Improving Interaction between NGOs, Universities, and Science Shops: Experiences and Expectations

The Danish National Case Study Report

by

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Preface

Michael Strähle and Søsser Brodersen

This case study report has been written for the INTERACTS project, which overall objective is:

To draw out policy implications for future co-operation in Science, Technology and Innovation, in particular the co-operation of small and medium NGOs with universities through intermediaries such as Science Shops.

INTERACTS is a pioneer cross-national study by organisations and institutions from seven different countries – Austria, Denmark, Germany, the Netherlands, Romania, Spain, and the United Kingdom - collaborating across disciplines to identify necessary changes in structures and routines in the RTD system for improving future interaction between NGOs, researchers, and intermediaries like Science Shops. By bringing together the results from different countries, a broader picture emerges concerning past experience of the impact of Science Shops, future expectations and policy relevance. In this way, INTERACTS contributes to strengthening the interaction between research institutions and society, and gives more in-depth understanding of the processes and effects of knowledge production.

INTERACTS is an Accompanying Measure to ISSNET, the International Science Shop Network, and financed by the European Commission, DG 12.

INTERACTS comprises five activities, which are interlinked. These National Case Studies Reports constitute the second activity in the INTERACTS project:
1. The State-of-the-Art Report provides an overview of the political and institutional conditions for co-operation between small to medium non-governmental organisations (NGOs), Science Shops, and universities in Austria, Denmark, Germany, Romania, Spain and the United Kingdom.
2. The **National Case Studies Reports** examine the practical experience and impact of interaction between NGOs, scientists, and Science Shops.
3. Participatory workshops in each of the partner countries form the next step, allowing discussion of future expectations and perspectives for co-operation with NGO representatives, researchers and policy makers. By giving voice to a broader range of stakeholders, INTERACTS contributes to the democratisation of science and technology policy.
4. The final report will identify potentials and barriers within the research and development system for improving conditions for future co-operation.
5. In a final step, the INTERACTS findings will be disseminated through national and international workshops and conferences.

Further information: http://members.chello.at/wilawien/interacts/main.html

We would like to offer our thanks to all the people, i.e. NGO representatives, students, researchers and staff members from the two Science Shops, interviewed for these case studies, without their willingness to participate, we would not have succeeded in gathering the information which creates the basis for these case studies. Also a thanks to the other members of the INTERACT consortium, whom we have had discussions and feedback with throughout the research period.

Søsser Brodersen and Michael Søgaard Jørgensen, January 2003

Lyngby, Denmark

Executive Summary

This report is the Danish case study report in the EU-financed project INTERACTS, which analyses experience and expectations to the interaction between NGOs, Science Shops and universities. The report analyses potentials and barriers to NGO's and similar civil society groups' use of research and science through co-operation with Science Shops as a mediator between universities and civil society.

The Danish national case study report analyses three projects carried out through the Science Shops at DTU and RUC. One case is a co-operation between two DTU students and an NGO, whom is working towards promoting the use of bicycles. The project addresses how different actors perceive and understand the bicycles as technology, and how this is incorporated in traffic strategies and planning. A second case is a co-operation between two DTU students and a day-care centre, aiming at investigating storage facilities for organic food and the possibilities of local supply of organic food to the day-care centre. The third case is a co-operation between four RUC students and a local branch of a larger NGO working with nature and environment. This co-operation aims at investigating the pollution level in a village pond.

Each case is described and reflected separately. A cross-analysis analyses the interactions among the involved actor group (clients, students, researchers, and Science Shops) discussing how the knowledge in the projects were developed and how the knowledge were used by the actors to try to gain impact on either research development or societal discourses.

When civil society groups request assistance through the Science Shops, their need for knowledge and research is based on a need for scientific documentation of a certain topic, a need for enhancement of new knowledge and/or a need for development of new solutions and perspectives to problems. All three types of knowledge need is covered by one or more of the cases. The cases show that NGOs perceive research done through universities as neutral and creating more legitimacy than research done by the organisation itself. The cases show that all three NGO's have used the results and findings to try influencing the societal discourses, and that the results and findings have helped two of the NGOs to gain influence. The analysis further shows that this influence seems to depend on the ability of the NGOs to build alliances with other actors. Knowledge in itself is not enough to get influence.

The cases show that some students choose to conduct research through the Science Shops, because their research can be beneficial for someone, who does not have access to science and knowledge. Aspects like the possibility of gaining skills in co-operation and communication and knowledge about real life problems are also part of the students' considerations when they chose to co-operate with civil society organisations through a Science Shop. Supervisors and scientists get engaged in Science Shop projects either because the topic of the investigation is within their own research area, because they find the topic interesting or because they see the project as a possibility to recruit students for later thesis projects or research projects. The challenges in the co-operation with civil society groups are to secure the scientific level in the projects, design the projects so it fits into the university schedule, without leaving out the time perspective of the clients, and secure the research is applicable for the clients and based on their need for knowledge.

The case studies have shown different roles of a Science Shop. All Science Shops have a role as mediator between science and civil society by establishing contact between students, researchers and civil society organisations, but a Science Shop can also have a role as incubator in curricula and research development within the university based on the knowledge needs raised by civil society organisations. Through these activities a Science Shop might contribute to societal discourses, like when the Science Shop at DTU started addressing organic food issues in the early 1990ties based on

Students', scientists' and NGO representatives interviewed in the three case studies all perceive the Science Shop as an important actor in ensuring civil society access to research and science. This access can contribute to capacity building in civil society organisations, enabling the civil society organisations to address and influence societal topics and problems.

Section 1: Introduction to INTERACTS Case Studies and Methods

Authors: Irene and David Hall

- **Experiences and Expectations of NGO / Science Shop Interaction**

The European Commission has shown itself keen to build up the scientific work of research and technology development, but concerned that many studies of public attitudes show there is little interest in science, but a considerable amount of public distrust in science.

