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A Forum for 'Doing Society and Genomics'

Emma K. Frow

The idea of 'doing society and genomics' raises interesting questions around what kinds of spaces, venues and activities might usefully contribute to such efforts. In 2004, the UK Economic and Social Research Council (ESRC) funded the creation of a new and experimental site for genomics and society work, the ESRC Genomics Policy and Research Forum. With the first round of funding for the Genomics Forum drawing to a close in July 2009, the workshop on 'Convergence Work and Competence-Building' hosted by the Dutch Centre for Society and Genomics in September 2008 (Stegmaier, 2009) provided a timely opportunity for reflection and analysis.

Based at the University of Edinburgh, the Genomics Forum is part of the ESRC Genomics Network (EGN), a UK-wide network of social science research centres examining social, legal, ethical and regulatory issues associated with developments in genomics and the life sciences. Importantly, and unlike the three principal research centres in the network, the Forum is *not* primarily a research unit, despite being based within an academic institution. Nor is it a press office or communications unit of the sort increasingly associated with research centres. Instead, the Forum has a remit to help connect social science research and thinking with a range of actors, including natural scientists, policy representatives and public groups. To quote from the Genomics Forum website:

"As part of the ESRC Genomics Network (EGN), the Forum acts to integrate the diverse strands of social science research within and beyond the EGN; to develop links between social scientists and scientists working across the entire range of genomic science and technology; and to connect research in this area to policy makers, business, the media and civil society in the UK and abroad."¹

This might seem an ambitiously broad remit for what in practice is a small organization. But the above quotation speaks strongly to notions of 'doing society and genomics,' and the Genomics Forum seems to have been cast as an intermediary in this activity. Arguably, there

¹ <http://www.genomicsnetwork.ac.uk/forum/aboutus/>. Accessed 5 November 2008.

are many different approaches to this role of intermediary. Should the Forum serve as a fairly passive or neutral space in which groups can interact freely? Or should it take a more active role, engineering or brokering knowledge exchange opportunities, and becoming involved in the process of translating research and findings across different groups? If the latter, should the Forum strive to build consensus among its various target groups? Should it perhaps take a normative stance, proposing recommendations and encouraging groups to adopt particular ways of thinking? The answer is almost certainly “it depends”, and in practice the Forum has experimented with each of these roles depending on the particular context or circumstances.

A related and by no means trivial issue is how one might choose to structure an intermediary or ‘boundary-spanning’ institution such as the Forum, in terms of physical space and organizational structure, and also with regards to staff competencies and workplan design. Although this is not the time to delve into a protracted discussion of such issues, it is worth highlighting them as often unspoken but crucial considerations for effective ‘society and genomics’ work – or indeed, the effective function of any organization! When building new and experimental entities such as the Genomics Forum, many different structure–function relationships might be proposed. As mentioned above, the Forum is a small organization, led by a Director and Deputy Director (both academics), together with a core support staff who have expertise in press & communications, web design and event management, a small number of Research Fellows and Policy Fellows (typically post-doctoral), and a rotating cast of Visiting Fellows from the worlds of social, natural and medical sciences, policy, and the creative arts.

The types of activities coordinated by the Forum are varied, including interdisciplinary workshops and seminars, ‘short courses’ for PhD students and junior researchers, policy briefing sessions, ‘salon evenings’, public events (particularly at the Edinburgh International Book Festival and during the UK National Science and Social Science weeks), and the publication of regular newsletters as well as an online peer-reviewed journal (*Genomics, Society and Policy*). Given its position as part of the ESRC Genomics Network, the starting point for many of the Forum’s activities is the research and expertise found within the EGN. To provide some structure the Forum has set up a number of ‘workstreams’, which draw on broad themes featuring in the work of the other Network centres. Through the types of activities outlined above, these workstreams attempt to synthesize and integrate Network

research with the thinking and activities of other communities. I will discuss the Plant Genomics and the Synthetic Biology workstreams in some detail below, but other workstreams at the Forum have included Genomics and Biosecurity, Genomics and Intellectual Property, and a series of capacity-building activities on stem cells.

Of course, it should be said that as well as leading workstreams and organizing events, Forum staff also participate widely in externally organized activities including workshops, consultation exercises and citizens' inquiries, task forces, and educational initiatives at both secondary school and university levels.

I came to the Genomics Forum as a Research Fellow in May 2006. Having completed my PhD studies (which focused on cell signalling and cell migration in inflammatory diseases) and then spent two years working at the journal *Nature* in London, the Forum position seemed like a career move that would allow me to explore my growing interest in the relationship between the life sciences, policy and society. A neophyte in the world of social science, my core task at the Forum was to set up a workstream on Plant Genomics, one of the general themes identified on the basis of ongoing research activities across the EGN.

