SISSA – International School for Advanced Studies Journal of Science Communication
ISSN 1824 – 2049 http://jcom.sissa.it/

Comment

SPECIAL ISSUE ON PEER-TO-PEER AND USER-LED SCIENCE: INVITED COMMENTS

Is there something like a peer-to-peer science?

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ABSTRACT: How will peer-to-peer infrastructures, and the underlying intersubjective and ethical relational model that is implied by it, affect scientific practice? Are peer-to-peer forms of cooperation, based on open and free input of voluntary contributors, participatory processes of governance, and universal availability of the output, more productive than centralized alternatives? In this short introduction, Michel Bauwens reviews a number of open and free, participatory and commons oriented practices that are emerging in scientific research and practice, but which ultimately point to a more profound epistemological revolution linked to increased participatory consciousness between the scientist and his human, organic and inorganic research material.

At the Foundation for Peer-to-peer Alternatives,[1] we make some bold claims about the future of our political economy and civilization. These claims are not scientific claims, but they are collectively considered hypotheses based on interpreting observable trends, continuously debated and verified by a community of both academic researchers, and freely participating concerned citizens. Our key hypothesis is that globally scaled small group dynamics, i.e. peer-to-peer forms of cooperation, based on open and free input of voluntary contributors, participatory processes of governance, and universal availability of the output, are now more productive than centralized alternatives. With 'productive' we mean, better able to create value (economic productivity), more democratic (political value), and more in line with human happiness and well being (social value).

The reality of peer-to-peer dynamics and how they are changing social practices are readily observable in the business and political fields, for example, in the success of open source and free software. The question here is how these changes would affect scientific practice. Are peer-to-peer practices also more productive 'scientifically'? The intuitive answer would be positive, since a peer-to-peer approach would allow a larger portion of minds to tackle scientific problems, above and beyond the capacity for mobilization of any scientific institution, however powerful.

It seems quite clear that early scientific practice showed quite a similarity with peer-to-peer practices, as it was open to the input of gentlemen-scientists who would judge each other's works. However, as science got institutionalized, the requirements and conditions for being allowed to offer input, became contingent of a whole process of credentialing; while open scientific inquiry became dependent on the funding of the state, and increasingly, by commercial players with very specific demands. In the last few decades there has been a steady privatizing of scientific research results, due to the pressure to commercialize knowledge on the market through intellectual property protection.

I think it is fair to say that there is now a broad movement of citizens and scientists that aims to restore the lost openness of science. The open access movement is particularly strong in the field of science, putting pressure on research institutions to use open access journals that can be accessible to every citizen and scientist, independently of his/her financial capacity. The pressure is on to extend this openness to the data (open scientific data) and even to the process of research itself (open notebooks). Citizen science works according to a even more radical logic, since its aim is to divorce scientific practice from the demands of credentialism. Rather than restrict input from credentialized scientists only, the idea is to retain the scientific method, and to allow all those who accept the methodology, to participate in the gathering of raw data, and even more, to allow interpretation of the data. Just as in open source software practice, the role of the experts becomes one of a posteriori validation based on a logic

of quality control, but not a power to exclude from participation itself. What disciplines these new modalities of open scientific practice is the object of the cooperation itself, and not an institutional logic of exclusion. This is very much in line with the practice of peer production in other social domains, where it also functions as an object-oriented sociality, where voluntary contributors accept the collective discipline imposed by the object of their cooperation (making good software or hardware), but obviously in science these demands must be very rigorous. But the logic of citizen science is that of equipotentiality: what matters is not the credentials of the person seen as a whole, but rather his/her specialized capacity to perform certains task according to the agreed social rules. Just as in open source software and hardware, the socially agreed experts have of course a dominant role in this a posteriori validation, but unlike open source, their credential remain a crucial aspect in their power to participate in that validation. This is where a P2P science would remain distinct from general P2P practice, where such credentialing is not required.

I believe the trend towards trans-disciplinary practice follows the same object-oriented logic. Instead of the institutional logic of the disciplines, instead of their mere inter-disciplinary cooperation, what is needed, and happening, is that the object of inquiry dictates the particular combination of research methodologies that will be used. In peer-to-peer science, a group of equipotential scientists and citizens get together, and, without representative mechanisms, contribute their particular capacities which will assist in the understanding of the particular object of inquiry. Like in peer production generally, the process starts from the free contributory individual, not from a group-based negotiation of interests. Of course, far from me the claim that this is already standard and mainstream scientific practice, but it seems to me that it is the direction in which the practice will tend to move. I've personally observed the constitution of EU-funded science projects, where this logic was observed and practiced.

An interesting aspect is whether the choice of these objects can be increasingly democratized? Current scientific practice is very much determined by the funding available from the state and private sector, which will obviously determine the choice of object. However, it seems to me that there is a concurrent democratization of access to scientific tools, and a similar surplus of scientific capacity, which can be mobilized for a free and peer-to-peer science. Free access to the internet, to scientific machinery, to processing capacity, by both scientists and scientifically trained laypeople, would potentially create a large reserve army that could swarm around a scientific problem. As scientific machinery becomes digital and connected, with increasingly abundant processing time available, and with a large pool of surplus scientific labour available, then it seems to me that the social conditions for a peer-to-peer transformation of science, are objectively available. The various forms of increasingly varied citizen science, would tend to prove that this process is well under way. The fast growing DIY biology movement is proof of the reality of this new social capacity for DIY science that escapes institutional control. What helps here is to see a polarity of initiation and control, between scientific institutions and communities on the one hand, and citizens and civil society actors on the other. One polarity of citizen science would simply involve a mobilization of external involvement, but under the control of 'science', we could call this scientific crowdsourcing. On the other side of the polarity would be citizen-initiated science, which would succeed in mobilizing the assistance of credentialed scientists. The pioneering activities of the AIDS advocacy group Act Up would seem a successful instantiation of the latter. This then would be a more authentic peer-to-peer science.

Another important P2P trend in science involves important epistemological shifts towards participation, and is based on a new vision of the subject-object division. This is probably the deepest shift, and will take the longest to occur. Western 'Cartesian' science was famously based on the subject-object split, on objective observation of passive material which was granted no subjectivity. Obviously, this was naturally practiced with natural objects and materials, but also in the human sciences. Even networked interpretations of science (cybernetics, complexity science, etc..), are based on the same reductionism, reducing human intention to mere interconnecting dots. It would seem to me that a true peer-to-peer science would be founded on a epistemology of participation, i.e. a recognition of the subjectivity of the material of study. In this scenario, it would not be possible to simply observe any human group, but part and parcel of the scientific method would be the co-creation and co-design of the research, by the 'objects of study' themselves. Such science would be a dialogic practice.

Obviously here, recognizing the subjectivity of non-human material would become increasingly difficult and controversial. While the subjectivity of animals is getting a growing recognition, and challenges the ethics of animal experimentation for example, the subjectivity of inorganic material is

rather harder to imagine and accept. Nevertheless, it seems that an obvious case can be made, that science has become co-responsible for the destruction of our biosphere, and that this is related to an epistemology that views the world as an inert object of study, instead of as living matter, that is part and parcel of our human lifeworld, and without which we could not exist. A true peer-to-peer science could be one in which the agency of matter and life would be duly recognized, as part of an increasing hierarchy of subjectivity. And the more subjectivity, the more of a right to participation would be recognized.

Notes and references

[1] http://p2pfoundation.net

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HOW TO CITE: M. Bauwens, *Is there something like a peer-to-peer science?*, *Jcom* **09**(01) (2010) C02