One of the functions envisaged by Europe in promoting a dialogue between science and society is to address this distrust through an 'early warning' system to alert the scientific community to citizens' concerns that are not being met by science as currently practised; the converse of this is to improve the public image of science, damaged by concerns over BSE, GM food etc., by greater communication to and respect for the public. As in the United States, there is also a concern in some circles, to democratise science by not leaving all the policy decisions to 'experts' but also to involve citizens and civil society (European Commission, 2002).

Regarding this dialogue, it has been argued that

> *"the relationship between science and society must become more two-way, involving scientific institutions listening to and learning to understand public concerns and values, and not merely educating them … there needs to be a long-term process of mutual learning between the public and science, which will necessarily involve new institutional relationships and forms."* (Fischer, Wallentin et al, 2002: 85)

The development of "new institutional relationships and forms" implies a new form of scientific governance. In Europe this development has included the emergence of intermediary organisations to link local groups with the sources of knowledge production (usually universities). It has been argued that these science shops have a vital role to play in the interface between science and civil society, because they can mediate between the concerns of citizens regarding their local conditions and environments and scientists who have access to the scientific and technical knowledge to meet those concerns (Irwin, 1995: 156).

Science shops consciously seek to "create equitable and supportive partnerships with civil society organisations", where they make their services available on "an affordable basis, free of financial barriers." As the research support is provided in response to

community concerns, it differs from “the traditional hegemony of science.” (Mulder et al, 2001)

In the European ‘Science and Society Action Plan’ (European Commission, 2002) this role of the science shop is recognised. In relation to engaging in a dialogue between science and the citizen, science shops are mentioned as an example of actions where

> *“science is placed at the service of local communities and non-profit making associations. Hosted by universities or independent, their common feature is that they answer questions from the public, citizens’ associations or NGOs on a wide variety of scientific issues.”* (European Commission, 2002: 15)

A sub-project of SCIPAS[1] considered the other side of the equation – the impact of science shop activity not just on the community but on university teaching, learning and research. The report argued that

> *“besides assisting citizen groups, science shops can also contribute to the development of university curricula and research.” (Hende and Joergensen, 2001: 5)*

All these developments illustrate that access to knowledge has to be spread more evenly through society, and that within the universities, curriculum change is also required to produce scientists who are aware of their social responsibility. Science shops have a key role to play in mediating the relationship between the public and science and in forwarding new awareness. As science shops now have considerable experience in this activity, and have become diverse in response to local and national conditions, it is timely to review whether they have been able to deliver these ideals, and whether their further development should be promoted through the support of European policy. The INTERACTS research is designed to address these issues, by tracing and comparing the experiences of science shops and asking whether these experiences have brought about benefit to community groups through improved scientific knowledge and whether they have helped develop university teaching and learning strategies as well.

- **Case Study Approach**

The method of research chosen for this project is case study research, as this approach will provide detailed data on the varied experiences of the very different

[1] The SCIPAS network attempted to catalogue the variety of science shop activity and to investigate their different methods of operation. Important outcomes were a conference in Leuven, Belgium in January 2001, proposals for establishing a network of science shops with a newsletter and the Living Knowledge website (www.bio.uu.nl/living-knowledge).

science shops in the member countries. Case studies are not merely descriptive, they are based on analytic categorisation and are designed to inform policy. According to key writers in this field:

> *"The research goal in a case history is to get the fullest possible story for its own sake. In contrast, the case study is based on analytic abstractions and constructions for purposes of description, or verification and/ or generation of theory. There is no attempt at obtaining the fullest possible story for its own sake."*
> (Strauss and Glaser, 1977: 183)

Criticisms of case study research usually relate to the idiosyncratic nature of a case, with the argument that case studies cannot deliver the kind of generalisable data that more positivistic, quantitative approaches can produce. Lincoln and Guba (1985) prefer to replace the concept generalisability with "transferability" as the latter term more accurately expresses how cases can be transferred from specific contexts to illustrate particular differences and similarities between cases. With INTERACTS, data is also being transferred to a wider policy context, through a method which involves comparison of cases.

For social policy researchers the case study has distinct advantages.

> *"All who wish to understand voluntary action will need to balance the parochialism of the case study approach against its attention to process and dynamics. Dense, located detail, critically analysed, is as important as thinner, if numerically significant outputs. This is a message for all who study voluntary organisations, whether as policy makers, practitioners, researchers or students".*
> (Scott et al: 2000)

The work of INTERACTS is intended to generate policy implications and recommendations by showing the empirical reality of science shop work "on the ground". If current policy does not connect with empirical experience then policy needs to be reviewed in the light of the evidence we produce.

As researchers we have collected information with a structured outcome as an objective, through gathering data via semi-structured interviewing using a standardised interview schedule, and using a common framework for analysis. The research has been designed to make the information accessible and coherent, so that both common and unique features can emerge, along with explanatory discussion on the wider issues of impact and implication for policy (Hall & Hall: 2002).

Donmoyer (in Gomm et al, 2000: 61) notes a key advantage of the case study method when he states that "case studies can take us to places where most of us would not have an opportunity to go". Similarly, Stake (1986) believes the role of the evaluator is to provide narrative accounts that provide vicarious experience. This report can

therefore seen be considered as providing access to a variety of community experiences, a “window on the localities” of science shops in action. The account of unique situations and individuals provides models for action, while the “rich data” collected adds nuance and subtlety to overarching theoretical perspectives.

