

Constructing a “futurology from below”: A civil society contribution towards a research agenda

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Almost fifty years ago, British social historian EP Thompson led a revolution in the study of history. He memorably termed it “history from below”. Addressing the social tumult that accompanied the first industrial revolution in England, he exhorted his academic colleagues to turn away from the standard history of great men and big events and to instead assess the lived impacts of social and economic forces on the lives of ordinary folk (craftworkers, agricultural labourers, etc).

Today, the study of new technologies—particularly Syn Bio—could benefit from something very similar. A parallel “futurology from below”—a people’s assessment of new technologies—could be beneficial as we hurtle into the next industrial revolution. The standard story “from above” of the technological and economic transformation around us is well rehearsed in popular science magazines and TED-style edutainment gatherings. It foregrounds stunning technical abilities, great men (Craig Venter!, George Church!) heroic good intentions (biofuels!, anti-malarial drugs! de-extinction!) and a dazzling new industry promising to deliver prosperity through progress. Embroidering that standard story is arguably the intellectually lazy option for public scholars.

Meanwhile Civil Society and some social scientists have been trying to tell a different story “from below”. Instead of accepting the claims of a northern scientist synthesizing artemisinin, this approach asks for the voices of existing artemisia growers in East Africa. Instead of accepting the claims of biofuel companies, futurology from below prefers the experience of Brazilian landless peasants. Since both publicly-funded research and civil society properly take the public interest as their starting point, there should be (and indeed there is) fruitful collaboration between them. Elements of such a collaboration could be:

Case Studies, deliberative processes and fieldwork “from below”: The first commercial products of Synthetic Biology are no longer imaginary. They are already creating real-world social, cultural, political and economic changes along commodity supply chains. It is not enough to speculate or pronounce from afar about whether or not the introduction of Syn Bio vanillin will impact livelihoods of Madagascan vanilla farmers or Syn Bio opiates impact regional security in south asia. Sustained studies are urgently needed, where researchers travel to affected communities, collaborate with in-country researchers, engage communities in conversation and critically analyze trends.

Challenging “solutionism” and technofix thinking: Evgeny Morozov defines solutionism as an unhealthy preoccupation with sexy, monumental and narrow-minded solutions ... to problems that are extremely complex, fluid and contentious... Solutionism presumes rather than investigates the problem it is trying to solve, reaching for the answer before the questions have been fully asked.

The field of Syn Bio is awash with solutionism- speculative technological fixes are casually cast as saviour “solutions” to public health, climate change and biodiversity collapse. Through the lens of simplistic technofixes these complex issues are reduced to simple “puzzles to be solved”. Public research should seek to test both very particular claims—“will switching to algae oil really save forests?”—as well as finding ways to challenge and articulate the bigger problems with solutionism itself. According to Benjamin Bratton, that means engaging complexity: “If we really want transformation, we have to slog through the hard stuff (history, economics, philosophy, art, ambiguities, contradictions).”

Addressing the revolution, not the apps: While there is real value in digging into the claims and societal impacts associated with specific applications, there is also a danger that case by case technology assessments alone obscure the cumulative and platform-level impacts of synthetic biology as a whole, especially over medium- to long-term time scales. Larger changes in the economy, cultural and cognitive changes or new social and economic vulnerabilities may only be detectable when synthetic biology is considered as a platform. Even more importantly, the development of synthetic biology appears to be embedded in the emergence of a new flexible manufacturing platform which encompasses other mechanization tools such as robotics, 3D printing, ubiquitous sensors, big data and drones. It may be tremendously valuable for a number of groups to collaborate on a big piece of work that undertakes a wide ranging assessment of the “new revolution in manufacturing” (spanning from Syn Bio and big data to sensor networks, drones, 3D printing and flexible robotics). Such a study could assess how these technologies synergistically transform supply chains, livelihoods, human rights, health and the environment. Civil Society could contribute fully to such an assessment.

Getting out of “bed”: In the last few years government funding arrangements for work to assess societal impact of new technologies may have fostered an unhealthy and unequal dependence between those developing a technology and those meant be critically assessing it. In genomics ELSI (Ethical Legal and Societal Implications) studies were folded into a far larger funding package for applied work that was already committed to moving ahead the field. In the field of assessing nanotechnology, social scientists became “embedded” in nanotechnology centers. While there are advantages, this nonetheless could have a tendency to cast social scientists and ethicists as potential PR advisors. They may be expected to help shape Syn Bio's social acceptability in lieu of developing deeper platform-level critiques. The extent to which power relationships within such institutions muzzle social scientists is unclear, but at least one high profile breakdown of the relationship between an embedded social scientist/anthropologist and SynBERC should raise warning flags. Having synthetic biologists (some with commercial interests) as day-to-day colleagues may also informally serve to soften critiques. Sending researchers to assess Syn Bio while embedded in ecology, environmental management or developmental biology faculties could lead to far more interesting outcomes.

Partnering with Social Movements and Civil Society: Civil society groups have already had useful and constructive partnerships (both formal and informal) with social scientists, geographers, anthropologists, artists and ethicists tracking the field. ETC Group is part of two formal collaborations with academic partners concerned with societal impacts of Synthetic Biology: the SYNENERGENE project housed at Karlsruhe Institute of Technology and funded by the European Commission, and the Bioeconomies Media Project housed at The University of Victoria, British Columbia and funded by Canada's Social Sciences and Humanities Research Council. In both cases, we play a formal role in assisting knowledge mobilization efforts as well as convening discussions between civil society, policymakers and the public that inform assessment of the field. We have also had informal collaborations (such as developing a patent landscape study and mentoring doctoral and masters students as interns). Civil society groups and social movements are becoming increasingly organized and reflective on the topic of Synthetic Biology and also are repositories of knowledge and novel perspectives. We connect with some of the most impacted communities (e.g. vanilla communities, stevia producers, coconut growers, natural products developers) as well as international policy communities and are working with them to understand real world impacts of synthetic biology “on the ground” as well as in the sphere of governance.