

TECHNOLOGY AND PUBLIC – BETWEEN ACADEMIC DEBATES AND
REAL PRACTICE (A view from the CEE country – Poland)

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The paper is not analytical but evaluative and synthetic. It presents a kind of picture of the country in transformation. The main issue is the assessment of two “things” – technology (produced, transferred, applied) and the public (its education, culture, political activism and aspirations). The evaluation is contrasted with the situation in the highly advanced countries (high tech societies).

Technological problematique is hardly gaining a decent recognition. In highly developed countries it is somewhat better. But even in the United States technological change is not in the mainstream economics. Surprisingly it is so in spite of the great tradition of the investigations on technological change made by Solow, Salter, Nordhaus, Nelson, Phelps, Rosenberg, Romer et al. The science and technology community is there quite large but certainly not influential enough according to its real importance. STS programs, are university-based but TA analysts, science and technology forecasters and R+D policy experts are often aside of the traditional academic disciplines (e.g. Cetron, Naisbitt, Coates, Bezold and others). This is because the problematique (when it is not only technically understood) is by all means *interdisciplinary, multidisciplinary, transdisciplinary*. This is a problem not only for monodisciplinary scientists, but also for public, for NGOS, as well as for politicians and journalists.

In less advanced countries (like Central and Eastern European ones) the situation is not favorable. First of all they *are being transformed* – both *from above* (by governments, parliaments) and *from below* (by market forces). Their external environment is friendly but competitive at the same time. They have

still some old industries (e.g. in Poland – coal mines, steel mills and not developed agriculture). There is of course some technology transfer in the form of FDI and of commodities imported. Openness of the economy is very helpful.

The problem is that the expenditures for R+D are very small (around 0,5% of GDP in the case of Poland). So innovations are not really produced. Education is underinvested. The emerging educational private sector (more than 200 university and college-level units in Poland) helps much but mostly in the area of business, management, marketing. The educational level is often not high at all. The large-scale state-owned industry was “deconstructed” – privatized, often just liquidated (e.g. electronics industry). Schumpeterian idea of “creative destruction” was implemented only in its destructive part, at least for the time being. Lack of domestic capital have promoted policy of SMEs development only. In the case of Poland they are usually too small to carry or use any R+D. In fact no real science and technology (or innovation) policy was needed. Neoliberal belief in “invisible hand” prevented from any industrial policy. Economy became consumption and import-oriented. Innovations, new technologies were not produced, so they were not a subject of public debate. Participation in technological decision-making was not meaningful. Moreover the foreign investors were not interested in locally conducted R+D (the exception in Poland was Motorola – still in plans). All this have constituted the *model of transition economy* in not a highly developed country. Now the problem is *how to modify this pattern and to reorient it from transformation and equilibrium model to innovative and developmental one.*

The *public* in less advanced countries is also less advanced in understanding technology and in democratic demands of its control. Moreover poor or unemployed people are not very much interested in science and technology problems. For the majority of society (the Polish case not only) the questions of participatory technology design or decision-making seem *very abstractive*. Moreover the democratic political systems is still weak and

unfinished. Local democracy (local state authorities and local self-management authorities) is just trying to perform its roles in a very difficult economic conditions and without experience. They are not really interested in community-based research or participative TA.

Of course some *scientific* and *medial discussions* have taken place on information technologies, biotechnologies, biomedicine. Often such discussions are ethically-oriented (e.g. it was the debate in the Ethics Committee of the Polish Academy of Sciences, another example was TV discussion on genetic engineering conducted by the Polish and French scientists) or religiously-oriented (e.g. on embryo research or cloning). While scientists and intellectuals debate the wide public is simply afraid of genetically modified food, genetic engineering, nuclear power plants (of neighbors) safety. It is rather fear than risk perception. More educated approach is to *environmental risks*. They are environmental parties, movements, groups and protesters. They are many protests against localization of buildings, supermarkets and highways (not always justified but made to get a compensation for eventual losses). Ministry of Environment Protection in Poland set up the *special commission* to solve contradictory situations with some public participation. So the *ecological aspects and impacts of technology* are better and better perceived.