- **Interview Questionnaire**

The case study is the means by which grounded experience can be developed into policy discussion. Each case is a study which has been conducted by a science shop, and is based on interviews with all the key participants on two levels – those who have been directly involved (Level 1) and those who have a view on the policy implications of the activity, such as university deans or organisational managers (Level 2). In this way it is hoped to represent the overlapping spheres of university, science shop and NGO activity, similar to the model of the Triple Helix of university-industry-government relations. (Leydesdorff, 2001)

A common methodology has been devised, with interview schedules (see Appendix) derived from the issues that partners have decided are central to the understanding of science shop work. Initial suggestions from partners of suitable questions were formulated into a pilot questionnaire, and feedback from the pilots was used to develop the final questionnaires to participants at level 1 and level 2.

So, for instance, the NGO respondent, researcher(s), supervisor and science shop were asked about the main research questions and methods, findings and recommendations and about the organisation of the project – how it was initiated, channels of communication, budget and timescales. The outcomes of the research were also investigated, in terms of usage and publication, long term benefit to the organisation, and relation to the wider objectives of the organisation.

These policy issues were also explored with level 2 respondents, although with the diversity of roles involved, it was more difficult to find questions which could be asked across all 6 countries, and some of the questions asked about science and society questions rather than about the specifics of the cases.

A major purpose of the study is not just to show whether negotiated applied community research can be effective – but to examine the case for the intermediary organisation in facilitating such research. So direct questions have been asked about the role of the science shop and about the advantages and disadvantages of the three way relationship between science shop, community group and researcher.

Open ended questions have been used to enable both the development of relevance to the particular case being studied and flexibility between cases (as national contexts are so different). The interviews had to be conducted according to ethical procedures and the following instruction was given by the designers of the methodology:

*"Before any interview take place, it is important to gain the **consent** of the participants for this research to be used by INTERACTS and for possible future publication. Please enquire whether they wish themselves and/or their organisation to be anonymous – and a pseudonym to be used."*

- **Sample**

It was agreed that partners would study cases of NGO-Science Shop interaction that were:

- Complete (so that activity was finished and impact could be assessed)
- Recent (so that those interviewed could recall fairly accurately what happened)
- With Impact (so that cases contributed to knowledge or to usage)

It was also agreed that case studies would focus on the three main actors:

- NGOs (with activities regarding the environment or social welfare and health)
- Researchers (students and/or supervisors)
- Science Shops

It was suggested that a minimum of 6 interviews per case would be required:

- 3 with those directly involved in the research, one each from NGO, Researcher, Science Shop (level 1)
- 3 with those involved in the research at a policy level, one each from NGO, Researcher, Science Shop. These might include NGO manager or regional network coordinator, University Dean with responsibility for curriculum and/or research profile, Science Shop manager (level 2)

In the event, it was difficult to interview three level 2 participants for each case, because the science shops were all at different stages of development – with the level 1 science shop co-ordinator often being the only science shop worker. Further, not all the science shops were university based, and policy makers in academia, who would be willing to participate, were not easy to locate.

Finally, each partner agreed to complete three case studies, one of which would be from a science shop in their country, which was different from their own. It was felt that this would supply further comparative perspective to the study and increase the validity of the research – so that the findings would be less heavily biased to personal experience and justification of action. It is recognised that this will not provide "objective" or "value-neutral" research, as all researchers are, after all, committed to the ideals of science shop activity. Researcher involvement requires awareness of 'positionality' – of the positioning of the researcher within a wider structure which relates to how they have come to understand knowledge as well as how they have come to produce it (Rhoads, 1997: 17).

But the extension of the sample to other science shops would enable the inclusion of questions and issues which the INTERACTS members might not have encountered in their own science shops and might provide further insights into negative or difficult problems which can arise.

- **Link to Science and Society Policy, WP3 (State of the Art Report), WP5 (Scenario Workshops) and WP6 (the Final Report).**

A first task for the INTERACTS research project has been for each national partner to contribute to a 'State of the Art' report, to set out the baseline with regard to science shops and science policy (Fischer, Wallentin et al, 2002). The case studies provide an opportunity to relate practice on the ground to the wider issues of policy at the national level of each partner through the conjunction of level 1 and level 2 interviews. The state of the art exercise sensitised the researchers to the policy environment of the cases and raised issues for questioning and analysis.

It is expected, in turn, the cases will provide the agenda for the scenario workshops which will further refine the issues introduced in the state of the art report, and worked through in the cases. Finally, WP6 will bring together the national findings into a comparative analysis for dissemination to NGOs, researchers, science shops and policy makers at national and European level.

- **Reflection and the Research**

All partners were required to complete a pilot case, which became the basis of reflection on and development of the study through email and workshops. All partners were advised to keep a research diary to record their experiences of the pilot. "Reflection in action" is the process of thinking about what you are doing, as the work progresses and is distinct from "reflection on action" which is a *post hoc* activity – "stop and think" when the action is no longer current (Schõn, 1983). Such reflection in action, Schõn argues, provides a way of opening thought up to possibilities which might otherwise be blocked off. It helps produce flexibility in finding solutions when objectives are unclear or problematic and so produces improvisation which is thoughtful rather than reactive.

For the INTERACTS partners representing different cultures and experiences, reflection in action is crucial, if not always comfortable, to finding solutions which are creative and scientifically sound, and which represent the commonality and the diversity of the cases. The interview schedule, for instance, was modified after extensive consultation and reflection by partners, and the analytic framework was similarly revised. The case study research has thus been improved on the basis of both substantive and methodological considerations.

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Section 2: The Danish National Case Studies

1 Introduction

The aim of this case study report is to investigate potentials and barriers for NGO's use of research in co-operation with Science Shops and similar research intermediaries, and researchers' and teachers' interest in developing research and teaching based on co-operation with NGOs.

