Who knows?

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Who knows? Notes on civic epistemology in the Czech Republic

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The notion of public participation refers most often to participatory political process of reclaiming interests, values and worldviews by social actors who are not professional or elected politicians. Such participation is meant to problematise and complement – if not uproot – the modern paradigm of political representation by the delegation of governance to professionals. However, as Bruno Latour [1987, 1993] strongly argued, political delegation constitutes in modern societies but one leg of a governance machinery. It has to be complemented by expert representation which, alongside the political representation of a society, deals with the nature and our knowing of it. It is this second leg of the expert representation that I wish to reconsider here in relation to the Czech environmental movement and issues.

Latour argues that modernity was obsessed by purification: of science and politics, society and nature, the Western civilisation and the "others", the (professional) knowledge and (lay) believe… But "we have never been modern", Latour says, in a sense that this purification not only never happened but in an even more profound way. Modernity always *needed* a simultaneous hybridisation or entanglement of those binarities in order to sustain itself and proliferate. It always needed busy traffic between science and politics, society and nature, laics and professionals but it tried to keep it hidden, unofficial, in footnotes of texts if anywhere. If we stopped to feel modern, Latour says, it is not because we lost the purity but because we are no more able to hide the hybridity which now overflows at any corner of our world. Key issues of today governance of the world – like climate change, safety in all its guises or questions around biotechnology –

cannot be resolved in the register of "purification", of careful sorting of issues to either deliberation in parliament or experimentation in a lab, to either professional intervention or lay "do it yourself". We need on the contrary solutions – and institutional arrangements – which allow for bricolaging, reinforcing and coordinating different sorts of knowledges and actions.

One of the key manifestations of this hybridisation between society and nature and science and politics might be the current shifting of the issue of knowledge to the core of the social order. We are supposed to live in a "knowledge society". Knowledge pertaining previously to particular social class gets extended as a constitutive feature of the political participation in society. We all are knowers of sort. But beware! This is only one of the possible interpretations, the "nonmodern" one, of the idea of knowledge society. The other, modern one, on the contrary reinforces the divide between professionals and lay citizens. It may be blurring the boundary between the epistemic and political order but at a price of bringing the exclusionary logics of (professional) knowledge to the realm of democratic politics. Only those who know may fully participate as social and political *agents*. Laics may consume knowledge and knowledge-based technologies but not co-producing and co-shaping them.

I will argue that the tensions and even conflicts between these two interpretations or enactments of knowledge society take place in reality. On one hand NGOs and other "non-certified" knowers produce substantial amount of knowledge and practices and experiment solutions to social-and-natural problems. There have hardly been – in the CR and elsewhere – more space and resources for them to do so than during the last 20 years. Venues for public participation have been opened in the form of consultative procedures, environmental impact assessments (EIAs) or public participation in administrative procedures etc. On the other hand there

also has been an enormous push on high-technologisation of our societies which prioritises highly specialised experts and suppresses the others to the role of observers "catching up" with developments. Even if they can speak in public consultation they may rather decide to stay silent because the very framing of the issues pulls them off. We do not deliberate, for example, about "good, fair and sustainable eating" but about "introduction of genetically modified organisms" in the CR. This imposes a frame in which many issues which could be reasonable arguments in the first case will appear as a question of a "mere" taste or belief in the second. A report for the European Commission on knowledge society [Felt 2007: 22-29] talks in a similar vein about two regimes of innovation: the regime of economics of technoscientific promises and the regime of collective experimentation. If the former is characterised by stress on breaking technologies, specialised knowledge, global competitiveness and intellectual property rights, the later is more participatory and locally bound and thus sensitive to the social embededdness of technology and innovations. In this chapter I would like to highlight and discuss some of the tensions of the two enactments of knowing and knowledge society in the Czech Republic in the environmental area.

An American political scientist and science and technology studies (STS) scholar Sheila Jasanoff [2005] arrived through her comparative study of regulation of biotechnology in the US, the UK and Germany, to the concept of civic epistemology. She wants to problematise a wide-spread view of socio-technological systems as converging, as if by nature, and lead by a single rationality which will finally allow for unitary regulation of (bio)technology. Such a view was held, for example, by the WTO in conflict over GMO regulation between the US and the EU. Contrary to that, Jasanoff highlights the differences between the three countries – and political cultures - under her scrutiny regarding the ways in which objectivity is established and judged, expertise is founded

and public accountability assured for in regulation of (bio)technological objects. It is important to notice that she does not differentiate between "civic" and "scientific" epistemology but subsumes the scientific ways of knowing and knowledge legitimisation under the label of civic epistemology: science does not, in this perspective, provide a framework within which adequacy of expertise and knowledge claims of non-scientific social actors could be simply judged but, on the contrary, the authority of scientific expertise is constituted within a frame of specific political culture. The expression "civic epistemology" may be however confusing: as we will see bellow some versions of civic epistemology may seemingly *withdraw* or even *exclude* citizens from epistemic processes. Jasanoff's choice may point to her "biased" experience with political cultures where citizen finally play a key role. "Political epistemology" might be a term more adequately capturing the embeddedness of epistemology in political culture.

