

Living Knowledge

■ International Journal of Community Based Research

Challenges and Opportunities



- CBR and Technoscience Activism:
A Report on the Living Knowledge 3 Conference
- Science Shops in Central and Eastern Europe:
Challenges and Opportunities
- The Acting Concept "Genetic Engineering in Action"
- Challenges of Citizen Engagement in
Emerging Technologies



Living Knowledge
The International Science Shop Network

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Editorial

Looking back at 2007 was again a good year for Science Shops in the context of international cooperation. Thanks to Claudia Neubauer and the team of Fondations Sciences Citoyennes we had a wonderful and inspiring Living Knowledge conference, last summer in Paris. It came up with fruitful discussions about the future of the Living Knowledge Network.



The TRAMS consortium did a good job in supporting emerging Science Shops. So the mentoring idea was effective. But we - the Living Knowledge Network - face a lot of important changes in the future. There will be no more structural funding when the current project TRAMS ends in May. And there will be a change in staff, because Caspar de Bok, who for years has been one of the key persons of Science Shop networking, will lay down his coordination tasks. Thank you very much for all your efforts.

There are many tasks for the future: The network will keep on providing services, like website, discussion list, newsletter, and maintaining the International Science Shop Contact Point. It will also keep on lobbying for the idea of Science Shops. We will have the next Living Knowledge conference 2009 in Belfast. And we started the discussion to move forward with a global alliance in Community-Based research with networks from North-America and Asia. But we also face a lot of discussions about the organisational structure of the Living Knowledge network which also will include the idea of membership fees to support the service.

How to proceed? There will still be the possibility of financial support by the EC as the open call shows. But we have to discover other - own - resources. Benefit from your national networks. Use the Living Knowledge network as a market place to post your ideas or take responsibility for a working group. Be ambassadors for your projects and for the Science Shop idea. We don't have to sing on the same page of the song book, but I'm sure we will find a way to conduct the choir. And remember: The network has to be fed.

Due to funding reasons this is the last printed issue of the Living Knowledge magazine, but the Living Knowledge newsletter will remain. It is in discussion if future issues of the magazine will merge with the e-journal 'GATEWAYS: International Journal of Community Engagement and Research' being developed by UTS Shopfront, Sydney and CURL at Loyola University in Chicago. Information about coming (online) editions and publishing cooperations can be found at the homepage of the Science Shop network www.livingknowledge.org. Contributions for the Living Knowledge newsletter and the website are always welcomed.

I wish you all the very best for 2008. Keep on contributing!
Yours sincerely, Norbert Steinhaus

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A next printed issue of Living Knowledge – International Journal of Community Based Research is uncertain - due to financial reasons. Information about coming (online) editions and publishing cooperations can be found at the homepage of the Science Shop network (www.livingknowledge.org). The editors still welcome the contribution of reports, articles, news, press releases and clippings, letters, contribution to discussions, job offers, internships, internet links etc for the Living Knowledge newsletter and the website. Please feel free to contact the editors for your questions and any support.

The views expressed in the articles and papers are those of the authors and are not necessarily endorsed by the publisher. Whilst every care has been taken during production, the publisher does not accept any liability for errors that may have occurred.

International Science Shop Office

As many of you know Caspar de Bok - as policy advisor for internationalisation at Utrecht University - is no longer involved in daily business of the Science Shops and decided to step back as network coordinator. Nevertheless he continues to coordinate the EC Science Shop project TRAMS (until May 2008).

Caspar de Bok: "Needless to say I have some sad feeling leaving the network as an active member because the Living Knowledge conference showed the positive energy of the network. I will not leave the network but my role will be different. Since the network offers a wide variety of experts and expertise I'm sure there will be relevant links with many of you in the future

as well. Besides that, it's the people that make the network and it's the members of Living Knowledge that make it a special network you can't just let go. It was a pleasure to work with you."

For daily businesses, information and communication about the network, Norbert Steinhaus from the Bonn Science Shop - being involved in the network as an active member from the beginning - will be at the international Science Shop contact point. Please change your references and links to the new contact point:

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LK 4



The Science Shop at Queen's University Belfast is delighted to confirm dates for the Living Knowledge 4 Conference. It will take place in Queen's University from 29th August to 1st September 2009. It will begin with an opening ceremony at 7:00pm on the 29th August in the University's Great Hall. Depending on interest a Summer School may also run during the day on the 29th August. Emma McKenna and Eileen Martin would like to hear from you if you have any ideas for the conference or would like further information. Email: science.shop@qub.ac.uk

LK 3 Proceedings

More than 330 people from more than 50 countries joined one or more of the 18 sessions of the 3rd Living Knowledge conference, with its nearly 100 oral presentations, and explored the more than 30 posters, watched the videos, and discussed at Open space workshops. And there have been much more proposals for presentations which gave us - the organizers - the difficult task to accept and refuse. A documentation of the conference with detailed papers, its presentations, posters, pictures and videos is under preparation and will be available by the end of January 2008. Its availability will be announced on the Living Knowledge discussion list. To get an impression of the conference you can have a look at some pictures and a conference video at www.livingknowledge.org

Multi-faceted approach to community engagement

Science Shops Wales (SSW) opened in September 2006. It is affiliated to the University of Glamorgan and the University of Wales, Newport. The funding provided by the Higher Education Funding Council for Wales has enabled us to undertake a variety of different approaches towards empowering communities through knowledge transfer. The demise of heavy industry in the south Wales Valleys has made it one of the most socio-economically deprived regions of the UK. A perceived lack of opportunity means increasing disenchantment with education - up to 40% of adults have no basic qualifications. These problems are compounded by the local geography, with mountains and poor public transport preventing easy movement between towns, whilst the local environment has been degraded by industrialisation and poverty. Its per capita CO₂ emissions are among the highest in world. Communities often feel isolated and disenfranchised, though



there remains a strong tradition of community involvement. In order to address as many of these issues as possible, SSW has developed a multi-faceted approach to community engagement, which emphasises the environment and sustainability.

- 14 research projects have been completed by undergraduates and SSW staff - and 12 more are underway
- A range of easy to read science leaflets were produced, and are advising other national organisations on how to make their own publications more accessible
- In August a 2-day forum for local experts and community representatives to discuss sustainable development strategies was held; this work

continues through a series of practical activities

- Training resources on environmental issues, such as participatory biodiversity auditing, with a dedicated outdoor training site under development are prepared
 - Nearly 40 science outreach activities were run
- More information at www.scienceshops.wales.org.uk.*

There is a long way to go in terms of supporting lasting improvements among our local communities. As well as continuing to provide research support, we aim to facilitate the creation of a self-help network - promoting knowledge transfer between community groups and universities, and influencing the research agenda by raising key, demand-driven research questions. The goal is to provide a series of outputs to act as the foundations for future steps, which are accessible, relevant, locally-focused and of real value to the communities of south-east Wales.

Particulars

The Senate of the 'Gheorghie Asachi' Technical University of Iasi, Romania, has decided to award Prof. Michael Sogaard Jørgensen, from the Technical University of Denmark (DTU) the title of Doctor Honoris Causa for remarkable scientific merits and contributions in the field of Environmental Management and Sustainable Development, as well as for all his support to the development of the Environmental Engineering profile in the University of Iasi. The awarding ceremony was held on September 15. Michael Jørgensen is head of the Science Shop at DTU also involved in Science Shop networking activities from the very beginning. The link with Iasi was made through contact with Prof. Carmen Teodisiu from the Science Shop at Gh. Iasachi Technical University. Congratulations!

Dig and Learn

The promotion of scientific understanding in primary schools got more and more attention since the results of the Pisa studies have been published. The subject "soil" with its various facets and fields of work therefore presents itself as ideal. But a curriculum for kindergartens does not exist yet. Educators are often isolated in questions of conversion of scientific education.

Science Shops and universities from Romania, Hungary and Germany cooperate in an FP6 project on country specific soil problems. Their aim is to promote the scientific understanding in primary schools and to link educational institutions with external partners outside of schools. Specific components for primary school education, which promote the scientific understanding of children in the basic school age and enlarge their skills such as a curriculum for general knowledge instructions and a teachers' guide and toolbox on soil issues were developed and tested. Supported by training seminars for teach-



ers, courses at schools and three national workshops, activities were expanded to a target group of pupils from 5 to 8 years age, and so covering the different ages of entry to the school system in the different European countries (kindergarten and primary schools).

