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Perspectives on Use of Expertise in Futures Studies

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Purpose

Numerous foresight activities rely on gathering expert knowledge, using e.g., the Delphi method. A crucial question for the quality of the exercise is who the relevant experts are. The question is particularly difficult when studying so-called wicked problems, which elude exact definition. Inclusive definition of expertise is called for in this brief, particularly because of the social power experts have. This brief tackles the complex issues of characterising expertise and taking full use of it in expert-based futures projects. Transparency of the chosen expertise must often be combined with upholding anonymity.

Facing Complex “Wicked” Problems with Methods Using Expert Knowledge

Numerous foresight methods are based on expert information, such as Delphi studies. In practical applications of these methods, the researchers have to make judgements on who is an appropriate expert.

This is particularly difficult in the case of the so-called wicked problems (Rittel and Webber 1973). Such problems are very complex with many definitions, and each definition seems to carry a presupposition of a solution. The solutions are based on a variety of theories, assumptions and values. Therefore, in many foresight applications an *interdisciplinary* approach is chosen, and experts are invited from different domains. In this way, both knowledge about different facets of a problem (such as technological, economic, and societal) is represented, and the different theories and concepts behind them are included.

For example, if climate change is seen primarily as a technological problem resulting from fossil energy use, the responses are likely to be expressed in technological or economic terms. If the problem is seen to result fundamentally from global inequalities, the results focus on international agreements and funding mechanisms. If the problem is seen to result from population growth and modern lifestyles, the answers

are to be found in the cultural and social spheres. No single framework could encompass the ecological, economic, social, cultural and technological dimensions of climate change.

Obviously in futures research, a temporal aspect further complicates the issue. It is not enough to know what the state of the problem is; we would also need to know how the situation may change.

If we want to know how things are right now, or how they will be in the near future, often it makes sense to ask those who can be defined to be on the top of their field. This approach often means asking middle-aged or older people with long work histories. However, the aims of foresight processes are often about opening new visions, finding new trends or unexpected turn points, considering trends and changes on long time scales, and finding ways to reach futures we define as desirable. Then, narrowly defined expertise may not be an optimal solution.

Objective

In this brief I will outline certain definitions for expertise, and discuss their implications for the use of experts in futures studies. The aim is not to provide definite answers, but rather to inspire discussion and make foresight processes more sensitive to alternative forms of expertise.

Defining Expertise

1. Expertise as cognitive property and a social construction

Expertise can be seen as both cognitive property and a social construction. From a cognitive perspective, expertise refers to knowledge and skills of a domain of activity. It can be acquired through education, experience or any other form of cognitive refinement. However, it is not necessarily linked to the social status of an expert. The social status often follows from formal degrees, higher professions and leading organisational positions. These properties are considered to indicate expertise, but they do not guarantee it, and similarly, a person without a socially acknowledged expert status may possess similar skills to an authorised expert.

Defining the content of expertise, i.e. the appropriate cognitive resources, or skills that matter in a domain of practice, is a social process (Turner 2001). The content of valid expertise changes over time and cultures. For example, medicinal practices that were considered valid in the 16th century Europe are very far removed from those practiced today in the western world, and different from traditional Chinese medicine. The content also depends on the definition of the problem at hand. With wicked problems that elude definition, it becomes increasingly difficult to determine what kinds of expertise should be included in a futures project.

2. Different types of knowledge

Bogner and Menz (2009) distinguish between three different types of knowledge. First, there is technical knowledge, which we typically gain through education. Then, there is process knowledge, which is close to tacit knowledge. It is knowledge that is gained through working in a field, and consists of knowledge regarding the practices and modes of operation within a field, such as patterns of interaction and organisations.

The third type of knowledge Bogner and Menz (2009) call interpretative knowledge and it means a person's subjective assumptions, views, interpretations, rules, etc. The key idea here is that all we learn through education or practice is interpreted and assimilated through our previous knowledge, values, and experi-

ences. Therefore even identical education and work history could not produce two identical experts.

Such subjectivity has often been considered a problem that detracts from expertise, which is commonly thought to be objective. It is, however, quite impossible to avoid. Selinger and Crease (2002: 245) note that expertise is built upon the person, and the "prejudices, ideologies, hidden agendas, or other forms of cultural embeddedness that person might have" do not disappear during the process of becoming an expert.

More importantly, subjectivity may not even be a problem. It is through subjectivity that many important aspects of expertise emerge into foresight processes, such as ethical consideration, empathy, and sense of responsibility. They all derive from experts' ability to personally engage with problems and their solutions.

If we accept that expertise itself is affected by the person, and reflects the social environment in which it has been accumulated, it becomes important to search for variety not only in terms of multidisciplinary but also, for example, in terms of gender, age, and ethnicity.

3. Why does the definition of expertise matter?

Defining someone as an expert gives him/her social power to define problems and suggest their solutions. Experts are therefore important actors in society. Expert knowledge is a vehicle for maintaining or changing the existing patterns of thought and action. While experts do not alone determine the future, they are powerful in defining what is real and possible in a society. In addition, expert knowledge is not entirely transparent, and there is limited possibility to hold experts accountable for their power.

In sustainability discourse, in particular, the widening of the definition of expertise has been called for. There may be a need to look at "counter-expertise" i.e. expertise beyond the establishment (e.g. non-governmental organisations). It is not only a matter of democracy; different backgrounds also produce different expertise.

Because expertise is not dependent in a straightforward way on formal degrees or titles, it can be argued that there is no such thing as a "lay expert". A person may either have relevant expertise or not, regardless of the status as a layperson. However, it may make sense to describe where the expertise springs from.