Jasanoff identifies on the basis of her empirical study the three regimes as *contentious* for the US, *communitarian* for the UK and *consensus-seeking* for Germany. The US model corresponds to their litigious political culture where issues are opened up as public through court cases in which heterogeneous actors participate. In the UK communitarian model there is a major role of informally established authorities (coming from any sector of society) and public consultations. In the German model objectivity and expertise is most tightly linked to established specialised institutions and as such rather restrained from the public space and scrutiny compared to the other two civic epistemologies. The consensus-seeking is limited to preconceived group of actors [Jasanoff 2005: 258-269]. Being aware of the fact that the epistemologies are never homogenous or changeless in a given country, Jasanoff nevertheless focuses on differences between the countries much more than on their internal tensions and processes in which civic epistemologies might be reconfigured.

In contrast to Jasanoff I want to focus in this text on situation in one country, the Czech Republic, but look more into the internal tensions and reconfigurations of civic epistemology here. I also do not focus on a single controversial area (like biotechnology in Jasanoff's case) but look more generally and perhaps opportunistically on national regulation of knowledge production on one hand and some instances of knowledge enactments in environmental area on the other. In the first part of this chapter I present a proposal for *National policy for research development and innovation 2009-2015*, which was recently formulated by the governmental Council for research and development and should be soon submitted to the Czech government for approval, and analyse civic epistemology implied in the document. In the second part of the chapter I discuss three organisations operating in the environmental area which – in most of the cases implicitly – question this civic epistemology and enact its (partial) alternative. The environmental area – together with health issues – is especially interesting for exploration of new modes of civic epistemological engagement as it combines high and rather direct stakes in terms of citizens' lives and places they inhabited with often highly specialised and complex nature of the issues. While the former is also true for social area ("Roma issue", social exclusion, public policies) everyone feels entitled to speak about the issues involved without any special qualification. It is generally perceived as a *political* question rather than an expert one. Environmental area with its molecules, chemicals and other substances invisible by everyman's eye is more easily framed as an exclusive realm of certified expertise and more resistant to citizens' epistemic intervention. But when they happen, more interesting they therefore are! I discuss the specificity environmental NGOs' epistemic involvement, namely in: 1. the mode of participation; 2. their take on interdisciplinarity; and 3. the localisation of knowing. I conclude the chapter by summarizing in a more explicit way the alternative civic epistemology implied in epistemic experiments in the

environmental area and compare to the epistemology present in science policy.

Economizing knowledge

National policy for research development and innovation 2009-2015 [Rada pro výzkum a vývoj 2009], which is now in the process of inter-ministerial consultation and should be soon submitted to the government to approval, is a framework document delimiting the science policy for coming years and beyond.[1] It does not mark a completely new approach to the area but strives to realise in a more systematic way the goals, ideas and modes of thinking about knowledge and research which have been being formulated in science policy documents since several years now. It can be taken for a condensed package of policy imagination on appropriate civic epistemology for knowledge society. Before I start discussing actual formulations of the policy let me note that the policy is not presented as a result of *political* choices but as something without a reasonable alternative, as something given by the international developments with which the Czech Republic needs to catch up and by certain needs and limits of the Czech economy. In this sense the policy does seemingly not transgress the modern "great divide" [Latour 1993] between science and politics because politics has become so economised and expertised that we

[1] Note that the seemingly "archaic" word "science" is no more employed in the title (as well as in the content) of science policy documents. It was first superseded by the expression "research and development" [e.g. *Národní politika výzkumu a vývoje České republiky na léta 2004-2008*] and later, as in the present document by "research, development and innovation".

do not recognise it as politics anymore[2]. Putting forward an alternative to the civic epistemology implied in the document thus also means re-politicizing policy – that is opening possibilities to think and enact alternatives.

Let me start now by introducing a quotation which condenses keywords and central perspective of the document. The following paragraph provides a diagnosis by the authors of the document of the current state in the CR whose desirable change motivates the reform.

