

Studying science, technology and innovation from the point of view of social sciences and humanities

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Science diplomacy. Foundations and practice Aprile 20, 2022



Contents

- The context: "Science diplomacy. Foundations and practice"
- Looking at science, technology and society: a (very) short introduction to Science and Technology Studies
- Modeling the link between science, technology, innovation and policy
- Setting the stage for Science Diplomacy



The context: "Science diplomacy. Foundations and practice"



Five seminars with leading scholars and practitioners on Science Diplomacy (SD) in April-May 2022

Seminars are intended to offer an introduction to the field, with a view to SD "in action" (foundations **and** practice)

In association with the European Union Science Diplomacy Alliance (www.science-diplomacy.eu)



For UNITS students:

- on-site (according to the schedule of events)
- online (Moodle, to be announced)
- MS Teams access code: dc5tuwe



Looking at science, technology and society: a (very) short introduction to Science and Technology Studies





Lynn White 1978, Medieval Religion and Technology: Collected Essays





Henry Ford (1982), Autobiografia



Barred (technological) determinism, scientific knowledge, technology and society interact and mutually alter their trajectories



Science and technology studies (STS) explore science and technology, social structures and practices as an inseparable entanglement

STS consider "the content of science and engineering (scientific facts, technologies, objects) is open to social analysis and not the result of a privileged form of knowledge about nature" (Rohracher, 2015)



Two subjects of STS investigation:

- how social, political, and cultural values affect scientific research and technological innovation; and
- how scientific research and technological innovation affect society, politics, and culture



Ready-made science

Bruno Latour (1987), Science in action



"Facts and artifacts are but temporarily stable outcomes of heterogeneous activities of scientists and engineers and their entanglement in wider social and political relations. Society and technology/materiality coconstitute each other and mutually shape each other" (Rohracher, 2015).



"There are no strict demarcations of what counts as STS and what is already outside its realm" (Rohracher, 2015)

- a narrower view on the formation of core concepts and emerging disciplinary structures;
- a broader view on STS as a multifaceted and heterogeneous field overlapping with other fields of study, and also comprising of a broad range of problemand application-oriented STS research on specific subjects, such as health, climate change, or science, technology and innovation (STI) policy.



Modeling the link between science, technology, innovation and policy





Fonte: Sarewitz, D., Pielke, R.A. [2007], The neglected heart of science policy: reconciling supply of and demand for science, in "Environmental Science & Policy", 10, 1, pp. 5-16.





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Science push (linear) model of innovation:

- V. Bush, Science. The endless frontier, 1945
- Basic research and specialized training
- Linear, unproblematic transfer of basic research into economic/social applications
- Science as a self-regulating institution
- "Science as a motor of progress" (Ruivo, 1994)



Problems

- Contestation of post-war development policies
- Increasing international economic competition
- Budget misallocation (aerospace, defense)



Need pull (reverse linear) model of innovation:

- Brooks, Science, Growth and Society. A New Perspective, 1971
- Science should respond to social, political and industrial needs (gradually, shorthand for "market uptake")
- Political prioritization of S&T development activities
- External assessment of S&T according to societal priorities
- "Science as problem solver" (Ruivo, 1994)



Problems

- "Picking the winners" is not easy
- Market/Society uptake not granted



Systemic model of innovation:

- OECD, National Innovation Systems, 1997
- Emphasis on science-government-industry connections (e.g., Triple Helix, Leydesdorff and Etzkowitz, 1998)
- Connections and collaborations are the focus of policy
- Anticipation and experimentation as policy tools for preparing scale-up of innovative product/process
- Interdependence and collaborations as tools to define societal demands for STI
- "Science as a source of strategic opportunities" (Ruivo, 1994)



Problems:

- Strategic opportunities as "market opportunities"
- Discontents of market-driven globalisation (e.g., inequalities) and of environmentally unsustainable economic model (e.g., climate change)
- Loss of trust on science delivering societal benefits (not new, but potent)



Normative model of innovation:

- Mazzucato M., 2018, Mission-oriented research and innovation in the European Union
- Mission-oriented (science) policies, as systemic public policies that draw on cutting-edge knowledge to achieve specific objectives
- Emphasis on cross-discipline, cross-industry collaboration for addressing societal challenges of common interest
- Von Schomberg, R., 2013, A vision of responsible research and innovation
- Mutual responsibilisation of diverse social actors in RTI







Problems:

- Are collaboration and participation effectively implemented?
- Who defines what the public good is?
- Does emphasis on the "public good" creates new conflicts about and within STI?



Setting the scene for science diplomacy



Reconciliation (Sarewitz and Pielke, 2007) of science and society happens on the international stage:

- Knowledge-intensive policies about global challenges (e.g., climate change)
- International efforts for regulating military (e.g., nuclear or chemical weapons, lethal autonomous weapons) and/or dual use technologies (e.g., viruses)
- International efforts to cope with emerging crisis (e.g., Ebola, Sars-cov-2)
- Building of competitive advantages for States and other international actors (e.g., chip design and manufacturing)



Science diplomacy is a set of activities intersecting (international) policy-making and STI aimed at:

- Support international cooperation between scientific institutions
- Support political collaboration in knowledge-intensive policy areas
- Support the building of knowledge-based competitive advantage



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To be continued...



April 27, 2022 Foundations of Science Diplomacy Tim Flink, German Parliament



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Thanks for listening! <u>sarnaldi@units.it</u>