The Science activist: should science get Political?

Transcript of the remarks by Pratik Patil, Advancing Systems Analysis Program, IIASA

Panel Discussion at the European Geosciences Union's General Assembly 2023

Tue, 25 Apr, 10:45–12:30 (CEST), Vienna

https://meetingorganizer.copernicus.org/EGU23/session/47437

While I look forward to an enriching discussion about the role of scientific activism in society, in my remarks I want to focus on science itself.

The crux of my argument is going to be that in order for science to become more value-neutral and less biased, it needs to transcend the status quo and existing SOCIAL norms. In this sense, I do think that we need an activist science BUT much of this 'activism' relates to the scientific enterprise itself rather than projecting scientific authority and it fits within scientific tradition.

Let us step back and reflect on the co-evolution of science and modernity. Because I think this context is important for our discussion today.

Some of you in this room may be aware that scientists are on the verge of officially declaring the Anthropocene as a new geological epoch! Anyways, my point is that I don't need to elaborate to this audience how influential and indispensable science has been for ushering in our modern era for better and for the worse.

In particular, the advent of the reductionist scientific method, the isolation of cause and effect under experimental conditions has been extremely effective.

This is why scientific objectivity is so profoundly and so seductively influential. It is quite convenient if we are able to avoid any value judgments, just shut up and calculate, and gain great insights that can be applied to maximize utility. We can innovate our way out of everything, without making any value judgments. This view is sometimes referred as "scientism". I am afraid it is time to acknowledge this story is not true:

Here's why:

Science is an epistemology, which means it is a framework for acquiring knowledge. Every epistemology is underpinned by ontology of underlying assumptions, either explicit or implicit. I think we need to make a **distinction between value neutrality and objectivity**. If we are not explicit about values, that does not mean they vanish. While we must strive to remain objective in our experimentation and methods – it is impossible to maintain value neutrality when comes to framing the research question, research agenda, scope, and what we choose to ignore. Especially in social sciences but I would argue also in natural sciences and geosciences. For example, deep-sea mining, geoengineering, and fracking. Is it value-neutral?

Furthermore, objectivity and reductionism have been over-extended in domains such as political economy and even our worldviews: The scientific enterprise is often co-opted and misused by **power structures as a profit machine at the expense of ecosystems and against majority interests**. Proverbial pie is not justly distributed while life support systems are degraded. I would argue some of the backlashes we see against experts stem from this. With a strange combination of utility maximization for the few and misuse of scientific objectivity, we have grown to view nature as something separate from humans. We need to instead re-animate the world and recognize the intrinsic agency and rights of ecosystems and different

life forms. While drafting this, I was reminded of the opening scene from hitchhikers guide to the Galaxy…where they demolish the earth to make way for a cosmic superhighway. To avoid absurdities, we should stop trying to objectify and quantify everything. For example, "it would be "optimal" to have policies where the central scenario entails a temperature increase of 3.5°C– 4°C" – that's the 2018 Nobel prize winner in economics.

The nature of our most pressing global challenges is demanding a different form of science. Once again, we acknowledge the effectiveness of the reductionist scientific method – we have unbelievable material abundance. The problem is less about production – it is more about sustainability and just distribution. In fact, it relates to the unintended consequences of previous applications of scientific discoveries such as fossil fuel engines. We have to be sceptical about further unintended consequences and reliance on ever more powerful technologies such as geoengineering, NETs, or the AI. Sander van der Leewu notes in his book social sustainability that "emissions are only one aspect of a much more fundamental threat to the continuity of our current ways of living on Earth. He calls it "the crisis of unintended consequences" and focussing on emissions alone is a form of escapism. This is why we need to be more activist in questioning the current norms that are responsible for exacerbating ecological crises and social inequalities. We can be more value-neutral by assessing a full range of options that conform to biophysical realities rather than just the ones that fit dominant ideologies.

Let me also refer Jürgen Renn, a philosopher of science and his remarkable book, the evolution of Knowledge: rethinking science for the Anthropocene. He notes, "Production of scientific knowledge has become an existential condition for our survival". But he goes on to write that, "just producing new scientific and engineering knowledge within the current knowledge economies will not suffice to cope with the Anthropocene. It would be counter-productive. Much of the necessary knowledge does not fall within these categories. It may rather be described as a combination of system knowledge that is the understanding of the earth system and its human components transformation knowledge, that primarily concerns the role of human societies and raises the question of how our collective action can ensure sustainable development, and orientation knowledge about ethics, politics, and belief systems for individuals and collectives". We need a combination of all three. Because on its own transformation knowledge, may encourage become blind activism while systems knowledge can lead to overtly technocratic solutions.

More concretely, I think this implies:

- Reductionism has to be complemented by complexity science and systems thinking.
- We also need epistemic humility with respect to our abilities to predict the evolution of complex systems… Laplace's demon is dead!
- Especially when it comes to social sciences, in addition to induction and deduction, we need to also present counter-factual scenarios with "backcasting" rather than just projecting the current trends to the future.
- Furthermore, science has to make space for other knowledge systems including indigenous knowledge and participatory co-creation of knowledge with relevent stakeholders
- We have to resist to the extent possible, competition-oriented structural aims and increasing commercialisation.
- I can't help but observe the framing of this panel discussion. The question before us is: should science collaborate with activists and do we risk endangering credibility if we do so? But what about funding and collaboration with private corporations and special interest? advertising, military industrial complex, fossil fuel industry. etc

- Jürgen Renn also evokes a concept of Niche construction from ecology - species shape the environment which in turn shapes their evolution. Science has recently become such a niche.... shaping our evolution. I think that imples a lot of responsibility. We can't hide behind illusions of neutrality and pretend that AI will take care of everything.
- Thankfully, we even have solid international agreements to guide our normativity
  I quote something I read last week in Time magazine*: "I will stand for climate action; climate justice; and the better, more peaceful, and sustainable world you and all generations deserve." This is Antonio Guterres UN Secretary-General writing to his great-granddaughter in the year 2100.*

Let me conclude by saying that passion, curiosity, and the goal of improving the human condition were always the key drivers of scientific enquiry or at least that has the claim. Just as it did, at the onset of modernity, science may play a role in even re-shaping our worldviews once again. Although, this time rather than letting power structures misuse science, we have a responsibility to be in alliance with the less privileged and the future generations. This need not typically conflict with objectivity where it matters. We should remain good Bayesians and update our priors based on evidence while considering a full spectrum of future possibilities.

Thank you.

Key References

Chabay, I., Renn, O., van der Leeuw, S., & Droy, S. (2021). Transforming scholarship to co-create sustainable futures. *Global Sustainability*, *4*, e19. https://doi.org/10.1017/sus.2021.18

van der Leeuw, S. (2020). *Social Sustainability, Past and Future: Undoing Unintended Consequences for the Earth's Survival*. Cambridge University Press. https://doi.org/10.1017/9781108595247

Three Decades of Climate Mitigation: Why Haven't We Bent the Global Emissions Curve? | Annual Review of Environment and Resources. (n.d.). Retrieved 19 February 2022, from https://www.annualreviews.org/doi/10.1146/annurev-environ-012220-011104

Renn, J. (2020). *The evolution of knowledge: Rethinking science for the Anthropocene*. Princeton University Press. https://ubdata.univie.ac.at/AC15556734