

Facilitating Creative Equality in Art-Science

A Methodological Experiment

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ABSTRACT

In this article the authors discuss facilitation as a way to develop creative equality in art-science based on their experiences working on an art-science project. They suggest that the space in which representatives from the domains of sciences and arts come together to collaborate is a trading zone in which novel links and relationships can be created. They introduce the notion of “boundary method” to describe facilitation as a method that can endure different meaning-making strategies and meanings employed by stakeholders yet still retain its utility for encouraging creativity at a cross-disciplinary interface rather than within a dominant discipline.

HYBRID SPACES AND OUTCOMES

The art-science interface can provide a level playing field for stakeholders, encouraging participants to work more independently of the expectations and restrictions of their respective disciplines. In this article, we discuss project facilitation as a methodological approach that fosters creative collaboration—facilitation being a moment of what has been termed the “third space” [1] between the domains of sciences and arts. For us, the aim here is equal stakeholdership.

While arts and sciences have a long mutual genealogy, one tends to be instrumentalized by the other: The arts may appropriate scientific ideas and methods, and the sciences may use artists and artistic approaches to communicate science. Our question has been how—if at all—art and science stakeholders can step outside their disciplinary frameworks to create new ideas based on equal contributions. Encouraged by some examples of artistic and scientific concepts, ideas and practices coming together in developing creative epistemological and ontological insights [2,3] and influenced by primarily British and European science policy debates around science in and for society, we suggest that there is potential for art-science as a meeting place and for its practitioners to

contribute to developing understandings of identity and social organization, as well as to contribute to cross-boundary production of knowledge that is relevant for both domains [4]. Furthermore, we argue that this role can be fostered through active work by facilitators. We understand facilitation as a boundary method that operates as a trading zone of “interactional expertise” [5], encouraging stakeholders to engage with one another and with new ideas.

The notion of the boundary method borrows from Star and Griesemer’s “boundary object” [6]. While the latter describes any material object that does not change its shape but does change its meaning for its diverse user communities, the former focuses on processes of translation and interpretation that can help cross borders among different knowledges and practices. The aim of using facilitation is to develop (a sense of) a community of practice [7] in order to encourage learning and to inform and develop the practice of its members. This community can be an extradisciplinary space that is focused on an issue. Extradisciplinary refers to practices that take place outside individual disciplines, yet which can feed new ideas back into disciplinary practice. In this article, we focus on the problem-led process of facilitation in fostering a community of practice at the art-science interface.

Our decision to focus on this facilitation method was influenced by science policy debate, specifically in the United Kingdom where a relatively rich funding landscape has encouraged collaborations at some points of the art-science interface, with research intermediaries such as the Wellcome Trust and the Engineering and Physical Sciences Research Council providing sponsorship. The growing opportunities for artists and scientists to mutually and critically engage with one another are in part owed to an expectation of greater accountability of both publicly funded science and consumer-oriented technology development to public and policy stakeholders. Note, for example, increasing requirements by charitable funders such as the Wellcome Trust and the publically funded Research Councils U.K. for their grant applicants to justify funding in terms of what has widely been termed “impact,” and the increasingly creative ways in which those research intermediaries themselves, as well

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as researchers, can respond to public impact agendas by producing different impact regimes, measurements and discourses. Beyond this logic of accountability, however, a critical and challenging rationale for art-science has emerged. In the context of risk and uncertainty discourses [8,9] and, increasingly so, in debates around responsible and societally relevant innovation [10], public engagement and art-science provide novel modes of exploring the ends and means and the societal understanding and role of science and technology, and of constructively engaging with notions of responsibility and societal impact of research [11].

