

## UPSTREAM PUBLIC ENGAGEMENT? SOME THOUGHTS ON THE »SHAPING FUTURE« PROJECT

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**This article discusses the Shaping Future project from the perspectives of upstream public engagement and Responsible Research and Innovation (RRI). It perceives the project as one appropriate approach to involve laypeople in the very early stage of technology development by providing adequate tools to unlock laypeople's needs and imagination as well as by proposing an appropriate and well-orchestrated process to combine the input of experts and laypeople in R&I.**

For decades now, there has been an ongoing discussion about the need for upstream public engagement in the literature of social studies, science and technology (Wynne 1996, Callon 1999, Irwin 2004, Wilsdon/Willis 2004). In addition, more recently, the European Commission and researchers call for Responsible Research and Innovation (RRI) (e.g., von Schomberg 2013). We should develop research and innovation – these distinct yet genealogically closely related strands of argument claim – that satisfy consumer needs and expectations; that tackle the big societal challenges of our times; that think from the very start about its ethical as well as environmental and societal repercussions. One of the several definitions of RRI calls for research and innovation that is oriented towards the right impacts, that is anticipatory, reflexive, inclusive and responsive (Owen et al. 2012 and 2013). But how can these claims be realized? Isn't it the scientists, experts and designers who develop the right and fitting technologies anyway? In contrast to sole reliance on experts, advocates of public engagement in research and innovation perceive the inclusion of laypeople as the silver bullet to achieving technologies that are both accepted and responsible. But how can public engagement in research and innovation be practiced? What processes are available and applicable to involve laypeople, users and consumers in upstream public engagement in research and innovation as early as possible? How can they cooperate with scientists, engineers and designers? How can they unlock, discover and explore their wishes, experiences, perspectives and knowledge and make them available to research and innovation?

Currently a plethora of different concepts of public engagement are practiced, e.g., constructive technology assessment, open innovation, maker movement, fab lab, citizen

science. Massimiano Bucchi and Federico Neresini (2007: 449) define public engagement in an all-encompassing attempt as »... the diversified set of situations and activities, more or less spontaneous, organized and structured, whereby non-experts become involved, and provide their own input to agenda setting, decision-making, policy-forming, and knowledge production processes«. Within this definition the *Shaping Future* project (Heidingsfelder et al. 2015a, 2015b) is situated in the participation of knowledge production in its incipient phase. The project, which is described in other parts of this volume in detail, set out to involve a diverse set of laypeople in the development of future technologies.

In a first step, the researchers from Fraunhofer Center for Responsible Research and Innovation (CeRRI) organized a series of workshops with a number of laypeople to explore their wishes and claims for future human-machine interaction in the areas of health, work, social relationships and mobility. The sample included altogether 76 laypeople of different age groups (12 to 82 years old) as well as broad social and professional backgrounds. The workshops used methods of enabling spaces, storytelling, prototyping/narrative objects to make the lay participants discover and explore their imaginations and desires towards future technologies. In a second step the research team clustered the outcomes of these workshops – i.e. 68 narrative objects – in eight greater fields of need by using quantitative and qualitative methods of empirical social science and design research. The clusters were curated life, mobile shelter, digital empathy, human machine mimicry, DIY health, transferable memories, adaptive environments and camouflage technology. These clusters were taken into an interdisciplinary expert workshop of Fraunhofer engineers from different institutes and were used as impulses to develop future technologies that are based in laypeople's needs and imaginations. The engineers developed eight road maps for future technologies, which designers then transformed into four speculative prototypes that cope with air pollution (Human+ Carbon-), create sustainable houses using caterpillar cocoons (Adaptive Environment), convey emotions and experiences from one person to another by using bacteria (Gutmentor) and contribute to human enhancement (Healing Muscle Patch). These objects were finally displayed and discussed at a public exhibition to support public reflection on new and emerging areas of research and technology, particularly their potential social and ethical ramifications.

The *Shaping Future* project motivated laypeople to imagine, explain and experiment with potential future technologies. It made engineers and designers work with these imaginations and created case studies of distant future technologies. It is less the actual speculative prototypes which created puzzlement, surprise, curiosity and different degrees of acceptance, but the process and methods that CeRRI skillfully applied and combined in this project, which are in several ways this project's groundbreaking outcome.

*Shaping Future* is basic research in the social sciences about how to realize upstream public engagement in R&I in a very early stage; how to develop a systematic, transdisciplinary dialogue in which laypeople, designers, engineers, researchers and social scientists can join and develop future products and technologies in a well-orchestrated process that fits peoples' needs and imaginations.

*Shaping Future* experimented with a set and combination of methods that should help laypeople to unlock, discover and express their needs, wishes, requirements and feelings towards future technologies. These included design thinking, public engagement and technology assessment methods. The creation of narrative objects – letting lay participants come up with, shape, draw, touch, experience, experiment with, explain and develop their own objects – enabled them to express and articulate their needs and imaginations. The *Shaping Future* process was well orchestrated in terms of *when* to bring in *which* actor, in *what* way and in which setting. For instance, the CeRRI team deliberately separated experts from laypeople in the workshop phase in order to enable the latter to express themselves freely and uninhibited by seemingly superior expert knowledge. *Shaping Future* is highly innovative in two ways: It involved experts and laypeople in upstream public engagement and combined existing methods into a new, well-orchestrated process. Experts and laypeople often worked separately but built upon each other's contributions. This separation helped laypeople to articulate their phantasies and wishes unintimidated by experts. Designers and engineers could then take up these ideas and transform them into future technologies, roadmaps and speculative prototypes. In this way, the process and tools applied did not neglect and level the very particular and distinct knowledge, skill and competences of laypeople and experts, but combined them in a new and fruitful way.

It is striking, however, that many narrative objects revealed a strong need for guidance in a society that in the last decades experienced an unprecedented increase in pace, complexity and available amount of information. To get support and guidance in this increasingly complex and fast world, to shield users from information overload separating really useful information from data noise or to connect them with their fellow humans – e.g. via the Gutmentor were central themes of several narrative objects. However, these objects were actually *technological* solutions to *social* problems. Thus, it might be worthwhile to broaden the scope of follow up projects to social innovation and to include social scientists not only as competent process designers but – together with members of civil society organizations – as a resource for future social innovation.

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