"Outcomes of R&D have not so far been consistently used in innovation in the Czech Republic. Among the major causes is the lack of new R&D findings appropriate for commercialisation, the lack of interest of the application sphere in the outcomes of R&D from public sector (given mainly by the use of other comparative advantages as cheap labour force etc.), generally low interest of many academic institutions in the transfer of findings or their insufficient knowledge of these matters. This is among other things reflected in limited number of newly established spin-off firms in the CR which are natural partners of research organisations and recipients of their knowledge. Substantial problem is inconsistent application of intellectual property rights in public and private sector, which is reflected in low patent activity in the CR. Also collaboration between public research and corporate sphere in R&D&I is, like in other countries, low" [Rada pro výzkum a vývoj 2009: 12]

This simple paragraph implies many presuppositions which are rather – but not always totally – explicit. First, it equals, in the first and second sentence, innovation with commercialisation. The document cannot imagine other

[2] This feature of today policy does of course not characterise only science policies but neoliberal policies in other sectors as well (education, health etc.).

usages of knowledge stemming from research than those which get commercialised in the industrial sector. It cannot imagine, for example, nongovernmental civil sector or local communities as creative users of knowledge, and it even does not mention public administration as potential users (though it does so on several other places in the document but the industry remains a paradigmatic user). Second, it conceives of "spin-off firms" – and no other social actors - as "natural partners" of research organisations and recipients of their knowledge. It literary naturalises one type of link between science and society while absolutely omitting any other. Third, the document equals intellectual property rights (IPRs) with patents – unable to think about any other type of IPRs like Creative Commons[3] or free software licensing. Related, application is conceived solely as a technological innovation – not as a social or sociotechnological one. This materialises, for example, in the name of the agency planned to support applied research (along the Czech Science Foundation supporting basic research) which is "Technological agency". Even though the secretary of the Council for research and development that prepared the policy documents reflected on the fact that it was a reductionist name, it was nevertheless assigned – pointing to the dominant model of technological innovation in mind.[4]

The role of the state changes significantly under this epistemology. Instead of assuring for production of public goods whose value are defined by other means than purely market demand, the state starts to basically play the role of a service organisation to businesses. It is for example planned that the state will, on one hand, provide businesses with scrips (*poukázky*) for purchase of research

[3] For a case study of the use of creative commons licence in science see http://wiki.creativecommons.org/African_Sleeping_Sickness_Test [accessed 9.4.2009].

[4] Research interview, 23.2.2009.

from knowledge producing institutions and, on the other hand, will provide bonuses for research organisation for their collaboration with businesses on research projects. The key issue here is, again, that it is *only* business organisations that are in the game – and no other social actors like NGOs or local communities.[5]

The society is in the document explicitly characterised in the following paragraph.

"In the CR, sufficient awareness of wider public does not exist about the importance of R&D&I for the development of competitiveness and the quality of life. This is at the same time accompanied by certain reticence of society in relation to novelties and the unwillingness to risk which is negatively reflected in an insufficient demand for innovation. This is related to low "entrepreneurial spirit" of Czech population. Also the media do not yet sufficiently propagate research, new research findings and their contribution to economy as well as the quality of life of inhabitants[6]" [Rada pro výzkum a vývoj 2009: 14].

Society is not thought of in terms of (political) citizenship – and even less in terms of epistemic citizenship of active (co)producers and users of knowledge, but as "inhabitants" whose quality of life can be improved by research in case they are as much as possible open to innovations. Any "reticence" is interpreted as negative and harmful for both science and society. Such thinking about

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[5] In western European countries there is for example a well established institution of "science shops", a research unit operating at (or associated to) a university which carries out research on demand or in collaboration with local communities or NGO. In 2001 science shops operated at more than 60 European universities [CEC 2002: 15].

[6] The documents simply says "inhabitants" without any specification. ("Rovněž média stále ještě dostatečně nepropagují výzkum, nové výzkumné poznatky a jejich přínos pro hospodářství i kvalitu života obyvatel.")

society is deeply rooted in the so called "deficient model" which presumes that society is questioning science solely as a result of its epistemic deficiency in relation to it - and if people are educated they will become more supportive of science. Despise the fact that this model was abandoned on the European level not only as politically unacceptable but also as an inadequate explanatory model [Stirling 2006] it still survives in its strong formulation in the new Czech science policy. Related, the notion of risk is employed in the document either in positive terms as a societal courage to make a change or it refers to phenomena to be sorted out by R&D; it is however never addressed as a possible *negative* outcome of the very technoscientific activity. Consequently there are no consideration of institutional mechanisms for identification and management of risks possibly arising from R&D activities.

