

Perspectives of NGOs, universities, researchers and students on co-operation through science shops

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1. Introduction

This paper presents some of the results from “Improving Interaction between NGOs, Science Shops and Universities“ (INTERACTS), which is a cross-national study by organisations and institutions from seven different countries 2002-2003. It is funded by the European Commission, DG12 under the programme “Improving the Human Research Potential and the Socio-economic Knowledge Base” – “Strategic Analysis of Specific Political Issues”. The project is part of the development of the international networking among science shops within the Living Knowledge network. The aim has been to identify changes needed in the R&D system for improving the future interaction between NGOs, researchers, and intermediaries, like science shops. By bringing together the results from different countries a broader picture is developed concerning past impacts of science shops, future expectations and policy relevance. Thereby, INTERACTS contributes strengthening the interaction between research institutions and society and contributes to a more in-depth understanding of processes and effects of knowledge production.

Some of the key questions of the INTERACTS project have been:

- How can the R&D system become more accountable?
- What are the potentials of interaction through intermediaries, such as science shops, to increase awareness of the mutual benefits of co-operation between universities and small to medium NGOs?
- What are the expectations for future co-operation between NGOs and universities?
- What policy recommendations flow from these findings at different levels: local/ regional, national, European?

The activities in the project have been:

- State-of-the-Art survey about political and institutional conditions for the co-operation between small to medium non-governmental organisations (NGOs), science shops and universities
- National case studies examining experiences with interaction among NGOs, researchers, students and science shops
- Development of future expectations and perspectives for co-operation between NGOs, researchers and science shops through discussions by actor groups at

scenario workshops (NGOs, researchers, students, decision makers and intermediaries)

More information about the INTERACTS project can be obtained at the INTERACTS homepage at <http://members.chello.at/wilawien/interacts/main.html>

2. Science shops in brief

Science shops are organisations that offer community groups free or very low-cost access to scientific knowledge and research in order to help them achieve social and environmental improvement. Some science shops are purely demand-driven as they only work with projects put forward by community groups, while other science shops also approach community groups and propose projects to them. Originally developed at Dutch universities during the 1970's, science shops and similar community-based research centres now also exist in Austria, Denmark, Germany, Romania and United Kingdom, as well as in a number of countries outside Europe including Australia, Canada, Malaysia, South Korea and the USA. According to estimates there are around 70 science shops in Europe.

Science shops today are characterized by remarkably diverse fields of expertise, organisational form and approaches. The term "science" is to be understood in its broadest sense, encompassing the social sciences and the humanities, as well as natural, physical, engineering and technical sciences. Most science shops are university-based, while others are independent, not-for-profit research institutes. The university-based science shops mostly engage students for doing the research, thus enhancing the students' skills in applying science to practical use. Some part of the research work might be done by the science shop staff and/or by university researchers. Science shops outside universities are independent research institutes where professional researchers often do all the research work. More information about science shops can be obtained at the homepage of the international network of science shops Living Knowledge: www.scienceshops.org

3. Cross-analysis of the INTERACTS case studiesⁱⁱ

Most of the cases analysed in the project were initiated by NGOs or community groups that approached science shops for assistance in conducting research on a problem relevant to their goals and objectives. The cases show that NGOs are approaching science shops for different reasons and with different ideas and expectations. The cases show that the initial step to consult a Science Shop is either based on problems the NGOs experience, observations they make, or ideas, desires or needs they have.

NGO/community initiated projects: Type of knowledge process wanted	Number of cases (field of case)
Scientific documentation of known problem to convince authorities about need for action	Denmark: 1 (environmental problem) Germany: 1 (impact of infrastructure project) Romania: 1 (environmental problems)

	Spain: 1 (environmental problem)
Enhancement of knowledge around a topic as part of NGO activity	Denmark: 1 (bicyclism) Romania: 1 (bio-diversity)
Facilitating or improving networking with other organisations	Romania: 1 (contributing to networking among NGOs)
Access to knowledge from governmental organisations/institutions	Romania: 1 (environmental problems) Austria: 1 (social services for poor people)
Development of solutions to a problem	Denmark: 1 (storage of organic food) Spain: 2 (development of green plan for city and housing for minority group)
Evaluation of NGO or community service and project	Austria: 3 (social services) UK: 2 (social services) Austria: 1 (research project about living conditions in local area)
NGO wanting to develop own services	Austria: 1 (social conditions for youth) UK: 1 (social services)

Two of the investigated cases were initiated by a science shop and not by NGOs.

