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**On constructing collaborations between engineers, designers and publics.**

**Emily Dawson**, Science and Technology Education Group, Department of Education and Professional Studies, King's College London, Franklin-Wilkins Building (Waterloo Bridge Wing), Waterloo Road, London, SE1 9NH. [emily.dawson@kcl.ac.uk](mailto:emily.dawson@kcl.ac.uk).

To experiment with collaboration between different groups for public engagement is a challenge, as the title suggests. Not only is collaboration subject to multiple interpretations and expectations, but public engagement is another contested field, where aims and intentions, theories and practices are the subject of a considerable literature.<sup>1</sup> *Material Beliefs* was a multidisciplinary project that brought together designers and engineers and sought to explore alternative models of public engagement. In total 34 engineers and scientists, 5 designers and a number of members of the public were directly involved in collaborations, not to mention the much larger number of publics involved in over 40 public engagement activities. These collaborations were at the heart of the projects experiment: could collaboration between designers, engineers and publics develop innovative forms of public engagement? This essay explores the collaborative aspects of *Material Beliefs*, focusing on three key aspects of these collaborations: different expectations, interpersonal

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<sup>1</sup> In the last 30 years a range of communication techniques have developed around science, designed to better manage the publics perceptions of science as well as relationships between science, government, industry and publics (Bauer and Gregory 2007, Gregory *et al* 2007). One development in this field has been the 'public understanding of science' (PUS) movement, which has more recently evolved into 'public engagement with science and technology' (PEST) (Irwin and Wynne 1996, Miller 2001). PEST practices were intended to attempt to redress the balance between science, publics and broader socio-political concerns (House of Lords 2000, Wynne 2007).

relationships and models of collaboration. These issues will be illustrated using quotes from the project evaluation.

### **Different expectations**

Material Beliefs was designed to be flexible and open about what kinds of collaboration and public engagement would result from the project, thus was purposefully unrestrictive about the collaborative projects it sought to nurture.

“D5: we made our lives difficult in the end because we didn’t want to describe the collaborations in projects being science art. And there are various reasons for that, but then we didn’t also want to talk about it as being design for innovation and these kinds of things, because then again... you can restrict the outcome.” *Designer 5*

This open approach confounded the expectations of many collaborators. As might be expected given number of participants (42+), opinions differed over the degree of ‘openness’ inherent in the projects. The lack of defined processes and outcomes was perceived as frustrating by some and as liberating by others.

“I wasn’t 100% sure what my role/relationship to Material Beliefs was. But I think there was a certain amount of let’s put you together (i.e. [engineer, public, designer]) and see what happens. I found the lack of clear role – a bit disconcerting to begin with – but came to see it as being a journey of discovery. And I enjoyed the journey”. *Public 2*

While designers reported being comfortable with the unrestrictive nature of Material Beliefs, within the engineering and public collaborators, there was a split between those who embraced the lack of parameters and those who did not. Therefore differences in expectations were not driven solely by subject disciplines.

### **Interpersonal relationships**

The second key aspect of the collaborations was the extent to which relationships were built and maintained. In two projects a number of smaller collaborations began before the main

collaboration emerged. One designer explained this informally as a process of trying to find people with whom enough mutual empathy was present that working together seemed possible. The degree to which collaborations were maintained was cited as criteria for success across the evaluation. Collaborators able to describe friendly interpersonal relationships reported higher levels of satisfaction, personal enjoyment and a greater perception of success for their projects. In projects where friendships were described, collaborators also went on to talk at length, via emails and informal conversations, about their plans to continue working together.

The difficulty of establishing positive collaborative relationships was also noted in the evaluation.

“D3: I think the collaborative side of it was probably underestimated...probably most of the way through... the idea that collaboration is easy, that you can bring people together and if you don't... if you've not experienced it... it's easy you know, it's going to be successful.” *Designer 3*

Material Beliefs intentionally developed collaborations through a series of filmed interviews, meetings and workshops. This differs from more organic collaborations based on friendship or mutual interest and was highlighted by a range of participants across the evaluation. Projects where collaborators were able to develop friendlier relationships also developed a 'co-production' model of communication, while those where interpersonal relationships were less established tended to describe their projects in terms of a 'one-sided' model of collaboration.

