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Technology Foresight and Its Contribution to Advancing Participatory Democracy¹

Foresight as a new, democratic means for shaping the future

Futures studies into global world models and social future models has revealed that these models cannot yet be regarded as forecasts but rather as possible social futures, and their implementations depends strongly on human values, expectations, choices, actions, and taking risk and responsibility. This recognition has led to the emergence of a new futures theory. During the 1990s a new futures theory was elaborated with the appearance of critical futures studies (*Hideg, 2002*). These critical futures studies defined the ‘future’ as something that already exists in the thoughts and emotions of people. According to R. Slaughter’s definition of foresight: ‘ .. a universal human capacity which allows people to think ahead, consider, model, create and respond to future eventualities. Founded on the rich and inclusive environment of the human brain-mind system which, crudely put, has sufficiently complex neural ‘wiring’ to support an extended mode of perception whose main functions are proactive and facilitating. Future thoughts and perceptions affect present occurrences and form an organic part of human ‘life- world’ (See *Slaughter’s* Glossary). This human ability is called ‘foresight’ in critical futures studies.

The key feature of Slaughter’s definition is that foresight exists at individual level but it can also be extended to the community or the whole society. An individual is able to envisage both his own and his community’s future. Both types of future thoughts and perceptions are forming and reforming the process of social dialogues and are embedded in the process of social innovation until the phase of shaping the future. Consequently, futures existing in the present are open and are humanly constructed;

thus human and social future hinges strongly on human values, choices, actions and responsibility.

Foresight as a new meaning of the future places not only the future in the present context, but it expresses that the future, as a human affair, belongs to every human being as well. The issue of democracy has also been placed in a new context in this way. *Shaping the future is a human and democratic action in this meaning of foresight.* The development of anticipatory democracy is very important therefore foresight should be an everyday practice. From another aspect, the fulfilment of anticipatory democracy can also be regarded as a tool for democratisation of society. (Pateman, 1970).

During the 1970's futures studies served to introduce the idea of anticipatory democracy (Toffler, 1970, Bezold, 1970). In Toffler's words (in 1970): 'To master change, we shall therefore need both a clarification of important long-range social goals and a democratisation of the way in which we arrive at them. And this means nothing less than the next political revolution in the techno-societies – a breath-taking affirmation of popular democracy.' (Toffler, 1970, p477) Bezold and Toffler recognised that successful management of changes would need the involvement of people in the process of shaping our future. From the 1990's foresight, as interpreted by critical futures studies, regards human participation and cooperation in the process of mapping out the future as evidence or as basic characteristic of every foresight activity. Since that time, *the fulfilment of anticipatory democracy has become a central issue in the development of different foresight procedures.*

Critical futures studies has developed several new tools, especially subjective methods, (e.g. futures wheel, futures workshop techniques, causal layered analysis etc.) in order to bring more and more future thoughts to the surface and to stimulate more and more people to participate in discourses about the future (Inayatullah, 2005). Different foresight procedures have been produced to promote democratic participation. Foresight training procedures have been worked out to expand future orientation of individuals, including their ability to share in participative foresight activities (Major et al., 2001, Schultz, 2003). Foresight management and institutionalisation at organisation level, is also under development. An important goal is for more and more employees to be

involved in the future shaping process in various organizations (*Daheim, Uerz, 2006*). Theories of technology, regional and social foresight have been elaborated for helping policy and decision making (*Miles et al., 2002*). A number of other foresight case studies are presently in progress to define suitable foresight procedures for advancing democratic participation.

Analysing foresight procedures in the aspect of anticipatory democracy we have found that an increasing number people take part in shaping the future, alongside experts and futurists (*Keenan et al., 2006*). People take part in the foresight process as active participants, so-called ‘stakeholders’, who bring into play a certain social sphere, or as citizens who express their expectations concerning a certain social sphere. *Involvement of stakeholders and citizens in the foresight activities has become an attribution of foresight*. Besides free expression of opinion, there are widespread discussions about futures issues among foresight participants. Main common features of these foresight procedures, in the aspect of anticipatory democracy, are as follows:

- involvement of stakeholders and citizens in the foresight activity,
- voicing free criticism about the present and the past, including the course of development during the foresight procedure,
 - free expression of stakeholders’ ideas about futures,
 - free discourse about futures possibilities, with the participation of different stakeholders,
 - extending stakeholders’ knowledge about the future, or help them to understand each other at least,
 - induce changes in stakeholders’ mindset, to bring them to cooperate and act responsibly for achieving the future,
 - make efforts to find connections between future ideas and present actions in the network of interconnections.

