

Collaboration between science communication scholars and practitioners: Report from Bellagio small group discussion, 9 November 2017

Authors: Ayelet Baram-Tsabari, Marta Entradas, Marina Joubert, Luisa Massarani, Jenni Metcalfe (convenor), Michelle Riedlinger

Context: Change in rhetoric from gaps to opportunities for collaboration

Three of the objectives of the Bellagio science communication conference (6-10 November, 2017) focused on the relationships between science communication researchers (referred to as scholars for the rest of this document¹) and practitioners:

1. Determine how science communication research can better inform the practice of science communication
2. Ensure that researchers appreciate and respond to the problems science communication practitioners are facing
3. Bring together science communication researchers and practitioners to work jointly on projects aiming to solve some of the world's intractable issues

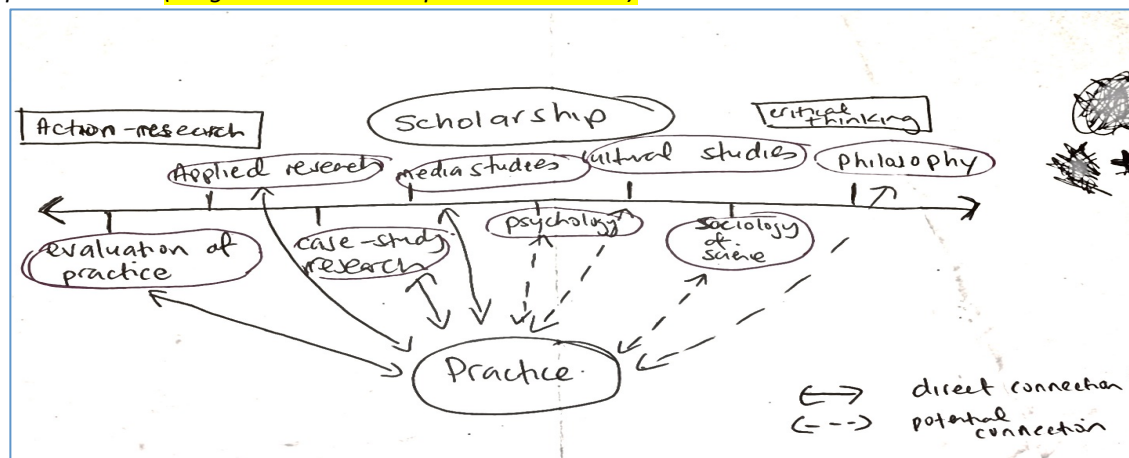
Interestingly, by the last day of our conference our rhetoric had changed from focussing on 'gaps' between scholars and practitioners and the need to bridge such gaps, to one exploring the opportunities for collaboration.

Our small group discussion looked at three questions within this context. Firstly, we looked what we thought was needed from scholarship-practice collaboration, and what this would ideally look like. The second question discussed whether this desired collaboration was happening already, and if so how this was working. After discussing these two questions, we then looked at where there might be opportunities for further collaboration.

Scholars and practitioners motivated to talk and work with each other

Our ideal picture of collaboration between science communication scholars and practitioners, is that they are motivated to talk to and work with each other, and see value out of developing and maintaining relationships.

Figure 1: Spectrum of science communication research and collaborative opportunities with practitioners (diagram to be developed and redrawn)



¹ Scholars and scholarship, rather than research and researchers, avoids confusion between those who research science communication and other researchers including STEM researchers

We thought there would ideally be different levels of collaboration, and that this could happen along a spectrum of research activity, from direct evaluation of practice right through to more critical thinking, as illustrated in Figure 1.

We did not believe that such collaboration would necessarily compromise the “arm space” needed between independent research and practice. Rather, it is likely that researchers may even be able to do more critical thinking if they’re aware of some of the practices that are out there. Likewise, collaboration does not mean that all scholarship is for the sake of practice. Instead, collaboration might mean people are jointly reflecting on each other’s activities, which leads to more critical thinking.

Lack of knowledge about existing scholar-practice collaboration

We thought it was likely there was more collaboration between scholars and practitioners than we have good awareness or knowledge about. We agreed it would be interesting to investigate this further.

In particular, we are interested in the idea that while there are people who just do science communication practice, and those who do only scholarship, there are all shades in between those two ends of activity. For example, Toss Gascoigne asked the PCST Network elist for examples of research and practice, and got 19 responses all from practitioners involved in action-research directly applicable to their practice.

We thought it would be useful to map people’s involvement in science communication research and scholarship to better understand the collaboration that is already happening, and opportunities to deepen this. Further, it would be valuable to compare science communication ‘maps’ across cultures and countries. Such an investigation would also find out more about people’s needs from increased collaboration between practitioners and scholars.

Gaining such knowledge is instrumental in helping to create and support the type of collaboration that would enrich the field of science communication for the mutual benefit of scholars and practitioners.

