Thinking through Public(s) for engaged research practice

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Abstract
This review explores usage of the term public in debates about science and society. Since the 1980s, there has been a broad shift from public understanding and science communication towards engagement, dialogue and participation. I explore the multiple meanings of public in these debates, including the transition from singular the public to plural publics; the importance of imagined publics; the implications of science in public; and of the public interest. Academics and communicators from any field can benefit from thinking through public(s) in this way – therefore I close with some suggestions for changing research practice that flow from these ideas.

Six Keywords: science in public; imagined publics; public interest; engaged research; public engagement onion; science in the making.

1) Introduction
It is increasingly difficult to function in 21st century academia without taking account of (or at least noticing) that small word for a big thing – public – a word in the unusual position of being used as a noun and an adjective, as well as a singular, plural and collective term. In this essay I will discuss how it has been used in debates about how academic researchers can – and should – connect and communicate beyond academia, while working with media, policy, industry, communities, stakeholders and citizen scientists, among others. It is now over thirty years since the UK Royal Society published its landmark committee report on The Public Understanding of Science (Bodmer et al., 1985). While scientists had been thinking about their relationship with wider society since long before Bodmer (Bowler, 2009), it provides a useful marker for thinking about how practice in this area has changed since the 1980s. We have seen broad shifts in language from public understanding and science communication towards engagement, dialogue and participation. Academics increasingly work with organisational frameworks and requirements to take account of, communicate and collaborate with non-academics. These include the expansion of the REF in 2014 to include ‘impact’: “defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia.” (UKRI, 2018).
Meanwhile, research funders in the UK, EU and elsewhere increasingly require academics in all fields to consider these activities at the proposal stage of research planning.

The Bodmer committee (and much of what followed) circumscribed the discussion to ‘science’, which they defined as including “mathematics, technology, engineering and medicine, and to comprise the systematic investigation of the natural world and the practical application of knowledge derived from such investigation.” (Bodmer et al., 1985, p. 7). While the social sciences and humanities encounter specific challenges in public engagement, there are common challenges which can be met by thinking more broadly across academia (Cassidy, 2014). Therefore I will discuss ‘science’ in the broader, German sense of wissenschaft (any systematic area of study) to include natural sciences, social sciences, engineering, humanities, mathematics, and arts. In this piece I will
explore the multiple meanings and usages of the term *public* in debates about science and society, including the transition from singular/mass: ‘the public’ to plural *publics*; the importance of *imagined publics* in shaping communication practices; the implications of *science in public*; and finally, the idea of *public interest*. I argue that academics and communicators in any field can benefit from thinking through public(s) in a more reflective way – irrespective of their commitment to direct forms of public engagement. I will close by outlining some suggestions for changing academic research and communication practices that flow from thinking through publics in this way.

2) From ‘The Public’ to situated, multiple publics

Given that *public engagement* has at times provided a seamless substitution for *public understanding*, without substantive changes in practice, it is worth revisiting why they are different. This is best done alongside a brief review of the arguments made by “critical PUS” (Michael, 2002) scholars about the problems of earlier approaches to science and society (Bucchi & Trench, 2017). While this literature is extensive the core point of relevance here focuses on the idea of ‘the public’, a phrase implying a large, undifferentiated mass of people, portrayed as a singular object (rather than multiple subjects). These critiques characterised older approaches as a deficit model (Wynne, 1991) of relations between science and public, in which “watery metaphors” were often deployed to argue that knowledge should be diffused from one to the other, with the implicit assumption that ‘the public’ was an empty vessel to be filled (Cooter & Pumphrey, 1994). Critical scholars argued that it was better think in terms of multiple ‘publics’: varying according to demographic factors such as gender, ethnicity and class; social identities; personal experiences; also in relation to the particular scientific topic at hand. In this view, for the democratic aims of PUS to be properly fulfilled, the perspectives of publics as active citizens should be taken into account, particularly during decision-making about science and technology (Irwin & Wynne, 1996). Drawing upon the sociology of knowledge and communication studies, they also argued that ‘lay’ publics can have valuable knowledge to contribute to scientific problems (Wynne, 1992). More recent research has borne out the observation that “to know science is not necessarily to love it” (Turney, 1998, p. 18) – instead, scientific publics often actively and unpredictably interpret the meanings of science communication (Bucchi & Trench, 2017; Dudo, 2015). New knowledge is situated and translated in the contexts of people’s pre-existing experiences and social connections, including at times the active construction of ignorance (Irwin & Wynne, 1996; Stocking & Holstein, 2009). These processes appear to be particularly active in countries such as the USA, where scientific issues such as climate change and vaccination have become linked with polarised political identities (Committee on the Science of Science Communication, 2016; Nisbet, Cooper, & Garrett, 2015).