The background for this study is based on a growing need for more throughout studies of the impact of collaboration between NGOs, universities, and Science Shops, and on a need for analysing the expectations for future collaboration. Expectations for future collaboration is touched upon briefly in this report, since it is the subject for the planned workshops related to the work package 5 in the INTERACTS research project.

In our analysis we follow the actors – civil society groups, Science Shops, researchers and students, and explain their role during the process of concerted knowledge production.

1.1 The DTU and RUC Science Shops

Two Science Shops involved in this case study research are the Science Shop at DTU (The Technical University of Denmark) and the Science Shop at RUC (Roskilde University Centre). DTU students study to become engineers, whereas at RUC, the students involved in this case study studies to become natural scientists.

Both Science Shops are a part of the university structures, though related to different departments within the respective universities. The Science Shop at DTU is a part of the Department for Manufacturing Engineering and Management (IPL), whereas the Science Shop at RUC is placed under the central administration at the university.

The aims of both Science Shops are to give access to science and research to civil society organisations, by creating contact between university and civil society organisations, and to give students possibilities for qualifying through co-operation with these groups on "real life" topics as part of their curricula. The Science Shop at DTU further aims at contributing to the renewal of the education and research at the

university. This development aspect is not one of the aims of the Science Shop at RUC (established in 1988), which only should be seen as an intermedia between civil society and students within the university.

The Science Shop at DTU was established in 1985 based on experience of the Dutch model. The Dutch model for Science Shops is aiming at giving access to research and science to civil organisations, and based on a wish to make knowledge needs of the clients have a more permanent impact on curricula and research. Through the years when the Science Shop was part of the Interdisciplinary Centre at DTU, the shop initiated and was involved in renewing activities within areas such as urban ecology, cleaner technology, and organic food, as incubator for the areas. [SCIPAS, 2001; p. 31-32]

“Development from within” in already established research areas, is another type of renewal activities the Science Shop at DTU has contributed to. In these activities researchers from different institutes have embedded topics from the Science Shop projects into their teaching or research activities, and the Science Shop has functioned as a dialogue partner. One example to this is teaching in local green wastewater treatment plants. Due to interest from a professor at Department of Environmental Engineering and Ecology at DTU, and requests from clients through the Science Shop, teaching in this area developed and has become part of curriculum in two regular courses. [SCIPAS, 2001; p. 28]

1.2 Choice of Case Studies

The three cases chosen to be presented in this case study report are all selected based on the following criteria, which were decided by the consortium of INTERACTS. Each case should be 1) complete, meaning that impact of the research could be assessed; 2) recent, meaning that interviewees would be able to remember what happened and why; and 3) with impact, meaning that it to some extent has contributed to knowledge production and transfer.

With these criteria in mind, two cases from the Science Shop at DTU were chosen and one case from the Science Shop at RUC. The two cases from the DTU Science Shop were careful selected with respect to which kind of impact the cases had had on the clients, the involved researchers and the societal discourses. The case from the Science Shop at RUC was selected by the Science Shop at RUC and not the researchers behind this report, based on instructions of the above-mentioned criteria and the fact that the case should be related to an environmental topic. Impact of the

RUC case was unknown to the authors before the research and interviews were made.

The two cases chosen from the DTU Science Shop are:

- A project made between students and an NGO, DCF (Danish cyclist Federation), working towards promoting the use of bicycles, who wanted research done about strategies in traffic planning; and
- A project made between students and a day care centre, Vognporten, who wanted new perspectives on how organic food products could be stored in a sustainable manner.

The case from the RUC Science Shop is:

- A project made between students and a local branch of a national NGO, DN (The Danish Society for the Conservation of Nature) in Frederikssund, who wanted an investigation of the pollution level in some village ponds within the municipality of Frederikssund.

The three cases are common in the sense that they all concern a topic within the field of environmental issues, but they differ from each other in relation to the environmental issues addressed, which kind of need for scientific knowledge the clients had, how the knowledge of the clients was enhanced and what the enhanced knowledge were used for, and the impact it has had on the actors and the society. The case studies also shows that the extent in which the clients participated in the knowledge production processes differs in the three cases, and that this may have had an impact on to which extent the clients have been able to use the research and results to impact the issue addressed.

1.3 Key Points from The State-of-the-Art Report

WP 3 contained a detailed study of the political and institutional conditions for the co-operation between small and medium NGOs, Science Shops and universities in Austria, Denmark, Germany, Romania, Spain and United Kingdom.

The State-of-the-Art Report points out where the relationship between Science Shops and civil organisations needs to be strengthen, explains the conditions in which the co-operation takes place and the discourses, which are determinative in relation to science and society in the six countries.

The aim in this subchapter is to sum up the key points of the Country Report for Denmark. In chapter *4: Discussion with Respect to Impact,* the issues for discussions

pointed out in The State-of-the-Art Report (Denmark) will be combined and discussed in relation to the Danish case studies, in order to draw up parallels or conclusions between the tendencies in the individual cases chosen for this case study and the general tendency within the field of science and society in Denmark.

Literature used for this subchapter is the State-of-the-Art Report: *Country Report: Denmark.* Written by Toke Haunstrup Christensen and Michael Soegaard Joergensen. June 2000. And *Concluding Remarks*. Written by Corinna Fischer, Michael Strähle and Annette Wallentin. June 2002.

1.3.1 Science and Society Discourse in Denmark

Historically, Denmark has a tradition within the field of environmental and technological science and policy-making, of bringing various stakeholders or interest groups together for discussions in order to reach consensus within the issue or topic for discussion. This has given NGO's and independent experts some influence on the environmental regulation.

Some topics in the science-society discourse in Denmark with respect to the role of universities in democratic development are 1) the status of different types knowledge with a dichotomy between lay people knowledge and scientific knowledge, 2) the possible role of university researchers as "counter experts", and 3) the co-operation between researchers and civil society (e.g. as seen in action research, dialogue projects etc.).

