

Informational precaution

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Short abstract

In environmental ethics, the precautionary principle states that parties should refrain from actions in the face of scientific uncertainties about serious or irreversible harm to public health or the environment. A similar principle is lacking when judging effects of information technology. Such a principle would be helpful in guiding discussions, and that is why we try to develop a precautionary principle for information technology in this paper.

As the effects of information technology are primarily social, social sustainability would be a key concept in developing the principle, where environmental sustainability fulfils this role in the traditional one. However, present definitions of social sustainability often consider it as an additional condition for environmental sustainability, rather than as an end in itself. Social sustainability, as meant in this paper, is the property of a development that it safeguards the continuity and stability of a social system. This may include maintaining trust and power relations in society. Based on this definition of social sustainability, we establish a precautionary principle with respect to the social sustainability of information technology.

The principle of informational precaution, as we call it, aims at protecting the social environment of technology by providing information security, just as the traditional precautionary principle aims at protecting the natural environment of technology by providing physical, chemical and biological safety. By providing causal insulation in the infosphere, i.e. separation of pieces of information, information technology may be able to protect the social environment. The principle of informational precaution then states that people should refrain from changing causal insulations in the infosphere, if there is uncertainty about possible serious or irreversible harm to society.

Extended abstract

In technological developments potentially affecting the environment or human health, the European Union has chosen a precautionary approach. The foundations are laid down in the “precautionary principle”, stating that parties should refrain from actions in the face of scientific uncertainties about serious or irreversible harm to public health or the environment. It further holds that the burden of proof for assuring the safety of an action falls on those who propose it (Raffensperger and Tickner, 1999; Rogers, 2001).

Meanwhile, a variety of technological systems, especially computerised ones, are deployed that might have serious *social* effects. Examples include government systems (electronic voting, biometric databases, road pricing) as well as private initiatives (Google, Facebook). A comparable point of reference that can be used to justify or refute objections is lacking here. An important question is, therefore, if the precautionary principle could be generalised to social effects of (information) technology.

The precautionary principle is rooted in the concept of sustainability, meaning that something needs to be protected against interventions that endanger its continued operation. According to the World Commission on Environment and Development (1987), “[s]ustainable

development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs". In general, this encompasses a) something to be protected, b) something endangering this, and c) a property that can be changed in order to prevent damage. Most often, this refers to sustaining *human life within the available resources* on Earth, by improving the *safety* of new *technologies*.

In this context, sustainability is then often categorised in environmental, economic and social sustainability. It is widely acknowledged that social sustainability is the hardest aspect to define (McKenzie, 2004; Littig & Griessler, 2005; Lindblad-Gidlund 2009), and there are extensive lists of properties that are said to contribute to social sustainability, including such diverse conditions as sense of community, equity between generations, and mechanisms for political advocacy (McKenzie, 2004).

Not only is it hard to define, its application is also limited. Social sustainability is often only regarded as an additional condition to be met in order to preserve the environment, or even economic values (McKenzie, 2004). It is then said that while protecting the environment, we should not forget to meet the needs of the local people. Therefore, technologies that can be said to *primarily* affect social sustainability are out of focus. In order to apply the precautionary principle to social effects of information technology, we need to be more precise about social sustainability.

One of the reasons why social sustainability has not been properly defined, we argue, is that the distinction between the *needs of individuals* and the *continuity of society* has not been drawn clearly. We choose to focus exclusively on what one could call the social environment, which should be protected in a similar sense to the natural environment. Where one could speak of ecosystems in the biological environment, we take the perspective of *social systems* for the social environment.

Following Luhmann's system theory (Luhmann, 1995; 1993 [2005]), we argue that *social systems do not include people*, but rather a separate structure of relations between them (Luhmann, 1995). The social system is thus part of the *environment* of people, rather than something that concerns the individuals themselves. Social sustainability, as meant in this paper, is the property of a development that it *safeguards the continuity and stability of a social system*. This does not mean that the system should be static; rather, dynamism is often essential for the stability of a system.

Having defined social sustainability in this *stricter* sense, we can now apply the concept to a *broader* area of developments. In particular, information and communication technologies, when changing trust and power relations between people, can now be said to affect social sustainability.

The notion of information security seems to be an intuitive goal of precaution, as it means that not every person should be able to access any information at will. Contrary to the (physical, chemical, biological) safety issues of the traditional principle, security issues arise with the malicious intent of attackers, who intentionally aim at accessing or manipulating information. We therefore translate the notion of causal insulation (Luhmann, 1993 [2005]), meaning that technology functions by limiting the mutual influences of the environment and the device, to the specific domain of information (the so-called "infosphere", cf. Floridi, 1999) and to the property of security as opposed to safety. We then speak of causal insulation between meaningful pieces of data and their potential (potentially malevolent) accessors.

The principle of informational precaution then states that *people should refrain from changing causal insulations in the infosphere, if there is uncertainty about possible serious consequences for social sustainability*. In future work, we aim at deriving a legal formulation of the principle, and finally showing how this principle can be implemented in design (cf. Turilli, 2007; Pieters and Van Cleeff, 2009).

References

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