The last feature I want to pinpoint here is the emphasis put on quantitative assessment of R&D&I, expert-based establishment of research priorities (foresight exercises) and overall "management" of the sector. This move corresponds to my initial observation that the science policy is as if exempted from "politics" and given by objective, apolitical criteria. It helps to submit research and development to "societal accountability" – thus restricting the autonomy of science - while keeping the general public at the safe distance. The accountability is ultimately reduced to accountancy in financial terms. Related, outcomes which could be utilised by the third sector or civil society more generally (such as policy or more practically oriented reports, articles in public media, non-patented or otherwise unprotected technological outcomes) are assigned no value in the research

assessment and researchers may in fact feel sanctioned by the system for dedicating time to their production.[7]

In the following table I try to condense the key features of the civic epistemology present in the documents and I compare it in several dimensions with the epistemological regime of science as it was imagined (not necessarily carried out in practice - see the argument of Latour [1987, 1993] summarised in the introduction) in the modern enlightenment project.

[7] A similar concern is expressed by US academics promoting community engaged research: "A central challenge to expanding engaged research is a perception held by many faculty members that it is not valued in promotion and tenure processes. Without academic recognition and reward, scholars are unlikely to carryout community-engaged inquiry in great numbers or over long periods of time. Research universities can advance engaged scholarship by establishing clear criteria by which institutions can provide incentives for faculty to undertake engaged research, assess its quality, and reward those who carry it out well" [Stanton 2008: 24].

	economizing knowledge	modern epistemological regime
legitimisation	commercialisation, re/production of capital, growth	truth, re/production of knowledge, emancipation
movement of knowledge	intellectual property rights	communalism (free movement of knowledge within scientific community)
concept of innovation	technical	technical
concept of external reality	natural and human resources	nature and society
role of the state	state as a service actor to businesses, actual privatisation of the state	state as a sovereign
concept of risk	risks to be sorted out by R&D	risks to be sorted out by science
science – society relation	research as an expert activity, society = economy, society of "inhabitants" and consumers of innovation	research as an expert activity, society of laics and amateurs
organisational mode	entrepreneurship, management	vocation, vision, autonomy

Table 1. Comparison of the main features of the epistemological regimes of economizing knowledge and the modern regime.

The table indicates that some of the features of the two knowledge regimes remain the same. There is certain continuity with a variation. It is also what makes the two regimes not openly conflictive but rather complementary in a sense that many scientists would still understand their work in terms of the modern epistemological regime while operating rather successfully in the R&D structured by economizing science policy [Stöckelová, Linková 2006; Linková 2009]. If we attend more closely to the concept of civic epistemology as developed by Jasanoff for the US, the UK and Gernany, we could observe that the Czech situation resembles most closely – and hardly surprisingly – to the German model of rather closed system of knowledge making and legitimisation which is centered around certified actors and in which the exclusion/inclusion of societal actors is to be pre-decided top down. There is also a strong presupposition of consensus around knowledge which makes it difficult to think and articulate both risk and uncertainty implicated in knowledge and innovation themselves. And it also averts attention from conflicts of interest arising from the situation of scientists and academic institutions collaborating closely with industrial and business actors (there is no mention of such a possibility what so ever in the document).

The epistemology implied in the documents does not however impose a framework from above which would contradict the mainstream public opinion on the nature of science and its role in the society. Both the European [Gaskell et al. 2006: 19] and national opinion pools [Šamanová, Škodová, Vinopal 2006] indicate – compared to most of the other European countries - high support for science in the Czech public, association of science with medical, technical and natural science disciplines, techno-optimism, expectation of practical impacts of science (even though the direct contribution to economic growth is not perceived as most important [Šamanová, Škodová, Vinopal 2006: 22]) and at the same time relatively low

active interest of general public in science. Accordingly, the Czech are among European societies seeing "scientific delegation" (experts deciding on the basis of scientific evidence) as the most desirable governance principle of biotechnology regulation [Gaskell et al. 2006: 45]. The public opinion thus seems to match well with the mix of modern epistemological regime and the economizing of knowledge. What is however important to stress in this context is that the proposed science policy documents do not simply take a descriptive stance (and are not meant to correspond to the general opinion on science) but performative stance – they explicitly try to change current state of affairs in the direction of increased academic-industry link and commercialisation of research outputs. The dominant public opinion on science can thus explain why the proposed reform does not evoke significant public attention or critique but it cannot prevent us from opening up and thinking about possible alternatives. This is indeed what I try to do in the second half of this chapter.