Studying foresight procedures it can also be seen that *every foresight procedure mentioned is developed in a way that it can be fitted to a given phase of democratisation of the whole society*. Foresight training procedures are materialising to improve future orientation of young and/or everyday people. This activity can contribute to the education of conscious and responsible citizens. Organizational/corporate foresight is

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aimed to develop employees' participation and to use employees' foresight capability in shaping the future of organizations. Organizational/corporate foresight works to promote involvement of employees. Technology, regional and social foresight is designed to involve people as stakeholders and citizens in the future shaping process in their communities and to involve them in policy and decision making. In this way they can contribute to the democratisation of policy and decision making.

There are notable differences between foresight procedures, based on the kind of democracy ideals they are founded on. Some foresight procedures serve the idea of representative democracy, while others serve the idea of participatory democracy. It is worth to differentiate in this respect, even if the aim of every foresight procedure is the fulfilment of anticipatory democracy. Given the fact that anticipatory democracy is also a tool for democracy and an integral part of the democratisation process, therefore its content depends on the idea of democracy, taken into consideration as a starting point by foresight professionals. The analysis made from this aspect shows that foresight training procedures and organizational/corporate foresight are based mostly on the idea of participatory democracy, while foresight procedures that can be linked to policy and decision making, are mostly based on the idea of representative democracy. Developers of both foresight training and institutional/corporate foresight procedures endeavour to involve all their students and employees in the process of future shaping. This opens the way for working on the idea of direct participatory democracy. On the other hand, developers of foresight procedures serving policy and decision making want to involve experts and representatives of different stakeholders, among them representatives of citizens. This is understandable, because they are working under the given social-, institutional conditions. The foresight procedure applied by them has to be tailored to fit to existing social conditions.

Main characteristics of technology foresight, from the aspect of democratisation

It is apparent (in the previous chapter) that technology foresight has developed on the basis of representative democracy. This characteristic feature clearly distinguishes it from all other foresight procedures. Some other characteristics also derive from the fact that technology foresight has followed its own course of development, such as:

- building close connections to policy and decision making,
- helping to implement the principle of subsidiarity in practice,
- applying the principle of representative democracy in the selection of stakeholders and in determining the role of stakeholders in the technology foresight procedure,
- involvement of the authorities as stakeholders in the technology foresight activity,
- consensus building among stakeholders, this being the main goal of this foresight activity.

Existing close connection with policy and decision making certainly guarantees faster development and propagation of technology foresight. This practice of technology foresight is gaining ground particularly in the European Union (*Keenan et al.*, 2005). Its institutionalisation has also begun. Nevertheless, it is yet unclear whether this foresight activity serves the dissemination of future ideas, developed by present key stakeholders, or whether it will bring to the surface future ideas of stakeholders and allow their free discussion. Meanwhile, signs of increased bureaucracy can be observed in the process of institutionalisation of technology foresight. For example, only one procedure is acceptable for preparing technology foresight, in case it is not in harmony with the aim and object of an ongoing foresight procedure.

The ambiguity and formal solutions, applied by technology foresight, with referred special characteristics, endanger free discourse among stakeholders as well. Consensus building is overemphasised, regardless whether it is possible to arrive at it or not, or even the time factor. Too much attention to consensus building in the process of technology foresight can also be harmful from the aspect awareness about uncertainty of the future and bringing to the surface of a wide range of possible future ideas which differ significantly from the 'consensus future'. *Applying the principle of representative democracy in foresight activity cannot offer a plausible solution to achieve anticipatory democracy, because present power relations are expressed in the process, whereas the future is supposed to be open and shapable.* Based on the present power settings, this practically means that future alternatives and the 'consensus future' prepared within technology foresight procedures do not differ from futures tuned to 'business as usual'

tone. The new outlines of technology thus taking shape reflect the interests and expectations of developers and manufacturers, while long-term environmental and social impacts are not taken into consideration. For example, researches and implementation of new results in the area of biotechnology take place without social endorsement and preliminary analysis of environmental hazards. This example and similar occurrences signal that democratic character of technology foresight is endangered even in case an increased number of stakeholders are involved in the foresight procedure.

