

Intricacies in Steering the Direction of Science

Commentary on "Towards a New Ethos of Science or a Reform of the Institution of Science? Merton Revisited and the Prospects of Institutionalizing the Research Values of Openness and Mutual Responsiveness" by René von Schomberg.

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INTRODUCTION

René von Schomberg's article (von Schomberg, 2024) makes an invigorating case for the co-responsibility of societal actors to give direction to the pursuit of science. In this reply, I wish to endorse his position as a much-needed reconceptualisation in the face of societal challenges and internal scientific developments. At the same time, I urge that there remain theoretical and practical intricacies in attempting to steer science.

At the core of von Schomberg's analysis is the call for stronger integration of science into society. Instead of self-governance along the lines of a new scientific ethos, he advocates reforming the institution of science. In particular, he understands the institutional purpose of science in terms of addressing societal challenges; he calls for co-responsible governance of science along with other societal actors; and he proposes to reform scientific incentive schemes to reward collaborative behaviour (including non-scientists).



The call for better integration must be understood against a background of urgency related to contemporary societal crises – environmental, health, inequality, and power competition – and the assessment that the inherited system of science is unfit because it is too insensitive to address societal needs. The better integration of science within society has been on the agenda in Europe for many decades. One key step was *the Responsible Research and Innovation* discourse, which stressed that “societal actors and innovators become mutually responsive to each other” (von Schomberg 2013, p. 63). The most recent step in this development is Europe’s shift towards “mission-oriented innovation policy” (Mazzucato, 2018). The idea of missions has conquered the imagination of policy circles because it suggests a way how different functional systems – politics, economy, science – play their role not merely by providing some abstract “public good”, but rather as complementary contributors to a joint societal endeavour.

But the call reflects not only societal expectations, but also developments internal to science. Von Schomberg’s call for better integration is not limited to societal necessity, but rather starts from a traditional – Mertonian – scientific norm (“communism”); this norm belongs to an ethos previously associated with the purity of science, at least by Merton himself. Yet today we see science not just as an unstructured process of knowledge accumulation, but emphasise its structural and normative properties that warrant ascribing it a “direction”. A scaffolding of science-society interfaces (e.g. funding bodies) is already in place to shape such a direction. The question of the right direction is unavoidable and requires engaging with normative questions that go beyond merely functional requirements of science. Hence, the direction of research is a concern for all scientific stakeholders, not just scientists.

Despite my agreement, I sketch three intricacies by drawing on the work of foundational (yet perhaps unfashio-

nable) theorists who have worried about outside interference with science. My comments revolve around the institutional function of science, the difficulties of steering, as well as the question of the constellation of co-responsible societal actors.

THE INSTITUTIONAL FUNCTION OF SCIENCE

Von Schomberg follows a recent wave of rethinking the function of science away from traditional knowledge production towards research missions addressing societal challenges. This places von Schomberg's vision squarely within the instrumentalist tradition of understanding the contribution of scientific organisations to society: their value should be seen in their contributions to the political or economic goals of the day. In previous decades, notions like the "entrepreneurial university" have emphasised the role of science for economic purposes, and more recently, the framing of societal challenges has

brought a "revised social contract" between science and society (Martin, 2012).

By contrast, idealist views resist this identification of the function of science with political or economic goals, and instead emphasise the value of knowledge and understanding as such (Fuchs *et al.*, 2023). Merton, too, falls in this category: "Science must not suffer itself to become the handmaiden of theology or economy or state" (Merton, 1938, p. 328). He warns that if the value of science lies in "consonance with religious doctrines or economic utility or political appropriateness" (*ibid.*), then its acceptance will also be conditional on meeting these criteria. Wilhelm von Humboldt, the towering figure in this tradition, warned that the state must "not make use of its academy as a technical or scientific committee", but must instead "nurse the inner conviction that when they achieve their final [*scientific*] purpose, they will also fulfil its [*the state's*] purposes" (Humboldt 1810/2019, p. 4). It should be noted that such idealist views about the

function of science need not necessitate strong views on its autonomy. Humboldt, for instance, thought that professorial appointments are too important and should therefore be reserved to the state. What matters is not autonomy, but instead that the guiding scientific ethos ("internal organisation") is oriented towards the pursuit of knowledge.

One approach to resolving this tension would be to draw distinctions between parts of science that are oriented towards certain societal goals, and those that are allowed a more idealist function. This could be done in terms of technical vs general universities, applied vs pure science, or engineering vs theory-led sciences. The former would then be delivering more transactional research for societal missions (along with a corresponding system of public justification, research evaluation and incentive schemes); while the function of the latter is seen in terms of society's culture, education and long-term enlightenment.

One danger with such distinctions is that those parts of the scientific system that are unable to justify their existence in terms of research missions will lose funding, talent and interest. The social sciences and particularly the humanities are likely to suffer and would at best legitimate their pursuit through some roundabout constructions framed in instrumentalist terms. But this would fail to give credit to their potential in enabling new understandings, concepts and avenues of action, which we may be unable to envision now. Besides, scientific organisations play important reflective functions, both for politics and society. Normative reflection and societal critique must go deeper than being merely a companying voice in missions. Societal challenges and missions are not the end of history. Human society continues to evolve in fundamental ways including our priorities and understanding of our problems. A continued commitment to social sciences and humanities may be a crucial reservoir of ideas and disruptions for this evolution. Furthermore, a confident and

operationally self-standing scientific culture will also be a greater inheritance to future generations than one limited to thinking about the political or economic goals of the day. This is at least one reason why such traditional distinctions in public justification and evaluation of science should be avoided.

