Open Scientist Handbook • OSH

Science happens elsewhere

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There are are lot of elsewheres out there.

“The smartest person in the room is the room itself: the network that joins the people and ideas in the room, and connects to those outside of it” (Weinberger 2011).

Science happens elsewhere

Below, you will discover the “double-loops” of organizational learning, and the cultural practices that build and sustain these. But why are these important for science and the academy? Can’t we just keep doing things the old way? In fact, you can bet there will be two kinds of academy organizations going forward: those standing still (or worse:

See: Is my learned society obsolete?, below), and those diving into the networked opportunities of open science.

Goldman and Gabriel (2005) penned the phrase: “Innovation happens elsewhere” to capture the value of open-source software communities. In the academy, it doesn’t matter if you are at Oxford or in Oxnard, almost everything you need to know to make the next step in your research is also being considered at this moment: somewhere else.

In the academy, this “beyond” is a global intellectual commons now becoming abundant with open data and accessible—and reproducible (Crick et al 2015)—research results. Using online peer production methods (Benkler 2016), the academy can optimize the value of this commons for innovation, knowledge, and growth. “[P]eer production practices [are] highly adept at learning and experimentation, innovation, and adaptation in rapidly changing, persistently uncertain and complex environments” (ibid).

The only competition your academy organization has is within itself. As other institutions—including new virtual science organizations—work to continuously improve on their work, your team needs to focus on leveraging the learning engine of double-loop governance to get better than your yesterday. In [Learning infinite science play](#), winning means accelerating your team’s learning and sharing capacity through what Hagel and Brown (2011) call a “creation net” for open innovation. Standing still is not an option when the research world is exploding somewhere else. This “explosion of creativity is taking over more and more of our world. Everyone involved in it is at the same time a producer and a consumer, a worker and a manager.... Progress in most academic disciplines now seems to move at the speed of ‘instantaneous,’ with discoveries building atop one another at a dizzying pace” (Ito and Howe 2016).

Creation networks: open science’s network effect

A creation network is enabled by a certain quality of learning within social interactions, a greater quantity of information flows (and/or a greater attention to these), an availability of interpersonal trust (based on demonstrated skills and commitment), and an environment of reflexive involvement: all benefits of belonging to a community-led double-loop governance. “[I]nstitutions will need to become much more selective in their efforts to protect existing stocks of knowledge and much more adept in using their stocks of knowledge to contribute more actively in creation nets and to plug into promising flows of knowledge” (Hagel and Brown 2008). Data-

intensive science (Hey et al 2009) in a whitewater world of global research demands a nimble governance for its teams, labs, networks, societies, universities, and agencies.

Know enough to know enough

When your academy organization looks to innovate—or when your personal research is looking to find the right question to ask—in a world where multiple/large data/information inputs, and international science discoveries are coming on line, how can you stay ahead of this emergent complexity? One way to look at this problem is through Ashby’s principle/law of requisite variety, coming from cybernetic management. Ashby’s law notes that unless the control system has at least the variety of the environment it controls, it will fail; which actually means that some part of the environment will be controlled elsewhere.

You need find ways to join the greater “science elsewhere.” Elsewhere is where other science teams are now using their infinite play mindsets in collaboration, asking the questions that their networked teamwork generates. Elsewhere there are flows of information being shared across the planet. That is a great reason for new creation networks in the academy: for open science sharing across the academy.

Elsewhere is where innovation happens; because unless you can corral the inherent variety of the problem you face, it will be too complex for your team to innovate a response. If you are not engaged with the open-science elsewhere that is opening up today, your team will suffer. You can either go out and hire a bigger team (good luck talking your chancellor or the NSF into that), or you can borrow enough requisite variety just long enough to bring your own team up to speed by starting up or hooking into an online creation network. You can join the sharing economy, play infinite science, and get better at it every day. Or you can rest on your (bullshit) reputation and keep on thinking the world will come to you.

When members are given license to form working teams across organizations, they also expand the extent of where their research *adjacent possible* is found; creative interactions and new knowledge become predictable outcomes. The larger the room, the smarter it gets. Find the room to nurture your research.

When the adjacent possible is a globally available

The “adjacent possible” is a notion that comes from biological theories of coherent change. It describes how the surrounding environment tucked between stasis and chaos provides a resource of available change. The adjacent possible enables, and

almost guarantees, certain changes (while ruling out others) out of potentially infinite play of innovation.

“Biospheres, on average, may enter their adjacent possible as rapidly as they can sustain; so too may econospheres. ... [T]he hoped-for fourth law of thermodynamics for such self-constructing systems will be that they tend to maximize their dimensionality, the number of types of events that can happen next” (Kauffman 2000). Every new piece of information, each new proto-fact, expands the horizon of infinite science play. The more scientists that add this new fact to their knowledge, the larger their mutual adjacent possible becomes, and the better the chance that innovation will emerge.

Bibliography: Open Scientist Handbook References