EFSUPS activities run until October 2008. Pre-tests of the developed training units and training seminars for teachers of participating schools took place at the end of 2007. Pupils instruction and practical teach-



ing in classes to apply the offered tools is planned for April 2008. A workshop in each participating country to present the results of the project will be organized in October 2008. The EFSUPS website gives an overview of the progress of the project, and offers a forum for dialogue between participating kindergartens and primary schools as well as for the exchange of experiences and project results:

www.teaching-soil.eu
www.exploring-the-ground.eu

UNECE and LK Database

The Aarhus Clearinghouse for Environmental Democracy supports the effective implementation of the Aarhus Convention through the collection, dissemination and exchange of information on laws and good practices relevant to the public's right to

- access environmental information,
- participate in environmental decision-making, and
- achieve justice on environmental matters.

The Clearinghouse provides information for a wide range of users, including Parties, Signatories and other states; Inter-

governmental organizations; NGOs; students and researchers; and the general public. Easy access to information on how countries have implemented the Aarhus Convention can provide an invaluable source of inspiration for other countries that work on developing their own procedures, mechanisms and legislation.

The Aarhus Clearinghouse for Environmental Democracy now features the Living Knowledge Database. See <http://aarhusclearinghouse.unece.org> and follow 'Resource Directory'. And don't forget to update your information in the database.

Global Alliance in Community-Based Research

The question how to create new partnerships, teaching and learning opportunities, and project development and how to effectively organize multicultural and interdisciplinary collaboration connecting local community issues with the global perspective has been a main topic discussed during numerous national and international gatherings. Recently a consultation about the best ways to move forward with a Global Alliance in Community-Based Research was held on September 2 in Paris, after the 3rd Living Knowledge confer-

Recently the Dipartimento Ince. There is strong support for linking up the various networks. It was decided for the time being to make use of the web-site and newsletter capacities of the LK network itself to stimulate debate, circulate ideas and move forward.

Peter Levesque (Canada) and Rajesh Tandon (India) were asked to prepare an initial statement of principles for discussion.

A global networking meeting will take place in May in Victoria, Canada, for the CUexpo2008.

www.cuexpo08.ca

A special Square

Researchers and residents jointly redesign a town square in Arnhem

The Sint Marten district in the Dutch town of Arnhem includes a square located in a social housing estate dating from the 1980s. It is felt, however, that the square no longer meets the residents' needs as an attractive place, where children can play and residents can meet. A group of enthusiastic residents therefore asked the Science Shop at Wageningen University and Research Centre to redesign the square. The

researchers who took up this request decided to involve the local residents – adults as well as children – in the design process, to help them design a square which local residents would enjoy and feel responsible for. Over the period from March to November 2007, two researchers from Alterra and two students from the university's department of landscape architecture worked on the project. They regularly consulted a core group consisting of representatives of the local community centre, the housing corporation and the Arnhem authorities, who offered content- and

process-related feedback. At certain moments, a group of district residents, who were asked to reflect especially on the proposals being developed and to contribute their ideas, supplemented this core group. In producing their designs for the developed alternatives, the students used the residents'



views as a source of inspiration, and tried to incorporate as many of their preferences as possible. Two of the alternatives were elaborated into redevelopment designs and presented to the residents. Based on their reactions, we made a final design for a square that has an attractive green appearance, offers children many opportunities for playing and encourage parents and elderly residents to spend time there and meet each other.

More information on www.wur.nl/NL/onderzoek/Wetenschapswinkel/Projecten/stmarten/

Community-Based Research and Technoscience Activism: A Report on the Living Knowledge 3 Conference

by Richard Worthington, Pomona College, USA

[...]Living Knowledge: The International Science Shop Network recently convened its third conference (LK3) from 30 August to 1 September, 2007 in Paris. [...] The stated Science Shop network's aims were expanded by: 'to promote and support public access to and influence on science and technology', and in this manner moved beyond promoting the community-based research (CBR) to engaging the much larger and far more consequential world of research.

Expanding the Agenda

The conjoining of CBR on the one hand, and popular participation in the goals and practices of the research system on the other, harbors social and political potentials that belie what might otherwise seem to be an obscure matter. The significance of this connection derives from the centrality of R&D in the global economy, the insularity of decisions about it, and the illusions about the research system's consequences for everyday people that are manufactured by its promoters. [...]

Given the advancing significance of the research system, the complex of corporate, state and university leaders who shape science policy is at pains to encourage public engagements with it that are both episodic in frequency, and ritualized celebrations of progress in substance. In taking research into their own hands, community-based researchers implicitly, and often explicitly, challenge this agenda. Likewise, HIV/AIDS activists, opponents of digital surveillance, seed savers, and movements against advanced weapons systems represent but a few of the many grass-roots engagements with specific arenas of science and technology that seek democratization and accountability. As isolated undertakings, however, these efforts yield less than the sum of their respective parts. [...]

Networking for Action

LK3 was unquestionably a step in the direction of a movement that connects disparate genres of knowledge-focused activism, and includes research policy within its scope. Nearly 300 people attended from 37 countries and 5 continents. A pre-conference on the basics of science shops for people interested in organizing them attracted 70 participants, revealing a growing worldwide commitment to building these new and important institutions. The conference organizers called for contributions in five theme areas: university engagement with communities; citizens' science and social movements; research policy from local to global; innovation and citizens; and participatory processes in science and technology. Given the origins of science shops as university-based entities that respond to community requests, a program weighted heavily toward the first theme would not have been a surprising outcome. However, the presentations were fairly evenly distributed among these topics. University professors and researchers accounted for about two-thirds of the attendees.

NGOs (many of them free-standing science shops) were the next largest grouping, about 13 percent of the total. Also represented were government employees (including elected officials), independent consultants, and researchers at independent institutions. I could find only six attendees who were primarily affiliated with a community-based organization of the type that science shops ideally are intended to serve, a void that was noted in a few discussions without gaining significant attention. Youth researchers (preuniversity), who often have an inspiring presence at CBR conferences, were absent from this gathering altogether. While this range of profiles would probably compare favorably with



many conferences on similar themes, clearly the LK network's aspirations to promote a world of greater knowledge equity face a continuing challenge in bringing multiple voices to the conversation. LK network members are in essence brokers and intermediaries in the negotiation and collaborative construction of a research system that serves sustainability and social justice, but their efforts will likely founder unless a broader range of participants can be brought to the table.

Diverse approaches to knowing were reflected in presentations that ranged from accounts of CBR projects to reflections on the epistemology of trustworthy knowledge; and from standard social science analyses of social movements to an on-the-spot scenario workshop on nanotechnology. In this regard, LK 3 "walked the talk" of the oft-heard claim that diversity in knowledges is to be valued. Finally, the most engaged conversations arguably transpired at breaks and poster sessions (no doubt lubricated by the marvelous French cuisine of all organic and local produce, served with recyclable plates, cups and implements); and Open Space sessions permitted unique and important topics to emerge from the attendees and enabled the formation of relationships among them. The flavor of the many intriguing discussions launched from the floor is suggested by one that addressed "Promoting Participation: More Participatory Research, or More Participation into Non-Participatory Research?"

Cutting across the conference themes and diverse formats were three principle concerns: critical analysis of the political economy of the research system; strategies for expanding the effectiveness of the LK network; and next steps. Corporate control of the research system received substantial attention in both plenary and breakout sessions. At the opening session, for example,

University of California (Berkeley) biologist Ignacio Chapela recounted his community-based research with indigenous farmers in the southern Mexican state of Oaxaca. [...] Subsequent presentations – on topics such as corporate shaping of bioscience research agendas and the political economy of participation in nanotechnology policy –resonated with Chapela’s remarks. So did a closing plenary observation by Dominique Pestre (Ecole des Hautes Études en Sciences Sociales) that broader participation in mainstream institutions has a legitimate place, but opposition is the main source of improvements in technical safety. In short, understanding and confronting corporate and state power was an important topic at LK3, a significant development in a community of practice that was founded to make local linkages, and retains this grassroots orientation.