The main focus for the plant genomics workstream activities has been at the interface of academic research and policy. Plants might take second-place in general awareness to some of the more health and medically oriented aspects of genomics, but they are deeply connected to issues such as climate change, biodiversity loss, agricultural productivity and food security – issues of growing importance on many political agendas, and which arguably call for interdisciplinary research and innovative policy interventions. How might research on plant genomics from natural science and social science perspectives be brought to bear on such issues? And how might one go about trying to foster these interdisciplinary discussions?

Rather than starting with EGN research findings and identifying target audiences for dissemination (a strategy that requires reasonable understanding of what such audiences might see as important findings), the reverse approach was adopted for this workstream. The aim was to try and build relationships with key individuals or groups *external* to the Genomics Network, to identify issues of importance to these groups, and then to see how research being done in the EGN (and in other relevant institutions) might contribute to their

work. The core participants in this workstream have thus been a small group of external experts: three senior scientists (with expertise in plant genetics, plant breeding and plant pathology) and one senior policy advisor (from the UK government's statutory advisory body on conservation), who together with an EGN social scientist and myself have defined the terms and scope of the workstream. The external committee members were all interested in better understanding how social science research might inform their work and thinking. They all believed that EGN research findings might be relevant to them, but were not necessarily clear on how to engage with the material or how it might in practice feed into their work. At its most basic level then, the plant genomics workstream can be seen as an exercise in knowledge exchange and competence-building.

Our activities over the past two years have thus consisted of a variety of meetings that in different ways have tried to build bridges and develop a common language or framework with which to discuss matters relevant to plant genomics and society. As a group, we initially identified three broad and overlapping areas to which the fruits of plant genomics research might be applied: (1) conservation and biodiversity, (2) agriculture and the development of a bio-based economy, and (3) alien species and biosecurity (relating to plant trade, invasive species and plant pathogens). We also identified a number of cross-cutting issues such as climate change, land use and food security. We then hosted a series of highly interdisciplinary workshops structured around the three central themes, in order to map out the core issues, and to identify areas of overlap, discordance or synergy between different research and policy communities.

These workshops involved an average of 30 participants each, including natural and social scientists from a range of different disciplines, as well as a number of policy officials and representatives from industry and non-governmental organizations. To provide some background and structure, a working paper was circulated before each workshop. The questions for discussion were framed in a way so as to encourage participation by all – for example, focused on identifying common issues or differences of opinion. Over 100 participants have taken part in these workshops; many have commented in their feedback that this was an unusual type of meeting for them to attend, but found it a stimulating exercise and useful in terms of networking.

A second type of meeting pursued in the plant genomics workstream has been a series of much smaller ‘expert hearings’. The steering committee members for the plant genomics workstream all took part in the large, interdisciplinary workshops, and after each one sat down to reflect on the discussions. Out of these ongoing reflections we wrote a short think-piece that tried to capture some of the trends and broader issues that we thought were emerging from this series of workshops. Our next set of meetings involved inviting groups of 2–3 senior scholars from across the humanities and social sciences – anthropology, sociology, political philosophy, geography, development studies, environmental economics, and so on – to take part in a day’s discussion with the steering committee. The starting point for discussion was to ask our invited experts to provide their reactions to the think-piece, and to introduce us to key approaches from their disciplines that might extend our thinking on these issues.

Again, the discussions at these informal meetings have been wide-ranging and stimulating, and by bringing various perspectives to the table we have been able to explore many different issues within what we have come to describe broadly as ‘the politics of plants’. To provide just a few examples, how might our relationship with the ‘natural’ world change as the possibilities offered by modern biotechnology increase? Is there a growing tension between human rights and property rights, between what we might see as ‘a good and just life’, and our increasing tendency to commodify or stake property claims on biological products and processes? Can we see the emerging debate about biofuels as reflecting a broader conflict between food and energy, two global systems with very different production and consumption chains, and which have quite distinct political and economic structures? Starting from questions such as these we might suggest several productive lines of enquiry to pursue, all of which relate in different ways to the evolving relationship between plant science and society.

Our initial think-piece has now been revised into article form for a new, interdisciplinary journal (Frow *et al*, in the press). Through this publication we hope to stimulate comments and discussion with a wider audience. More generally, the trajectory of the plant genomics workstream continues to develop in an organic way. We have engaged in learning about processes of interdisciplinary engagement as well as matters relating to plant genomics and society. Over the course of ten or so encounters a shared or common understanding does seem to have evolved, as witnessed for example by the flurry of articles and noteworthy

items exchanged within the group when we now sit down for a meeting. Indeed, the repeated interaction of a small group has been a key element of this project. The enrolment of senior scientists and policy advisors has also been crucial – although the demands on their time are fierce, they have the autonomy to participate in such activities if they deem them to be worthwhile. And they have been in a position to effect change in their institutions on the basis of our discussions.