Socializing knowledge

In order to explore alternatives to the epistemological model implied in the science policy documents as well as in the general public opinion I will look into things which do not line up with it. I specifically focus on the public engagement in the environmental area. I don't want to claim that the area as a whole had become innovative in terms of knowledge production and use and the handling of expertise. The Green party – especially the current one, "cleaned up" of those who tried to keep the party linked to the environmental social movement[8] - has strongly

[8] For the discussion about the desirable party-social movement nature of the Green party see Bělohradský [2006; 2007].

relied on the governance in terms of "scientific delegation". In spite of its emphasis on public participation in the last election campaign[9] the Green ministers (of the environment and of the education) have formulated their key policies as expert – not political and public – issues.[10] As Konopásek, Stöckelová and Zamykalová [2008] analysed it in the case of the "paradigmatic" controversy over the construction of the highway bypass around Plzeň, it is also green NGOs who may use the modern dichotomy of science and politics and legitimise their actions with reference to pure expertise of certified experts. However, I want to argue in this chapter that many noteworthy developments take

[9] The Green party election programme "Quality of life" from 2006 reads as follows: "We still encounter efforts to restrict the rights of citizens in the cases that concern them. We can see a furious effort to prevent the repletion of the Constitution and block the existence of the institute of national (general) referendum. Local referenda are often invalid due to the necessity of high participation of citizens. Proponents of new laws try to restrict the participation of interested public in decision-making processes. This manifested for example in the case of the law on the protection of nature and landscape, atomic law or the civic code. Civic activities and public participation in the administrative or political decision-making are in these situations a counterweight to the formalizing forces. The Green party stands against the restriction of civil rights in laws regulating the protection of environment. The Green party will thus promote the widest possible support of nongovernmental non-profit organisations – interest associations, civil initiatives, foundations and publicly beneficial organisations, as an important democratic pillar of society." (http://www.zeleni.cz/157/clanek/4-otevrena-spolecnost-a-demokraticka-ucast-posilme-ochranu-lidskych-prav/#4.2 [accessed 11. 4. 2009]; translation TS).

[10] See e.g. an interview with Martin Bursík on climate change [Kaiser 2009]; similarly minister Ondřej Liška responsible for the reform of the higher education and partly also for the R&D&I itself tried to restrict and channel rather than open up participatory debates on the proposed higher education policy [e.g. Christov 2009]; the Party leadership of the Green party tried to closed down rather than support the public debate on the placing of the US missile radar in the ČR and so on. See also the chapter by Michel Perottino in this book.

place in the environmental area at the same time which put the dominant epistemological model (shifting from the modern regime to the economisation of knowledge) into question.

Before starting to discuss specific cases I want to distinguish four ideal-typical modes in which social actors can relate to knowledge and expertise. First, they may simply subject themselves to knowledge produced by specialised, certified institutions. This of course happens in many cases – maybe more often than normally presumed. For example when patients "experiment" with drugs prescribed by medics, changing the dosage or intended use of them, it can already be interpreted as a questioning of certified knowledge. Second, citizens and civic associations may be actively outsourcing knowledge and expertise from specialised, certified institutions, domestic ones or from abroad, thus reclaiming partial epistemic agency by formulating requests for knowledge and using it latter for specific purposes. Third, social actors can themselves become producers or co-producers of knowledge, for example collaborating with academic institutions or academicians on research projects and generation of expertise. There are still only a few environmental NGOs in the CR who ask for research grants (for example from the Ministry of the environment)[11] but as we will see later in this chapter, many things of this kind happen on a more informal basis, that is unrecognised as a "research activity" for example by the state database of research projects. Situation in at least some of the Western European countries and in the US

[11] E.g. from 167 research projects submitted to the Ministry of the Environment in 2008 only 11 involved as an applicant or co-applicant an organisation with a legal form of an NGO or civil association or an individual unattached to any institution (http://www.env.cz/AIS/web-pub.nsf/$pid/MZPVMFOZABT5 [accessed 11.4.2009]).

where such activities often get a clear institutional support is significantly different in this respect[12]. Finally, social actors can develop parallel knowledge to the one produced in specialised certified institutions; knowledge that often does not even enter into an open confrontation with mainstream discourse and practices – for example alternative medical therapies.

I will now briefly describe and discuss three cases of production and use of knowledge which come from interview with members of three environmental organisations, all of them professional in a sense that they have paid employees. I select them for qualitative analysis because of their different scale of involvement in research and knowledge production activities and also different thematic focus. I will call them urban ecology (UE), rural and landscape ecology (RLE) and conservation biology (CB), according to the main focus of their activities. Neither of them of course corresponds to any ideal-typical modes of relating to expertise that I have distinguished in the previous paragraph. But this is exactly what interests me – the mixing and impurity of the modes used, and at the same time the challenges all this poses to the epistemology implied in the science policy documents.