A second cross-cutting emphasis was collaboration and networking among science shops. Deliberations in this mode included project descriptions – e.g., the Dig and Learn collaboration of science shops in Bonn, Bucharest and Gödöllo on soil science for primary school learners. Strategic discussions engaged several issues: the differences between local collaborations and translocal campaigns to bring CBR advocacy to national and international policy levels; the importance of supporting and working with Third World scientists; and the need for a growing, densely connected global network to overcome the perpetually marginal and marginalized position of popular movements in the techno-scientific arena.

The Living Knowledge network itself was the object of several discussions. For most of the period since its founding in the late 1990s, LK has received European Union funding to support its core activities, but the EU now expects the network to become self-supporting. How will the financial requirements of managing a network be met? (Answer: probably through a sliding scale of membership fees.) How will the focus and energy provided by various EU-sponsored projects, such as Training and Mentoring in Science Shops, be sustained? (Still working on that one, but decentralized nodes deploying diverse strategies will have to step up to fill the void of receding sponsorship from the center.) It is no exaggeration to say that the survival and effectiveness of the network will hinge



on the capacity of its members to build new synergies. If the political economy focus provided a view of the challenges, the discussions on networking took up the matter of how to deal with them. Finally, next steps were articulated in venues ranging from plenaries to small discussions during breaks and after hours. In addition to the discussion just reviewed on the changes in management of the LK network, the most visible further steps will be a series of upcoming conferences: the Canadian University Research Association Expo in Victoria, British Columbia, Canada, May 2008; LK4 in Belfast, Northern Ireland, in 2009; and a Scientific World Social Forum being organized for Belém, Brazil, in 2009, details at le-forum.net/www/info/wsf-fsm-st.

Conclusion

LK3 identified and analyzed a “third sector” of knowledge production to people active in this arena, deepening our understanding of our place in the political economy of knowledge; continued the valuable nuts and bolts work of building science shops as hopefully stable contributors to this third sector; brought in new players from the global South, from peer-to-peer movements, and from research policy; and sent everyone off not just more enlightened, but armed with specific targets and plans for continued networking and building of a global movement. Perhaps most impressive was that LK3 was simulta-



neously more intellectual than past LK conferences (with terms like epistemology and names like Gramsci flowing comfortably through the discussions), and more practical in its sophisticated discussions of strategies and plans for next steps. Action item number one arguably could be the network’s dependence on a predominantly university-based membership, which will be hard pressed to affect policies and practices without a much wider base of participation. The promises and perils were best captured by Claudia Neubauer of the French Fondation Sciences Citoyennes in her closing remarks:

“We are living this tension between on the hand a strong optimism and an extraordinary creative power, and on the other hand the impression that what we have achieved up to now is little. So our way towards a new contract between science and society that will lead to a more just and ecologically sustainable world of increased solidarity is still very long. And thus, please, keep acting as you do!

Notes

- 1 This is a shortened version of an article first published in ‘Science as Culture’, Vol. 16, No. 4, 475–480, December 2007. You can find a pdf of the full text at www.loka.org/Documents/lk3review.pdf
- 2 Previous conferences were held in Leuven in 2001, and Seville in 2004.
- 3 Available at www.scienceshops.org/new%20web-content/framesets/fs-about.html
- 4 I use the term CBR in a generic sense to refer to the type of research done by science shops and similar organizations. In the simplest terms, CBR is systematic inquiry that incorporates a substantial level of community participation for the purposes of community improvement and social change

Science Shops in Central and Eastern Europe: Challenges and Opportunities

by Richard Worthington,¹ Bálint Balázs,² Diana Cupsa,³ Lucian Georgescu,⁴ Jiri Holas,⁵ Vlasta Holasova,⁶ Ilie Telcean³

This essay briefly reviews the activities, accomplishments and outcomes of the Science Shop movement in the Czech Republic, in Hungary and Romania.

Introduction

The development of Science Shops since their origins at Dutch universities in the 1970s is an uneven story of growth, retrenchment, accomplishments, disappointments, and relegation to a precarious space at the edge of larger trends in science and technology. Nonetheless, in the first decade of the new millennium, Science Shops and similar institutions can be found throughout Europe, the Americas, Asia, Africa and Australia-New Zealand (including the first Science Shop in China formed in November 2006, and another in early 2007). It is very interesting that this type of structure (Science Shop) was adapted to different social systems and cultures, historical and political backgrounds. Networks among Science Shops - such as the Living Knowledge Network and the Campus Community Partnerships for Health - have flourished in the past 10 years, and others that have gone dormant (the International Participatory Research Network, the Loka Institute's Community Research Network) have made major contributions to the growth of the field. While each network has a primary regional base (Europe and North America for those just cited), all have a global reach due to their ability to connect via the Internet and at biennial or triennial conferences. Institutional changes favoring Science Shops, such as requiring experience in community-based research (CBR) for new faculty hires at universities, are clearly growing (Worthington, 2006). In sum, it appears that this novel institution has found a niche in society.

The original Science Shops aimed to make new knowledge accessible to civil society groups that were pursuing social goals and lacked the capacity to do pertinent research on their own. They arose in a social context marked by several key elements: the existence of civil society organizations that could benefit from applied research and recognized its importance; a willingness of these organizations and research performers (primarily universities) to collaborate on projects; a disposition in at least some segments of the citizenry to question the claims of recognized experts in the state, industry, and universities; and a culture of societal efficacy that encourages people to embrace the possibility that social action can yield positive results.

These are not conditions that are encountered everywhere. When the first Dutch Science Shops were founded in 1973, for example, other European countries such as Czechoslovakia were firmly in the grip of authoritarian rule. In the Czech case, the regime had been propped up by foreign occupation only five years earlier, resulting in a purge of reformist elements from social, economic and cultural institutions that is estimated to have affected up to 10% of the working population (Glenn, 2002, p. 45). These regimes ultimately collapsed, but nearly two decades after the fall of Soviet-backed socialism, civil society in Central and Eastern Europe remains weak (Howard, 2003). The recent creation of Science Shops in the Czech Republic, Hungary, and Romania may thus seem to bear uncertain prospects, given the importance of a strong civil society in the formation and success of these institutions elsewhere. In the same time it is important to

take into account the fact that the Science Shops were created in these countries during the EU accession period characterized by an increased role of civil society, opening of academic activities to divers new directions and increasing of transparency in decision making process.

In this essay, we briefly review the activities, accomplishments and outcomes of the Science Shop movement in these three countries. While the picture is mixed, experience to date shows that negative outcomes are by no means a foregone conclusion. At this point, a number of developments seem possible. They include the demise of these noble experiments; their stabilization as small institutions that veer significantly from the reformist visions of the original Science Shop movement; and sustained growth as important contributors in the development of a stronger civil society sector.

Czech Republic

The Science Shop EDUCO CZ was founded in Prague in 2006 as a partnership of Agricultural Research Council, Ltd. (a private research and consulting company), the Czech Agricultural University's Institute of Education and Communication, the Institute of Agriculture and Food Information (a state-sponsored research and information organization founded in 1926), the Equestrian College in Prague, and Charvat Oil (fuel distribution). In addition to in-kind and cash contributions from these sponsors, the Science Shop was assisted in its start up with a grant from the European Social Fund.

EDUCO CZ is the Czech Republic's second Science Shop. An environmentally-oriented Science Shop in Brno was founded in the mid-1990s with assistance from activists in the Dutch sister city of Utrecht, and completed a pilot project on waste separation. However, attempts to secure a second round of funding were unsuccessful, perhaps owing in part to a shift from the politics of the Velvet Revolution of 1989, in which environmental issues played a prominent role, to preoccupation with economic instability and hardship in the transition to capitalism (Schmit, 2003).

