Need and Use of Participatory Procedures to ensure Compliance and Legitimation of Codes of Conduct for Governing Nanotechnology's Risks

Nanotechnology is considered as a strong growth sector with high volume of investments (see BMBF 2011: 3). Regarded as a cross-sectional technology its innovative potential ranges from environmental relief to increase in efficiency of nearly every branch of production (see BMBF 2011: 12f) to applications targeting human enhancement (see Roco and Bainbridge 2002). Changing the size of a particle to the nanoscale also causes a change in its behavior and properties and therein lies the risk as well as the chance of nanotechnology-based products. Whilst scientists are able to manipulate matter on the nanoscale they are not able to assess the potential damaging effects for humans and environment (see for a recent overview report: Möller et al. 2013).

Thus, technology and innovation policy is confronted with tensions between envisioned chances and scientific uncertainty about risk potentials. Despite these areas of conflict political decision makers decided to boost technology development and to promote its innovative potentials by pointing to global economic competitive ability (see BMBF 2011: 3).

The legitimatory and epistemological underdetermination of this decision results in initiatives of corporations to gain acceptance by creating voluntary corporate standards (Codes of Conduct) for 'responsible nanosciences'. Using these self-regulative measures former addressees of state law regulate their corporate behavior by themselves. Codes of Conduct aim at protecting the environment, consumers, workers and other persons concerned with possible disastrous consequences of nanotechnology-based products. Therefore the target of this strategy reaches far beyond corporate self-interest by appealing to the protection of collective goods.

A closer look at two german initiatives from international corporations BASF (2014) and Evonik (2014) reveals that none of them developed organizational responsibilities and procedures to detect and sanction the compliance of their Codes of Conduct. The absence of those procedures not only infringes normative expectations of corporations' behavior. It may also cause negative consequences of those groups the Codes of Conduct seek to protect.

Leaving aside concerns that these initiatives are more a marketing strategy than an actual attempt to absorb nanotechnology's risks, the implementation of Codes of Conduct opens up the opportunity and necessity to influence corporate behavior. This contribution tries to evaluate procedures which immediately can be implemented and pave the way for democratically shaping the standardization process.

Because of the collective objective of these initiatives and missing procedures that ensure compliance the standardization process needs public participation. Public Participation not only ensures legitimation of corporate standards but also improves the efficiency of the policy mechanism. This argument also is theoretically lined by concepts of Science and Technology studies, naming Real-time technology assessment (Guston and Sarewitz 2002) and the European version Constructive Technology Assessment (Schot and Rip 1996) which both see societal participation as necessary for the governance of risk technologies.

For a democratic decision-making process it needs to be assured that participation procedures are not only a way to gain acceptance of decisions made in other political forums. One procedure to guarantee an open discussion is that the decision-making process is problem-based rather than technology-based. By grounding the focus on possible modes of technology development, the technological progress is stated as a matter of course and deliberation is narrowed to the question of how this progress can be designed (see Gill 1993: 39). Many public dialogue processes in nanotechnology center on the 'how' of technology development while neglecting discussions about the need and sense of technological innovations (see Wullweber 2011: 16). A problem-based approach starts from a societal problem or demand. Here different technological trajectories can be discussed while technological progress is only one option to solve a problem. Only this problem-based approach ensures a legitimate discussion about technology governance and is the premise for every participatory method.

The following examples show that problem-based public participation can reasonably be integrated inside the phases of setting, detecting and sanctioning Codes of Conduct. Very effective is the inclusion of groups who are concerned with the consequences of nanoproducts like residents, users, suppliers, workers, shippers. Within the process of setting and phrasing the standard they can offer special knowledge about preferences and needs to optimally adapt the measures to the target group. Successful examples on the local level are 'good neighbour agreements' between chemical industry firms and local residents, or 'pollution control agreements' between enterprises and local government or citizen groups (Gunningham and Grabosky 1998: 100). Also within the sanctioning process there is potential for many pressuring methods. Organizational commitments can be formally enforced through contracts between vendors and suppliers (supply chain requirements) where the former group uses its purchasing power to force commitment to the assurances (Gunningham and Grabosky 1998: 112). Finally, naming and shaming campaigns of societal groups are always a very effective way of sanctioning corporate behavior.

Starting from the legitimatory and epistemological underdetermination of Codes of Conduct for responsible nano-sciences these measures can solve general problems of the governance of risk technologies and use efficient instruments of democratically shaping technological development.

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