Urban ecology (UE): UE is an association which – compared to the other two I will introduce later – sees itself as the most political one: it wants to defend the

[12] See for example science shops initiatives [CEC 2002: 15; Interacts 2003] or different sorts of community based-research [e.g. Chopyak, Levesque 2002; Artury et al. 1999; Warner 2008] which are supported by research councils in the UK (http://www.esrc.ac.uk/ESRCInfoCentre/index_voluntary.aspx [accessed 15.4.2009]) and Canada (http://www.sshrc-crsh.gc.ca/site/apply-demande/organisations-organismes-eng.aspx [accessed 15.4.2009]; see also http://communityresearchcanada.ca/?action=members [accessed 15.4.2009]).

interests of certain groups of people living in the city which prefer alternative modes of transport to automobilism and an overall slowing down of the city. At the same time they also participate in administrative procedures and city committees and produce reports analyzing developmental plans of the city etc. They have a long-term collaboration with three specialists who mostly work for UE on an unpaid voluntary basis (none of them is from an academic sector or a public research institution but from private firms). Interestingly, these experts do not present themselves as linked to UE during official negotiations (e.g. with the municipality) but as independent experts: the link to the civil association UE could devalue or compromise their position in eyes of civil servants. Apart from this UE has unsystematic collaboration with a Faculty of architecture. They have contact with a professor who is willing to assign student work on topics negotiated with UE. This is however not trivial for the association and requires capacity on their side: it has to formulate the task and oversee the project under way so that it keeps it linked to their needs. The interviewee saw the unique expertise of the association in its interdisciplinary care for the topic including technical and social science expertise (the interviewee himself has a degree in social anthropology and spent some time in Copenhagen during his postdoctoral studies with a project focused on urban mobility) and the translational work between expert and political articulation of issues.

Rural and landscape ecology (RLE): The roots of RLE reach before the year 1989 when an ecological journal was established by employees of an institute of the Academy of Science. After 1990 when the institute was dissolved the association became a “recycling point” for the institute’s

researchers. RLE organised interdisciplinary[13] communal-political debates, e.g., on developmental plan of the city, and it is since this time that they keep a circle of specialists from different disciplines who are collaborating with them on a practically voluntary basis. The association has a particularly strong link with one university department in terms of supervising theses, common curses and even mobility of people (formers students end up as employees of the association). This link was even perceived as perhaps too strong by the director of RLE, driving the departments' students too much to application instead of getting solid theoretical grounds during their studies. In spite of all these different links to academic institutions most of the collaborations remain on personal – not institutional – basis: i.e. RLE collaborates with individual academicians, rarely with institutions, and on the other hand members of RLE collaborate with academic institutions (e.g. as students' supervisors) as individuals. Exceptions have been two projects, both financed from abroad: a project on participatory regional planning where public dissemination and participation of an NGO was required by the foreign coordinator and a project recently submitted to an EU operational programme together with a university department. In terms of their epistemic contribution, the director of RLE sees two main specificities of their activities when compared to academia. First, interdisciplinarity of their approach to thematic issues ranging from technical disciplines to philosophy (which also the participating academicians very much appreciate as something less developed on academic ground); and the linking of communal/ city life with its intellectual potential. This is, according to the director,

[13] I do not distinguish for purposes of this text different forms of multi-, inter- and transdisciplinarity, a distinction which can be made in some contexts, and simply use "interdisciplinarity" to refer to the fact that researchers from different disciplines are involved in knowledge exchanges.

absolutely lacking in the official governance mode of the municipality, which does not see NGOs as actors able to provide expertise.

Conservation biology (CB): CB was founded a couple of years ago by a group of students from a university (a natural science faculty) as an affiliate to a similar organisation in Slovakia which was established by researchers who had decided to leave an institute of the Academy of Sciences at the beginning of 1990s. They are one of a few NGO with the focus on conservation biology in the country and don't have problems to get domestic funding for their projects: they are, for example, one of the few NGOs that have applied for research funding from the Ministry of Environment and have been successful with most of the proposed projects. According to the director of CB they are not interested by routine work ("counting butterflies") but in more complicated and original tasks which demand deeper understanding (such as creation of a conservation plan for a national park); one brand of CB also focus on consulting for farmers and creating of agricultural conservation strategies. The association is in a special competition-collaboration relationship with the academy. According to the CB director, individual academics are able to carry out conservation biology research projects (such as creating a conservation plan for a national park) at dumping costs. The NGO cannot compete with them, as they can make use of their hinterland at academic institutions. Contracts in this case are often between the ordering party (*zadavatel*, *objednatel*) and an academic as private person. This is the competition side. At the same time however, there are also collaboration as CB often contracts university researchers to carry out research for them – at dumping prices - in CB projects. These contacts with academicians are based very much on personal relationships. CB collaborates in this way with several dozens of academicians. CB staff also supervises student diploma theses. However, university staff does not usually (especially in the older generation)