The focus of EDUCO CZ is renewable energy systems in general, and biofuels in particular. Ironically, the shop's scientific expertise in biodiesel is in part a product of repression during the Soviet era. The top Czech scientist in the field, Daniel Preininger, had been forced from a leadership position in Czechoslovakia's agricultural research system due to his opposition to the Soviet invasion, taking up a position with less authority at the Institute on Scientific Systems in Agriculture that reported to the Ministry of Agriculture. There, he met a younger scientist, Jiri Holas, who later became the central figure in the founding of EDUCO CZ. The two were thus able to spend considerable time together investigating methods of converting the Czech Republic's persistent surpluses in cereals and grains into biodiesel fuel. When the top-down system of agricultural research of the socialist era gave way to a more open system of innovation and

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information, Holas founded the Agricultural Research Council in 1993 to do research and consulting. On hearing of the Science Shop model while attending a conference in Berlin several years ago, he collaborated with others to create EDUCO CZ as an institution that would formally integrate the capabilities of the partner organizations listed above to play a mediating role in advancing biofuels.

During its initial two years, EDUCO CZ has developed and delivered eight courses that train agricultural producers in requirements of EU environmental policy; four online courses on renewable energy systems; a regional pilot study on social and economic aspects of rural development; and a guidebook on agricultural diversification. The organization's website (constructed with assistance of students at the Agricultural University) carries some 1035 articles on renewable energy systems, most of them in Czech language, and by August 2007 had logged nearly 3 million hits, a remarkable accomplishment in a country with a total population of approximately 10 million.

Clearly, EDUCO CZ has been very productive during its brief existence. The outputs just recounted are only part of the story. Even more significant is the diversity of players who have been involved in the Science Shop's programs, including sponsoring organizations from private industry, higher education, and the state, with active involvement of university students and farmers in addition to researchers. Moreover, the focus on biofuels and rural development has high relevance in the Czech context, where economic growth has been robust since the late 1990s, but agricultural output (and consequently the quality of rural life) has declined. The role of EDUCO CZ seems closer to an agricultural research and extension service than a Science Shop driven by civil society questions on the original Dutch model, but there is little question about its potential relevance to a more balanced development process in the Czech Republic. The more immediate question is the one typically faced after a successful startup: how will it be funded on a sustained basis?

Hungary

The Center for Service Learning, Community Outreach and Voluntary Work (www.scienceshop.hu) was established in 2005 within the Institute of Environmental and Landscape Management at Szent István University in Gödöllo (near Budapest). Initiated by the Environmental Social Science Research Group (www.essrg.org), the Center is the first Hungarian Science Shop, providing a direct link between the university and local communities.

The Center was created amid the contradictory and challenging circumstances of a changing higher education system in Hungary. In the transition to a market economy, national leaders attempted to modernize and adapt universities to the changing social and economic environment with a tuition fee, institutional integration, and new governance structures. Powerful national and regional actors promoted a new emphasis on linkages with business to complement the traditional emphasis on academic excellence. However, a multitude of social demands on universities, combined with the limited effectiveness of the reforms, resulted in an unprecedented expansion in enrollments, chronic budgetary shortfalls, and serious quality problems.

In this context, an exclusive and rigid pedagogical culture has persisted even as the social reality in universities has changed. A recent review of civic engagement and higher education in Hungary revealed a paucity of relevant information on or observation of service learning, action research, or community-based learning (Kozma and Galambos, 2005). Even so, a number of conditions that are favorable toward such partnerships can be discerned amid the ferment of a changing higher education landscape. These include:

- A tradition in the Central European social sciences that treats these societies as unique and focuses on their practical problems (Wessely, 1996).
- A growing awareness of new collaborations between universities and social actors in their surroundings; and new interdisciplinary programs (Kozma and Galambos, 2005).
- The adoption of new methods in professional programs such as problem-based learning and action learning (Kelemen and Balázs, 2006).



Exploring the ground in a Youth Summer Camp

Much of the original impetus for the Center came from students. An early initiative in 2004 was a youth summer camp in the University's organic garden and horse farm that drew attention to the local natural heritage. The project was organized by Ágnes Mero, who at the time was a university student and later became the Center's first coordinator. This experience led to a collaborative project with Science Shops in Bonn and Bucharest, entitled Exploring the Ground – Fostering Scientific Understanding in Primary Schools, that is funded by the EU's Sixth Framework program (November 2006 – November 2008).

In the Center's brief history, a wide range of successful projects have been completed. From a curricular standpoint, courses of György Pataki and Réka Matolay in Social Entrepreneurship (focused on alternative businesses) and of Norbert Kohleb in Environmental Politics have successfully engaged students in active and collaborative learning. Course evaluations demonstrated that students were able to take over responsibility for their own learning, which is an enormous step ahead in the context of Hungarian higher education. Extracurricular service learning is best exemplified by an ongoing participatory rural development initiative launched in 2003 in the socio-economically disadvantaged Borsodi Mezőség Environmentally Sensitive Area. Organized by PhD student Barbara Bodorkós, student volunteers have collaborated with local residents in the development and implementation of a sustainable development agenda in all phases of the project.

Yet another project is a Science Café (part of the worldwide Café Scientifique Network) managed by Balint Balázs, that meets monthly in Budapest, and provides a relaxed and publicly accessible environment for discussion of such topics as sustainable agriculture, the risk society, and social participation. In the last academic year, the Center organized a thesis market, where students can find meaningful research topics for their thesis while talking to NGOs, local governments and SMEs. The first event was attended by 150 participants and forged connections in research areas offered by nine faculties of the university. Finally, students enrolled in a course on Hungarian ethnics were invited to volunteer for a weekend to help catalogue the folk arts collection of Tiszatarján, a project which unfolded during the interviews made in the Borsodi Mezőség region. In the process they learned about folk arts motives and traditional lifestyles in the

region, as well as the importance and constitution of a complex registration system which can be used in any field of work.

A prevailing skepticism and distrust towards democratic politics and institutions makes a pedagogy centered on participatory processes and values rather difficult in Hungary. Nonetheless, the Science Shop activities just reviewed established equal standing of scientifically trained researchers, students, local communities and the publics. In the tenuous context of present day Hungarian society and higher education, the prospects for building on these accomplishments are uncertain, but two things are clear. First, action research and learning which reaches beyond the borders of traditional university research tasks is a key to building up a flourishing network with civil society organizations. Second, it is clear that further development of science-society interfaces and cooperation with professionals of the international network is essential to successfully fulfill a niche in the Hungarian higher education sector. Considering the ever changing institutional background in the Hungarian higher education sector, the greatest challenge for the Center for Service Learning, Community Outreach and Voluntary Work is to situate itself close to constructive possibilities for moving forward (Balázs, 2007).

Romania

Eight Science Shops and a network connecting them (INRO) were created in Romania between 1999 and 2005 under the auspices of a Dutch Foreign Ministry Matra Programme project on problem-based learning through Science Shops. The Dutch program managers solicited competitive proposals at science and engineering faculties of Romanian universities for two sets of three year-projects, with those selected in the first phase continuing along with the new award recipients during the second phase. In addition to guidance from three Dutch Science Shop veterans, the project funding supported one full time equivalent staff member at each university (typically this position was divided between two faculty members), and provided modest research expenses for items such as computers, publication of results, and travel to workshops.

While civil society is poorly developed throughout Central and Eastern Europe, Romania ranks at the bottom among these countries in important indicators of social development (Badescu, et al., 2004), creating an especially challenging environment for the work of Science Shops. This difficult environment is plainly evident in the semi-annual project reports from the participating Science Shops, which reveal considerable struggle and often discouraging results in efforts to engage students, faculty, university leaders, civil society organizations, and public authorities. Nonetheless, all of the Science Shops persisted amid the adversity, and by the end of three years most of them successfully met or exceeded the project criteria for number of research requests received and projects completed, students engaged, and multidisciplinary connections created. A striking example is the Science Shop TIMCED InterMEDIU at Petroleum-Gas University in Ploiesti. At the beginning of the Matra project, the staff noted that students were primarily using the Science Shop as a consultancy for their own academic assignments, and needed to be reoriented toward working on Science Shop projects. Within three years, however, TIMCED InterMEDIU had brokered five thesis projects that assessed subsurface soil and water contamination from nearby oil refineries and fertilizer plants. Students were in contact with citizens throughout these projects, and the Science Shop's outreach to the Monitoring Laboratory of the Environmental Protection Agency provided access to analytical capabilities not available at the university. In addition, the Science Shop handled the types of arrangements that often preclude

campus-community partnerships, such as transportation for students to field sites and acquisition of sampling devices and containers.