CREATIVITY FROM INTERACTING METHODS

Art-science research can aspire to constitute a mutual exchange and coproduction of methodological insights. It suggests a form of hybridity that draws on logics of mobility and transformation. If we perceive the art-science interface as an experimental space—with methodology, collaboration and outcomes—then its projects can provide a meeting point for different epistemic cultures such as they exist in the various disciplines of arts, humanities, social sciences, sciences and engineering, as well as in the public domain. The art-science interface can operate as protected space for the extradisciplinary interaction among these fields, enabling the production of knowledge outside of the disciplines, yet (critically) drawing on and feeding back into them. Kate O’Riordan suggests, “There are some conditions under which art projects do operate as a kind of interstice” [12]. The case made here is about art engaging with biology, opening up the aims and processes of the bioeconomy by critically challenging some of its discourses and practices. O’Riordan aims to mobilize an understanding of art-science as a “third space”—a space that encourages rethinking of dominant economies (their values and norms, methodologies and frameworks), but arguably also of epistemic cultures [13]. With a focus on interaction, the interface nature of the field and, more importantly, the contribution the field can make to the involved disciplines and epistemic cultures, we follow Andrew Barry and colleagues’ suggestion that cross-disciplinary work [14] does not only have to be a synthesis of disciplinary knowledges, or a response to a perceived lack of knowledge, but can also be a critical reflection of existing knowledges and their limitations. Barry et al. term this mode “agonistic-antagonistic,” “intended to effect more radical shifts in knowledge practice, shifts that are at once epistemic and ontological” [15].

In response, we aim to develop a basic framework for the fostering of interaction between scientific and nonscientific epistemologies and their practices. This framework takes art-science interaction as an opportunity for fostering more equality between arts and sciences by encouraging letting go of respective stakeholders’ disciplinary restraints while drawing on their knowledges and competencies, and focusing on creative engagement. As Hilary Rose suggests in her program for a feminist epistemology for the natural sciences, the act of bringing together different methodologies in the process of knowledge production works to counteract processes of losing the sense of materiality and actuality [16]. In the context of art-science as a mode of engaging with science

in and with society, Rose’s approach can be reinterpreted as a program of contributing to efforts of raising awareness of the inherently social nature of scientific work and the material social impacts that science and technology have on society. In such a program stakeholders in cross-disciplinary engagement at the art-science interface are asked to reflect on social identities and relationships in interacting with collaborators, in order to problematize the specific efforts and values of knowledge production situated in both cultures. Rose refers to avoiding the “renaturalization” of the labor of those involved. For art-science interactions this means ensuring that the work of artists collaborating with scientists and exploring science-related issues, and of scientists keen to engage with art-science, is not taken for granted, or seen as something intrinsically artistic or scientific, but rather is seen as being at the interface of both. Significantly, the work and roles of the artist and the scientist need to be considered on an equal footing: The artist is not simply responding to the science, and the scientist is not only providing scientific knowledge. Second, and related to the first, the manual and mental labor of art-science is built upon and aims at establishing relationships—between knowledge, people and locations as well as among things. For scientists this could mean engaging with their personal perspective and social implications of their work, with the practice of making meaning from knowledge. For artists this could mean engaging with the materiality of scientific knowledge—often forgotten, for example in ubiquitous analogies relating DNA to an elusive “code” rather than a physical material—and with the social and cultural aspects of both cultures of arts and sciences, the use of innovative metaphors and the genesis of scientific “facts.”

Rose’s program not only encourages the agonistic-antagonistic mode of knowledge production, it also provides an approach to reflecting on the problems of art-science as a third space emerging in practice [17]. The art-science field as an epistemic and ontological program—particularly in its aim to move beyond the logics of accountability and legitimation as well as innovation—is faced with an issue that Jean-Paul Fourmentraux has identified: “The interdisciplinary hybrid known as ‘research and creation’ lacks a stable identity” [18]. Art-science collaborations are mobile and temporal, usually project-based, comparable with “boundary organizations” [19,20] that emerge in response to a perceived issue and can dissolve once the issue has been deemed to be addressed. Fourmentraux’s notion of “research and creation” is valuable in reimagining art-science as a mobile interface that encourages experimentation and aims to change sedimented relationships between the interface’s objects and their audiences, and between its stakeholders. Experimentation and the researching of novel methods for producing knowledge are meeting points that can be conceptualized as (temporary) communities of practice [21]:

- As a domain of shared and/or overlapping identities and interests—rendering art-science engagements an extradisciplinary and professional interface, informing the cultures of art and science and improving output;

- As a community arising out of interaction in joint learning and generating new ideas and insights, and a sense of mutual responsibility contributing to communal identity building; and
- As a shared repertoire of practices.

We suggest understanding the art-science interface as an experimental setting for testing and developing methods. Disciplines of both epistemic cultures draw on a range of comparable techniques and values that have general methodological aspects in common: research into the investigated subject, established frameworks (or schools) of technique and technologies, experimentality, rigor, peer review, emphasis on originality, aesthetics and claims to interpretations of reality. Both fields mobilize disciplinary frameworks and have professional standards. To that effect, Edward Bulwer-Lytton has posited that “art and science have their meeting point in method” [22] and this idea is also reflected in suggestions that aesthetic values can be part of physical science and mathematical theory [23,24].

