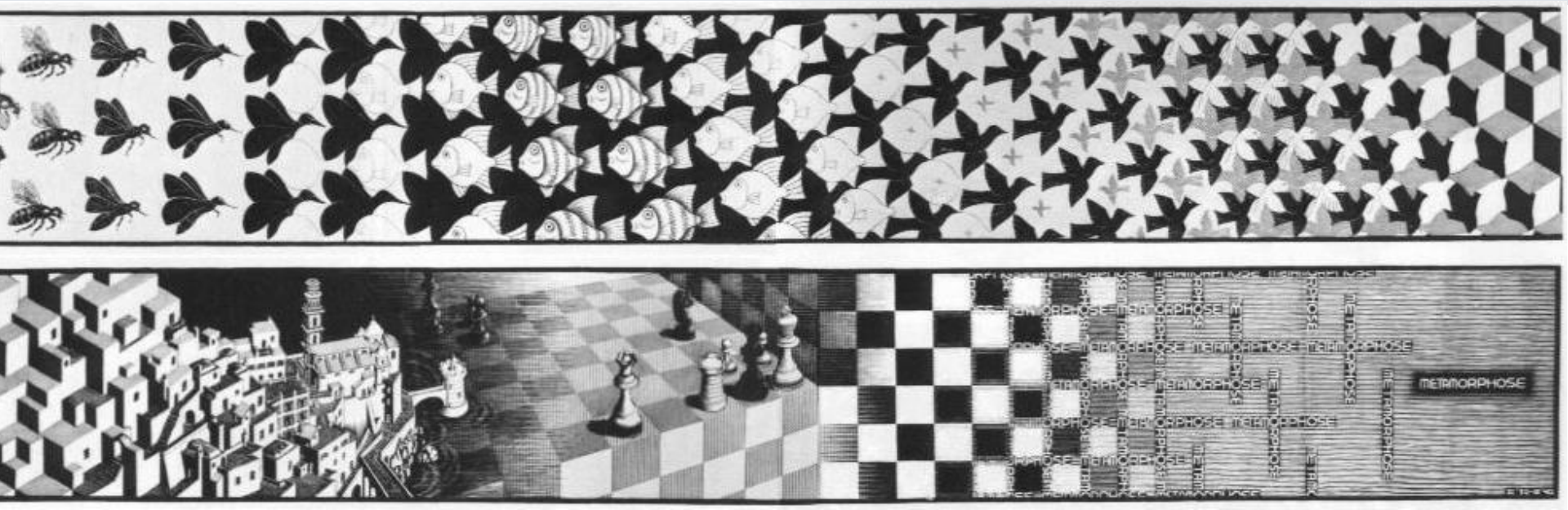
A challenge

How the Norwegian research system could cope with 'Grand Challenges'



Maurits Cornelis Escher, Metamorphose II (1939-40)

Stefan Kuhlmann
with Arie Rip, University of Twente (UT)

Research Council of Norway
Conference *"Grand challenges and the challenges they pose for research policy",* Oslo, March 1, 2016

Grand Societal Challenges (EU Horizon 2020)

- **Health**, demographic change and wellbeing;
- **Food security**, sustainable agriculture and forestry, marine and maritime and inland water research, and the **Bioeconomy**;
- Secure, clean and efficient **energy**;
- Smart, green and integrated **transport**;
- **Climate** action, **environment**, resource efficiency and raw materials;
- Europe in a changing world **- inclusive, innovative and reflective societies**;
- **Secure societies** - protecting freedom and security of Europe and its citizens.

Governing Grand Challenges?

- **Grand Challenges (GC) as priorities for R&D and innovation stimulation ?!**
- Orientation towards Grand Challenges (GC) creates a **challenge for science, technology, and innovation policies** (Kuhlmann & Rip 2014; 2015).
- GC comparable to Manhattan Project or Apollo Project (= unambiguous missions)?
- Rather, GC pertain to **heterogeneous** (also "new") actors and forces, to be mobilised, guided and **integrated**, including **social** innovation.

➢ **GC: open-ended missions, concerning the socio-economic system as a whole, involving heterogeneous actors, even inducing (or requiring) *system transformation.***

Another Grand Challenge

- **Building blocks for the governance of GC:**
  - GC are heterogeneous
  - Governing GC can require/induce system transformation
  - More broadly defined notion of 'innovation' required
  - Research and innovation systems are evolving and changing themselves (in long-term perspective)
  - 'Tentative governance' needed

➢ Thus, another Grand Challenge:
How to modulate research and innovation system changes so that Grand Challenges can be addressed productively?