Researcher/science shop initiated projects: Type of knowledge production	Focus/number of cases
Facilitating or improving networking with other organisations	Germany: 1 (conflict resolution between NGOs)
Developing NGO knowledge about funding opportunities	Germany: 1 (developing different kind of materials for use by NGOs)

4. The NGO perspective

The case studies reveal that NGOs might have expectations, when they approach a science shop:

- Research and methods which are simple, so that findings are transferable throughout the country (UK)
- Research that provides information that feeds into changing practice (UK)
- Results that can be applied to practice (UK, Innsbruck)
- Access to free or affordable research
- Access to impartial and independent research

The case studies show that one barrier to co-operating with a science shop perceived by NGOs is whether students are capable of meeting the needs of the NGOs. One of the Vienna cases, for example, mentions doubts about the appropriateness of a masters thesis for yielding useful results that would enhance the knowledge of the NGO and provide useful information for its daily work (Vienna). The results produced by the students resolved the problem and satisfied the expectations of the NGO by far. The student commitment is mentioned in several cases. Another barrier, mentioned in the Danish case studies, is that when NGOs approach the science shops with project proposals, they cannot be sure whether or when students will be able to work with their project proposal. This makes some NGOs approach science shops with more strategic problems and not urgent problems (Denmark).

Impact of science shops on NGOs

The principal impacts on NGOs from their collaborations with science shops were improved access to research resources for traditionally marginalized social elements, a more realistic and strategic understanding of the value of research, and improved capacity.

Efficient access to research resources

In general science shops are perceived by NGO representatives as an efficient way to connect universities and communities (Romania). Through mediation of science shops NGOs gain access to science and research, which they would not have had if science shops had not existed (Germany, Denmark, Spain, Romania). In the cases from Innsbruck it is stated that science shops are perceived as more accessible than a university department owing to their explicit openness to the public. Furthermore science shops are perceived as less bureaucratic than the university system (Innsbruck, UK).

NGO perceptions of science shops and of research

Science shop projects raise the awareness of the possibilities and limits of research among civil society actors. The Vienna cases point out that when clients approach the science shop they often have no idea what is open to research and what is not. Through consulting with the science shops the NGOs become aware of the possibilities and limits of research (UK, Vienna).

Contribution to capacity building in NGOs

In the majority of cases NGOs state that the science shop project contributes to their ongoing practices. In some cases projects contribute to the capacity of the NGOs to carry out future practice. This impact is not always planned or foreseen in the initial project idea and planning. However, some cases also show that a scientific report is not enough to convince authorities (e.g., municipal authorities) about the need to deal with a problem.

The cases show the following types of impact on the capacity of the NGOs:

- Projects are not only broadening the "store of knowledge" in general, they are also enlarging the capacity of the NGO to act (Innsbruck).
- The capacity of NGOs are built up through 1) provision/ mediation of relevant contacts and knowledge, 2) support for the building-up of networks, e.g. by bringing people together, 3) provision of organisational frames and experts for workshops and other events, and 4) by showing opportunities for funding (Germany).
- Through a workshop the participants felt empowered to analyse their own societal living and they were able to implement some of the results in their own local communities (Spain).
- Through co-operation with the science shops and students the NGOs feel capacitated to bring forward the research and its results in order to debate the

topic of concern, and thereby potentially impact the political sphere (Denmark).

- Influence national/regional and local government (Spain, Innsbruck)
- Learning to apply methods or theories used by the researchers or the students.

