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Research Funding is critical to societally relevant research

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Paul Benneworth and Kate Maxwell explain why we need public funding for science that creates truly public benefits.

There has been increasing concern recently in ensuring that public funding for science and innovation creates truly public benefits. This has emerged at a time of an uneasy feeling emerging in society that it is private corporations and patent holders that reap the rewards, particularly in new drugs which may be generally unaffordable despite

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being 'discovered' by public funding (Gronde et al., 2017). Barry Bozeman's work about public value failure highlights the sense that 'the public voice' has been suppressed in scientific decision-making primarily oriented towards delivering technological advances (Bozeman, 2002). Indeed, contemporary world's complexity makes it hard for researchers working on narrow technologically focused questions can comprehend how their results will be used once their ideas have left the laboratory. This raises the question of whether funding can function as a governance instrument to encourage this wider reflective practice, to ensure that scientists take all reasonable measures to use their privileged positions to benefit society?

A number of research funders have sought to address this by stimulating interdisciplinary teams to develop proposals addressing societal challenges incorporating social sciences and humanities (SSH) researchers to bring in these societal considerations. The 'Sandpit approach' was pioneered in the UK (Giles, 2004) and subsequently adopted by the Research Council of Norway as an innovative mechanism for building interdisciplinary research projects directly focused on solving grand challenges. Sandpit approaches are characterised by funders establishing specific funding lines, defining an overall challenge and invite/ fund applicants from across the disciplines to attend a physical workshop (Holm et al., 2013). At this workshop, participants form into ad hoc multidisciplinary teams to propose innovative projects (including social sciences and humanities researchers to better reflect on this human dimension), and then the most promising of those proposals are invited to submit full research plans to realise that challenge-oriented research. In short, they appear to offer a potential tool to empower these interdisciplinary teams researchers to better meet their ethical duties whilst still advancing their disciplinary state-of-the-art.

But can these new instruments act as a mechanism to encourage scientists to design research projects that

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are more directly linked with public values as articulated in societal challenges? This issue is touched upon in a recent research paper that we co-authored (Maxwell & Benneworth, 2018). We followed an the experimental institution from the Norwegian Research Council of Norway's, first, experimental funding event, called idélab, which followed a sandpit model creating projects addressing challenges of energy, decarbonisation and resource management reducing carbon emissions.. The Capture+ project, for example, seeks to create an industrial scale process in which mineral carbon ('biochar') is created from short-cycle wood production to then be entombed thereby removing that carbon from the atmosphere. We were a fifth project that followed the other four teams to explore the extent to which these projects were able to include public value in their scientific decision-making.

And we did indeed find examples of how involved academics guided their research away from technologically-promising areas that nevertheless might unleash societally undesirable consequences. A plan for capturing carbon by encouraging sea-based bacterial blooms was explicitly ruled out the social work package revealed that the public would not accept the idea of genetically modified organisms, however scientifically safe, in the ocean. The team had a rather tricky decision to take as to whether this avenue – which could potentially have lead to publications, patents and future funding – was worth risking given its likely rejection by wider society. And to take that decision effectively, and 'avoid the public value failure', the natural-science-led team needed to draw on and take seriously social sciences and humanities knowledge relating to ethical decision-making, risks and uncertainty in scientific developments. Another project, while not having to make such a drastic decision, found that by integrating discussions of societal ethics as a normal part of the project's regular meetings meant not only that communication increased among the researchers, but also that they, as individuals, became more focused on

the role of their scientific work as part of society and better able to prioritise their research objectives in line with society's needs – on this project and in the future (Røyne et al, 2017).

So can these new approaches to funding stimulate a renewal of the ethical covenant between science and society? Our research suggests they can, but under certain conditions. The key factor that allowed the 'voice of public values' to be heard in the projects was the respect for the social sciences and humanities researchers' knowledge in the project. Although this sounds trivial, science studies repeatedly show how multi-disciplinary research tends to treat SSH as less valid than the harder sciences. Social sciences and humanities is often uncertain, inductive and exploratory, and deviates more obviously from the shared models of what 'real science' looks like that multidisciplinary teams draw upon to understand each other's work. Without that true respect from more technical researchers, SSH academics in multi-disciplinary teams often find themselves pushed towards asking what would make societies more acceptive of these new inventions (Science Europe Scientific Committee for the Humanities, 2014). And this in turn is dependent on the strength of those core SSH disciplines to ask, pursue and answer their own research questions, in their own research communities.

In this recent trend of research funders to require their researchers to create useful knowledge, research funding has disproportionately been channelled towards technical disciplines because of their intuitive proximity to the world of business. Funding to SSH has stagnated, often been cut, and may disappear entirely from the next European Funding programme Horizon Europe (Petersen, 2016). The social sciences and humanities can provide a capacity to channel and represent public values within highly specialised research in complex systems, and stimulating interdisciplinary research through sandpits can help them use it. But without ensuring a high core level of

funding to SSH to decide themselves what is important to study, we risk losing our capacity to ensure that publicly-primed technology development works to build more social and sustainable societies.

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