Revised Lund Declaration on GC (2015)

- Suggested requirements on KRIS and key actors in Europe:
  - A "**clear political commitment** to step-up efforts to align strategies, instruments, resource sand actors at national and European level".
  - "an **excellent science base**, world-class research infrastructures and a new generation of researchers with the right set of skills, notably creativity, entrepreneurship and innovation".
  - "to connect with **partners around the world**, in advanced, emerging and developing countries".
  - "to address the grand societal challenges in partnership and to attract the world's **best researchers** and innovators and **private sector investment**".
  - "Greater impacts on the challenges have to be achieved through (…) a stronger focus on **open innovation** and the role of **end-users**".

➢ However well intentioned, quite traditional ways: about priorities and funding, continuing with existing institutions, roles and division of labour.

‘Nature’ of Grand Challenges?

- Strategic initiatives required to address a particular GC will depend on its ‘nature’
- ‘Nature’ reflects what relevant actor coalitions consider as ‘problem’ and key points of leverage
- Definition and articulation of a GC are result of social perception, communication and negotiation
  - GC = inevitable developments, requiring *adaptation* measures
  - GC = influenceable, requiring *mitigation* measures
  - GC = *desirable* development (like better agriculture)
  - GC = *undesirable* development (like clean water shortage)
- Anticipation and Scenarios can help to explore, reflect and articulate changes and strategic initiatives

Our take on the 'other Grand Challenge'

- No one-fits-all policy approach
- Go for *tentative policy mixes, also facilitating system changes* where relevant
- Policy mixes can draw on
  - classical priority setting and implementation approaches
  - on transformation in science (systems) or breakthrough innovation
  - demand-side and procurement policies
- ... and will focus on system-oriented strategic interventions, experimental in design, including out-of-the-box approaches, new combinations of actors and alliances.

Existing policy approaches (options and limits)

- ***'Business as usual' priority setting procedures***
  - Example Germany: Ministry drafts thematic programmes (drawing on strategic intelligence, brainstorming with key stakeholders), launches calls for proposals, organises selection with help of experts … *No transformative orientation!*
- ***Beyond 'business as usual' priority setting***
  - Example Netherlands: 'Top Knowledge Sectors' policy with priority-setting delegated to standing panels of stakeholders (selected by government); traditional institutions and programmes have now refer to top-sector policy *= some concertation towards transformation.*
- ***Concerted policy initiatives***
  - Historical examples: US 'Grand Missions', with 'Green Revolution', next to gov't also strong role of Rockefeller Foundation; UK Wellcome Foundation supporting innovative R&D approaches
  - More recently, e.g. Bill and Melissa Gates Foundation with focus on health in developing countries

Orchestrating new actor constellations

- Make sure that *key actors* are involved, next to public policy and industry also e.g. charitable foundations, CSO (free to move, tend to go for public interest goals).
- Combined economic and social changes require also *social innovation.*
- Enable *intermediary organisations* and spaces for interactions to enable and improve concerted action, without a master plan.
- Concerted action requires new capacities and capabilities, so *learning* and transformation is needed.

➢ *Coordinating change actor* required: stable, trustable, non-partisan, ready to invest (e.g. Mazzucato 2013).

Concertation through tentative governance

- Major **public-private initiatives** coping with the transformative potential of a GC need a ‘tentative’ concept of governance (Kuhlmann et al. 2016).
- **Tentative governance** is designed, practiced, exercised or evolves as a particularly dynamic process to manage interdependencies and contingencies in a non-finalizing way; rather prudent and preliminary than prescriptive and persistent.
- It creates **spaces of openness, probing and learning** instead of trying to limit options for actors, institutions and processes.

Meta-governance

- Tentative governance includes a ***meta-governance*** dimension (Jessop 2002).
- Meta-governance ('governance of governance') is visible in emerging modes of 'social technologies'
  - Facilitating and framing articulation,
  - Allowing for contestation and negotiation of competing views.

➢ Functioning working as a 'crash barrier' guiding the the **'navigation'** ongoing making of governance across the various domains of the research and innovation system effectively.

Example: National Science Agenda (NL, 2015-16)

- **Web-based open inquiry:** Until 1 May 2015, everybody in NL could submit questions to academic research via wetenschapsagenda.nl. In total individuals and parties from academic institutions, the business community and civil society organisations submitted more than 11,000 questions.
- **Jury process, assessment and selection of questions:** Five academic juries, appointed by the 'Knowledge Coalition', clustered and assessed questions, coordinated by Royal Netherlands Academy for Arts and Sciences (KNAW).
- **Three conferences:** In June 2015 discussion of questions especially relevant for academia (Science for Science), for Dutch economy (Science for Competitiveness) and for society (Science for Society).
- **Next step: towards a Dutch National Research Agenda:** Knowledge institutions, companies and civil society organisations were invited to discuss with the posers of questions and other interested parties about specific subjects and themes.
  Steering group of 'Knowledge Coalition' is responsible for setting the final agenda, guiding public and private policy.