We need to mention the aspirations of technology foresight in Europe. Some foresight professionals say that foresight should brake away from the futures studies and follow foresight procedures developed in the area of technology foresight. Namely, the foresight activity that builds close connections with policy and decision making can qualify as the only foresight with a European character and therefore worthy of institutionalisation and propagation (*Keenan et al., 2003*). This aspiration is harmful in terms of futures studies, because *it leads to separation of foresight knowledge segments instead of supporting synergy of experience acquired in the course of various foresight activities*. In a period of instability, the possible sidelining of foresight activities that do not harmonise in methodology and goals with the given and preferred technology foresight, can become an unwelcome feature in European foresight theory and practice (*Hideg, 2007*).

Technology foresight has accumulated wide experience in the area of democratisation. It has developed the way of involving key stakeholders of researchers, manufacturers and authorities in the spirit of representative democracy. *Technology foresight activities have not yet become the organic part of democratisation of technology management and governance*. Foresight activities are not carried on regularly and they connect to technology management and governance only in ad hoc way. Its institutionalisation would not serve well further democratisation, either in the field of technology foresight or technology management and governance. If further development of anticipatory democracy is important for technology foresight then the course to be followed by technology foresight development is clear: *to find new solutions for fulfilment of*

anticipatory democracy that can contribute to strengthening participatory democracy in technology management and governance at different levels and fields.

Why does the development of technology need anticipatory and participatory democracy?

It is reasonable to ask why future development of technology needs democracy? There is huge competition in the field of technology development, especially in the field of forefront technology development. Each new, hopeful idea and innovation is qualified as secret strategic information. Many experts, among them foresight experts, think that only a few innovators, with very creative minds, are needed for achieving breakthrough results. If there are sufficient economic resources for financing innovations and their coming onto the market, then the 'islands of excellence' can generate spectacular development for a country. I think the idea of 'islands of excellence' is not sufficient to get to the forefront of technology development or to speed up the socio-economic development of a given country in the beginning of the 21st Century. The forthcoming decades will pass in the spirit of knowledge-and interactive society (*Hideg, Vág, 2004*).

The idea of knowledge society is based on minimising social loss of information paradigm. In other words it means that opportunities of information paradigm should be utilised in a socially effective way. Therefore it is not sufficient to be well informed but also to be capable of transforming information into knowledge in our era of information. Creation of new knowledge should not only become continuous activity but also be a part of the social reflexive learning process. This means that new and socially useful knowledge is placed in context and is used creatively. Knowledge develops by being shared among people and by use in a concrete situation. This type of knowledge creation is characteristic not only to technology development and innovation but also to a wide range of other activities as well. For this reason the development of individual and social knowledge base, closely linked with one another, has become a key issue of social development. In the context of democratisation this means that the emergence and propagation of active and reflexive participation should be part of the evolving knowledge society.

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The idea of interactive society takes another step ahead. We should know not only how to act in a given situation but also how to become constructive as components of a complex system. To this end, we need to know how to define our position in a complex system, how to communicate, cooperate, perceive signs, respond reflexively, think and act responsibly in our position. This so-called ‘interactivity’ can be seen as a way of functionality in post-modern society (Leydesdorff, 2001). If the new knowledge is ‘created’ through interactivity of different contexts and ongoing social dialogue, then this knowledge creation could also measure the performance of society. This new knowledge, including the technology knowledge, not only propagates simply from the centres but is also generated by society in a different context. We can therefore state that democratisation by participation belongs also to the advancement of society (Barber, 1984 and Baiocchi, 2003). Participative democracy, in its different complexities, constitutes a new position for the human being to competently exercise his influence.

Studying new ways in innovation, Chesbrough proves that innovation, as a process, becomes open in the aspects of actors and new needs that need to be satisfied. This opening up innovation can be meant as a new emerging paradigm of innovation (Chesbrough, 2003). Hippel states that user-developed innovation is very effective way of innovation activities (Hippel, 2005). The technical, economic and social development in Finland can show a case of this line of innovation development (Markkula, 2002).