5. The university perspective

This section addresses the role of universities in relation to science shops as it has been seen through the case studies. The case studies show that science shops can contribute to the role and the tasks of the universities in different ways, but not all cases show all these types of impact:

- Contribute to the competencies of the involved students and thereby the competencies of the future professionals
- Contribute to the learning methods at the universities by making them more project oriented and problem-based
- Contribute to new research themes at the universities
- Contribute to the strategic societal role of the universities

In the majority of cases mediated through university-based science shops, the research was carried out by students, usually upper level undergraduates, supervised by scientists. In some of the cases from the university-based science shops the research was carried out by researchers in the science shop or from the university (this was the case in two of the German projects and one of the Innsbruck projects). In cases involving independent science shops outside the universities, the research was carried out by researchers in the science shops, or by researchers or students at a university co-operating with the science shop.

Contribution to the student competencies

Science shops provide a unique opportunity in the education of scientists and professionals by expanding their awareness of and skills for addressing their social responsibility through their work with NGOs. This gives science shops a key role to play in the mediation of the relationship between the public and science and in developing awareness about this relationship (Innsbruck).

An important motivating factor for the students to co-operate with the science shops and civil society groups seems to be that the results are going to be of use for someone, and not only be a desktop study (Denmark, Innsbruck).

Through co-operation with civil society students might enhance or develop the following competencies and skills:

- Social competences (Innsbruck)
- Employable skills (UK, Denmark, Vienna, Innsbruck)
- Real life experiences (UK, Denmark, Romania, Vienna, Innsbruck)
- Communication and co-operation skills (Denmark, Romania, Innsbruck)
- New knowledge and perspectives (Denmark)
- Knowledge and expertise within transdisciplinary research (Germany, Vienna)

- The ability to connect the various needs and demands of different groups with their rather theoretical scientific background. (Innsbruck)

The students also benefit from a co-operation with civil society organisations by:

- Using the results for diploma projects and publication in peer-reviewed journals (Romania)
- Acknowledgement of the quality of their work and positive evaluation in students' scientific events (Romania)
- Science shop projects may create job opportunities and thereby impact their career (Denmark, Innsbruck, Romania, Vienna)
- Being also more aware that the presentations for the general public may involve an adequate usage of the scientific terminology. (Romania)
- The students earn (in some cases) some money. (Innsbruck)

Relevance for university teachers and researchers

As previously mentioned, the researchers involved in the science shop cases were primarily involved as supervisors for the students. The case studies further show that science shop projects and co-operation with civil society can be beneficial to the university system. In the United Kingdom, Denmark and Romania science shop projects have had impact on curricula at postgraduate and undergraduate level (UK, Denmark).

Experience from one of the Danish cases shows that Science Shop projects can lead to the establishment of new research and teaching areas, like in a case about organic food. Several requests from NGOs through the Science Shop at The Technical University of Denmark resulted in the establishment of organic food as a research and teaching area at the university (Denmark). This case also shows that even where the Science Shop besides being a mediator also has taken the role as incubator for research and curricula development, it can only do so with ongoing involvement of university scientists in science shop projects (Denmark).

The Romanian experience shows that scientific publications were published in peer reviewed journals (national or international) or communicated at different conferences and seminars. Some of the project data were integrated into the regular teaching activity, and an interest in scientific follow-up topics and formulation of new project proposals were created due to the Science Shop projects. The Romanian experience also shows that the social dimension of scientific work was acknowledged, e.g. scientists acknowledged that problems can not be solved without considering the social context in which the problem is being solved (Romania). The science shop activities have contributed to the ongoing modernisation of the curricula and research by providing flexible modules of learning and project based learning, post-graduate courses, inclusion of science shop project results into the regular teaching activity, multi-disciplinary research and formulation of new project proposals (Romania).

Barriers for university co-operation between Science Shop and civil society

Several barriers for co-operation between universities and civil society have been identified in the case studies. The researchers are under a constant time pressure from the university structures: research has to lead to publications, and teaching obligations have to be fulfilled.