There are some good hopes because of growing education (twice more students than before), widespread use of technologically advanced products what raises the technological culture. The burst of entrepreneurship can help as well, especially in the case of innovative undertakings and *intellectual entrepreneurship*. Scientific and educational programs and projects are badly needed. But their supply should be met by *demand* – of government, of business, of NGOs. This demand is still marginal or none. Much depends on building up specific institutions in these sectors, also in the scientific and educational sphere (the recent and perhaps the only one institutionalized unit, rather of network character, is the Center for Impact Assessment Studies and Forecasting at the

Leon Kozminski Academy of Entrepreneurship and Management in Warsaw – the number one private business school in Poland). The government ought to formulate long term innovation policy and to improve financing R+D, science and technology parks should be develop not only on paper, the business (also foreign) should be encourage by many instruments to invest in R+D, technology transfer ought to be promoted. Political system should be more participative and locally oriented. The public ought to be more future-oriented. Corruption has to be downsized (it influences decisions on localizations, investments). The same concerns the organized crime sector politically influential and illegal imports and being beyond the state control (the shadow economy constitutes about 20% of GDP in Poland).

Enlargement of the EU is thus badly needed to ameliorate situation in countries like Poland, to give good examples of public debates on technology (not just abstractive but really used), of public acceptance of risks (its perception and evaluation), of public participation in decision-making.

This set of recommendations is comprehensive, complex and multifaceted. Beyond doubts it is difficult to be implementated; first it should be operationalized in *policy-oriented terms*. It is evident that this will take time.

Annex

The figures and tables below illustrate some issues, discussed above.

Fig. 1 shows the new situation in knowledge production and use - imposing new approaches and delimiting new areas of research, evaluation and action

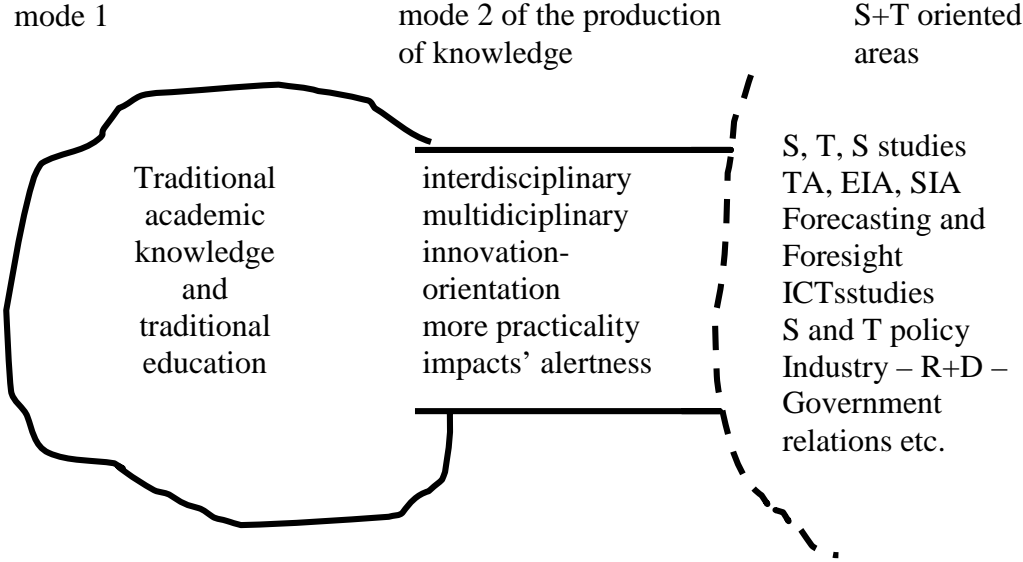


Fig 1. A new map of knowledge production and S and T problems

Fig. 2 illustrates the basic civilizational and political factors influencing social (public) perception, understanding and participation – in the context of social attitudes towards technology and its impacts.

