

Governing Trust in the Biosciences: Institutional and Cultural Change

Conference Report

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Tom Douglass



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Introduction

This conference was the concluding event of the Economic and Social Research Council (ESRC) funded project *Governing Accountability in China's Life Sciences* (led by PI Dr. Joy Zhang). In the past three years, extensive fieldwork conducted by this project has established that despite China being the world's second largest investor in R&D, its science public engagement programme is still under-developed. A 'post *hoc* pragmatic' mentality has largely contributed to a mismatch between China's scientific ambition and its public reception. In addition, an over-politicisation of science and science communication in China has resulted in a 'credibility paradox' which inversely curtails public trust in formal channels of science communication. This is a problem that Chinese scientific and regulatory communities have just started to tackle. In March 2017, this project pioneered the public engagement of science in China by organising China's first multi-stakeholder public engagement training workshop. Experts from both China and the UK concluded that in addition to infrastructural change, a 'cultural change' within the scientific community was also required to fully grasp what constitutes scientific accountability in the globalised biosciences.

The aim of this conference was to continue the Sino-European dialogues emerging from the past three years of work, with, in particular, the goal of establishing pathways forward to build and sustain public trust/engagement in new applications of biotechnologies. In attendance at this conference were scientists, policymakers, practitioners and social scientists. This conference aimed to engage with and answer questions such as: what constitutes 'effective accountability'? What institutional and cultural changes are needed to make biotechnologies more accessible to, and assessable by, the public? And, what are the emerging legitimating devices in the application of the biosciences in the rise of new social networks? In reflecting on these key questions and problems, the aim was to engage in information-sharing and reflection by both sides. The focus, as such, was to establish what shared problems of trust and institutional/cultural norms exist that transcend national boundaries, whilst also acknowledging that simply importing (further Western) regulatory norms and bioethical standards may have significant local deficiencies.

Conference Presentations: Day One

The first day of the conference was structured around the two keynote presentations and two sessions. The two keynotes, from two eminent public scholars, philosopher Baroness Onora O'Neill and biologist Professor Dame Ottoline Lesyer, in respective ways were concerned with diagnosing

cultural and institutional norms that are preventing sufficient public engagement with science. The two sessions addressed the promises and impacts of government/institutional/public deliberations and the nature of effective contemporary science communication.

Keynote: Why Should We Trust?

This two-day event was kicked off by Professor Onora O'Neill's provocative reflections on trust and intelligent accountability. She pointed out that opinion polls were good at recording people's generic attitudes of trust or mistrust, but may not reflect the evidence. Trustworthiness is more fundamental than trust, but it can be difficult to judge others' trustworthiness. Thus we have these



seemingly 'mismatching' scenarios in which people who are untrustworthy are trusted and there are also people who are highly trustworthy but, due to various miscommunication and misunderstandings, are received with skepticism. There are three fundamental characters of trustworthiness: honesty, competence and reliability. But in contemporary institutional life we are often required to hold people accountable by relying on a set of performance indicators. It is easy to forget that performance indicators are not measurements of trustworthiness, but an indirect substitute for measurement. In fact, metrics based on these indicators sometimes produce

perverse incentives, which may distract professional attention away from the primary requirements that an activity or a profession is meant to serve. Thus, O'Neill argued that what we need is an intelligent form of accountability. The ways in which we hold professionals accountable are often hyper complex and are thus difficult for the public to judge. Mere transparency itself is part of the problem rather than the solution. We need to make information both accessible and assessable to its audiences for them to be able to place (or to refuse) trust intelligently.

Session One: Institutional Deliberations and Their Impacts

This session examined the ways in which growing deliberations between governments, scientific institutions and the public and the role of evidence in policy-making, and discussed avenues of further improvements in both China and the UK.