Some case studies have also shown that it is difficult to involve scientific staff in science shop projects, if they do not see any publication possibilities in projects done through the Science Shops (UK). Most of the Science Shop projects analysed in these case studies have contributed to “grey” literature (literature not registered in libraries or databases), but have not achieved much notice within the wider scientific community. (UK, Innsbruck). To be successful, contemporary scientists need to focus on basic science or on the problems of large business and government institutions. If Science Shop projects are mainly seen as concerned with the practical problems of NGOs with little connection to basic science or powerful institutions, researchers have little incentive to participate in them (Denmark). The German case studies show that universities are more interested in “big projects” with a high amount of third-party funding, and in building relationships with big companies or other powerful institutions rather than smaller NGO-related projects, so it is sometimes difficult to engage scientists in science shop related activities (Germany). In sum, in a world where science is increasingly expensive and commercialized, science shops that provide a connection to civil society face a structural disadvantage in competing for the interest and resources of universities.

The role of science shops in university strategies

The interviews with decision-makers in the case studies show that science shops can be related to ongoing strategic discussions about the role of universities in some countries.

In the UK science shops can be seen as relating to the so-called third mission activity in higher education, which is outreach. All managers from the universities involved in the UK case studies recognised that these issues now are on the agenda of government and expressed a personal interest in developing them and publicising staff expertise visibly to external bodies (UK). University managers increasingly accept that teaching and learning must be combined with community outreach in order to justify public funding. But at present the third mission is almost exclusively dominated by the contribution of universities to scientific knowledge production *on behalf of* (and not in co-operation with) society. This is expressed within a business / innovation orientation where the scientific advances of academia are exploited commercially.

The Head of the Department of Manufacturing Engineering and Management at Technical University of Denmark pointed out that a tendency within the university structures is that more and more knowledge is produced within the universities, but the understanding of the knowledge and for which purpose it is produced is lacking. Science shops are one way to promote and connect knowledge production and knowledge application (Denmark).

6. The mediation perspective

The case studies show that science shops provide several types of mediating functions between NGOs and research institutions. Some functions are mostly related to mediation between NGOs and researchers or students at a university, and other functions are more directly part of the knowledge production:

- Providing easy access to the resources of universities
- Mediation between the knowledge need of the NGO and the researchers and/or students as part of the project planning
- Carrying out research
- Acting as knowledge repository, ensuring continuity and progress from project to project
- Acting as antenna for new societal topics, which are not yet addressed by NGOs (when the science shop initiate projects on own initiative) or authorities
- Acting as incubator for new research and teaching areas.

The knowledge production itself takes place in a number of different ways with respect to NGO participation:

- Knowledge transfer to NGOs, where existing knowledge is transferred to the NGO by the science shop
- Knowledge supply, where researchers or students produce new knowledge, which is transferred to the NGO
- Participatory knowledge production, where the knowledge production takes place in co-operation between students or researchers and the NGO. Depending on the Science Shop model, the Science Shop itself might be mediating and guiding the interaction or it might carry out the research.

The approach of knowledge production is shaped by the type of project, the conditions of the involved actors and their understanding of research.

Mediation as process

The existence of science shops means that there is an organisational structure in place for linking the university and civil society. By providing the link between civil society and university, the science shops remove barriers for smaller NGOs to approach the universities.

Ensuring that appropriate students are involved in Science Shops projects is one of the most important tasks performed by the science shops. Without a good match between these very different institutions, a successful project is unlikely. An initial process of negotiation can be seen, where each party learns about the requirements of the others, and the research questions are operationalised in a student research project within the limits of student capability and academic requirements (UK, Germany). Linking across university and civil society means that Science Shops mediate between those who have a concrete practical interest and those who emphasize the theoretical aspects of research (Vienna).

Translating questions from civil society into a research perspective is one of the major jobs a science shop initiates before a project co-operation can start. The case studies point towards this task as being complex and time consuming (UK, Innsbruck, Vienna). The experiences from the case studies are that some larger NGOs already have formulated research questions before they address a science shop, although they may not have the resources to undertake research themselves or to commission funded research. Smaller NGOs in UK seemed to be less capable of formulating research questions, and were therefore hesitant about approaching universities or lacked knowledge about whom to approach and how (UK).