A dominating discourse concerning the role of research and universities in the societal development is that *research should ensure the transformation of the Danish society into a knowledge-based economy.* Interaction between public and private research should contribute to innovation and competitiveness. The universities describe their partners differently in their development contracts, but contact and dialogue with the business community and regional collaboration is dominating.

The Danish Council for Research Policy has pointed out that the changing pattern of production and use of knowledge, raises new demands to science and research, and increases the competition between universities both nationally and internationally. The council has pointed out, that in order to obtain more freedom the universities should *"enjoy the confidence of the society at large"*. This has initiated a debate, where a dominating view is that the majority of university senates should consist of external members and appointed university managers, instead of elected managers.

According to the National Research Policy the public awareness of and interest in research should be increased and the democratic dialogue on the social role and significance of research broaden and developed. The Policy further states, that openness and teamwork should characterise the relationship between the research system and the society, and that freedom of research only can be maintained if researchers live up to their responsibility and set up ethical limits to their research. The policy points to three discourses: 1) public awareness and understanding of science; 2) the responsible researcher; and 3) public influence on science, where the university-business relationship dominates.

The focus the contribution of research towards competitiveness and the focus on university-business relationship is reinforced by the fact that programme funding civil society initiated environmental projects recently has been cancelled by the government. The Danish Science Shops are not well known in the general public and they all have rather limited funding.

2 Methodology

The aim in this chapter is to describe how the research was carried out, based on the general methodology of the project described earlier.

2.1 Application of Questionnaire

When the questionnaires to the level 1 and 2 semi-structured interviews had been agreed upon between all partners, they were translated and reformulated into Danish. The questionnaires were used as guides during the interviews, and not followed stringent. Not to follow the guide stringently was a choice chosen directly by the authors, due to a wish of creating the interview situation as a conversation allowing the interviewees and the interview to develop through the process.

The interviews aiming at level 2 interviewees were a bit difficult, mainly because the questions in the questionnaire were related to thoughts and perceptions about the impact of Science Shops on science and research development. These are topics the organisations in the case studies, had not given much thought. When this was realised, the questions were rephrased in a manner, so they were based on the actual project, and then discussed in a broader perspective. This proved to be successful, and through this we managed to get the general views and thoughts of the organisations towards Science Shops and their impact on knowledge production, and curricula and research development.

2.2 Selection of Interviewees

When the three cases were chosen based on the criteria mentioned earlier, the selection of interviewees took place. And this process was a bit like a detectives work, due to the fact that the students in the DTU cases all had graduated, and three of them moved away from Zealand, one of them had even moved out of Denmark, which made it impossible to reach her. The interviewees for the level 1 interviews, e.g. students, supervisors and clients were identified through the reports made for the clients and kept in the two Science Shops. The interviewees for the level 2 interviews were partly identified by asking the level 1 interviewees whom they thought would be able to put perspectives on the case and discuss the impact of Science Shops, and partly identified by the authors of this national case study report.

In the case of DN Frederikssund the level 2 interviewees became the Manager of the Science Shop at RUC, and a representative of the national organisation DN, which DN Frederikssund is a local committee of. In the case of DCF, the representative from DCF, due to his position as Director of the organisation, both acted as level 1 and level 2 interviewee. The Manager of the Science Shop at DTU, and the Manager of the IPL were further identified as level 2 interviewees in both the case of DCF, and the case of Vognporten. Discussions with Vognporten further highlighted the municipality of Albertslund and the Parents' Council Committee as level 2 interviewees. The trade union of pedagogues were also identified as a level 2 interviewee, but despite of efforts of the authors, this actor was not interested in participating in the research.

2.3 Reflective Report on Research Practice

Before the interviews were made, an introduction paper about INTERACTS and the purpose of the interview, was send to all interviewees, in order to make sure the interviewees understood why they had been chosen for an interview, and why their information was important for the research. In each interview the interviewer introduced herself, the INTERACTS research and the purpose of the interview. This was done in order to make sure, the interviewees understood their role in the research. The interviewees were also asked if they wanted to remain anonyms or if they wished to appear by name and position. In all cases, the interviewees did not wish to remain anonymous.

After each interview, which was recorded, a summary partly based on transcription and partly on resume was made and send for comment and acceptance by the interviewee. Comments from interviewees were incorporated in the transcriptions and resumes, which format the basis in this case study.

As mentioned in Section 1, case studies have a high risk of being the researcher's interpretations of the events and understanding of the world. This is something we as researchers of these case studies have sought to avoid, by discussion and reflecting on themes and issues mentioned by the interviewees, and it is our belief that the analysis presented in this case study report reflects the views and points of the interviewees, and not our understanding of how we perceive the issue for discussion.

2.4 Documentary Evidence Available

The interviews made in relation to this case study report have all been recorded, with an exception of a quarter of the interview made with DN Frederikssund, and the interview made with the Parents' Council. These exception were due to tape recorder errors, which were discovered immediately after the interviews, which caused the information was written down based on one of the authors memory, and subsequently an acceptance of the interviewees.

The interviews were partly transcribed and partly resumed afterwards, and are available in Danish.

Reports and articles used in this case study are also available, though they are all in Danish, with the exception of the SCIPAS report 6, which is in English.

Sources used in this case study report are referred in the chapter 6: *References*.

3 The Danish Cases

3.1 The DCF Case

3.1.1 Fact Sheet

Danish report title: "Hvad er en cykel? – en socialkonstruktivistisk analyse af mulighederne for at fremme brugen af cyklen". Udarbejdet af Jan Luxenburger og Rune Asmussen. Juni 2000. Videnskabsbutik nr: 1996.009.

