

# STS Challenges. The Next Ten Minutes and The Coexistence of Modes of Science

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**Abstract:** The Covid-19 pandemic is not only a profound health, economic and social crisis but also a dense summary of key STS concepts. The current pandemic invites us to recognise the co-existence of different modes of science, offering an opportunity to contribute to a better understanding of contemporary science in society dynamics and their changes.

**Keywords:** STS; Covid-19; modes of science; coexistence; decisional processes.

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In ten minutes from now, a scientific expert will say something about the Covid-19 pandemic that will trigger comments and critiques from other scientific experts, further questions and discussions in the media.

Controversies; insights into the changing social role of scientists and the public image of science; shifting relationships between expertise and policymaking. The current pandemic is not only a profound health, economic and social crisis but also a dense summary of key STS concepts. As Steven Shapin put it in our recent conversation, “we are now living through the greatest exercise in public scientific education that there’s ever been”<sup>1</sup>.

Public debates reveal implicit assumptions about the perceived role and nature of science.

However, there have been several discussions regarding disagreement and diversity of advice provided by experts and the impact this could have on policy decisions and public opinions. These discussions often oscillate between two extremes: those who think that science (and scientists) should speak with “just one voice”, offering to political decision and to public opinion reliable and uncontroversial knowledge; those who invite to recognise the inherent uncertainty, provisional character and articulation of scientific debate and research processes, allowing no shortcuts even in times of emergency.

In STS, we are familiar with the different “modes” of science (mode-1 and mode-2, academic and post-academic science, Science 1.0 and 2.0), often described as chronological transitions of organisational practices of research and its social uses (Gibbons et al. 1994; Nowotny et al. 2001; Ziman 2000; Bucchi 2015).

To an STS-eye, the current debates on the role of science in the pandemic might be easily interpreted as the misalignment between “mode-2” concrete expectations (e.g. short-term orientation towards practical goals; pressure to deliver solutions; scientists as expert advisors) and “mode-1” traditional social image of science (e.g. long term, curiosity driven effort and discussion; independence; scientists as intellectuals having the right to express their own individual vision, even when potentially contradicting their colleagues).

It is easy to imagine STS lifting its finger and admonishing science: “You are working and being funded as mode-2 science but still pretending to have all the prerogatives and freedom of mode-1 science”. And vice versa, lecturing society: “You are expecting quick results and convenient fixes typical of mode-2 science but are still reasoning and imagining science along the lines of mode-1”.

But would this really help? Or is the current crisis a situation that invites us instead to recognise the *coexistence* of different modes of science - as narratives, rhetorics and images that continuously overlap and intersect, with the same actors practicing and preaching different modes in different situations?

This overlapping is neither unprecedented nor unfamiliar to those studying science and even to scientists themselves. In his book *Science and Government* (1960), CP Snow tells the story of how leading physicists contributed to the UK military effort during the World War II. One of them, Nobel laureate Patrick Blackett, credited for having made possible defeating the powerful Nazis U-Boats, introduced the concept of “operational research”. His lesson to politicians and the military was “that you cannot run wars on gusts of emotion. You have to think scientifically about your own operations” (ivi, 25). Blackett had a lesson also for his fellow scientists willing to engage as experts advising decision makers: “The giver must convince himself that if he were responsible for action, he would himself act so” (ibid.). When scientists accept to enter into the dynamics of this operational modality of knowledge, they implic-

itly accept to try and give simple responses to complex questions, to compress the long times of research; not to suppress uncertainty altogether but making it manageable by those who have the ultimate responsibility of political decisions.

This role of science in decisional processes, can, of course, enter into tension with an image of research as independent. In this sense, for instance, the 92 different scenarios offered by experts to the Italian government in view of the so-called “phase 2” of the pandemic represent a very detailed technical overview but quite difficult to be used in decisions.

Tension and ambiguity between different modes of science can also emerge dramatically, as it happened in the case of L’Aquila earthquake (2009). The reading of that judicial case from the international scientific community was fast and superficial, even comparing it to the Galileo trial. Without entering into the complex juridical details, it is clear that expressing an evaluation in a scientific paper is not the same thing – from the point of view of responsibility – compared to expressing it when a scientist acts in the capacity of expert delegated by politics to manage an emergency situation.<sup>2</sup>

The “right to error” is typical of independent science: taking unusual or intellectually risky paths has sometimes allowed making unexpected or revolutionary discoveries. On the other hand, a scientist who accepts engaging into operational relationships with politics must evaluate the potential consequences of her/his indications. Not all scientists, however recognised for their studies and academic publications, have like Blackett the necessary qualities to play this difficult role. And unfortunately, not always politics succeeds in carefully selecting among the different advices provided by experts: UK Prime Minister Winston Churchill finally managed to get rid of Blackett and continued to trust physicist Frederick Lindemann, who insisted on concentrating all military efforts on bombing German cities. Data later showed that his estimation of the impact of those attacks was completely wrong, ten times higher than real effects.

Seventy years later, the ambivalence and interplay of different visions and modes of science is much stronger and visible. Rather than an ambiguity to be finally resolved, we could consider it as resource for bringing into light such different visions, highlighting their implications and consequences for research, politics, and society.

In ten minutes from now, STS scholars will have once again an opportunity to contribute to a better understanding not just of the present pandemic, but more broadly, of contemporary science in society dynamics and their changes.

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**References**

- Bucchi, M. (2015) *Norms, competition and visibility in contemporary science: The legacy of Robert K. Merton*, in “Journal of Classical Sociology”, 15 (3), pp. 233-252
- Gibbons, M., Limoges, C., Nowotny, H. and Schwartzman, S. (eds.) (1994) *The New Production of Knowledge: Dynamics of Science and Research in Contemporary Societies*, London, Sage.
- Nowotny, H., Scott, P. and Gibbons, M. (2001) *Re-Thinking Science. Knowledge and the Public in an Age of Uncertainty*, Cambridge, Polity Press.
- Snow, C.P. (1960) *Science and Government*, Cambridge, MA, Harvard University Press.
- Ziman, J. (2000) *Real Science. What it is, and what it means*, Cambridge, Cambridge University Press.

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<sup>1</sup> Original interview, 14 april 2020. A short excerpt has been published in Corriere Innovazione, 24 april 2020.

<sup>2</sup> A recent reappraisal of the issue by Brandmayr here:  
<https://hscif.org/author/fb446cam-ac-uk/>