



Reducing the democratic deficit in institutional foresight programmes: A case for critical systems thinking in nanotechnology

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ABSTRACT

The democratic deficit (the 'deficit' hereafter) in present institutional Foresight ('Foresight' hereafter) lies in its participation regime. In this paper practical ways to reduce the deficit are proposed that ought to increase the responsiveness of Foresight programmes to society's values, concerns and expectations. The existence of the deficit is examined placing ever more emphasis on the need for the active participation by a balanced but wide spread of stakeholders who will help to shape the future of society through the practical scheme proposed. The notions of 'situations' and Critical Systems Heuristics (CSH) are combined into a metaphor to suggest how the deficit in Foresight might be reduced. The purpose is to ensure, as far as that is possible, that the process of participation is genuine, inclusive and effective: practical steps toward this are suggested. The subjective nature of the metaphors assists the interpretation of these suggestions. The notion of 'situations' and Critical Systems Heuristics (CSH) represents an attempt to provide a metaphorical foundation for inclusive Foresight. At their core, 'situations' and CSH consider that problem definitions, proposals for improvement, and evaluations of outcomes depend on prior judgements about the relevant system. The resulting framework that emerges from CSH is a set of boundary concepts usable as a checklist of critical boundary questions. The checklist may be grouped under four issues relating to sources of: (i) motivation, (ii) power, (iii) knowledge, and (iv) legitimization.

The current paper discusses the application of the 'situation' cum CSH metaphor for the case of nano-science, nano-technology and nano-artifacts that are being widely adopted in areas such as materials, ICTs, and medicine. As a result of the growing interest for nano-field, nano-artifacts are now reaching the consumer markets within a large number of branches. On the other hand there is a growing scepticism about the nano-field regarding the environmental and health risks of nano-artifacts along with the ethical and legal issues arising as a result of the widespread use of these products. A number of processes have been designed and implemented concerning the legal, ethical and social impacts of nano-sciences, -technologies, and -artifacts. The paper suggests that inclusive Foresight, reinforced with the principles of CSH, can be of use in the nano-field providing wider stakeholder representation during the research and development processes. Such processes will contribute to the development of more socially and environmentally responsive nano-artifacts.

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1. Institutional Foresight

Institutional Foresight programmes ('Foresight' hereafter) now occupy a prominent position in the minds of public policy makers. In the 1990s most of these programmes were driven by the economic mantra of technologically dependent competitiveness and its importance to national economies. Despite this belief, almost all Foresight implied wider dimensions

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stretching into social, ecological, political and value matters. Because of their overt techno-economic purpose Foresight has relied on the opinions of a relatively narrow body of technologically oriented people. The flaws arising from this widely recognised *exclusivity*, suggested that the processes used ought to be more *inclusive*, enabling a much wider cross section of people to take part, difficult though this may be. The gap between *exclusivity* and *inclusivity* is the source of the *democratic deficit*: how this may be reduced, through widening participation in public Foresight, is the purpose of this paper.

1.1. History

Current Foresight studies attempt to create collective anticipations, usually related to technology, of important influences that may shape the future of research and indirectly society. It is far from clear that the sponsors of Foresight studies, and those who execute them, have a particular model of what they expect of the outcome, even though 'implementation' is always stressed as an important element of the programme design. From their beginning in Japan in 1971 it was natural for Foresight studies to absorb many of the processes and methods used in technology forecasting, indeed initially the Japanese studies were called 'technology forecasts' and were based on US experience of the Delphi method. As a result, there are two general shapes to Foresight studies that flow from early decisions about their procedures and management structure. Naively, these two forms of consultation have been called 'narrow' and 'widespread.'

Narrow consultation is characterised by the appointed expert or advisory committee, which is expected to report to its sponsor urgently. It performs its task with either no or a minimum of consultation outside its own members and their capabilities; inclusivity is unlikely to be a concern. The underlying philosophy is of 'satisficing' as often the time scale for the work involved precludes any other approach. Satisficing should not be equated to slipshod investigation. Expert or advisory committees are frequently created for political purposes, in Foresight narrow consultation needs to be recognised as a possibility but one that is employed sparingly.

By contrast, widespread consultation requires a well-specified programme of considerable complication as described elsewhere [1] and may include an international element. Inclusivity is an option given that appropriate and acceptable processes can be put in place, but so far Foresight has depended on expert technological opinion where inclusivity has been interpreted as seeking opinions from a larger number of the typical experts. However, any form of inclusivity brings with it the need to identify a different and larger number of participants.

Practical experiments to widen participation in Foresight studies vary from extensions of conventional approaches to entirely new ones. Experiments such as the Futur programme [2] have revealed some of the problems that will have to be overcome for Foresight programmes to become inclusive. Further steps to create inclusive programmes have been outlined elsewhere [3]: none of their ideas have been used in practice and to that extent they are original. Many of their indications fall into the realm of behavioural science and the behavioural styles of participants, an area ignored in all Foresight studies until now. Sponsors will need to put much effort into understanding these behavioural matters and their role for inclusive Foresight to be achieved. The creation of new user-friendly ways of enabling participation, by all who wish to take part in every stage of a study, from defining its purpose to implementing the outcome then becomes a major challenge.

1.2. The case for inclusive Foresight

Widening the scope of consultation and making Foresight into a much wider social process, is prompted by (a) recognition of the restriction to participation in current Foresight (b) the lessons learned from the corporate sector regarding the benefits of stakeholder inclusion and (c) trends for increased inclusivity across all areas of policy making.

Inclusivity is a matter of creating *trust* across a wide range of communities in discussions of future developments, especially in science and technology. The objective ought to be to enable participation by a broad spectrum of people. To introduce inclusiveness will require a change in mindset by programme sponsors, organisers, practitioners, the direct participants and the audience to whom the outcome is directed. Indeed, the process has to be one in which experts and non-experts regard each other as equal but with different agendas and capabilities that each needs to understand. Bringing this mutual appreciation about will test communication and interpersonal social skills to their limit. In this sense inclusiveness is a matter of definition and process. Extending participation introduces specific management and process needs if Foresight programmes are to be extended into the social sphere without becoming chaotic [3].

Foresight ought to be concerned with three questions:

1. What is possible?
2. What is feasible?
3. What is desirable?

For inclusivity these three questions are inter-related in social, technical, economic, ecological, political and value/norm (acronym STEEPV) aspects of society. So far, Foresight has concentrated on the first two questions related to science and technology and has paid relatively little attention to the third. The case for inclusivity comes directly out of the need to recognise the following:

- The assumption that all technologies are desirable and that people possess an infinite '*plasticity*' toward the adoption of ever more invasive, complicated, if not complex technologies
- The lack of *trust* between all the parties involved, especially between the 'expert' community and the general public, which has undergone such a marked erosion in recent years with the shift towards a post-modern world

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