Repository of knowledge and antenna function

The cases from United Kingdom show that science shops function as a repository of knowledge that is used as a baseline for planning and implementing new projects (UK). In doing this, science shop mediation also helps promote the work of civil society (Vienna). Science shops can also have an antenna function, as was seen in one of the Spanish case studies, where the science shop equivalent acted as a watchdog for environmental and health issues impacting workers and neighbourhoods (Spain). In sum, by creating an accessible repository for knowledge, science shops help civil society constructively respond to social problems.

Problems, barriers and dilemmas

The case studies show that one barrier that the many science shops face is lack of visibility, both toward the public and toward researchers, students and decision makers at universities and research planning institutions.

The cases from Vienna point out that the contribution of a science shop to a successful project is not visible enough (i.e., even if the project results get attention, the mediation process that created it is not visible). However, too much publicity could trigger a demand which smaller science shops would not have the resources to cope with. A future task for the science shops will be to solve this dilemma of making the science shops work more visible (Vienna).

The Danish case studies further point towards a barrier related to the science shops position at the universities. The Science Shop is perceived as a separate institution at the university, and not as an integrated part of it. This made the students think that the Science Shop was not fully accepted at the university, and that doing a project through the intermediary might be less scientific than doing a project directly for a researcher at one of the institutes at the university (Denmark).

7. Future expectations of science shops and the relations between science and civil society

The pro-active part of the INTERACTS project aimed at mobilising NGO's, researchers, decision makers and science shops in the development of the debate at national and international levels about the potentials and expectations for future co-

operation between NGO's, researchers and science shops in different countries. The main points addressed were:

- The conditions for empowerment of NGO's
- The conditions for improving researchers' awareness of public needs
- The need for improvement of the services offered by intermediaries like science shops.

The discussions were carried out as scenario workshops based on an adaptation of the so-called European Awareness Scenario Workshop methodologyⁱⁱⁱ.

The preliminary workshop reports show the visions developed at the workshops. Some of the visions were (names of the country/region, where a scenario workshop gave the mentioned vision, are given in brackets)

- Strengthen the voluntary sector (UK, Innsbruck, Germany)
- Science shops at all universities (UK, Innsbruck, Germany, Denmark)
- Knowledge – a public function / sharing knowledge (UK, Innsbruck, Germany, Denmark)
- Value-led universities (UK, Innsbruck, Romania, Denmark)
- Science shops as a formalised and acknowledged part of universities (Romania, Denmark)
- Open university: universities should be an active part in society (Innsbruck, Germany, Romania, Denmark)
- Civil society as part of research and teaching (Germany)
- Multi-disciplinary approach (UK, Innsbruck, Germany, Romania, Vienna, Denmark)
- Science Shops should respond to community needs (UK, Germany, Romania, Denmark)
- Create partnerships and networks between research and civil society (UK, Innsbruck, Germany, Romania, Vienna, Denmark)
- Science shops should be independent (Vienna)
- (Innsbruck, Spain)
- Research perspectives integrated in science shop projects (Romania, Vienna, Denmark)

Some proposals for future initiatives were

- Science Shop board with representatives from NGO's etc. (Innsbruck, Vienna, Denmark)
- House of Science as a combined facility for all outreach activities at universities (Innsbruck, Spain)
- International network among science shops (Vienna, Denmark)

Some of the direct outcomes of the workshops have been

- International conference (UK)
- Creation of network among the participants (UK, Denmark)
- Working group developing the concept of House of Science (Innsbruck)
- Feed-back meeting (Innsbruck, Denmark)

8. Conclusions and recommendations

It is also an aim of INTERACTS to develop policy strategies for improving the conditions for future co-operation between NGO's, researchers and intermediaries like science shops. The main points addressed are:

- The access of NGO's and citizens to participate in Science & Technology decisions
- The conditions for intermediaries like science shops
- The conditions for university teachers and researchers to work with NGO-initiated and NGO-related topics as part of their research and teaching activities.