Professor Christl Donnelly began this session with a talk concerned with the Royal Society and the Academy of Medical Sciences' collaborative project in the UK on developing best practice principles for the synthesising of evidence for policymaking. Professor Donnelly discussed how complexities (such as the volume of evidence) inherent in decision making mean that policymakers require a time-sensitive unbiased summary of all the available evidence on a topic. She discussed the importance of involving policymakers from the beginning of evidence synthesis as well as other stakeholder perspectives along the way to sufficiently understand a policy question or problem. She also indicated how the use of certain synthesis techniques, particularly from evidence-based medicine (e.g. meta-analysis and systematic review), are increasingly being recognised for their utility beyond solely medical contexts, with increasing government interest in these types of evidence synthesis. Professor Donnelly also highlighted the challenges in the production of adequate evidence synthesis, particularly surrounding its necessarily multidisciplinary nature, access to and dissemination of evidence.

Next, Professor Xian-En Zhang provided a detailed examination of how reforms and policy have attempted to move China towards an innovation-driven nation, with research and development expenditure now the second highest in the world.

This has led to vast increases in patent applications and high numbers of peer reviewed papers with growing research impact – though, interestingly, level of basic research investment remains comparatively low. It is clear that evolving relationships and interactions between China's government, scientific institutions, scientists themselves and the public (who increasingly have the ability to

raise comments and suggestions on scientific issues) have been important in shaping the national science and technology development plans and major underpinning policies. Emerging information and communication technology (such as WeChat) is also changing the way that these interactions



occur. However, Professor Zhang also noted that on some non-consensus issues (for example, the clinical application of stem cells, transgenic plants, and synthetic biology) the dialog between government, scientists and the public should be strengthened.

Keynote: Scientist, Public and the Great Wall

The afternoon discussion began with Professor Dame Ottoline Leyser's keynote, which explored the 'great wall' that separates science from everything else. She began by examining C.P. Snow's famous discussion of the two cultures of the sciences and humanities, using this framing to evaluate why the 'wall' between science and everything else has been established. Using the social scientific idea of the ingroup/outgroup phenomenon she discussed the need to dismantle problematic perceptions (e.g. of the public as 'stupid', or of scientists as 'superhumanly intelligent') and the insecure identities of scientists (by emphasising that science is about being repeatedly wrong). By challenging ingroup/outgroup identities, it will be possible to encourage an allgroup that includes people and publics of all traditions. Dismantling the wall will require a radical culture change which, of course, will not be an easy thing to bring into occurrence. However, there are intervention points (ranging from less focus on memorisation of scientific outputs and more on how science is done in the education system, through to the way in which research is assessed), that if altered can create a culture of problem solving rather than adversity.



Session Two: Science Communication for a New Age

The second session of the conference was oriented towards exploring the achievements of but also the existing limitations in the communication of and subsequent public understanding of science in the UK and China.

Paul Manners spoke about his work as the director of the National Coordinating Centre for Public Engagement (NCCPE) in the UK. He discussed the problems they attempt to address as a

body that agitates for change that results in science being more closely connected to society. As well as outlining a timeline of science communication and public trust/confidence in scientific advice to government (and the particularly damaging effects of the BSE crisis), Paul Manners outlined a set of problems in science's relationship with society – particularly unaccountability, lack of understanding, and irrelevance. This talk then considered how policies have begun to transform these relational problems, discussing specific changes in the UK context, such as the Research Excellence Framework (REF) which is oriented towards improving the societal relevance of scientific research. However, emphasis was given in a manner similarly to Professor Leyser of the necessity of professional culture transformation to fully alter science's relationship with society in terms of the crucial issues identified above.

Dr. Honglin Li continued the session by presenting her research on scientists' engagement with popular science writing in China. Popular science writing is a key source of science communication, popularisation and influences the public visibility of scientific research. The findings from her empirical work suggest that Chinese scientists hold interest in popular science writing but do not engage actively. In the scientific community, in the media, and at a public level, there has been a failure to form a collective consensus that science communication and popularisation is of equal importance to science and technology innovation. There is a sense in China that scientists that do engage in science communication and popularisation lack scientific research ability. Dr. Li argued that mobilising scientists to engage in popular science writing rather than primarily, for example, distinct professionals, such as science journalists, may lead to a more effective dissemination of scientific findings to the public due to the specialist knowledge and experience of scientists of the research process. To facilitate engagement, it was argued that scientists need support from universities/institutions, appropriate training from popular science writers, and for the Chinese Science Writers Association (CSWA) to actively work to incorporate more scientists.