FACILITATING ART-SCIENCE COLLABORATIONS: LESSONS LEARNED

In 2012 we ran an art-science pilot project that brought together a small number of practitioners across different artistic and scientific disciplines with the aim of producing creative outcomes loosely inspired by or connected to genetics and genomics. The aims of this pilot were to identify how to effectively develop a sense of an art-science community of practice and help future practitioners to produce work together. The project involved six participants, divided into pairs, and required each pair to collaborate on an output over the course of nine months. Two of the pairs were made up of a scientist and an artist-practitioner, respectively. (One of the artist-practitioners was Pippa Goldschmidt, who is an ex-scientist but not an expert in the field of genetics and genomics.) The third pair consisted of two artists from different disciplines (poetry and photography).

It seemed inevitable at the time that the science of genetics and genomics would be seen as the starting point because that was the most visible focus and content within the institutional context of the ESRC Policy and Research Genomics Forum (now defunct) and in the context of the funders’ interests in making genomics more publicly accessible. Participants from the arts expressed feeling a disadvantage in not being “experts” in this scientific discipline. In response, facilitation between the scientific and the artistic approaches, and between participants, emerged as a vital method. The two facilitators (one of whom was Goldschmidt) tried to shift the interests of the group into a deliberately wider territory by fostering a discussion bounded by quotations about artistic and scientific practice from a wide range of artists, musicians, philosophers and scientists. This discussion had the benefit of allowing all the participants to identify their own interests and (indirectly) their expertises and visibly supported them in feeling that they were participating in a more level playing field. It was interesting to observe that the artists’ use

of and interest in technology (such as photography) helped them establish common ground with the scientists and allow a “way in.”

Three key learning points emerged. First, facilitation is vital. Particularly in the first phase of the engagement, the practitioners look to the facilitators to identify and determine the boundaries of a complex, multidimensional space. The facilitators in this pilot tried to convey the fact that they considered the boundaries to be permeable and flexible, and after a period of time of discussion and work together it became clear that the practitioners had gained confidence in setting their own boundaries and areas of interest. Second, initial acknowledgment of practitioners’ professional achievements and interests is important; if we imagine each practitioner’s work in this type of project as a journey through this multidimensional-bounded space, then it is helpful to allow practitioners to identify for themselves their starting points, usually based around their own expertise, in this space.

Third, it takes time to establish trust between practitioners. This seems obvious, but projects that are goal oriented and funded by organizations keen to see visible outputs may not have enough time built in with no purpose other than to create good working relationships. We used informal “play” with physical objects such as refrigerator magnets, Plasticine and colored pencils to help break down barriers between practitioners and allow them to generate ideas. While we expected that participants might feel this to be “child’s play,” the contrary became apparent: Scientists quickly associated these approaches with their own practices of presenting research ideas. Identifying a project as being ostensibly “about” or “inspired by” a scientific subject (in this case genetics) creates tension about the resulting “accuracy” of the outputs. And when their professional reputation relies on accuracy, scientists find it hard to let go. We found it helpful to remind participants that the project’s aim was not to narrate or communicate science but to create something inspired by a scientific issue.

One of the aims of this pilot was to see if the scientists would be willing to work alongside the artists and jointly produce a creative output. Such a collaboration did happen in one of the partnerships: The artist visited the scientist in her lab and then wrote a poem, which the scientist then decided to illustrate using visual images from the work carried out in her laboratory. A more conventional starting point of this pilot would have been to encourage the artists to respond to the genetics research, as in traditional models of art-science collaborations. But by encouraging the artists and scientists to work together in this new space, we attempted to put a greater emphasis on the process of creation rather than scientific content. Did this in fact persuade the scientists to do something different from their usual “scientific” processes? To answer the question fully requires consideration of what their daily scientific work actually entails, but enriching a poem using scientific metaphors and images may be a step away from the usual scientific process, or it may be considered essentially similar to conveying ideas in a scientific

paper. More generally, an attempt to move art-science projects into a more “symmetrical” space needs to start by identifying exactly what is entailed in the practices of the relevant sciences and arts.