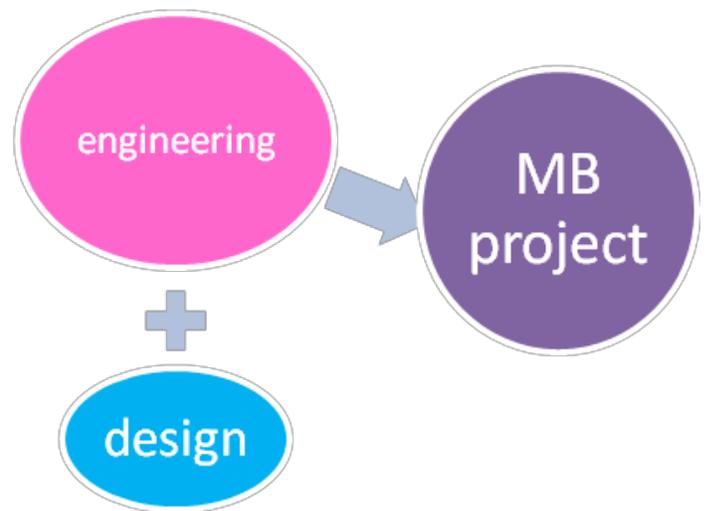
### **Models of collaboration: One-sided collaboration**

Two collaborative models can be distinguished among the projects. In the first model, collaborations tended to be one-sided, guided predominantly by one discipline, which 'used' the other, see figure 1. This model appeared in more than one project and at different times within projects. This model was described by both engineers and designers and at different points either engineering or design was portrayed as the dominant force of a project.

“I mean, the idea for these [objects] came completely from [the designers], there was no engineering input on those whatsoever. It’s kind of we gave birth to the idea, pretty much defined the [objects], [an engineer] helped with that a little bit, but this is why for me the collaborative side of it failed because the idea came solely from the design side, the engineering came in, [a second engineer] was fantastic but he came in so late that we already had pretty much outlined [the objects] fairly well.” *Designer 2*

This model of collaboration appeared in projects where collaborators seemed to little sense of what the design role was and attached only limited value to it.

E9: [the designer] said, “I’m not an artist. I’m a designer” And something that interested me is always, how do you... what does a designer do that the artist doesn’t? For example, is it like an architect and a civil engineer, where the architect does the fluff and the engineer makes it happen.” *Engineer 9*



**Figure 1: One-sided model of collaboration.**

In a symmetrical manner some designers described difficulties communicating clearly about their work, their role in the project and, in particular, the differences between various aspects of design, for example, between product design and speculative/critical design.

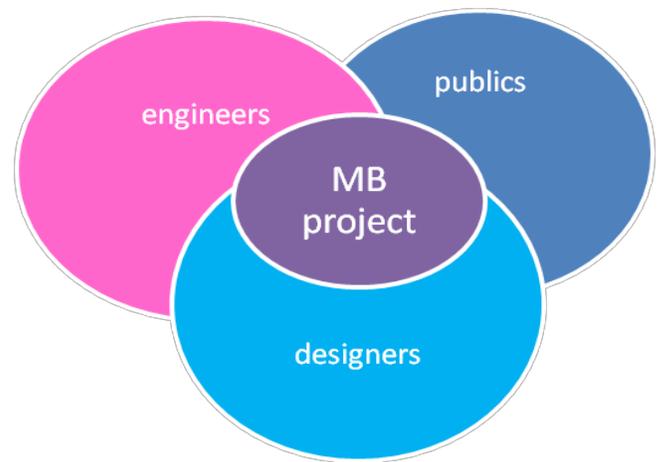
“D2: And you see it all over the TV, the Linda Baker and celebrity designers working for MFI and it that’s what they think they’re getting then... it’s difficult for us to get a foot in the door because all they think that we’re doing, is to be maybe taking their sort of, wonderfully engineered things and... packaging it in pretty ways. And if that’s what they think then of course it’s problematic...” *Designer 2*

Misconceptions regarding the role of designers and frustration about the open nature of the project overlap with projects where more formal interpersonal relationships were developed and the development of one-sided collaborations.