Since the 1980s there have been changes in language and practice around science and society (particularly in the UK), which can be broadly characterised as a shift “from deficit to dialogue” (Stilgoe, Lock, & Wilsdon, 2014). The extent to which this has moved beyond “political ritual” (Komporozos-Athanasiou, Fudge, Adams, & McKEvitt, 2018), truly interacted with marginalised and disadvantaged people (Dawson, 2019), or effected deep institutional change is still under debate (Pallett, 2017; Smallman, 2017; Thorpe & Gregory, 2010). There are signs that the idea of *engaged research* (Holliman, 2017; Packman, Rutt, & Williams, 2017) is changing academic practice: these include the adoption of *responsible research and innovation* (RRI) (Hartley et al., 2016; Stilgoe, Owen, & Macnaghten, 2013), and the increasing visibility of *co-production* in prestigious scientific contexts (Jasanoff, 2004; Nature Editorial, 2018). Amongst engagement professionals, there has been a pragmatic consensus that this “work in progress” (Burchell, Sheppard, & Chambers, 2017) is best supported by a strategic mix of outreach, impact, consultation, collaboration and co-production activities; adopted according to the publics involved and the wider goals of researchers (Figure One).
Figure One: development of the public engagement ‘onion’
3) Changing and Imagined Publics

Once we move from *the public* to multiple *publics*, it becomes easier to think across the range of existing activities; think systematically about who publics are and how they come about; and develop more strategically *engaged research* (Holliman, 2017). Publics should be understood as contingent, overlapping, contradictory and changeable. They participate in – and are subject to - ongoing processes of formation, mobilisation, dissolution and manipulation (N. Mahony, Newman, & Barnett, 2010; N. Mahony & Stephansen, 2017; Tucker et al., 2018). These insights are helpful for thinking creatively about publics beyond basic demographics, and to situate interpretations of scientific communication in lived experience, social identities and political contexts. When thinking about policy relevant or controversial research topics this encourages explorations of where already apparent *issue publics* come from and how they are changing (Sandover, Kinsley, & Hinchliffe, 2018). With more obscure or complex topics which non-specialists may not be aware of, or have yet to seriously consider, this opens possibilities for creating new publics in order to foster dialogue and mutual learning.

The insight that publics are constantly being made and remade invites further reflection on their interactions with media, journalists and other communicators. Communication studies researchers have long considered the parallel question of mass media *audiences* – who they are, how they interact and interpret media content - and how journalists’ ideas about audiences in turn shape media working practices. Arising from studies of the newsroom in action, a key concept is the idea of *news values* – features like controversy or everyday relevance which journalists and editors believe make a ‘good story’ by catching audiences’ attention (Harcup & O’Neill, 2017). Fundamental to the creation of news values in media working practice is the *imagined audience*, “the mental conceptualization of the people with whom we are communicating” (Litt, 2012, p. 331). This idea has been extended into thinking about *imagined publics*, for example in analysing how shallow performances of engagement can help legitimise decision making (Burchell et al., 2017; Irwin, 2014). Publics (or ‘the public’) can be imagined or portrayed as an obstacle to new innovations (Marris, 2015); or as a strategic justification for taking – or avoiding - controversial policy decisions (Cassidy, in press). Like journalists, scholars and practitioners in public engagement, designers and engineers also imagine idealised publics, who facilitate creative thinking but can cause disappointments when actual people fail to live up to these expectations (Barnett, Burningham, Walker, & Cass, 2012; Cherry, Hopfe, MacGillivray, & Pidgeon, 2017). Imagining publics can also lead to problems when the only people getting involved are those responding to the formal invitations of participatory processes: what more could be learned from uninvited, excluded and disinvited publics (Chilvers & Kearnes, 2015; Dawson, 2019; de Saille, 2014)?