Dr. Alexandra Freeman gave a presentation reflecting on the significance of the role of television in science communication. Citing the BBC television series *Blue Planet 2*, Dr. Freeman highlighted the reach and impact of television. Although *Blue Planet* has successfully influenced public dialogue in the UK on environmental harms from plastics, it was argued that to really exploit the reach and influence that television possesses, it was necessary to combine it with other media (such as social media) to allow dialogue and discussion. This can have benefits for researchers

themselves, including: feedback on the implications of research, new ethical considerations, and audience metrics. The potential dangers of television coverage, such as fostering unrealistic expectations, were also acknowledged when screening, for example, unique early stage surgery or clinical trials. Television (and other forms of media) are judged on entertainment, and audiences do enjoy attention grabbing and novel developments. However, careful design and exploitation of different media offers media professionals and scientific researchers who work in partnership interesting opportunities to conduct novel scientific research that they establish to be of interest to audiences (such as the impacts of coconut oil on cholesterol levels assessed through a clinical trial on *Trust Me I'm a Doctor*) that otherwise would not have been conducted. When such a partnership works then the result can be 'win-win' for everyone concerned.

Dr. Chenfeng Wang, founder of Wuhan *Natur*, a leading food safety NGO in China, shared the organisation's 10-year experience in (re)building trust in China's food system. The presentation



started with a seemingly strange case that this ESRC project published in the *Journal of Risk Research: Natur* seemed to be able to sustain a high level of trust among its members despite the well-recognised 'low quality' in its foods. That is, urbanites seemed to have a higher tolerance to fluctuations in the choices and presentation of *Natur*'s fresh produce. Dr. Wang attributed this to their experimentation with the idea of 'Participation Is Procurement', which encourages inclusive decision-making, information sharing and collaboration in the production of food. The change in the 'relations of definition' in the food system fundamentally altered how individuals identify, assess and react to food-related risks.

Conference Presentations: Day Two

The second day of the conference was structured around four sessions and a concluding roundtable discussion. The main themes and goals of the second day were to establish what effective accountability consists of, to further examine the nature and achievement of effective transparency

in science, and to examine the successes and remaining questions in achieving effective institutional and cultural change within the biosciences.

Session Three: Unpacking Effective Accountability

The first session of day two addressed the question of what constitutes effective accountability and the challenges to its realisation.

Dr. Zhiqin Du, Deputy Secretary General of the Chinese Medical Association (CMA) began day two of the conference with a review of the development of Chinese medical ethics and the place of accountability in medical ethics in China. This presentation traced the transitions in Chinese medical ethics from the ancient Confucius tradition to the fast development of modern medical ethics in China as a result of internationalisation. Looking ahead, Dr. Du highlighted three new trends in the professionalisation of Chinese medical ethics which may be of particular importance in addressing practical problems: 1) CMA encourages the younger generation of doctors and scholars to strengthen exchange between international medical science and medical sociology/sociology of science and technology. 2) CMA puts emphasis on the importance of innovative education approaches to enhance the training of medical professionals in China. More importantly, such training must be nationally-grounded but globally-informed. On this point, Dr. Du particularly lauded the Educational Module Resource (EMR) (see below) as 'an excellent experiment' and expressed that the CMA looked forward 'to joining forces in the promotion of this topic in China'. 3) The CMA also recognises that institutional reform, such as better regulatory provisions and ethical guidance, is crucial for accountable governance.