### **Collaboration as co-production**

In the second model, both disciplines worked together to ‘co-produce’ a project for public engagement. This involved more emphasis on working with publics and a greater degree of relationship building, see figure 2. In this model collaboration was characterised by an acceptance of undefined roles and an appreciation that the project outcomes were open and therefore unknown.

“E 15: I didn’t mind not having a clear goal... I quite enjoyed, in fact, not having one because everything else we do does have one so it’s quite nice, it’s, rather than thinking, “Right if I do this I must make sure that I measure that at the end and I must have these criteria for that measurement. Whereas, you know, just have a chat. Fine. And, and that’s, that’s liberating personally.” *Engineer 15*



**Figure 2: co-production model of collaboration**

One of the groups that developed this model in their collaboration were also able to involve members of the public directly in their project. This may be because practices common to some forms of public engagement have been developing similarly open, participatory approaches to engagement.

In the co-production model, collaborators not only embraced the open nature of Material Beliefs, but described confusion about roles or misunderstandings about design in neutral or positive terms.

“E 13: I think previously, the Venn diagrams of sort of the languages that we use and, and the skill sets that we had, would have been miles

apart and they sort of gradually come together and now there is this sort of overlap where we speak the same language and, and have similar ways of thinking... And for me it's mostly been changing the boundaries that we use to describe things... so I don't think that it's been quite that straightforward and some people have been much more scientific and some people have been much more artistic. But it, it's been about flexibility of language and ways of thinking and, and thinking differently about problems and learning not to think in the box of feasibility which is what you're saying isn't it? Stop thinking about what's credible and think about what, what might be incredible."

*Engineer 13*

This description of the 'incredible' contrasts with the negative associations developed about confusion over the role of design, frustration at the lack of clear management in the project and a tendency towards 'one-sided' models of collaboration. Being flexible about positioning designers, engineers and publics in relation to one another and the capacity to embrace the open ended nature of Material Beliefs may be connected to the ability of a collaborative project to develop a 'co-production' model of collaboration.

## **Conclusions**

This essay has illustrated the three key collaborative themes that emerged from the Material Beliefs evaluation. Firstly how collaborators managed the open-ended nature of the project, secondly the impact of friendly relationships and finally the two models of collaboration that developed across the projects. These issues have been referred to as the tensions between 'collaborative advantage' and 'collaborative inertia' (Huxham and Vagen 2005).

'Collaborative advantage' describes how working together provides collaborators with access to knowledge and skills beyond those held individually, opening numerous opportunities for strategic collaborations. 'Collaborative inertia' concerns the frustrations, mismatch of expectations and frequent failures of seemingly exciting collaborations to achieve their potential through communication, management and relationship problems (Huxham and Vagen 2005).

Constructing collaborations between different disciplines is a complicated and nuanced practice. Material Beliefs can be best understood as an umbrella project that created a space for collaborators to develop new relationships, novel forms of working and to expand their public engagement practices. ‘One-sided’ and ‘co-production’ models of collaboration are appropriate to different degrees depending on the context and nature of a project. What is interesting in this project is the extent to which the other factors (interpersonal relationships and degree of comfort with the open ended nature of the projects) cluster around a particular model and suggest underlying tensions in the ‘one-sided’ model.

While constructed collaborations may always differ from more organic partnerships, the processes involved deserve reflection and further experimentation. In particular, issues of managing relationships, balancing collaborators needs, communication and the different models of collaboration should be considered further in light of this project.

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