appreciate this as beneficial for all sides of the deal. According to the interview such collaborations with the academia cannot be called partnership (academics have a feeling they do not need an NGO); but it is a partner collaboration with some of the younger generation, especially those who do not play "first league" in academia but have also other interests. On the other hand (and in contrast to the perception of RLE), CB and NGOs of their type are not, according to the interviewee, appreciated as providers of expertise by public administration. At the same time, however, when public administration wants to use expertise in dealings with third parties (e.g. developers), it nevertheless prefers to operate with academia-based expertise. The types of knowledge produced by CB differ on scale from articles in impact journals, research reports, know-how reports, to comments on proposed legislation. "Doing research is beautiful but often has low practical impact; commenting on legislation is boring but the impact can be immense," says the CB director.

What can we take from these three accounts? First, we can see that epistemic links and collaborations across sectors exist and NGOs are implicated in them. It is in a stark contrast with what the science policy documents take into account and try to implement through policy intervention. Much of this collaboration and knowledge work of NGOs remains however on personal basis – as a paid or unpaid work, depending on the cases – which contributes to its official invisibility. For example, the Statistical yearbook Science and technology 2006 reported 223 persons employed in the nongovernmental non-profit sector all together, which is less than 0.5% of persons employed in the R&D sector in the country [Český statistický úřad 2006: II.1 Zaměstnaní ve výzkumu a vývoji]. Many of the links get constituted by biographies of individuals and their mobility between sectors. It is again symptomatic that the science policy does not show any appreciation of this kind of mobility and only mentions – and is ready to support -

international academic mobility and "horizontal" mobility between industrial and academic sectors. It is also significant that two of a few ministries which so far provided research fund for NGOs – the Ministry of the Environment and the Ministry of Local Development, are supposed to no longer distribute research funds in the reformed system of R&D [*Návrh změn státní správy výzkumu, vývoje a inovací*, undated], which may even more hinder the participation of the third sector in research activities. Related to the institutional and policy invisibility is the fact that while cross-sector relations are in many cases perceived as partnership between individuals, they do not exist as such at the institution level or with older generation of researchers in academic institution (who can also be supposed to hold managerial positions). The disregard for the link of the academia with the civic sector in terms of practical policy support and recognition in research evaluation translates here onto the level of academic institutions. The institutions could indeed harm their performance in the eyes of policy makers/ funders if they take the link with the civil sector seriously and dedicate their energy to it. Individuals must be then motivated otherwise – by the personal links, engagement with the issue, interests going beyond their academic careers.

Second, two of the NGOs see their contribution explicitly in interdisciplinary take on issues which is less present – even though rhetorically prioritised – in the academia. It is interesting to consider in this context an analysis carried out in the UK by Barry, Born and Weszkalnys [2008] of three logics of interdisciplinarity, "a set of contemporary rationales about what the purposes of interdisciplinarity are and how it should be guided and justified" [Barry, Born, Weszkalnys 2008: 24]. The authors talk about the logic of innovation, the logic of accountability and the logic of ontology. Innovation refers to "a spectrum of arguments about how scientific research can be expected to contribute to industrial innovation and economic

growth"; accountability to "a range of ways in which scientific research is increasingly expected to be accountable to society" [Barry, Born, Weszkalnys 2008: 24]; and finally the logic of ontology is characterised "by an orientation towards effecting ontological change. /…/ intentions to re-conceive both the object(s) of research and the relations between research subjects and objects" [Barry, Born, Weszkalnys 2008: 25]. It is symptomatic that the Czech science policy only takes into account the logic of innovation in its reductionist, econometric approach. Although more material should be gathered to fully address the issue of the logics of interdisciplinarity present in NGO projects, it is clear from the interviewees' accounts that they think about interdisciplinarity in much broader terms. Both societal accountability and ontology is involved in their accounts. RLE set their interdisciplinary debates in a form of public communal exchanges which enable not only epistemic exchange but at the same time a (trans)formation of its political relevance. The director of CB talks about major role of local knowledge: "If we took outcomes of scientific research and simply transfer them to practice, we would offer meshwork (síťovina) instead of compact cloths. Something very leaky. Thanks to communication with people having local knowledge this can be supplemented, transformed, darned." Local inhabitants (fishermen, farmers) are not a source of indisputable knowledge for her – on the contrary it may sometimes be funny what they say. But it is always a great source of inspiration and information on local exigencies according to her. These accounts indicate that NGOs' knowing goes beyond disciplines in many different ways – not only towards the exchange with other scientific disciplines but also towards local knowledge or communal relevance re-creation.