4) In Public

A second sense of the word *public* - widely used, but less widely reflected upon – centres on the meanings of acting, speaking or communicating *in public*. Thinking about *science in public* can therefore encompass all the above: “What the public think of science and what scientists think of the public, and how the media bring the two together” (Gregory & Miller, 1998, p. ix); while bringing in broader considerations of the roles played by science in wider culture, society and politics (Broks, 2006). The longstanding idea of the *public sphere* – the conceptual space where citizens, civil society organisations, industry, policy and politicians come together to consider and debate ideas – can be fruitfully applied to science (Gregory & Miller, 1998, pp. 81–103; Habermas, 1962/2015). The public image of science – as portrayed and performed in popular science formats such as museums, books,
films, TV and news media – often creates and confirms stereotypical ideas. Scientists tend to be depicted as authority figures (albeit somewhat eccentric ones) and Science as a fixed body of certain knowledge, separated from society and with select, almost mystical access to the wonders of the natural world (Collins, 1987; Cooter & Pumphrey, 1994; LaFollette, 1990; Turner, 1980). Science in public can be mobilised to further a whole range of agendas, from the promotion of science across society, through disciplinary turf wars, to the promotion of personal scientific careers and specific new technologies (Cassidy, 2006; Gieryn, 1999). It contrasts starkly with science (with a small ‘s’) as practiced and experienced by active researchers and as observed by scholars who study scientific working lives. This version of science is human: messy, contingent, subject to personal rivalries as well as political and economic constraints – and the knowledge it produces is constantly in process - being built, critiqued, tested and sometimes abandoned (Sismondo, 2010).

Following his early observations of laboratory scientists in action, Bruno Latour wrote of science as having two contrasting faces, like the Roman god Janus (Figure Two). On the one hand, he described “ready-made science” – the science of the past, consisting of established authoritative facts; on the other, “science in the making” – the messy, present day process of research investigation and the work of persuading peers that new knowledge is reliable and meaningful (Latour, 1987, pp. 1–17). This idea can be extended to help us understand the differences between science in public (ready-made); and science in practice (in the making) - as practiced, experienced and discussed in the relatively ‘private’ spaces where researchers do their work, such as laboratories, field sites, offices, coffee rooms, conferences and academic journals.

Most people understand that to speak, act or write in public has different implications to doing so in private – hence the importance of gossip, as well as protecting the anonymity of journalistic sources and research participants. This can also be understood as performance: the differences between what people do when they are ‘frontstage’ compared to what they will do when they are (or think they are) ‘backstage’ (Goffman, 1959). Backstage/frontstage can help us to understand the differences and connections between science in public, science in practice and wider society. For example, investigating the backstage of scientific uncertainties, political agendas and budget constraints involved in creating and running museums make it possible to understand how the frontstage content of exhibitions turns out as it does (Cassidy, Lock, & Voss, 2016; Macdonald, 2002). Similarly, the complexities of science policymaking start to make more sense when analysed in terms of the strategically deployed interactions between front and backstage (Hilgartner, 2000).
The 2009 ‘Climategate’ scandal (when the private emails of climate scientists were made public and used to discredit their research) can be understood in terms of climate sceptics exploiting the dissonance between science in public and the human messiness of science in practice (M. Mahony & Hulme, 2018). It also highlighted how online media are changing the relationships between science, policy, politics, media and publics, by making the ‘backstage’ of private communication increasingly porous to the wider public sphere (Baym & boyd, 2012). It has prompted further reflections on the problems created by the public image and expectations of Science (Brown & Michael, 2003; Mason-Wilkes, 2018); alongside responses such as open science (Brigitte Nerlich, Hartley, Raman, & Smith, 2018) and calls for science communicators to “show your workings” – to make the uncertainties and diversity of research practice more visible in public communication (Hulme & Ravetz, 2009; Maier et al., 2016).

5) In the Public Interest? Research in the 21st century.

Moving beyond publics and in public, a quick check of the dictionary reveals further interpretations of relevance here. Despite the shift from public to publics, it would be a mistake to entirely disregard the public - understood as wider society. Whether services and assets such as libraries, laboratories, universities, trains and oil reserves should be owned and managed by the state or by commercial interests (public ownership) remains a core political issue, as is public spending by national governments. To stay with politics, while critics of the deficit model ably pointed out flaws in survey methods used to assess public opinion about science, what wider publics think still matters deeply, not least in the outcomes of elections and referenda. Indeed, it is when such votes are finely balanced that another imagined public looms large, as politicians of many persuasions deploy verbal and visual rhetoric to claim that their position has the support of the will of the people. At a time when pro and anti ‘expert’ positions have become associated with partisan political divides, the consequences for scientific funding and institutions are likely to be profound. Understanding (and explaining) such rhetorical positioning in relation to science, as well as digging into the nuances of what wider and narrower publics know and think about scientific issues, remains a critical priority for the field (Bauer, 2015).