Another approach would be to formulate another type of long-term research missions that are designed to stimulate deeper human understanding as such, and thus especially the social sciences and humanities. Instead of the Apollo programme ("putting a man on the Moon"), these missions would take inspiration from historical examples like the *Encyclopédie* produced in 18th Century Enlightenment France ("surveying all of human knowledge"). In line with von Schomberg's proposal, these missions could be co-created and implemented with non-scientific actors; research behaviour engaging with stakeholders could similarly be incentivised. While these missions would face their distinct problems – most importantly, the multitude of theoretical, epistemic and me-

thodological approaches makes it difficult to think of complementary actions within missions – they would similarly integrate science into society, while re-invigorating the pursuit of "traditional" knowledge-oriented enquiry.

THE DIFFICULTY OF STEERING SCIENCE

Von Schomberg rightly points out the lack of a "demarcation criterion" between scientists and ordinary citizens engaging in truth-claims. This gives additional support to the idea that shaping the direction of science must be opened up to include non-scientists. Everyone engaging in science – even citizens – must be involved in shaping and conducting science. Yet we can doubt whether this framing gets to the heart of the difficulty of steering science. Instead of asking which people should have a place at the table shaping science, we should ask which types of reasons, communications or social systems should be given such a role. Should politics steer science?

If we view society as consisting of different functional subsystems, such as politics, economy, law, science, education or morality, we can start to conceptualise both the need for greater integration among these, as well as the challenges in doing so. The German sociologist and systems theorist, Niklas Luhmann, famously argued that modern society is increasingly characterised by the operative closure of these functional subsystems, a process which he calls “functional differentiation”. The more one of these subsystems becomes differentiated, the greater the tension with the others. Society seems to drift apart, given these mutually unintelligible forms of communication.

The scientific system, among others, could develop its quality and complexity not through being addressed towards the goals of other subsystems, but rather through the decoupling of its dynamic from the conditions and interests of its environment (Luhmann, 1990). Similar remarks can be made about the differentiation of other subsystems in socie-

ty, such as the economy. For Luhmann, the implications of such a systems-theoretical view on science is that the structures of the science system cannot be determined by outside forces. Of course, other systems, such as politics, may intervene or shape and urge the scientific system. Yet for the scientific system, these will remain irritations which it can, at best, re-interpret in its own terms. Politics and other subsystems can suggest topics and research directions and agendas, but – Luhmann contends – in this way “no concepts are yet developed, or research results developed” (*ibid.*, p. 639). The persistent pressure of politics to deal with certain scientific topics may have the effect that the scientific systems ends up making promises to deliver scientific insights (“truths”), without being able to guarantee their delivery. We may observe this type of inflation of promises when grant proposals list lavishly the sustainable development goals that the proposed research will contribute towards.

In light of the persistent dominance of academic disciplines, journal prestige, and citation metrics – in other words, key determinants of academic behaviour that may at least sometimes be obstacles to open science –, the call to co-shape the direction of scientific research with other stakeholders may remain too weak. The call to incentivise scientific behaviour that reflects openness and mutual responsiveness may be insufficient to challenge established practices and may be treated as mere irritation to scientific practice.

Such an incentive scheme would ideally be accompanied by arguments about why such collaborations are likely to generate novel scientific insights; in other words, appeals to norms and goals internal to science.

CO-RESPONSIBILITY WITH WHOM?

Besides the question about the societal function of science and the difficulties of shaping its direction, we should also be attentive to the interests and particular constellations of actors aiming to shape science. Not all constellations of co-responsible societal stakeholders will advance science or address society's needs. Even if we assume that directing science is possible in principle, we must be ready to prevent science from being captured by special interests or authoritarian political agendas.

In the last decades, and particularly in the US, the strong identification of science with economic growth also provoked criticism of the subjugation of science under such goals. The literature on "academic capitalism" (Slaughter & Rhoades, 2004) points to the influence of businesses and economic interests in shaping research agendas, educational curricula and fostering secrecy around research results, as well as potential

conflicts between academic and economic interests. This dominance of economic goals within science was cemented rather than challenged by a system of public research funding that allowed the commodification of research findings (Mirowski, 2011) and local communities or civil society assuaged by the promise of regional development.

One way of avoiding such dominance of certain interests would be to insist on the fair distribution of costs and benefits in such constellations of co-responsible societal stakeholders. It is unfair for one group of actors to fit the bill or to do the work, while others take away the profits. However, more is at stake than merely the problem of whether scientific organisation (or the public sector) receive their fair material share of collaboration. This returns us to the reflective function science plays within society.

Science that is open to being steered by social collaboration will depend in its external legitimacy, self-understanding

and funding on such collaborations.

The danger is that the delicate balance of collaborations with politics, economy and civil society may fluctuate. Authoritarian political forces would welcome a scientific system thus dependent. Some industries employ a large shadow of the scientific system (for example, the food industry) that is aimed at capturing or undermining scientific credibility.

Science that is integrated more fully into society is likely to be more directly impacted when power imbalances or overreach by one functional subsystem deviate from a more idealised picture of co-responsible societal stakeholders steering science. It is therefore imperative that scientific organisations have a clear and confident view of the societal function of science, also beyond serving immediate political or economic goals.

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