Two additional examples from the Matra project suggest the diversity of Science Shop experiences in Central and Eastern Europe. The Science Shop InterMEDIU at the University of Oradea is part of the Biology Department in the Faculty of Sciences, with experience in environmental protection and public health. Since its founding in 2002, InterMEDIU Oradea has completed projects on the incidence of giardia among local school children; the control of ragweed and other pollen sources that cause allergic reactions that have been a significant medical problem; and the prevention and treatment of diseases afflicting trees in the city's parks. Of these projects, the last emerged directly from apartment dwellers who noticed that the trees were suffering from parasites and diseases. This resonated with concerns about the scarcity of green space in Oradea, which is considerably below European Union standards for a city of its size. The other projects emerged through interactions with medical faculty and local health practitioners who were aware of these problems. The ragweed elimination project was initially funded through Matra, but has continued with funds from the local city council. Volunteers have participated extensively in eradication efforts, as has the railroad, which increased maintenance on its rights of way in order to suppress pollen growth. Both the local and national press have covered the project. In sum, InterMEDIU Oradea in its initial years has completed one project that arose from the concerns of neighborhood residents, and has located modest local funding for another public health endeavor that has gained widespread participation and recognition, demonstrating that effective grassroots participation is possible even in environments where there is little history of or disposition toward it.

InterMEDIU-ECEE Galati at the University "Dunarea de Jos" in Galati started with local connections and played a catalytic role in the formation of an Agenda 21 action plan for the county and region that



INRO: The Romanian Science Shop Network

resulted in new laws for sustainable development. After several years of operation, it was selected as Romania's European Center of Excellence on the Environment under the terms of the country's accession to the EU. ECEE is situated in the second urban agglomeration in Romania with an important industrial development being in the same time in the most environmentally sensitive region in Europe (Lower Danube Basin and nearby the Danube Delta). All the development strategies for this region have to maintain the balance between the economic development and environmental protection with a strong transparency and civil society participation. Following an initial period of building relationships, the center has flourished and now has 14 employees. In this case, the Science Shop not only forged local civil society connections, but catalyzed a larger research and curriculum modernization initiative that is well aligned with the country's need for researchers and project managers

in the process of European integration. The creation and the development of Inter Mediu Department constituted an important advantage for all stakeholders in the region and at national level. In the same time, the geographic position of Galati University and the strong collaboration with similar structures in Republic of Moldavia and Ukraine created the possibility for a trans border partnership in different projects and studies regarding environment and sustainable development. Actually there are some contacts for collaborations with academic institutions from other Balkan Countries (as Bosnia Hertzegovina) in order to extend the experience in other European conditions.



Class about mushroom intoxication by Science Shop Bacau

At this point, Science Shops have been created as institutions in Romania, and many of them remain active, even if at a modest level. The InterMEDIU network was the least developed of the Matra project components, and is currently dormant. Nonetheless, the Romanian experience demonstrates that very modest Science Shop funding can stimulate new approaches to learning in universities and contribute to strengthening civil society in an environment where such contributions clearly should be high on the list of national priorities.

Conclusion

Science shops clearly can play a crucial mediating role in transitional societies grappling with their own internal political and economic dynamics, as well as processes of economic globalization. The evidence reviewed here shows that Science Shops in Central and Eastern Europe have been both efficient and effective, forging new paths of learning and social action while operating with very modest levels of support. In a very dynamic environment of global production and European integration, their small size and marginal visibility and status make Science Shops easy targets for downsizing or elimination, as we have seen even at one of the most distinguished centers of Science Shop activity in the world, the University of Groningen.

At the core of Science Shop operations is a brokering role that serves civil society. Although the required resources are low compared to other university undertakings, brokering takes time, and effort must be compensated if the Science Shop is to be a sustainable institution. At the same time, the basic fact that civil society is the beneficiary means that as a general rule the funding for this brokering role can only be realistically supported through some form of subsidy, rather than a market exchange. This operating sponsorship and subsidy can, in theory, come from regional (EU), national, and/or local entities.

Regional sponsorship is unlikely to provide a reliable and sustained source of funds because Science Shops are local institutions, and EU projects must involve more than one country. While Science Shops can and do network across borders, basing their existence on such networking would change their basic purpose and design, although the Galati example demonstrates that this may work in

individual cases. At the national level, in theory resources could be reprogrammed from less effective programs that are deeply embedded in Central and Eastern European universities, and widely viewed as being in need of change; but in a context of severe budgetary constraints, the political barriers to such reprogramming are formidable. The Czech Republic may be an exception in this case: since the late 1990s, Czech economic growth has been robust, yet one place where the social costs of the associated changes have been concentrated is the rural areas that are the focus of EDUCO CZ. Support (through the university system) for a Science Shop thus seems more plausible given the greater availability of resources at the national level and the rural economic development focus of the existing initiative. The Oradea case has demonstrated that local funds can be tapped for Science Shops, although clearly the existing level of funding falls far short of what is needed to sustain operations, which at present continue on a volunteer basis.

It is thus left to the creativity and persistence of Science Shop advocates to navigate this difficult terrain. A distant observer who was mindful of the history of similar grassroots knowledge-making initiatives since the Scientific Revolution would predict their marginalization and demise. A more proximate review of Science Shop activists and their impacts in higher education and the community in Central and Eastern Europe suggests there is a basis for optimism, even if it is guarded

„What are your thoughts on Science Shops and civil society? Readers are invited to contribute to a discussion on the issues addressed in this article at www.loka.org/ScienceShops.html“

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Notes

- 1 From 1993 to 2004 the value of agricultural production fell by 7.4 percent (www.czech.cz/en/economy-business-science/general-information/economy-development-and-potential/agricultural-industry-in-the-czech-republic/), source accessed December 12, 2007.
- 2 INRO stands for InterMEDIU Romania (mediu is the Romanian word for environment). In addition to the eight Science Shops created with support from the Matra Programme, another four were created with their own resources by the end of 2005.
- 3 The mass media were an interesting exception, with most Science Shops reporting local and/or national coverage in newspapers and television of their activities. In at least one case, however, media reporting sensationalized the results of a project, much to the chagrin of the project director (interview, Carmen Teodosiu, September 20, 2006).
- 4 TIMCED is a predecessor organization to the Science Shop in Ploiesti, Training, Information and Mediation Center for Eco Development.
- 5 For details on this cutback, see www.rug.nl/wewi/Archief/opheffingbeta?lang=en, accessed January 2, 2007.

The Acting Concept “Genetic Engineering in Action”

by Otto Seitz and Markus Kosuch. Translated by Anna Seitz

The educational theatre with the main stress on “applied theatre” is of growing importance in terms of transferring complicated facts of sciences and maths, of violence prevention and promotion of languages and even in ethical issues which deal with the use of biotechnology in medicine and agriculture. The basic idea of this approach of educational theatre is the conviction that only holistic learning with all senses is a sense-full experience.

In a project of discourse about ethical and social issues in modern medicine and biotechnology supported by state department of education and research (BMBF) consisted the collaboration between the group of educational theatre in Baden-Württemberg (together with the Science Shop Tübingen), the centre for ethics of Tübingen university and the university for economy and environment in Nürtingen-Geislingen. In this project two different methods were used; the reflexive consultation, which this article will not discuss further, and staging the issues and the educational theatre. Both methods are oriented to the following three main ideas.

- I. Earnestness in approaching ethical problems
- II. Developing the skill of arguing
- III. Reflexion and transition to a flexible relation between experts and laymen.

In the end of 2006 the project „Genetic engineering in action“ was carried-out successfully in a two-day workshop with a mixed group of teachers and students and two groups of pupils in the studio for educational theatre in Reutlingen.

The conception of the workshop:

The conflict on the “outside” (for example the chances of genetic engineering) becomes a conflict on the “inside”. The protagonist has to evolve a strategy on how to act regarding to the conflict. Here not only scientific perspectives but also personal, emotional, ethical and political (power, economy and money) aspects are of great importance for a decision. On the first day the participants experience the different dimensions of the conflict. The day ends at the “summit” of the conflict. The conflict should then be solved on the second day. The solutions are worked out discursive or theatrical. Afterwards the results are presented to the whole group.