Professor Nikolas Rose gave a presentation exploring Responsible Research and Innovation (RRI). The main argument offered by Professor Rose was that it is necessary for detailed thought about potential consequences to become central to all involved in research from funders, through research managers, to the researchers themselves, prior to and throughout the processes of research

and innovation rather than at the end of the process. Responsibility is important because a lack of it damages trust in science. There is some evidence that responsibility is increasingly becoming salient in shaping research horizons, particularly through the funding of research. For example, the Engineering and Physical Science Research Council (EPSRC) urges funding applicants to abide by AREA: or in other words, to *anticipate* consequences, *reflect* on purposes and motivations, *engage* in public dialogue, whilst also necessitating that



researchers *act* to use these process to shape research direction and trajectory. It may, though, be difficult to take responsibility for the unknown or difficult-to-predict consequences of future research and scientific innovation. Significant resistance to responsibility also seems still to exist from scientists themselves. Professor Rose argued, however, that by working to increase the responsibility of systems (rather than individuals) through encouraging social and ethical reflection throughout research and innovation we can mitigate the worst of these difficulties and engage in meaningful institutional/cultural change.

Session Four: Unpacking Legitimizing Devices in the Sino-European Governance of Biotechnologies

This second session offered a more empirically focused discussion on how social legitimacy can be secured and sustained.

Tracey Brown from the organisation Sense about Science spoke about the need for greater transparency in the processes of research rather than only in the disseminating/reporting of science. She argued for the necessity of opening up the actual diagnosis of problems (that require scientific investigation) to the public realm. Tracey explored the aims and successes of her organisation Sense about Science, which works to open up scientific discussion about what we know and what we do not, to improve accountability and to challenge the misrepresentation of scientific evidence in public life. In the production of scientific evidence, it is often the case that the solution appears

without society even really knowing what the original problem was or having the chance to contribute to the diagnosis of problems. Opening problem diagnosis up to debate early in the process can overcome this. Tracey also spoke about how fear of uncertainty in science is damaging, and rather, that uncertainty should be embraced so as to fully understand what we need to know to arrive at a decision.

Through her review of how this ESRC project developed in the last four years, Dr. Joy Zhang highlighted the necessity of co-developing a public engagement culture in and with China. Research on how Chinese urbanites make sense of risks reiterates what Sheila Jasanoff argued that neither fact nor value can stand alone in a society. That is, for the public, scientific evidence was not seen as a form of knowledge or a given fact, but was seen as a possibility. As such, new scientific possibilities do not always necessitate a decision or an action, but it proffers a choice, which one evaluates on one's own terms. At one level, this means that (Chinese) scientists need to get comfortable with the idea that the public needs to interact with evidence as a necessary process of sense making. At another level, efforts enlightening and enabling a new generation of scientists about their social responsibilities should have an international outlook, for we need Chinese scientists to have the matching ability to identify, articulate to different (global) communities about the harms and benefits that novel scientific discoveries entail. This is also a mutual learning process. It is both about exploring scientific communication tools that better embed Chinese science within global society and about developing social science heuristics that speaks better to the particularities of Chinese science.

Session Five: Making Changes Happen (Part I)

The final two sessions of the conference were concerned with achievements in, limiting factors, and potential opportunities/solutions to inducement of institutional and cultural change in the biosciences.

Professor Wenxia Zhang, first, reported findings from her recent mixed methods research concerning understandings of research ethics and research integrity amongst Chinese scientific and medical research personnel. There was agreement amongst participants that scientific research, for example, could go astray by deviating from ethical norms and that scientists should be responsible

for the social consequences of their research. However, problematically, there was varied responses to whether, for example, research ethics constrains scientific freedom and the belief that if a study is promising but ethically problematic another researcher or team will do it anyway. Overall, it was found that there was ethical compliance but not without some significant violations. This can be traced to the fact that a problem in the Chinese context is the underdeveloped systems of governance of research ethics at the institutional level. Recommendations emerging from this research included the need to strengthen research ethics regulation and enforcement, and that formal research ethics training should be included in the curricula of universities.