English report title: "What is a bicycle? – a social constructivist analysis of the possibilities of promoting the use of bicycles". Written by Jan Luxenburger and Rune Asmussen, June 2000. Science Shop number: 1996.009.

Request: Made by the NGO 'The Danish Cyclists Federation' (DCF) through the Science Shop at DTU.

Aim: To investigate how the use of bicycles can be promoted to become more attractive in the future.

Duration: From February 2000 to June 2000 (one semester, e.g. 13 weeks).

Students: Two M.Sc. in Engineering students at their 4th year.

Costs: No costs involved in the research.

Outcomes:

- Official report to DTU, the Science Shop and The Danish Cyclists Federation with the Danish report title stated above.
- CD Rom with the official report
- Article published in the NGO's newsletter 'Cyklisten' (in English the 'Cyclist') to its members about the results of the research. Title of the article: 'Hvad er den cykel?' (in English 'What is a bicycle?') by Ingrid E. Petersen. Edition 2000, number 5. DCF. The article was based on interviews with the two students.

- Article with the title 'Hvad er en cykel?' (in English 'What is a bicycle?') Published in the Journal 'Anvendt Viden' (in English 'Applied Knowledge') published by the Science Shops in Denmark. Number 4/December 2000.
- Agreement between the NGO and the students, about cooperation in connection with the student's research for their Master Thesis.

Working methodology:
Literature review combined with semi-structured interviews (single and group interviews). Approach based on the SCOT methodology.

Interviews:

- The two students performing the research: Rune Asmussen and Jan Luxenburger (Level 1 interviewees)
- The DTU supervisor: Morten Elle (Level 1 interviewee)
- Science Shop Manager: Michael Søgaard Jørgensen (Level 1 and 2 interviewee)
- NGO representative: Jens E. Pedersen (Level 1 and 2 interviewee)
- Head of Department of Manufacturing Engineering and Management: Leo Alting (Level 2 interviewee)

3.1.2 Summary of the Project

The project was carried out from February to June 2000 by two M. Sc. in Engineering students in co-operation with the NGO; The Danish Cyclist Federation (DCF). DCF had in 1996 approached the Science shop at DTU with a request of getting students to do research about *strategies in planning of traffic.*

The aim of the project was to analyse which motives bicyclists' have for using the cycle as transportation mean. And based on this knowledge, to put forward recommendations to DCF about how to motivate more people to use the cycle instead of a car to cover their transportation need.

The aim was answered through an analysis of users of bicycles, politicians and traffic planners' perception and understanding of the bicycle as technology.

[Source: Student report]

3.1.3 Participants

- **Science Shop:** Videnskabsbutikken, DTU
- **NGO:** Danmarks Cyklist Forbund (DCF)
- **Students:** Rune Asmussen and Jan Luxenburger
- **Supervisor:** Morten Elle

3.1.3.1 Science Shop at DTU: Videnskabsbutikken DTU

The Science Shop at DTU was established in 1985. The purpose of the Science Shop is to give access (free of charge) to university research to people or organisations for whom contact with universities is not normal practice, and further to initiate interdisciplinary courses and research based upon the problems of the inquirers. The Science Shop's task, when they get a request from an organisation or group of people, is to establish contact between the organisation and students or scientists at DTU.

Science Shop interviewee: Michael Søgaard Jørgensen

3.1.3.2 NGO: Danmarks Cyklist Forbund (DCF)

The Danish Cyclist Federation (DCF) is a national wide medium sized NGO working to improve safety, access, confidence and comfort for the cyclists in Denmark. It is further an objective for the organisation to encourage a greater number of people to use the bicycle for transportation, instead of using private cars or public transportation.

The organisation was founded in 1905, and is the only organisation in Denmark working towards obtaining the interests of everyday and touring cyclists. The organisation is membership based and in the year 2000 the organisation had approximately 26.000 members.

NGO interviewee: Jens E. Pedersen

3.1.3.3 Students: Rune Asmussen and Jan Luxenburger

The two students, who reacted on the request from DCF was at their 4th year in their studies. Their main focus the years before they chose to co-operate with DCF had been on waste management, city management, and traffic management. Both the

students wanted to achieve the profile *Planning and Technology Management* at the end of their studies.

Student interviewees: Jan Luxenburger and Rune Asmussen

3.1.3.4 Supervisor: Morten Elle

The students' supervisor main focus is on infrastructure planning.

Supervisor interviewee: Morten Elle

3.1.4 Project Description

3.1.4.1 Background

In 1996 DCF requested assistance through the Science Shop because they felt a need for having research done about the subject '*strategies for traffic planning'*, which they did not had the resources to perform by themselves. The request to the Science Shop was formulated very broad, because DCF found it important not to be too specific in their requires, because that would hinder a dialogue with the students about aim and approaches, and make it difficult to establish a common feeling about the project between them and the students. [DCF: Jens E. Pedersen]

The request to the Science Shop was:

> *"The traffic planning in Denmark is stamped by paradigms, which origin is difficult to trace. In the 1960ties the planning was based on a philosophy about separation, whereas the tendency now a days is more like integration of pedestrians, bicycles and cars. The architects, who do not learn anything about traffic during their studies, are the ones responsible for planning, and the examples they base their planning on are based on past experiences rather than future views and perspectives. DCF seeks students interested in doing research about the philosophy of the planners, and where it originates, because in that way we can go into discussions about future planning".* [Project proposal]

The students had several times during their studies looked in the Science Shop catalogue for interesting project proposals because:

> *"It could be fun to do something others could use. […] It could be interesting to do something others had a need for, and thereby give them the opportunity of a scientific input, which they not have the resources to buy". [Student: Jan Luxenburger]*

> *"I had several times looked through the catalogue they [the Science Shop. red.] publish, and I think, when we were to perform our Preliminary four-semester programme project, that we looked whether there were something we found interesting. I think we looked every time we were about to perform a project. And this time, we found the proposal from DCF, which we thought would fit with what we wanted to do".* [Student: Jan Luxenburger]

> *"As I remember it, we had decided to do something including the interview method and based on the SCOT approached[2]. And in order to find inspiration, we looked through the catalogue, because we wanted to do something in co-operation with a partner outside the university, and further to do something for somebody".* [Student: Rune Asmussen]

The two students identified the project request from DCF in the Science Shop catalogue, because it had a broad definition and it did not point towards a very technical traffic analysis and solution.