Some of the key challenges of cross-disciplinary projects relate to the nature of the collaboration and the identification of the relevant tasks, such as agenda-setting, transparent communication and social interaction. Participants may find it difficult to understand each other’s skills outside the relevant disciplinary frameworks and may find it necessary to remind each other of their qualifications. Scientists can feel that their work and research program may be judged or undermined by artistic practitioners with very different skill sets in the process of opening it up. Facilitation can ensure that communication between collaborators commences and continues. The facilitator opens up space to exchange and explore via the use of various imagery, tactile work (for example, in reproducing metaphors and images as well as practices by using materials) and play with words, their meanings and their relationships to the scientific issue.

Simultaneously, the facilitator sets broad boundaries for the “problem” to be addressed by the collaborators, who will look to the facilitator for indications that what they are doing is within the terms of engagement. Facilitation thus aims to aid understanding of the different methodologies and experiences at the interface.

Furthermore, the facilitator can foster an environment in which the competencies and knowledges of participants are respected and equally involved in the engagement process. There is a certain amount of pressure on the facilitator in framing the problem, yet the facilitation process needs to encourage and prepare space for discussing a subject matter arising out of science and technology in mixed contexts, that is, not purely as a scientific issue to be responded to in artistic ways but also as an opportunity for the scientist to rethink scientific work “outside the laboratory.”

It is critical for the engagement process, as well as for the outputs, to ensure that the scientific content does not solely drive the engagement and that the scientists are involved in the intellectual and physical production of art-science methodology and outputs. How, for example, might a scientist respond to a creative piece of writing about science and in turn create a piece of literary text, painting, sound, sculpture, etc., herself? Or could participating in the art-science process influence scientific practices? [25] Similarly, for the artist the interaction offers choices about exploring different methodologies and metaphors.

All of the above points require the facilitator to acknowledge, and indeed problematize, the inherent power asymmetries in art-science collaboration. Initially, an artist might have more control over the output generation, while the scientist has a stronger notion and understanding of the scientific subject. As the facilitation program of the art-science interaction encourages collaborators to challenge and develop views, the asymmetries shift. Eventually, a vital issue is that of the impact of collaborative work. This work needs

to be made visible not only to the collaborators as publics of each other, but also to wider audiences. The framing of the work changes how it is received—by the collaborators, by other practitioners and scientists, and by funders and the wider public. The subject matter of the engagement has a considerable role to play in developing facilitation at the art-science interface.

CONCLUSION

Technoscientific practices and discourses spanning science and society provide a rich subject matter for art-science interaction. Similarly, facilitation provides an opportunity for testing personal and professional tools and processes for their suitability to the interaction, its aims and its audiences. Participants act as each other’s audiences in the interactional processes of experiment with and introduction of ideas and methods. An obvious question this raises is why any scientist should be interested in such an engagement, particularly when illustrative modes of art-science seem to serve science well. While two structural drivers may encourage commitment in art-science projects—that of funding for artists and that of impact demonstration by scientists—interest in shared problems and the cross-disciplinary experience play a significant role in such engagements. Both the interest in exploring a scientific concern from a different perspective and the interest in broadening the scope of established methodological approaches and metaphors can be drivers for the involvement of scientists and artists alike. Researchers whose daily practice brings them in contact with other disciplines and methodologies within and outside their fields may find it more interesting and “easier” to engage at another interface such as that of art-science. Developing cross-epistemic engagement and outcomes and outputs requires individual investment. The interest and belief in collaborating with different, and likely unfamiliar, epistemic cultures form part of the basis for actual cross-disciplinary practice and knowledge production to challenge existing cognitive and affective boundaries and constructs.

We have discussed facilitation as an opportunity to encourage participants to release themselves from their disciplinary constraints in collaborating creatively at the art-science interface. Our view is practice-informed and influenced by the normative ambition of encouraging and affirming the equality of role and commitment from the sciences and the arts while aspiring to foster collaborative work that can inspire. The art-science interface conceptualized here is constituted in the facilitated creative process, encouraging mutual recognition and an open mind to the process and potential output. This facilitation process offers a “third space” emerging in interaction that can and should aim to open up existing economies of practice, of value and of thought. Facilitation as a boundary method refocuses on the individual scientist and artist as collaborators who have yet to explore each other’s position toward a subject matter, negotiating subject, process, techniques and agenda of the boundary-crossing project.

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