Our discussions about mapping or surveying people about their involvement in science communication identified the need for such a study to:

- Be multi-country and multi-lingual
- Allow people to self identify as science communicators along the practice to scholarship continuum
- Access as much of the science communication community as possible, including people not currently engaged (e.g. health communicators)

Supporting collaboration: design thinking, increased dialogue, develop relationships

Our group discussed what could immediately improve collaboration across the field of science communication, and our three main ideas were very much based on discussions throughout the Bellagio conference.

1. Explore and share ‘**design thinking**’ where scholars and practitioners take an interdisciplinary approach to focus on specific problems (as presented by Maarten Maarten van der Sanden). The rationale for this approach is explained in the box below.

Design Thinking for Science Communication

By Maarten van der Sanden

The challenges in science communication practice are most of the time *complex* problems. There is uncertain science (e.g. climate science) in an uncertain world (e.g. storm, drought, policy, politics). Moreover, there is uncertain science communication science (e.g. effectiveness of engagement) in an uncertain science communication practice (e.g. fake news, climate sceptics, technology push, differences between facts and concerns). To find solutions, and to cope with uncertainty in an uncertain world design thinking:

- Finds the essence of the problem: what is the soul of the social interaction between science and society (e.g. find trust, being acknowledged, feel heard, be taken seriously)
- Starts from reality, continuously combining theoretical knowledge, practical experience, creativity and intuition in various iterations of the design process (understand <-> test). Design thinking means, heart on, hands on and mind on.
- Necessary co-creation/co-design between science communication scholars and science communication practitioners to find solutions for science communication practice AND deepen science communication theoretical knowledge. Design thinking, therefore is not solely about finding solutions for practice, but results in mutual learning.

2. Promote **closer interactions between scholars and practitioners** at all levels along the research spectrum (see Figure 1). It's not about practitioners paying more attention to research, or scholars paying more attention to practitioners, but more that both are needed to gain new perspectives on science communication.

Such interaction means scholars don't just rely on practitioners to absorb and apply their published research outcomes (deficit model) but also actively seek conversations with practitioners (dialogue model), and involve them, when appropriate in their research. Ironically, this means practising what they preach to scientists and science communication practitioners.

But on the flipside, it also means practitioners seek out scholars who may have knowledge and advice that could be useful to them. They also look for opportunities to reflect on their practices jointly with scholars and to co-design/evaluate their activities.

The results of recent research (unpublished) where 34 science communication experts were interviewed about ways to improve the links between science communication scholars and practitioners is shown in the table below. As can be seen, the experts recommended activities that ranged across the three science communication models.

Table 1: Recommendations for improving the links between science communication scholars and practitioners

Recommended activities	Science communication model
Provide online summaries of research Pair research papers with practitioners' summaries of that research Use blogs and social media Produce a journal for practitioners Produce PCST Network quarterly publication summarising research	Deficit
Identify opportunities to interact (e.g. PCST Network conferences / symposia; AAAS meetings, working groups like in UK) Hold forums of 'best practice' involving scholars and practitioners Have practitioners comment on scholars' papers at conferences like PCST	Dialogue

Recommended activities	Science communication model
Network, and visa versa Ask practitioners what research they want	
Design research and communication together in a problem-solving process Involve practitioners in global research projects	Participatory

In particular, we thought that there was a need to encourage and support **practitioners and scholars to meet locally**, within their own regions so that they develop relationships informally and formally. We thought that such relationships were likely to foster trust in each other and drive collaboration further.

We also recognised the language divide between scholars and practitioners, and that any collaboration may require interpretation of academic papers into simple direct language. There is a website for STEM educators that interprets scholarly papers, which could provide a basis for a similar site for science communicators, as described in the box below.

However, as a precursor to developing such a site we believe that we need to identify the specific needs of both scholars and practitioners from each other, including their preferred means of sharing information with each other. The RR2P site is specifically directed at educating and informing practitioners about research, and we think it is important that scholars are also more informed about and engaged in the activities of practitioners.

The goal of the *Relating Research to Practice* (RR2P) website is to build and reinforce the Informal Science Education (ISE) field’s awareness of, access to, value for, and use of current peer-reviewed research in science education. The premise for the creation of this tool is that ISE practices and programs can benefit through more direct engagement with the significant body of research-based evidence and knowledge about the teaching and learning of science. A second premise is that a more research-engaged ISE field can in turn more actively contribute to, challenge, and expand the knowledge base about the teaching and learning of science.

Information provided by Dr Heather King

3. Identify **principles of good science communication practice** and share these with those designing science communication programs, including policy makers. During the Bellagio conference a number of principles were identified for good science communication practice including:

- Identify visions and values first (and remember scientists also have values)
- Focus science communication on communities for community-based solutions
- Identify and value non-scientific knowledge
- Use “boundary spanners” (science communicators?) to connect different social groups
- Critically reflect on the role and impacts of science and technology on different sectors of society
- Recognise that failure is a learning opportunity

We think these principles should be further elucidated according to evidence-based science communication research and shared with the wider science communication community. They should also form a basis for approaching government and NGO policy-makers who are involved in designing and funding initiatives that include science communication activities. Such a set of principles would necessarily evolve with greater engagement of the science communication community, and ongoing research; particularly collaborative research between scholars and practitioners.