III Międzynarodowa Konferencja Open Access w Polsce
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Network enabled reseach: Not just more or better, but fundamentally different

The web is just the latest example of a network that has qualitatively changed what human society is capable of with a limited set of resources. Before the web networks of mobile phones, and before that fixed telephony made qualitatively different forms of social interaction possible. Twenty years ago an impromptu meet up between local friends and someone visiting for a day would have been near to impossible. Today it is trivial. Prior to the telephone the telegraph, postal service, moveable type, the stage coach, and writing itself all created similar changes in human and social capacity.

We are only just beginning to see the first glimmerings of what network enabled research might make possible. Tim Gowers, one of the world's great mathematicians, described the experience of the Polymath project compared to his normal approach to mathematics as like a race car to a horse drawn carriage. The level of qualitative change is indicated by the solution of a problem that he regarded as too hard for him to solve within a matter of weeks by a group of mathematicians acting as nodes on a network. Examples can be multiplied but they are single isolated examples. Our research capacity remains similar in practice to what it was in the 1980s. The question must be, for the future of ourselves and the planet, how can we best exploit the capacity of networks across our research effort. In short: how can we make networks of research resources, people, information, and tools that work. What will they look like? And how do we get there from here?

The path remains at best obscure at the moment but an emerging understanding of how networks function can help to guide the way. The key aspects of an effective network are threefold:

- The larger and more connected the better: networks thrive on connectivity. The larger the network and the more connected it is, the greater the opportunity for critical information to reach the right person.
- The lower the friction the better: transfer of non-rivalrous resources at speed and with low friction is the most important capacity of a network. Artificially introducing friction, or not acting to reduce friction means effectively breaking connections within the network, reducing its capacity.
- High information flow requires effective demand-side filtering: a consequence of high network connectivity and low transfer friction means a large quantity of potentially incoming resources to any given node. If that node is a person they won't be able to cope. But filtering at source is creating friction. Therefore the information flow necessitates the design of flexible and configurable filters that can be used to modulate resource flow on the demand side.

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- What does this mean in practice for scholarly communication? At the moment we have systems set up to reduce connectivity and scale — by limiting access to research resources to limited groups of people — we deliberately create friction in the system due to legacy business models — by charging for distribution and dissemination when these costs are disappearing making the first copy costs the most important to recoup — and we have a system based almost purely on supply side filtering.

In an ideal world we would utilise the (as near as makes no difference) zero cost of dissemination to enlarge the scale and connectivity of our research network by making the content free. We would actively reduce friction to sharing of research resources by focussing business models on the generation of "web ready" content, charging for the first copy costs up front and competing on the basis of the service offering. And in a perfect world we would abandon pre-publication peer review in favour of a model of filtering services that would enable the consumer to decide what they want to see, what quality filters they want applied, and who they trust to apply them. In this world there are many services which currently don't exist but look quite similar to thing that happen in major publishing houses. The question is how to get there from here, ideally without bringing the whole system crashing down around our heads en route.

Biography
http://cameronneylon.net/about/

Cameron Neylon is a biophysicist who has always worked in interdisciplinary areas and is an advocate of open research practice and Improved Data Management (IDM). He currently works as senior scientist in biomolecular sciences at the ISIS Neutron Scattering facility at the Science and Technology Facilities Council (STFC).

Along with his work in structural biology and biophysics his research and writing focuses on the interface of web technology with science and the successful (and unsuccessful) application of generic and specially designed tools in the academic research environment.

He is a co-author of the *Panton Principles for Open Data in Science,* founding editor in chief of "Open Research Computation", and writes regularly on the social, technical, and policy issues of open research at his blog – "Science in the Open".