1st day of the workshop –

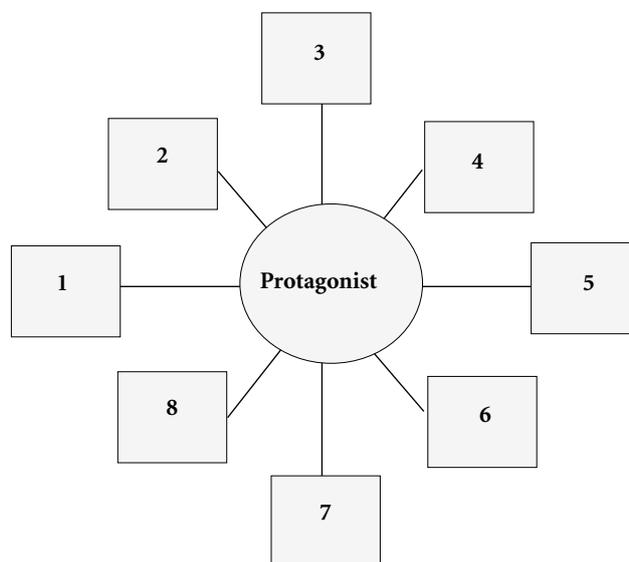
the conflict is coming to a crisis and is presented as a scene

The group was split up in two groups one that dealt with a case from red genetic engineering and one that examined a case from green genetic engineering. The starting point for the first group was the imagination of a fictional case study from red genetic engineering (Parents thinking about taking up a preimplantation genetic diagnosis (PGD) abroad) and for the second group from green genetic engineering (Mister Müller, farmer, thinks about cultivate Bt corn). It followed an intense introduction for the groups into the topic of red and green genetic engineering through young scientists from the fields biology, biochemistry and law. In order to work with the given information every participant constructs a card with arguments for

a fictive character of the given case. Here should be cared about the topics family, public, power and the internal life of the protagonist. The young scientists supported the group members with wording the cards and open questions.

The protagonist in conflict

The ring-game: “How can I pull the protagonist on “my” side?” The sentences and the cards with the arguments are used to pull the protagonist on the side of the one who is arguing (both figuratively and physically – cf. rules of the game). Eight ropes are fastened to a wooden hoop. Every one who is arguing takes one rope, the protagonist steps into the ring. The other participants are viewers for the time, but later they become an active part in the game.



Basic rules of the game:

1. Everyone tries to pull the protagonist on his side.
2. While trying to pull the protagonist on ones side an argument or a sentence is combined with the physical activity of “pulling”.
3. While trying to pull the protagonist on ones side with ones sentence the other players hold against it and try to maintain the position of the protagonist.
4. Further sentences and arguments can be expressed, which get assigned to the characters and therefore can be documented by the viewers.

Feedback on the experience:

How did the participants experience the game, changing characters and being “inside of the conflict”/being in the hoop? How did the importance of the specific arguments shift?

Scenes of the study case about the topics family, public, power and the internal life of the protagonist are developed in small groups. Every group selects one of the given topics and makes up characters who are involved in the conflict.

Interviewing the characters / Lawyers

Some participants of the small groups take the part of a character and are interviewed by the other group members. In a further phase

the group members cross-examine the character like lawyers to test whether the character can maintain his position even when he is getting attacked. The intense preoccupation with the character and a deep understanding of an unknown part is the necessary prerequisite for an authentic and credible play.

Rehearsals of the scene

The attitude, arguments and activities of the actors aim at the influence the point of view and the decision of the protagonist. The protagonist has got a searching and questioning attitude. He has not already developed a basic point of view or even made a decision. The attitude of the protagonist shall make the arguments of the others appear. The scene shall be stopped at the climax – at that moment when the conflict is the biggest.

Presentation and flashlight-feedback

One after the other the small groups present their scene. After every presentation the audience gives a short flashlight-feedback:

What did affect me the most in this scene?

Which new ideas came up through that scene?

Where would I like to continue with the scene?

2nd day of the workshop – the day of the (fictional) decision

Sociometry – the decision of the protagonist

On the second day of the workshop the participants have to make a decision from the perspective of the protagonist. The call and even develop the reasons, motives and consequences of this decision.

The participants overtake intellectually the part of the protagonist and decide from his point of view. To do this they take a stand on the stage. Here they communicate verbally their decision and take a new stand next to the person that has for most parts the closest opinion. The participants who make similar decisions form a new group.

Reason – Decision – Consequence

Every “decision-group” develops now a scenic-dramatic presentation where reasons for the decision are called, the decision is communicated and potential consequences, which result from the decision, are presented. The consequences can be “realistic”, “utopian”, “nightmarish”, ... The small groups are free in the scenic-dramatic presentation of reasons and consequences. Just the decision of the protagonist is firm. The presenting group builds a statue and the protagonist communicates verbally his decision. That way the decision itself is scenically and clearly presented. It is also the dramatic turning point which delimits clearly the presentation of the reasons from the presentation of the consequences.

Presentation of the decision, its reasons and possible consequences to the whole group of “green and red genetic engineering”

In this part all the participants from the group for green genetic engineering and red genetic engineering are together.

At first the decisions of the protagonist that dealt with green genetic engineering are presented one after the other.

A short feedback on the decisions, the reasons and the shown consequences follows after every presentation.

Afterwards all the decisions of the protagonist (both discursive and scenic/theatrical) about the topic red genetic engineering are presented one after the other.

Discussion of the ethical issues and the theatrical solution in small groups

The “Reason-Decision-Consequence” presentations are discussed

in mixed groups (4 members = 2 green genetic engineering + 2 red genetic engineering)

Final plenum

In the final plenum the participants talk about their experiences, attitude and changes of their attitude.

Final remarks about the theoretical background

The method of discourse “Genetic engineering in action” is based on the idea to empathise the participants with an unknown character with the techniques of the educational theatre. You stylize and abstract a conflict which is based on a real occurrence. Furthermore the participants are playing several characters of the same conflict. With this approach they could experience different levels and perspectives of the conflict. The concept of this method of discourse is build upon “the scenic play” (Ingo Scheller: Das Szenische Spiel – Handbuch für die pädagogische Praxis – Cornelsen Scriptor Berlin 1998). “Genetic engineering in action” puts the main emphasis on studying in a way that is “based on experience” and “action oriented”.

Following core terms are of importance for this way of studying.

1. The term of adventure or rather experience
 “You have an adventure – You make an experience!” The concept of “teaching based on experience” assumes that human being learn through experience and even just through experience. Everything that happens in class and that does not become an experience that students remember will not be learned.” Through the conflicts that are put on stage in the workshop the participants have common adventures. You turn these common adventures into a learning experience, when you publish, discuss, alienate and reflect on these adventures. In working on the common adventure the participants create the learning experience.
2. Working on “the attitude”:
 While working on a character the participants deal with the attitude on the inside (emotional, ethical, philosophical and social) and the attitude on the outside (physically, vocally) of an unknown character about the topic “genetic engineering”. Working on “the attitude” is a learning method taken from theatre. This method is aiming at empathising with unknown characters and situations. Attitudes get published, worked on, modified and compared and through all of this get approachable for reflexion.
3. The thesis of acting protected by a role with the connection of identifying with a character
 As every participant identifies with an unknown character, he could act protected by a role. The participants not only act themselves, but also a different person. According to Stanislavski they obviously use their own repertoire and experiences in playing this character. But they always have the opportunity as individuals to distance themselves from the character, to make a clear difference between oneself and the character. Acting protected by a role enables students
 - to reflect and to change learning adventures into learning experiences and
 - to publish and work on fears, hopes and topics that are taboo and that are not talked about in class.
 The practical results show: the more intense and exact the empathy is done and succeeded, the more serious and exact the conflicts and scenes are improvised. Because the actors know their task exactly and do not “overact” because of insecurity, earnestness is supported.