➢ **Main achievements (so far):** raised attention and public awareness for role of science and innovation for grand societal (an other) issues.
Good 'concertation'

Example: Joint Technology Initiative

- Innovative Medicines Initiative (IMI)
- Aiming to “improve health by speeding up the development of, and patient access to, innovative medicines, particularly in areas where there is an unmet medical or social need”.
- partnership of EU (H2020) and European pharmaceutical industry (European Federation of Pharmaceutical Industries and Associations).
- Associate or project partners: patients, regulators, procuring organisations.
- €3.3 billion budget for the period 2014-2024 (from EU, industry, associate partners).

➢ Enabled and concerted by European Commission (FP6, FP7)

Options for Norway

- Norwegian KRIS is a patchwork: key organisations have their own mandates and pursue them rather independently.
- There is fragmentation, linked to many different Ministries, pushing their interests in their interventions in KRIS.

➢ **But also emerging 'concertation':**

- Long-term plan for research and higher education 2015-2014, submitted to Storting by the Ministry of Education and Research in Oct. 2014.
  Envisages "collaboration arenas for coordination and implementation".
  "21 Strategies" are one example.
- Dream Commitment Process (2014-2015) of Innovation Norway: encouraging companies and organisations to explore options post-oil and gas industries, with government support.
- Bottom-up inititatives:
  Abelia; Norwegian Cancer Society; 'Bioverdi', by University of Oslo

Options for Norway: RCN as Change Agent?

- RCN as a strong intermediary organization could adopt the role of a pro-active broker and **change agent** 'navigating' transformation processes.
- **Three roles** for RCN as change agent addressing GC:
  - RCN would create **spaces** where various relevant actors would work together on future directions and societal agenda building
  - Defining and/or managing **concerted action**, perhaps as a contractor for specific jobs, also drawing on public-private consortia
  - occasional **assessments** of how far the work towards Grand Challenges has come, including a better understanding of the nature of the various GC.
- RCN needs **competence in 'navigation'**: diagnostic and prospective studies ('Strategic Intelligence'), networking, consulting stakeholders, deliberation, moderation of negotiations, and ability to package and perform.

In conclusion

- Understand Grand Challenges as a chance for strategic reflection and tentative transformation of KRIS.
- Enable change agents (such as RCN), for
  - Mobilization and “concertation” of incumbent and new actors, including Civil Society Organisations and charitable foundations
  - Anticipation and “navigation” of transformation efforts
  - Change agents should be supported and by and leran through “stategic intelligence” (foresight; scenarios; assessments).
- Warrant strong support by government.
- Think and act globally: for which GC would Norway claim to become a global forerunner, a leader, or a strong contributor?

References

- Jessop, R. D. 2002. *The future of the capitalist state*. Oxford: Blackwell.
- Kuhlmann, S., Rip, A. (2014): *The challenge of addressing Grand Challenges. A think piece on how innovation can be driven towards the "Grand Challenges" as defined under the European Union Framework Programme Horizon 2020*, Report to ERIAB; DOI: 10.13140/2.1.4757.184
- Kuhlmann, S. & Rip, A. (2015): Research policy must rise to a grand challenge. In: *Forskningspolitikk* 4/2015 (http://fpol.no/wp-content/uploads/2016/01/Forskningspolitikk-4-2015-red.pdf).
- Kuhlmann, S., Edler, J., Ordóñez-Matamoros, G., Randles, S., Walhout, B., Gough, C., Lindner, R. (2015): *Responsibility Navigator*, Karlsruhe (Fraunhofer Institute for Systems and Innovation Research ISI), www.responsibility-navigator.eu
- Kuhlmann, S., Stegmaier, P., Konrad, K., 2016.Tentative Governance in Emerging Science and Technology—Conceptual Introduction and Overview. Special Issue of *Research Policy* on "Getting hold of a moving target—the tentative governance of emerging science and technology" (in preparation).
- Mazzucato, M. 2014: *The Entrepreneurial State. Debunking Public vs. Private Myths*, L./NY.
- Rip, A., & Joly, P. 2012. *Emerging Spaces and Governance*. A position paper for Eu-SPRI Forum.