The development of policy recommendations is a difficult process, which should be a combination of a scientific process and a creative process. The main focus is to enable dissemination of the experiences to more universities and more countries by focusing on the prerequisites and the barriers related to science shop activities. This scientific and creative process needs to be situated in the concrete context of the specific universities and countries developing policies toward science shops, focusing on societal and environmental dynamics, the role of NGO's, and the relationship between science and society, including their development at the universities. The analyses need to consider recommendations at all levels: local, regional, national, international

It is also important to link with ongoing societal discussions in order to make science shops eligible within existing funding schemes and obtaining support for new schemes. Some of the issues in focus and some of the links to ongoing societal discussions (in brackets) are:

- Giving voice to civil society by developing the NGO capacity (EU discussion about governance and the role of civil society as part thereof)
- Giving voice to civil society by getting 'input' to research and curricula development (Danish discussion about "the open university")
- The competencies of future academics and professionals (EU discussion about the need for dialogue skills due to the more complex societal development)
- The contribution to local and regional development (EU could finance science shops through the social and regional funds)

Some of the conclusions and recommendations drawn are briefly presented in the following paragraph.

The case studies and the scenario workshops in INTERACTS show that science shops are a successful model for knowledge production based on co-operation between NGOs and research institutions, but they continue to occupy a marginalized status in both universities and civil societies. The severe lack of stable economic resources for a number of science shops keeps their social contribution limited to the small number of projects they are able to complete, and limits their visibility to society. There is a need for considerations about possible sponsors, like regional and local authorities, universities, European Structural Funds etc.

Some proposals for recommendations developed through INTERACTS are (some background considerations are presented in *italics* after each recommendation):

- Civil society needs should be incorporated (more) into the university policies and profiles (*As a way of counterbalancing the focus on businesses in the focus on the opening up of the universities towards “society”*)
- Community-based research centres or science shops as a mandatory part of universities (*Dilemma: bottom-up policy at the single university ⇔ national or international top down policy*)
- Need for local and national research grants and programmes with focus on community-university research co-operation. (*Should enable more community-university research co-operation*)
- University curricula should include elements of civil society co-operation (*Can make the future academic and professional more oriented towards the needs of civil society and more capable of co-operating with citizens and their organisations*)
- Local and national university criteria for research assessment of departments and researchers should include civil society co-operation (*As addition to today’s focus on mainly scientific articles and patents*)

9. References

The case study reports from the INTERACTS project:

DK:

Brodersen, S. & Jørgensen, M.S. (2003): *The Danish National Case Study Report - Improving Interaction between NGO’s, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

Innsbruck:

Gnaiger, A. & Schroffenegger, G. (2003): *Austrian Case Studies Report – The Innsbruck cases - Improving Interaction between NGO’s, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

Germany:

Steinberg, S. & Schophaus, M. (2003): *German Case Studies Report - Improving Interaction between NGO’s, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

Romania:

Teodosiu, C. & Teleman, D. (2003): *Romanian Case Studies Report - Improving Interaction between NGO’s, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

Spain:

Ahumada, I. & Labatut, A. (2003): *Spanish Case Studies Report - Improving Interaction between NGO's, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

UK:

Hall, D. & Hall, I. (2003): *UK Case Study Report - Improving Interaction between NGO's, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

Vienna:

Urban, C. & Reimer, R. (2003): *Vienna Case Studies Report - Improving Interaction between NGO's, universities and Science Shops: Experiences and Expectations*. January 2003. Contact no. HPV1-CT-2001-60039.

ⁱ The paper is based on activities carried out within the INTERACTS project. Other participants in the INTERACTS project are

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ⁱⁱ References in the following paragraphs are made to the national case studies by the name or the initials of the country followed by the page in the national case study reports. For the Austrian case studies Innsbruck is used in relation to the case studies carried out by the Institute FBI in Innsbruck and Vienna for the case studies carried out by the Science Shop Vienna (Wissenschaftsladen Wien)

ⁱⁱⁱ Information about the scenario workshop concept can be found at

<http://www.cordis.lu/easw/home.html>