This brings us to a final set of meanings, relating to the greater good or collective benefits – public health, of public concern, public goods and in the public interest. Given the extensive academic arguments about publics, models, engagement and deficits, the relative lack of reflection in the field of science and society about this final meaning of public is quite striking. Once again, these are widely used, rhetorically powerful common-sense categories with multiple uses. Public health seeks to promote the health (understood as overall well-being, not just the absence of disease) of wider populations. However, this can result in conflicts between ‘expert’ and ‘lay’ perspectives about health and medicine, reflecting differences between the interests of populations, and thinking about personal and individual experiences. As such, questions of how public health communicators might engage more productively with publics remain under debate (B. Nerlich & James, 2008; Rock, 2017). By contrast, the notion of public interest (understood as supporting the common good), has been successfully deployed by environmental campaigners in legal decisions compelling institutions to protect nonhuman environments, or to defend activists undertaking acts of civil disobedience (Konkes, 2017). Questions of who gets to define what is actually in the public interest (e.g. judges, scientific experts, campaigners, local communities, industry, etc.) and how such decisions get made have been studied in legal and scientific contexts (Jasanoff, 2014; Lynch & Cole, 2005), but the wider aspects of this question remain under-examined (although see e.g. (Konkes, 2017; Powell, 2016). This is particularly noticeable when scholars and practitioners of science engagement and policy unreflexively use the notion of public interest to justify their work, or inadvertently ‘speak for’ the
publics that they work with (Chilvers, 2012). At a time when a plethora of politicians and campaigners from across political spectra claim to be standing up for ‘the people’ against ‘elites’ of various kinds, closer and more reflexive examinations of this tendency would not go amiss.

To close this piece, I will now explore the implications for academics, research support, engagement and communication professionals seeking to implement engaged research practice – or perhaps just hoping that their work will have some kind of ‘impact’ on the wider world. Thinking systematically through publics in a more can help further these aims – I therefore suggest that the following questions might help the reader in doing so.

**Who are the publics for my research?**

The very first step is to properly think through the difference between *public* and *publics* and to develop a clearer and more detailed idea of who you are aiming to engage with. Most obviously, how might your work have implications for particular demographics (e.g. in terms of age, gender, sexuality, ethnicity, income, etc)? Are there groups or individuals who have other pre-existing connections with your research topic? Examples might include local communities, patients, NGOs and businesses in relevant sectors, and campaigners – sometimes these people are referred to as stakeholders: “those who are affected by or can affect a decision.” (Reed, 2008, p. 2418).

Remember that these visible publics are still in process, and it is therefore a good idea to try and understand where they came from and how they have become involved in the issue. Further to this, are there other, currently unengaged or disengaged publics who you would like to reach? It is possible that very few people are aware of your topic or have considered it at depth: in this case the major task might be to try and create some publics, which of course necessitates clearly explaining why you think it’s important in the first place. Finally, a critical question which should not be ignored: *how am I imagining my publics?* As many journalists know, being self-aware about such imaginings can help in crafting effective communication, yet this insight does not negate the existence of actual people who can (and probably will) interpret what you have said very differently.

**How would I like to (and how might I find myself) engaging with publics?**

As the Public Engagement Onion suggests, thinking through publics also necessitates clear thinking about what the purpose (or purposes) of engagement are for your research. Remember that even to achieve ‘impact’ in the relatively narrow terms set out by institutions requires evidence and evaluation (Terama, Smallman, Lock, Johnson, & Austwick, 2016). This creates particular dilemmas for insecure researchers and scholars, who need to invest in unrewarded “informing/inspiring” (fig 1) activities in order to build their careers and the external relationships required for lasting impact (Jones & Oakley, 2018). Moving beyond such instrumental goals, it is likely that the aims and methods of public engagement will vary according to the substantive topic, career stage, discipline and social, political and institutional contexts of the researcher – as will the extent to which it needs to be done *in public*. Thinking about research as a cycle also helps, as the most appropriate mode of engagement will change at different stages of the work. Lessons learned and relationships built in one project can feed into a collaborative research design for the next. You may find that several activities work in concert: the closer to *co-production* you go, the more your work will need to be supported by sensitive listening and skilled communication. Finally, remember that by its very nature you cannot control this process – as well as the publics you want to engage with, there will probably be publics who want to engage with you, whether you like it or not. Draw on the skills and advice of more experienced academic and professional colleagues to try and anticipate such interactions and devise engagement strategies in advance.
Does this research have broader implications which I would like to raise, or that others might be concerned about?

This takes us to the heart of why we might embark upon an engaged style of research in the first place. It’s probably fair to say that most researchers and scholars believe that their work is, broadly speaking, in the public interest – even if publics are not and may not ever be all that engaged. However, given that ‘the public interest’ is a nebulous and ill-defined beast, it would be wise to reflect more closely on whether this is so, as differences in the answer so often lie at the heart of public scientific controversies. The process of thinking through publics as outline here can perhaps provide a first step towards building more scientifically and socially robust answers.

References