> *"It was because it was formulated broadly, this project, that we chose this particular project. I think DCF had other projects, but they were very specific. We did not want to do research about some traffic technical issues, what we wanted was to do research on a more general level, and through this proposal we thought that would be possible".* [Student: Jan Luxenburger]

[2] The Social Construction Of Technology (SCOT) approach is based on a understanding that a technology's values and characteristics are based on how the actors perceive the technology, and that a technology's meaning is closely related to the social settings in which it occur.

The broad definition further allowed the students to work with a hypothesis, saying that most people do not see the bicycle as an alternative to other transportation possibilities, such as private cars or public transportation. This was a hypothesis they had developed through knowledge from different courses they had attended and through their common interest for both traffic planning and bicycling. [Student: Jan Luxenburger]

> *"We had previously developed this hypothesis, saying that the explanation to why few people use the bicycle was that they did not perceive the bicycle as an alternative".* [Student: Rune Asmussen]

> *"They [the students. red.] had the perception that cyclists and non-cyclists had different perceptions and understandings of the bicycle as a transportation mean".* [Supervisor: Morten Elle]

3.1.4.2 Objective and Research Questions

During the first meeting between the students, the Science Shop and DCF, the students and DCF agreed on the aim: ***To investigate how the use of bicycles can be promoted to become more attractive in the future.***

The research question was a result of partly DCF wish to gain knowledge about why people uses the bicycle as a transportation mean, and partly because the students had a hypothesis they wanted to test. [DCF: Jens E. Pedersen, email correspondence]

The students operated with the hypothesis that there are three different actor groups with different perceptions of the bicycle as technology; *the users (the bicyclists), the politicians and the traffic planners*.

> *"We had the hypothesis that there are different groupings, who perceive the bicycle differently, and that this maybe could be one of the reasons why traffic planning for bicyclists is not always optimal. […] We made a rough grouping of the world, saying there are some cyclists or someone with a need for transportation, then there were the grouping around the politicians; the political level, and the ones who implement the political decisions, the traffic planners. What we wanted, was*

> *to investigate how these three groupings perceive the bicycle as technology, because we operated with the hypothesis, that they do not have the same perceptions, and one of the consequences of this, is that traffic solutions may suit the politicians visions and the planners ideas but not necessarily suit the needs of the bicyclists".* [Student: Jan Luxenburger]

3.1.4.3 Working Methodology

The motive for the students for investigating the request from DCF was, besides to investigate their hypothesis, also to get practical experiences in using some of the theories and methods they had been taught during their studies. Their objective for the project, before the first meeting with DCF, was to base the research on a SCOT approach, and applying interviews as their main research methods.

> *"This was probably to a large extent our purpose, to test the techniques, before applying them in our Master Thesis, which we were to work on afterwards".* [Student: Rune Asmussen]

> *"We had chosen the methodology from the beginning, and chosen that we wanted to work with the interview approach, this was decided before the project start. And in a sense, the project was a very study-technical project".* [Student: Rune Asmussen]

> *"One of the aims with the project was to test the interview approach as part of the method and to perform focus groups interviews".* [Student: Jan Luxenburger]

The representative from DCF had never heard about the SCOT approach before, but he found it very interesting. It was further his belief that the students had more knowledge about which approaches to use than he had, so he left the decision about approaches and methods to the students.

> *"We had several meetings with Jan and Rune, and Elle, and we did discuss their methods and model, but that was beyond my expertise, but I found the model interesting, because I had never heard about it. But for us, it was not important which model they wanted to apply, but rather which conclusions they would end up with".* [DCF: Jens E. Pedersen]

During some of the discussions between DCF and the students the idea of making focus group interviews came about. DCF had in previous researches used this method with good results, and the students had been taught about this interview form, but never tried it out. So in common agreement, they decided to perform two focus group interviews with *users* of bicycles. [DCF: Jens E. Pedersen]

> *"In order not to make too many interviews, we decided to use written material for the traffic planners and the political level".* [Student: Jan Luxenburger]

> *"It was random selection, the people we talked to in the focus group interviews, I do not remember whether some of them were members [of DCF. red.]".* [Student: Rune Asmussen]

Interviews made during the project:

- One representative from the Road Directorate
- The former Director of DCF
- Two focus group interviews with random selected people

3.1.4.4 Time Frame

DCF requested assistance through the Science Shop in 1996. In January 2000 the two students responded on the proposal and co-operation between the students and the NGO was agreed to begin in February 2000 and end in June 2000.

3.1.4.5 Budget and Finance

The project did not require a budget.

> *"We had no expenses, at least not to what I remember".* [Student: Rune Asmussen]

3.1.4.6 Channels of Communication

The communication between the students and DCF was mainly done through meetings face to face.