Next, Professor Michael Calnan focused on the regulation of expensive medicines and discussed the general question about whether trust shapes the relationship between science and medicines more than science directs trust in medicines. To exemplify this, he presented evidence from an ESRC funded study conducted on the processes of the Single Technology Appraisals (STAs) carried out by the National Institute for Health and Care Excellence (NICE) in England and explored the ways in which uncertainties were perceived and addressed by the STAs' decision-making committee. Three layers of uncertainty were in evidence: epistemic (referring to the ability of biomedical methods used by the pharmaceutical industry to produce knowledge about treatments), procedural (particularly relating to the sheer volume of evidence considered), and interpersonal which (refers to the competency and motives of those providing evidence). There was also uncertainty and ambiguity associated with the level of technicality and complexity of the information provided. Professor Calnan discussed how navigating these layers of uncertainty was (partially) managed through practical rationality and various forms of trust at different levels. Systemic positioning and 'forced options' to trust indicated the potentially insidious processes of regulatory capture of NICE by the pharmaceutical industry. Thus, though ostensibly an objective techno-scientific evaluation, social forces necessarily emerge in the development and subsequent management of uncertainty. NICE were given detailed feedback on the results for their reflection and incorporation within the management of uncertainty in technology appraisals.

Dr. Li Du explored from a legal perspective what the role of professional regulation is in the formation and maintenance of public trust. One example discussed was of the development of professional regulation concerning stem cell treatment regulation. The development of professional regulation in this area may have interesting consequences for the heightening of public trust, it was argued. The presentation highlighted how public trust is fostered not only via the content of

available professional regulations but also the extent of compliance and enforcement. In the Chinese context there is a need at a general level, as such, to establish further regulation addressing research integrity, a need to invest in and cultivate science journalism, and for the development of transparent and trusted information platforms.

Session Six: Making Changes Happen (Part II)

In the second change achievement-oriented and final session of the conference, Dr. Lu Gao and Dr.



Miao Liao spoke about their work (in collaboration with this project) developing a pilot 7-lecture Educational Module Resource (EMR) on public engagement, aimed at postgraduate and early career researchers in China. Dr. Liao first introduced how the writing of the EMR aligns with her work on Responsible Research and Innovation (RRI) at the Ministry of Science and Technology. Dr. Gao then shared initial feedback from the EMR's trial run in leading Chinese universities and several research institutes in CAS in 2017. It was evident that the EMR has already had some successes in raising institutional awareness of the importance of the public engagement of science and establishing curriculum change. But both Dr. Liao and Dr. Gao pointed out that the

EMR as it currently stands is still limited in scope. It requires more inputs from diverse disciplines and needs to be further adapted to fit with the particular teaching culture of Chinese universities.

Following this, with reference to his experience working as a scientist in both the UK and China, Dr. Wei He reflected on the loss of trust in scientists in China and solutions to this loss of trust. Dr. He spoke about scientific controversies in China and the problems with insufficient dissemination of information, censorship, and lack of investigation of scientific fraud. Connections were drawn between the government as funders of the majority of research in China and thus scientists as surrogates of the government. Declining trust in the biosciences thus reflects doubts about governance of scientific activity. To improve governance of the biosciences and by extension trust in scientific activity, Dr. He argued that what is required is greater accountability, opportunity (e.g. the training of more scientists), greater payback (e.g. increasing the wellbeing and pay of

scientists in China), intellectual freedom (e.g. freedom from government censorship) and greater publication in Chinese rather than English (to increase likelihood of public accessibility/ understanding in China). In order to achieve these goals there needs to be training in communication/public engagement for doctoral researchers (as already occurs in the UK) as well as strengthening institutional ability to disseminate research findings to the public. Scientists also need to be encouraged to more overtly confront challenges in biosciences, use and engage with the media (both traditional and new media) to disseminate and popularise science, as well as adhere to ethical characteristics. Dr. He concluded with the reflection that though China has achieved much in the biosciences in the last fifty years, learning from outside opinion and by embracing change, scientific progress and its governance can only become stronger.



Roundtable: What can dialogues achieve? Agenda Setting for UK-China Consortium on Scientific Communication

The conference concluded with a closed roundtable discussion. As there were strong recognitions from both British and Chinese participants on the rare momentum this ESRC project created on the promotion of public engagement in China, key partners involved discussed practicalities in taking the UK-China Consortium on Scientific Communication forward