This brings me to the third point I want to make, which is the localisation of knowledge and innovation. Modern science was strongly linked to the idea of universality. True knowledge, or the truth, was supposed to be

universal and abstract – valid irrespective of place. As science and technology studies have shown, this has never been the case. The universality is an effect of localisation of knowledge on many places (though the spreading of technoscientific machineries and practices) [e.g. Latour 1987; Law, Mol 2001]. As economisation of knowledge does not care primarily about truth and validity but functionality and utility, it does no more emphasis "universality". It rather operates in the topology of "globality" as for competitiveness and the mobility of researchers and technoscientific objects, and "nationality" as for the reference to nation-state economy which should profit from R&D&I. The narratives of NGOs do definitely not disregard global and national dimensions of knowing and innovation (this would be unthinkable in the context of "planetary" environmental issues) but they explicitly bring to the game also the dimension of the local – of localisation of knowing as well as of the use and relevance of knowldge. The RLR interviewee talks about communal co-evolution of the city and its intellectual potential. The CB interviewee talks about differences between regions and their specificities which make the local knowledge (that is the knowledge of local inhabitants as well as a researcher working in the locality for extended period of time) so relevant. This epistemic stance requires long-term relationship rather than instantaneous measurement. While the modern ideal of universality and the economic ideal of unlimited global mobility can be (partially) achieved through extending the technoscientific networks and related legal devises (like patenting schemes) it only can work, as science and technology studies teach us, for closed systems: lab knowledge can be movable and universal so far as it stays in a standardised lab environment. As soon as it moves outside the lab into open (eco)systems it becomes mutable. By the same token, an open ecosystem requires localised knowing, not simply an application of a universal knowledge. It seems that the NGOs – operating in contrast to many scientists outside of

a lab – have a special appreciation and sensitivity for this insight.

Concluding summary

I will summarize my exploratory arguments by coming back to the table which compared the modern epistemological regimes and economizing of knowledge and expanding it by a third alternative in some of its dimensions which can be considered on the basis of the empirical material introduced above.

	economizing knowledge	modern epistem. regime	socializing knowledge
legitimisation of science	commercialisation, application, re/production of capital, growth	truth, re/production of knowledge, emancipation	re/production of knowledge, critique, application, sustainability
movement of knowledge	intellectual property rights	communalism	open, public goods
concept of innovation	technical	technical	socio-technical
science – society relation	research as an expert activity; society = economy; society of "inhabitants" and consumers	research as an expert activity; society of laics and amateurs	research as participatory activity interwoven with political articulation of issues and interests; society of (co) producers of knowledge
organisational mode	entrepreneur-shipmanage-ment	vocation, vision, autonomy	engage-ment
inter/ disciplinarity	interdisciplinarity – the logic of innovation (mobilisation of natural and human resources)	disciplinarity as the main concern (establishing of distinction between sciences of nature and sciences of society)	interdisciplinarity – the logic of accountability and the logic of ontology (a study of socio-natural ecosystems)
topology	global (collaboration and competition), national (economy)	universality	locality

Table 2. Comparison of the selected features of the epistemological regimes of economizing knowledge, socializing knowledge and the modern regime.

Two things seem noteworthy to me in the table. First, there is a valuable specificity in the socializing regime of knowledge. It does not need to be uniquely attached to a third sector's epistemic practices but it is strongly embodied in them. Second, economizing and socializing knowledge may coexist to some extent but it will always be coexistence in tension if not open conflict. From this perspective it is hardly acceptable that the state allies itself so uniquely with the former and detaches itself from the latter.

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Social Movements and Public Action

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edited by

Pascal Marty

and Sandrine Devaux

CEFRES

Prague 2009

Centre français de recherche en sciences sociales, USR 3138 CNRS-MAEE, Vyšehradská 49, CZ 128 00 Prague 2

1st edition

This book was published with the support of the EU-CONSENT network of excellence, a European Commission Framework 6 programme.

ISBN: 978-80-86311-20-3