Responsive Research and Scientific Autonomy

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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Von Schomberg's call to place *mutual responsiveness* – which I understand as the ability of researchers and the research system as a whole to foster meaningful exchanges and learn from novel experiences, no matter where those originate – at the core of Open Science and related efforts to reform the scientific landscape is both timely and significant. Widespread sharing is not enough to guarantee responsible and inclusive research, nor are vague appeals to improve research culture, whatever it is that such culture may turn out to include (Leonelli, 2023). Rather, emphasis needs to be placed on the conditions under which sharing materials, methods and insights – and debating the goals and directions towards which these may be put to use – may improve research exchange, communication and scrutiny, resulting in scientific outputs that are both reliable and socially responsive. Hence von Schomberg's focus on the interplay between institutional and behavioural features of science and his plea for a reform in governance structures, such as initiated by COARA, are very well-taken. He is, however, too quick to dismiss the importance

of some degree of autonomy for those involved in creating knowledge. To show why this matters, I here briefly discuss two of von Schomberg's additional claims: (1) his focus on 'knowledge actors' as the protagonists of research efforts; and (2) his critique of the effectiveness of self-governance efforts by researchers.

Von Schomberg notes the importance of decisions around who should be considered as a *bona fide* 'knowledge actor', since it is those actors, in his view, that embody and enact mutual responsiveness. How does one demarcate such actors from misinformed, unskilled and/or partisan groups is a fraught question at a time when disinformation and echo-chambers, augmented by technologically mediated forms of pervasive communication such as social media, risk obliterating the difference between reliable and unreliable knowledge. This concern is exasperated by the immense fragmentation characterising the scientific community, which is arguably not one community at all – contrary to von Schomberg's formulation – but a vast ecosystem of diverse groups whose features are finely tuned to specific situations, goals and environments, including various constellations of collaboration with non-scientists (such as, for instance, farming communities in the case of agricultural science, social and medical services in the case of biomedical research, amateur bird-watchers in the case of ornithology and scuba-diving *aficionados* in the case of marine biology). As von Schomberg points out, there are ways to counter malicious attacks on the methods and legitimacy of scientific inquiry while at the same time preserving the non-dogmatic, critical character of scientific debate. These involve opening up research to contributors with relevant expertise from all domains and paths of life, thereby embracing the complexity of the research landscape and its multiple relations of transdisciplinary cooperation and dependence. This is the social space within which mutual responsiveness becomes both meaningful and hard to achieve, particularly given the

interventions of individuals, groups and institutions who endorse the values and behaviour of knowledge actors in principle, and yet in practice use their understanding of the research process primarily as an instrument of control and dominance over others.

The platform economy associated with the emergence of generative AI and social media provides an ideal market for such take-overs: given the enormous investments, skills and resources needed to be a player in the development of AI-centred innovation, this is by definition an unequal space where even academics – those paid to conduct research in a professional capacity within higher education institutions – are at a strong disadvantage vis-à-vis the wealthiest private companies. Responding to concerns around power inequities in the conduct of research, philosopher Helen Longino (2002) has offered a modified set of norms for scholarly interactions, three of which are particularly useful for my purpose here: the development of opportunities and incentives towards uptake of criticism, where those engaged in research are regularly encouraged to consider constructive and evidence-based feedback; the existence of public standards by which the quality of knowledge can be evaluated, and which themselves are subject to frequent scrutiny to ensure their relevance and adequacy over time; and the cultivation of "tempered equality of intellectual authority", according to which anybody who has relevant expertise is welcome to participate in intellectual debate, yet choices are made around which voices should be highlighted and which voices should be toned down to avoid science replicating power dynamics already entrenched in society at large. While anybody with relevant expertise could be considered as a knowledge actor, this does not provide automatic legitimacy, and deliberation still needs to occur over which contributions are more or less significant and credible.

This takes me to a point of debate. I agree with von Schomberg on the crucial importance of institutional gover-

nance precisely to foster such deliberation, thereby fostering Longino's tempered equality. He, however, couples this argument with a vote of no confidence in self-regulating efforts by the scientific community, which he deems largely ineffective and grounded on an ideal of scientific autonomy which no longer holds. He takes the case of COVID-19 data-sharing efforts as a key example where cooperation was largely mandated and facilitated by scientific institutions rather than by researchers themselves, and autonomy played no role in researchers' decisions around what to share and when. I take issue with this interpretation of what the history of science teaches us in three respects.

First, the implementation of Open Science towards the pandemic response, despite strong incentives to share data and methods from countries around the world, has been neither homogeneous nor uncontroversial; more than one interpretation of openness has informed the development of platforms used to research COVID-19, resulting in ongoing debate over which forms of cooperation worked best for which purpose, and whether and how data sharing should be institutionalised in order to facilitate inclusive exchange as well as actionable outputs (Sheehan *et al.*, 2024). Within this fraught landscape, the decision to share research insights was often taken by individual researchers with a strong personal commitment to help address the global emergency through transnational collaboration.

Second, such personal commitment to open exchange is part of an ethos cultivated through decades – sometimes centuries – of research practice in domains such as astronomy, meteorology and natural history, which may not have been codified and represented in recent work by science academies, but recurs in the daily work of researchers around the world, as I have often witnessed in my own studies of scientific labour. Such a long history of openness is precious precisely because it fostered effective methods to establish and maintain meaningful relations with con-

tributors, critics and stakeholders, thereby enhancing the responsiveness of science to social and technical challenges, inputs and critiques.

Third, as research becomes ever more technical and hyperspecialised, it is crucial to recognise the extent to which individual contributors – whether or not they are professional scientists – are called to take meaningful and responsible decisions on what to pursue, how, with whom, and for which purposes. In this sense, autonomy remains a necessary feature of scientific research, insofar as only expert contributors are in a position to translate abstract norms, policies and codes of conduct into practical methods and infrastructures suited to their specific situation of inquiry. Incentives, encouragement and adequate training certainly need to be in place for researchers to make such decisions – a critical point, I agree with von Schomberg, especially given the very limited acknowledgement of the labour and expertise required for such work within current reward systems in academia and beyond.

Yet the right governance and institutional settings can only go so far, with researchers needing training and incentives to play an active role in decision-making – thereby exercising autonomy in ways that may make research more or less socially responsive. This applies especially to the 'engineering perspective' that von Schomberg applauds within contemporary life science, which is centred on intervention but does not necessarily engage with questions of social accountability in a consistent or effective manner. Indeed, it could be argued that concerns with the ethical implications of engineering life, so prominent in the aftermath of the Human Genome Project in the early 2000s, have become peripheral to STEM activities and training in many parts of the world – a worrying development given the impact of bioengineering on every aspect of life on the planet, and one that we risk to see replicated in emerging forms of data science and generative Artificial Intelligence.

In conclusion, recognising researchers' agency and autonomy in making research responsive is critical to reforming scientific institutions going forward. The elephant in the room continues to be private and public entities, ranging from national governments to corporate industry, whose allegiance to political ideology and economic growth clashes with the norms, processes and outputs of science, while also conditioning almost every aspect of research, including how, when, where and why scientists get to circulate and scrutinise each other's practices and outputs. What institutions need to do is carve the right incentives, pedagogies and venues for researchers to retain the autonomy required to create meaningful collaborations with relevant parts of civil society under conditions of temperate equality.

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