At the level of expectation and scientific communication it is established that new knowledge is generated by its use and sharing. Every new technology needs natural, economic, social and intellectual resources. Among them the social resource, i.e. an environment that inspires learning, is of great importance because it enhances intellectual capacity. Given that technology can produce dangers as ‘side effects’ and this fact should be made public in the introduction of an innovation. Innovation is not only new knowledge, embedded in new technology, product, service, but also *reflexive knowledge that gives meaning to novelty in social, organizational cultural and human quality terms*. Harmonized cooperation is also needed among different actors during the whole life cycle of innovation, because even a knowledge particle can contribute to new technology. Actors are people who have competent knowledge and can reflect, i.e. they are able to generate new knowledge thus contributing to the development of new

technology. *Emergence of cooperation among actors is not only a simple matter of organization, but a functional way of participatory democracy. With a view to the above, participative democracy does not equal with dilettantism but with the mode of generating new, reflexive knowledge.*

Another result from this line of thought is that technology foresight can be understood as a scope of creating new reflexive knowledge on technology. It deals with creating expectation knowledge regarding new technology including extension of socio-cultural function on a time scale. Therefore, the whole social process of developing new technology, that also comprises technology foresight. *Technology foresight, generating new reflective knowledge, also has a democratic character in terms of anticipation and participation.*

Some methodological issues concerning advancement of participatory democracy in technology foresight

If technology foresight is interpreted in the mentioned way, then the next question that arises: how should technology foresight be developed to meet changing social needs? One possible answer to this question is that the development of *technology foresight should promote open foresight activity.*

The idea of open foresight emerged from the area of organizational/corporate foresight. *Open foresight* is based on the assumption that business can shape future contexts and markets through communicating the dynamic interaction between social, technological and economic forces, in an open dialogue (Daheim, Uerz, 2006). It can be characterised by transparency, methodological variability, context orientation and participation. It focuses on interactivity of communication and open discussions among the participants. Openness of foresight can be explained from three aspects. It means (1) the involvement of competent stakeholders of different areas and levels who can be associated with the topic of foresight, (2) it should be open to environmental issues, (3) it should be organised as an open communication process. This idea of open foresight tallies with the idea of open innovation. If innovation could be opened up for users on a wider scale, then technology foresight should also be supported by users and potential users, besides traditional key stakeholders.

First steps to be taken towards open foresight include recognising the importance capturing even weak signals and wild cards. Hiltunen suggests that every employee in an organization should look out for signs coming from ‘wherever’, this would be important in the life of an enterprise. After communicating and filtering these signals, a part of them could be entered into the information database of foresight activity (Hiltunen, 2006). In other words, mapping weak signals and wild cards could be more effective if every employee could participate in capturing such signals or ‘giving’ signals, namely recognising the importance of signals.

The development of information resources by expanding participation can also be of great importance for technology foresight. This can be the first step that should also involve other methodological revivals which can be connected to the development of foresight democracy. Four methodological connections of technology foresight should be developed in this context:

- rearrangement of stakeholders’ choice and the way of their involvement,
- giving stakeholder status to the natural environment,
- building up a technology foresight network,
- institutionalisation of technology foresight as an inner phase of technology management and governance.

The re-assessment of social function of technology foresight, under new social conditions, requires that the sphere of stakeholders should be extended to include all potential actors, e.g. scientific researchers, producers, service providers, users, managers, policy makers etc. Solving this problem is not a simple task, because the range of potential actors and their competences are also to be defined, hypothetically. *This can give additional dimensions to the matter of stakeholders’ choice.* The need to find stakeholders is evident in present circumstances, but to find possible stakeholders of the future depends on the expected social function of the new technology. In this aspect the principle of representativity should be abandoned. But what would be the new criteria for the choice of stakeholders in place of representativity? To answer this question we should pay attention to the competence of potential actors. One possible

solution would consider both the competence and ability of an actor to become a stakeholder in a certain technology foresight project in such a way that demands at least a minimal level of diversity of new thoughts. Detailed methodological elaboration of this solution should be a new research topic of technology foresight.