But what has actually been achieved through this workstream so far? How might we begin to evaluate the ‘success’ of this endeavour? This work programme has been modest in ambition, and has consistently been presented as an experiment in learning and knowledge exchange – this is a luxury we are aware many research proposals would not get away with. We have not generated new research findings *per se*. However, our co-authored article can be seen as a broad-level mapping of the plant genomics landscape that presents a different perspective on a fast-evolving set of relationships, and attempts to set an agenda for future research. (It should be noted that this article is an outcome, albeit a rather conventional one, that was not stipulated from the outset.) It occurs to me that new ‘framings’ such as the one developed through the plant genomics workstream are a more likely outcome of early attempts at convergence work than are novel research findings – and that the work involved in delineating this space or ‘trading zone’ (Galison, 1997) for productive discussion is not necessarily trivial. Negotiating the differences in language, culture and practice among different communities is crucial in order to develop encounters that are seen to be mutually worthwhile. Is this a process that we are too quick to overlook in our rush to see tangible fruits of interdisciplinary labours?

Returning to the idea of evaluation, another measure of our efforts might be the incorporation or ‘trickle-down’ of social science research and approaches in the home institutions of the steering committee members, and indeed we have some nice examples of this. Importantly, some of these opportunities could not easily have been predicted *a priori* and would likely have been missed had we taken a more conventional approach and tried to ‘match’ EGN research findings with particular target audiences. The identification of important questions for future research, or the formation of new interdisciplinary collaborations might also be taken as measures of success. One of our committee members has now hired at least one social scientist to work within his institution. Another blocked out a week in his diary to spend as a visiting fellow at the Forum, and is now writing an article

with researchers from three different EGN centres based on the week's activities and discussions – a nice example of interdisciplinary collaboration.

Over the past 18 months my activities at the Forum have also expanded to include a workstream on synthetic biology, which again has an emphasis on the interactions among different academic disciplines. The Forum was initially approached by researchers from the engineering and biological sciences departments at Edinburgh University to see whether we might be willing to engage with them on some of the broader societal issues relating to synthetic biology. Our efforts have since become national, as we recently secured a three-year grant from four of the UK Research Councils to develop an interdisciplinary research network on synthetic biology.

There are currently about 50 members of the UK SynBioStandards Network, drawn principally from five universities. The Network is coordinated by an engineer, a plant scientist and myself, and the focus for our activities relates to standards and characterization in synthetic biology. Standardization is an issue of potential interest from a wide range of disciplinary perspectives. To provide a few trivial and somewhat speculative examples, 'wet-lab' synthetic biologists might be concerned with standards for the purpose of research coordination and efficiency, computer scientists might wish to engage with some of the technical data-sharing aspects of standards, and social scientists might have an interest in exploring the implications of standard-setting for innovation trajectories. In this way, the issue of standardization provides an entry point, or perhaps a 'boundary object' (Star & Griesemer, 1989) for developing interdisciplinary encounters and activities. As well as providing synthetic biology researchers in the UK with a forum in which to share information and discuss matters of relevance to the development of this nascent field, one of the anticipated outputs of the Network will be in the form of successful cross-disciplinary research proposals. Several EGN researchers are part of the SynBioStandards network, and we hope to draw on our varied experiences in 'doing genomics and society' to help develop a productive network.

The attempts to build bridges across academic disciplines in both the plant genomics and synthetic biology workstreams can be seen to parallel my personal journey as a natural scientist into the world of social science. The learning curve has been steep – my experiences suggest that the chasm between 'the two cultures' of the natural and social

sciences runs deep (Snow, 1959), but thankfully does not seem completely impassable. After two years, terms such as 'normative' and 'epistemological' no longer seem quite as daunting, nor does the word 'regulation' automatically conjure up images of signalling pathways and feedback loops. However, a certain identity crisis has accompanied this process of change. No longer a 'real' scientist or yet a proper social scientist, the 'interactional expertise' one could say I am developing (Collins & Evans, 2007) seems now to cast me in a hybrid role that is part administrator, part facilitator, part collaborator, and occasional contributor. The Genomics Forum as an institution could be said to have a similar identity.

Through its first five years of activity, the Genomics Forum has acquired considerable experience in crafting 'society and genomics' encounters involving a range of different actors and drawing on a variety of methods. These encounters often uncover interesting questions and avenues for further research. The challenge for our second phase of funding will be not to treat these questions as an endpoint of our activities, but to find ways of feeding them back into the research and policy process, to exploit the growing networks we are developing in order to pursue more scholarly and in-depth analysis of these timely and provocative issues. In this way, the Forum might become a more central and supportive node in ongoing efforts to 'do society and genomics'.

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ADDITIONAL WEB LINKS

ESRC Genomics Network: www.genomicsnetwork.ac.uk

The UK SynBioStandards Network: www.synbiostandards.co.uk

Emma Frow is a Research Fellow at the ESRC Genomics Policy and Research Forum at the University of Edinburgh, UK. She is currently completing an MSc in Science & Technology Studies.

E-mail: emma.frow@ed.ac.uk