Results in a “flash light”

- Topics of red genetic engineering are easier to approach emotionally
- The need of interchange and communication and clarifying facts happens very concentrated, if this is connected with the task of creating a character (e.g. writing a role-biography);
- Acquiring arguments and information happens very intense, if the participants create characters and empathise with them.

Further information

Who wants more information, is welcome to order the acting concept in a PDF file from Otto Seitz, o.seitz@t-online.de. The documentary film “Konkrete Diskurse – Gentechnik in Szene setzen” (concrete discourses - Genetic engineering in action) can be ordered for the price of 10,00 Euro at the office of the LAG Theaterpädagogik BaWü e.V., Wörthstr. 14, 72764 Reutlingen, Email: info@lag-theater-paedagogik.de. A book publication about the entire project: Georg Mildenberg u.a. (Hrsg.): *Diskursprojekt Biotechnologie – Zur Bewertung in Schule und Hochschule: Methoden, Beispiele, Materialien*; Oekom Verlag, München (2007).

Challenges of Citizen Engagement in Emerging Technologies

by Maria Powell, Mathilde Colin, University of Wisconsin - Madison

Earlier this year, exercises aiming to engage citizens in public debates on nanotechnologies were the focus of a workshop at the 3rd international Living knowledge conference held in Paris. Although universities and nanotech centers that are trying to make this engagement happen to achieve real results, and also raise the question of the impacts (or lack thereof) on policymaking¹, there has been little discussion about the challenges in terms of community and capacity building created by these exercises. Hence our question: to what extent can citizen engagement “exercises” build citizens’ capacities to engage effectively with scientists and policymakers in real contexts over the long term? Most engagement exercises are top-down, short-term endeavors². In these conditions, is it realistic to expect unorganized lay citizens to influence science and technology policies? The projects we have undertaken in Madison, Wisconsin (USA) raise questions about the barriers that one faces when trying to do so.



Our projects aim to create more meaningful citizen engagement in nanotechnology. Supported by the University of Wisconsin’s Nanoscale Science and Engineering Center, we actively involve lay citizens—who gathered into “the Citizens Coalition on Nanotechnology” after a Consensus Conference on Nanotechnology held in 2005—in interactions with scientists and policymakers, and doing public outreach: they help to organize Nano Cafes³—selecting topics, scientists, readings, and even presenting information about nanotechnology at the events. In between the cafes, they wrote policy recommendations, media stories, and spoke at local and federal hearings.

Despite the success of these projects, we face some key challenges that we would like to highlight in order to foster reflection about what meaningful citizen engagement entails. Our experiences are teaching us that lay citizens—and sometimes we—don’t “naturally” know how to work together inclu-

sively and democratically; these skills need to be learned and nurtured. Facilitating citizens’ capacities to effectively engage with scientists, policymakers, media, and other citizens requires ongoing, time-intensive in-person and group interactions. Institutional support for this kind of efforts is very slim. Encouraging citizen participation and balanced societal discussions about nanotechnology, while working for the same institution that heavily supports it, is fraught with political tensions.

Last but not least, the individual and collective capacities built during the projects, that are necessary for citizens to interact with scientists, policymakers, and other citizens over the long-term, are very fragile and in critical ways, dependent on university support. After two years of top-down citizen engagement, aiming at empowering citizens and having them engage in a bottom-up way, we and the citizens continue to face many challenges. Rather than self-satisfaction about short-term, top-down engagement exercises, what we need today is a deep brainstorming about the challenges and barriers to genuine bottom-up citizen engagement in emerging technologies—e.g. emancipated from a top-down influence—and the ways we can overcome them.

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- 1 Irwin, A. 2006. Governance. *The Politics of Talk: Coming to Terms with the ‘New’ Scientific*, Social Studies of Science, 36; 299. Etc.
- 2 Powell, M. and Kleinman, D.L. 2007 Building citizen capacities for participation in technoscientific decision making: The democratic virtues of the consensus conference model, *Public Understanding of Science*, 2007, 17, In Press.
- 3 see Madison’s Nano Cafes, www.nanocafes.org



The Eco-social Studies Centre of the University of La Laguna. Four Years Later

by Juan Sánchez-García and José Manuel de Cózar-Escalante,
Centro de Estudios Ecosociales de la Universidad de La Laguna (CEES)

After several years of work, the Eco-social Studies Centre of the University of La Laguna (Spain) has gradually become consolidated as a real community-based research centre, complying with the customary criteria for this type of activities. The main principles governing the CEES activities include the diffusion of information to civil society organisations and the public in general, centring on research issues with a clear social component, the promotion of inter-disciplinary activities and, lastly, the furtherance of the awareness of researchers and the general public in regard to socio-environmental problems.

In number 2 (March 2004) of the Living Knowledge Journal, the recently created Eco-social Studies Centre (CEES) of the University of La Laguna (Tenerife, Spain) was presented in the Living Knowledge Network [de Cózar-Escalante 2004]. That article contained information regarding its origin, its main objectives as well as its enacted projects. From the date of its creation - in February 2003 - to the present, the CEES has become consolidated as a community-based research centre. The CEES is conceived as a research centre serving the community. Its members judge that it complies with a significant number of requisites in order to deserve such consideration. The scope of this article is to briefly describe how the new activities carried out are in keeping with such criteria. To a great extent, these activities have continued to be prompted by the demands of representatives from different NGOs, associations and citizens' platforms. Civil society's demands for support and counselling have been made in a situation of enormous environmental pressure in an island as Tenerife, of great ecological diversity and varied landscapes. The CEES has been working in a context of lack of participatory tradition, together with mistrust and even hostility from certain political and business circles.

Community-based research criteria

The centre has endeavoured to keep to the following main criteria:

- To make the results of its research available to civil organisations
- To favour access to specialised knowledge to those outside academic circles
- To centre on research topics with a clear social focus
- To foster co-operation between disciplines
- To endeavour to increase the awareness of the public and of researchers in regard to socio-environmental problems.

In order for the CEES to provide useful information and specialised knowledge to improve citizens' participation processes in the resolution of environmental problems, several studies have been published on the environmental situation in the Canaries, for example: Environmental protection and quality of democracy: functional assessment of the Canary Islands' environmental insti-

tutions (in Spanish) [F. Aguilera, ed., 2006].

Moreover, the results of research have been made public using more informal channels, such as press articles, radio and television interviews, conferences outside the academic realm, extra-mural university courses, seminars and workshops, etc.

Research topics and interdisciplinarity

The research topics chosen have been, mainly, a result of pressing socio-environmental problems of the Islands.

- Environmental protection and quality of democracy
- Governance and urban planning
- Natural wastewater treatment systems in rural areas
- Mobility and accessibility in historical centres
- Urban corruption
- Landscape and land use issues
- The dynamics of social movements in Canary politics

To favour interdisciplinarity the CEES has organized and coordinated several seminars on, among others:

- Environmental policies and interdisciplinary research (various years)
- Legal strategies facing eco-social conflicts
- Ethics and Aesthetics of Nature
- Models of Science and Politics: from expert demonstration to extended participation
- Nature and Society
- Justice and Urbanism
- Environmental Culture and Human Encounter with Nature

This interdisciplinary work is also visible in the co-operation in different research projects, such as the ones mentioned above, as well as a fortnightly presentation of research underway by CEES members or other guest speakers.



Establishing links

Concerning the last criteria, the CEES has made significant efforts to increase the awareness of the public as well as of students and researchers in regard to socio-environmental problems through the aforementioned seminars, media communication, etc. Recently, with the mediation of CEES, the University of

La Laguna has joined the Spanish Network of Universities for Climate, an initiative pursuing the development of sustainable programmes within the Universities, while making the university community as well as the public in general aware of the climate change problem. This Network offers CEES a set of opportunities for action.