The other new issue is *the consideration of the natural environment as a stakeholder in technology foresight*. Since technology foresight is an interactive communication process among stakeholders, issues that are not of immediate interest to stakeholders are undervalued during the communication process. The natural environment is seen as just another important issue in the area of technology foresight. The stakeholder of natural environment should be sought after from among environmental scientists/researchers and organizations. An additional methodological problem that arises is: *how and in what phase of technology foresight can the stakeholder of natural environment be involved so that his activity does not counter fresh thoughts about the development of technology?*

Applying any kind of methodologically acceptable solutions, in response to the questions raised, technology foresight can result in different conflicts among stakeholders. These conflicts may be the subject of further discussions, but may also be a valuable means for new findings in technology foresight. Bringing to light conflicting future thoughts and merging them (if possible) into different alternatives, should be regarded important in the process of reaching a 'consensus future'. Conflicts among stakeholders concerning alternative futures signal the fact that there is no consensus concerning technology future, but it can also signal that certain stakeholders' groups would like to develop an alternative technology. *Democratic societies should also make possible to seek alternative technological paths. Methodologically it is essential that every expectation concerning the future of technology should be transparent and stakeholders should take responsibility for them.*

Organization techniques also need improvement, if an increasing number of competent stakeholders are to take part in the process of technology foresight. *Networking is the preferred working method (Bezold, 2006)*. It can be acceptable, provided that the network is open to every stakeholder who wants to join the technology foresight activity. It is the task of the foresight manager to encourage stakeholder involvement.

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This means that there is no available well-founded methodology for the free involvement of stakeholders, besides the general methodology of networking. While looking for methodological solutions it is very important to emphasize that technology foresight requires – as input information – diversity of thoughts regarding technology future, and concurrent filtering through discussion by competent stakeholders. Use of the Internet is encouraged, because applying the old ‘hand-made’ solutions (like using experts’ or public Delphi, brainstorming etc.) does not make possible the collecting and processing of all technology future ideas, without jeopardising free participation and expression of future ideas. In addition, these ‘old’ procedures are extremely time-consuming. The establishment of an open website for technology foresight networking is a very simple and frequently applied method for open discussion or dissemination of special issues and results. *The methodological development of its working for achieving free participation in the whole process of technology foresight is yet unsolved.* This is not fortunate, at a time when the meaning of technology foresight is also changing and the strengthening of democratic participation is an emerging new line of technology foresight. This methodological development itself could be another important foresight research project.

Strengthening of democratic participation in technology foresight cannot be achieved without responsibility for the future expectations and ethical future actions by stakeholders (Nováky, 2006). For this reason, technology foresight should not only become a continuous activity with regular feedbacks, but also a means of technology management and governance. Up until now, technology foresight has established close connections to policy and decision making. The present overemphasis of a ‘consensus future’ can be regarded as the ‘price’ of these close connections. If the democratisation of technology management and governance, including and technology foresight could be brought together, on the basis of development of participatory democracy, then the development of methodology of participation in technology foresight could be achieved through *cooperation between foresight professionals, working in the area of technology foresight, and professionals dealing with the development of management and governance (Heinelt, 2002).* This should prove to be a better way for institutionalisation of technology foresight, rather than further strengthening connections with the present form of policy and decision making.

New conditions and tasks mentioned in the area of technology foresight and special development routes for technology foresight also make possible for technology foresight to contribute more effectively to the achievement of anticipatory democracy. In view of the fact that *recommended methodological issues are not essentially in conflict with research issues/projects of other foresight activities, therefore it is recommended that technology foresight should also strengthen its connections to other areas of foresight.*

Note

1 This study is based on the presentation 'Methodological Experiences in Hungarian Foresight Activities' held at 5th workshop of the Forum 'Foresight, Roadmapping and Governance' (7-8 December 2007, Budapest) organised by Forschungszentrum Karlsruhe, Florida Institute of Technology and the Hungarian National Commission For UNESCO. The study was published in the volume of 'Futures Studies in the Interactive Society'. Hideg, E. ed. Futures Studies Department, Corvinus University of Budapest, Budapest, 2009, 149-156.

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