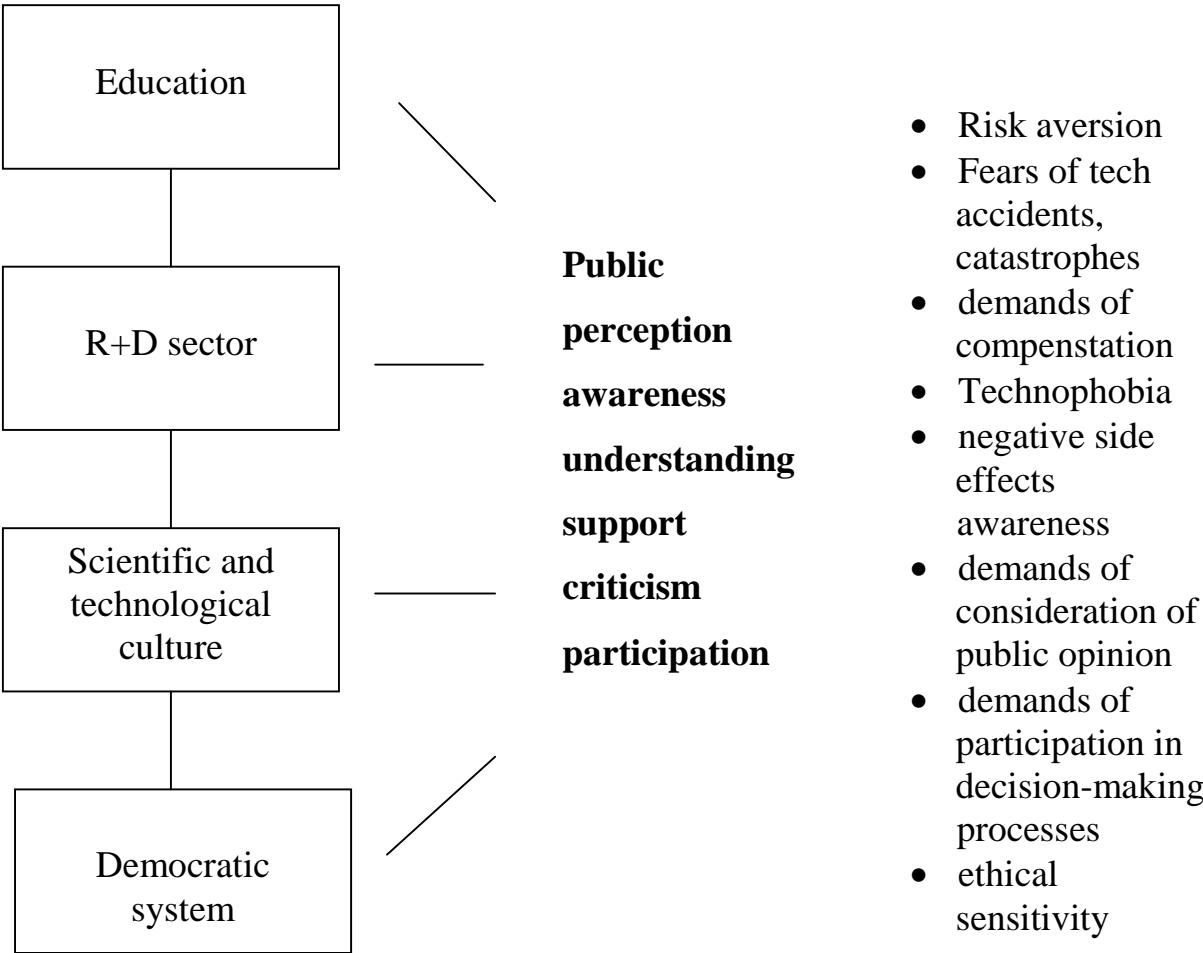


Fig. 2 Civilizational and political assets, public and its attitudes

In the Table 1 there is a list of some key words (and etiquettes) used in scientific, medial and political discourses concerning science, technology and future

Table 1. Expectations and rhetorics on Sand T

Social expectations

(stimulated and generated by media)
nuclear energy (formerly)
space research
info-communication
biotechnologies
biomedicine

Political and ideological rhetorics

market society
technological paradise
consumption paradise
globalization

The next table contains the main features of highly advanced economy and society. These features are evidently connected with its science and technology level. The situation in less advanced countries can be characterized by the *lack* of these positive – for understanding and participation in technological choices and decisions – features or their underdevelopment. The possible problems will be overdeveloped though.

Table 2. Highly advanced countries characteristics

Main Features	Possible problems
- high tech industries orientation	excessive business
- large info sector (or info economy, digital economy, e-economy)	technological unemployment
- large and effective R+D sector	military oriented to significant extent
- high consumption of scientifically and technologically-based goods and services	commercialization (as a way of distribution vs social goals)
- dense, effective and cheap info-communication infrastructure	some inequalities (e.g. in access)
- good widespread education (i.a. computer literacy)	elites and the rest McUniversity
- high technological culture	
- democratic politics, public sphere	lobbying vs participation
- NGOs, civil society	commercialization vs mission and values

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