Using Expertise in Futures Studies

Why is expertise useful in futures studies? It is not just that experts know a lot. Information might be found through other means. Instead, in futures projects, such as Delphi studies, it is often important to make intuitive and quick estimates about future possibilities, and about



the impact of changing drivers on the topic in question. Intuitive judgement has even been considered a central ability of an expert (Dreyfus and Dreyfus 2005). Careful consideration does not replace but improves the expert's intuition.

1. The expertise matrix

The wide definition of expertise that was discussed above poses a new challenge to the expert selection. If we assume that various types of expertise need to be included in the panel, there need to be tools for keeping track of the variety. Expert matrix (introduced by Kuusi et al. 2006) is a simple tool for both ensuring the variety and for making it more transparent for the audience of a foresight exercise.

In the matrix, the desired variety is detailed, and during the assembly of the panel, the expertise of the panelists is marked in it. For example, in a research project regarding renewable energy growth, we listed various energy sources and forms on one hand, and various roles within a value chain on the other hand. Then we searched for e.g., an expert being familiar with biogas and energy transfer (Varho et al. forthcoming).

It is also possible to make a longer list of expertise characteristics. In another project, we wanted to have variation in terms of topics affecting the future of transport (such as fuels, engine technology, land use, and behaviour), transport modes, field of education, level of education, background organisation, age, and gender. These were listed in a table, in which each expert was characterised (Varho and Tapio 2013).

It is not necessary to have perfect cover in a matrix. Finding different people for all combinations of our transport project expert table, for example, would have meant thousands of experts. However, we were able to get significant variation, and the table also increased the transparency of the process considerably.

2. Facilitating expert deliberation

As we all, also experts may get too focused on conventional wisdom and current or past situation. As we discuss the future possibilities, there is often a need for people who think "out of the box". Some people are more able to do this, but it is possible to encourage this type of thinking in the whole panel.

One way to do so is to ask experts to describe both a probable and a preferable future (Amara 1981). This approach does not only accept but embraces the subjectivity of experts. It helps the experts to recognise their preferences (in preferred future) and also to aim for objectivity (in probable future). Even if total objectivity is impossible, it is an ideal that many experts strive for, and they may feel more comfortable when they have these two views to distinguish between.

Different methods for gathering data from experts may encourage the expression of new views. For example, the use of expert interviews allows new ideas and interpretations to be incorporated into the futures project. Usually in e.g. Delphi studies it is the research team that formulates the questions. New or alternative interpretations of the problem at hand may not emerge during questionnaire rounds. In addition, some experts may not feel comfortable giving numerical estimates of the future development. The combined use of numerical, visual, and verbal answers can encourage different types of experts to express their views (Varho and Tapio 2013).

Anonymity of expert panels is usually sought for. It is useful, among other things, for encouraging also those with less obvious (social) expert status to express their views. However, face-to-face meetings such as workshops can be introduced at some point of a project, for more thorough communication and co-learning.

Discussing the Use of Expertise

In this brief I have outlined some perspectives on experts and the use of expertise in futures projects. Some questions arise from these, although definitive conclusions cannot perhaps be drawn.

1. What are experts good for?

Using expert views is often valuable in futures projects. It can be an "economical" approach, as experts are able to give estimates regarding complex systems. When the futures project aims more at estimating how the future unfolds than at creating new visions, conventional expertise is naturally important. But the further we look into the future, the less the existing knowledge may be relevant.

Do we really need experts, or more specifically, those we define as experts?

In a recent project (see Tuominen et al. 2014) we asked both transport experts and high-school students to describe the future of Finnish transport. It was interesting to see that the students were able to describe in their essays very diverse futures that, in most part, reflected the alternative future visions of the experts. However, they were not able to give plausible numerical estimates that would have reflected the qualitative visions. It seems that expertise on a subject is valuable - at the very least - because experts are more able to give numerical estimates. Numbers, in turn, are often very useful for distinguishing the future views apart and for comparing them with existing or targeted levels. In addition, transport was a subject that all students have some experience on. A

more esoteric subject might not have gained equally valuable answers from them.

2. Are experts “experts” at all?

Given the subjectivity of experts that was discussed in this paper we need to ask if they should be defined as experts, or are they e.g., stakeholders. There may not be a conclusive answer to this question. It is likely, however, that when people are invited into the futures project as experts they aim more at objectivity than when they are defined as stakeholders. In the stakeholder position, they may even feel obligated to defend the interest of those they are invited to represent.

It is possible to include in an expert panel people who would not define themselves as experts. For example, we have included a high-school student in a project that otherwise addressed experienced professionals (Varho and Tapio 2013), because we believed that she would have valuable experiences and viewpoints to share from

the perspective of today’s youth. This was considered valid, in particular, because the timeline of the futures project extended several decades into the future.

Collins (2013) has discussed three dimensions of expertise, namely “esotericity”, “accomplishment”, and “exposure to tacit knowledge of a domain”. Being a teenager is hardly expertise according to the first two dimensions, but to some extent it does fulfil the third dimension. Being immersed in a subculture gives a person the ability to see and interpret the world in ways that are not obvious to others.

3. Is an expertise matrix useful?

An expertise matrix or another equivalent tool is important for finding appropriate experts for a futures project. In addition, participating experts should be described to increase the transparency and internal validity of the project (Kuusi et al. 2015), even when anonymity is maintained.

Sources and References

This brief is based on the following article, in which the findings are discussed in more detail:

Varho, V., Huutoniemi, K. 2014. Envisioning solutions - Expert deliberation on environmental futures. In: Huutoniemi, K., Tapio, P. (eds.) *Transdisciplinary Sustainability Studies: A Heuristic Approach*. Routledge, London & New York. pp. 140-157.

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