An important line of work of the Centre is that of establishing formal (institutional) relationships with other public and private organisations in order to pool efforts to achieve common goals. For example, CEES co-operates formally and informally with the César Manrique Foundation, the New Water Culture Foundation, the Official College of Architects of the Canaries (District of Tenerife, La Gomera and El Hierro), Canaria Orotava Foundation for the History of Science, Secondary School Teacher Centres, Canary Network of Educational Centres for Sustainability, etc. On many occasions, these relationships have been the result of the convergence of a series of factors which reveal the importance of the university as crossroads for participatory research. For example, contacts have been made recently with the Secondary School Teacher Centres of the Valley of La Orotava (Tenerife) as a consequence of the convergence of two requests previously made to the CEES. Firstly, the petition for community-based research (CBR) from a civil society organisation (a Citizens' Forum for participation in the Special Protection Plan for the historical centre of La Orotava -Tenerife); and, secondly, the petition for training for a master course on town-planning to be delivered in the same university and addressing technicians of both the

public administration and the private sector. The CEES has acted as mediator, creating the necessary conditions for what is hoped to be a fruitful convergence in a community knowledge-building process: in this case, enacting a project on mobility and accessibility in Historical Centres in primary and secondary schools of La Orotava.

Finally, as participants in the 2nd International Living Knowledge Network Conference of Seville (February 2005) and, more recently, in the 3rd one held in Paris between August and September 2007, we have been able to observe how the evolution and consolidation of our centre develops at a par with the evolution and consolidation of this organisation.

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Information

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You & Your Body: A series of interactive public learning events

by Prof Peter Howdle, Dr Susan Hamer, Dr Vicky Ward
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The University of Leeds medical school has been running a project entitled 'You & Your Body' which has consisted of a series of interactive public learning events. The project took place between October 2006 and July 2007 and was funded by the Wellcome Trust.

This project was designed for an adult audience from the general public. The aims were to enable the public to ask good questions, present science and medicine in fun and engaging ways, inform the public about the latest thinking in a health related field, encourage public involvement in the development of future partnership events, inform them about future possible bio-science developments and identify possible partners for future development work. The project was run by a team from the Faculty of Medicine and Health at the University of Leeds and involved researchers, clinicians and scientists from across the University and from the Leeds Teaching Hospitals Trust. Between October 2006 and June 2007 a series of five interactive learning events was held. Each event focused on a particular area of the body (i.e. joints, brain, heart) and combined a series of short talks with interactive exhibits and opportunities for the audience to talk to speakers and exhibitors in an informal context. A series of general questions was answered by the panel of expert speakers. Each event attracted between 120 and 200 members of the public. Audiences

primarily consisted of older adults but the age range spanned under-16s to over-75s. Many people attended the events because of their own or a relative's medical condition, but others simply wanted to learn something new or had a particular interest in the field of medicine and health.

The events provided an important opportunity for researchers, clinicians, scientists and patient groups to meet. Some said that they had begun to have discussions about working more collaboratively and some groups from outside the University had received invitations to become involved in future seminars and events. The project also produced some unexpected outcomes, one of which was finding that many people do not see the relationship between science and clinical medicine. Science was viewed as an abstract subject, whilst clinical medicine was separate from science and research. We also found that many people had clear preconceptions about medical experts and that these focused on medical hierarchy, unapproachability and poor communication skills. However, these events were able to challenge these preconceptions. Finally, we found that people had clear preconceptions of the University of Leeds as an organisation. These included seeing it as remote from the community, a place for young people and unwelcoming.

The final project report as well as a copy of a summary report which has been developed specifically for members of the public can be found on the project website (www.leeds.ac.uk/medicine/yourbody). For further information please contact: v.l.ward@leeds.ac.uk

EC Calls

Area 5.1.1.5: Public understanding of science and promotion of public debate
SIS-2008-1.1.5.1 Exchanges and co-operation of local actors on scientific culture

This activity aims to exchange best practices and cooperation between cities (and/or regions) for the development of a scientific culture at the local level. Action in 2008 will focus on the creation of a European mission-oriented network of cities (preferably of different sizes) specifically constituted to cooperate on science in society issues. The network should ensure the performance of concrete actions such as: exchanges of best practices (twinning, coaching, networking); actions that can foster the co-operation of local actors on scientific culture in an attractive way; also using their scientific technical and cultural heritage; developing two-way communication between scientists and citizens. Evaluation will treat positively those proposals which propose actions liaise with existing Science Shops, science museums / centres or encourage the development of new Science Shops (or similar organisations) as a tool to provide local civil society organisations with the scientific knowledge they need. Existing network organisations should propose new partnerships with other structures and actors.

Expected impact: Actions for the development of a scientific culture at the local level should in particular bring together relevant local actors involved in science, culture, entertainment, education, local economical development, citizens' participation, media (e.g. local authorities, outreach departments in universities and research centres, science museums, science cafes, schools, libraries, Science Shops, citizens' conferences, local civil society organisations, local media, enterprises etc.). The European financing will not, however, support individual cities developing their local actions.

Other activities/areas open for proposals in the current call are 'Ethics and Science', 'Strengthening the role of women in scientific research and scientific decision-making', 'Encouraging cooperation and networking between scientific events organisers on public engagement with science'.

**Deadline for all proposals is
 Tuesday 18 March 2008 at 17.00.00,
 Brussels local time.**

<http://cordis.europa.eu/fp7/dc/index.cfm>, follow 'Capacities' - 'Science in Society 2008-1'.

Community-University Exposition (CUexpo) 2008

May 4-7, 2008, Victoria, BC, Canada

Community-based research is an exciting movement of learning and growing for all involved. Goals of CUexpo 2008 are to celebrate and create opportunities for new community-university partnerships, to support research that is collaborative and community-based and leads to positive change and create a space for policy-makers and university and community representatives to take action on research, resource-sharing and research ethics. Cuexpo 2008 will also provide opportunities for networking across Canada and world-wide. Several Living Knowledge network partner's proposals have been accepted for presentations and workshops. Themes for CUexpo 2008 are:

- Community-university engagement, partnerships and ethics
- Climate change and sustainable community green economic development
- Life-long learning, popular education and community / green mapping
- Youth engagement, food security
- Community and green economic development
- Women, poverty and social inclusion
- Homelessness, housing, health promotion and well-being

Information and online-registration at www.cuexpo08.ca

Planet Diversity: A world congress on the future of food and agriculture

May 12-16, 2008, Bonn

A global festival and congress of diversity is to be organized to serve as a counter weight to the government negotiations of the Rio-Convention on Biological Diversity (CBD) and its Protocol on Biosafety in Bonn, Germany, May 2008. "Planet Diversity" will bring together representatives from local and regional grassroots movements and institutions working on food and agricultural innovation and reconciliation based upon cultural and biological diversity and wants them to meet with scientists and experts as well as representatives of NGOs active in the field. A public festival at the beginning of the Congress aims to attract as many citizens, professionals and amateurs from around Germany and Europe.

More Information at www.planet-diversity.org

What is a Science Shop?

A „Science Shop“ provides independent, participatory research support in response to concerns experienced by civil society. Science Shops use the term „science“ in its broadest sense, incorporating the social and human sciences, as well as natural, physical, engineering and technological sciences.

There is not one dominant organisational structure defining a Science Shop. How Science Shops are organised and operate is highly dependent on their context. Organisations that meet the definition of a Science Shop and do provide civil society with knowledge and skills through research and education on an affordable basis will be taken into account.

There are forums for all parties interested and involved in Science Shops and other forms for community based research. They can give input to but also get information from the Living Knowledge discussion list, the bimonthly newsletter or this magazine, which provide users with resources and tools related to community-based research.

Living Knowledge Website:

www.livingknowledge.org

International Science Shop Office

livingknowledge@wilabonn.de

If you want subscribe or unsubscribe to the magazine or the newsletter please send a message to C.F.M.deBok@uu.nl or visit our website at <http://www.livingknowledge.org> and select 'Discussion list and Newsletter'

EC Services

The EC printed a flyer on Science Shops. This flyer focuses on different target groups, universities, students, citizens groups and local authorities. The flyer can be downloaded from the Living Knowledge website.

Printed copies can be ordered for free at the European Commission from liz.versterlund@cec.eu.int.

The new Science and Society portal of the European Commission replaces the previous Science and Society website. The portal is open to all news and organisations related to Science and Society.

http://ec.europa.eu/research/science-society/home_en.cfm

Still available at the old EU website are specific pages with general information about Science Shops as well as the minutes and single contributions of two Science Shop workshops organised by the European Commission

http://europa.eu.int/comm/research/science-society/scientific-awareness/shops_en.html