> *"It depended on our need, when we felt we had something we wanted to discuss or have respond on, then we called Jens and arranged for a meeting".* [Student: Jan Luxenburger]

> *"It was designed from the beginning that there should be a meeting in the beginning, then a meeting in the middle of the process and a last one at the end of the process".* [Student: Jan Luxenburger]

> *"We went through the formal programme; one start up meeting, a meeting in the middle of the process and one at the end. And then Jan and Rune arranged meetings with DCF by themselves".* [Supervisor: Morten Elle]

The Science Shop established the contact between DCF and the students, and when the project was over they arranged a presentation. According to the organisation, the Science Shop should not take another role than what they do, it is only their task to establish the contact, and the rest of the co-operation process is between the organisation and the students. [DCF: Jens E. Pedersen]

> *"They [the Science Shop. red.] did not play a role in the process, except that we read DCF request in their catalogue, and they were present during the first and the last meeting".* [Student: Rune Asmussen]

> *"I remember a preliminary meeting, which I did not participate in, and an evaluation meeting, I do not think we had a midway meeting. Typically we arrange three meetings, but if I am the supervisor, the Science Shop become more involved. You can say, our [the Science Shop. red.] involvement is more to make sure that the co-operation is working to all parties' satisfaction. I try to attend the preliminary and the evaluation meeting, in order to contribute with scientific knowledge. But the professional and technical supervision is the responsibility of the supervisor, and in some cases the student assistant also contributes".* [Science Shop Manager: Michael Søgaard Jørgensen]

During the process the students felt that the organisation appreciated their work, and they felt welcome in the organisation, even though it was only the director the students communicated with.

> *"They were very pleased with having us to co-operate with them, and they were very friendly and put a lot of resources and time available for us".* [Student: Rune Asmussen]

> *"It was only Jens we communicated with"* Question: Did you experience that as a problem? *"No, and that could be because of for who's purpose are the project done, and we used them as our resource for knowledge".* [Student: Rune Asmussen]

> *"It was limited how much of the organisation we had contact with, it was primarily Jens, the director, we had contact to. We did not have an office in there neither did we talk to the employees".* [Student: Jan Luxenburger]

DCF commented on the students' writings throughout the whole process, and this "forced" the students to communicate their thoughts less academic and think of the theoretical approach in a more practical perspective.

> *"We had to be careful in using the theory, so that it did not become too theoretical. In this way it was very good, if we wrote or concluded something far away from normal understanding, then he [Jens. red.] would notice it, and ask us to further elaborate on it".* [Student: Jan Luxenburger]

When the students made their presentation to DCF at the end of the project period, the meeting was arranged by the Science Shop, which according to the two students, had played an invisible part during the project process.

> *"This was one of the negative elements, because the Science Shop played a role again. They had been involved in the first meeting, because the project was through the Science Shop. And I mean, maybe we did not use Jens as a resource to the full extent as what we should have done, and maybe also our supervisor, but we were annoyed with the Science Shop, because they had planned the last meeting and made the*

> *agenda. […] It seemed unnecessary that the Science Shop participated, and wanted to lead the meeting".* [Student: Rune Asmussen]

The students used their supervisor mainly for supervising on the theoretical part of their research. They held meetings with their supervisor every 2 or 3 week, where they would discuss the chapters the students had written.

> *"His [the students supervisor. red.] supervision was mainly that he would point out some discussion aspects based on what we had written, so we could further elaborate on these aspects. So it was on a more overall level that we got supervision from him".* [Student: Jan Luxenburger, email correspondence]

3.1.4.7 Key Findings and Recommendations

The research confirmed the hypothesis outlined by the students, that planners and politicians do perceive the bicycle as technology differently than the users, which means that when discussing and debating this technology it is based on different view and motives.

> *"We found many places, where the three levels move in different directions. The political level thought and perceived the bicycle as an instrument for improving the environment, and they negotiated on a level, which could not be transferred to the everyday life. Whereas this dimension was not important for the users and the non-users, for this group a lot of other aspects were important".* [Student: Jan Luxenburger]

The research highlighted that the problems the users see in connection to the bicycle as technology are aspects such as the luggage carrier capacity, and the technical design. [Student report]

The focus group interviews with the users highlighted that the biggest problem for them is other cyclists and not cars or busses, which was assumed by the planners and politicians.

> *"You can say, that what they [the students. red.] found was not something new, but through the project both they and we*

> *were confirmed in assumptions made prior to the project and these findings were based on other approaches than we use to apply, here I mean this method [SCOT. red.] and the focus group interviews".* [DCF: Jens E. Pedersen]

> *"What I found interesting in the interviews Jan and Rune made, was that when the bicyclists were to describe the problem by being a bicyclist in Copenhagen, then most of them pointed at the other bicyclists as the problem. Other problems were mentioned but the main part pointed at other bicyclists are the cause for feeling unsafe and insecure in the traffic. It was the not cars or lack of suitable infrastructure which were mentioned as the main problem, but the relation to the other bicyclists".* [Supervisor: Morten Elle]

A concrete recommendation the research pointed out was the role DCF should take in the debate about traffic planning.

> *"What we could conclude was, that we thought the main role for DCF should be as a negotiator or a catalyst in the negotiations around this technology, which the bicycle is".* [Student: Rune Asmussen]

That DCF should take the role as negotiator was based on the conflicts the research pointed out between the users, the non-user and the politicians and planners perception of the bicycle as technology. Negotiations among the different actors were a central point in the conclusions made by the students, if DCF were to motivate more people to use the bicycle instead of private cars or public transportation. [Student report]

3.1.4.8 Impact Usage

The findings in this project have to some extent been used to influence the political debate and they have contributed to the development of a new policy related to bicyclists'.

<u>DCF</u>

The research inspired the organisation to initiate a campaign around the bicyclists' behaviour in the traffic, which is an aspect the organisation has never addressed before. But most important, the organisation has used the conclusions in the research

in the political debate around bicyclists' terms and conditions in the traffic. The organisation is member of different committees and councils responsible for traffic, and through their membership in these institutions, the organisation has raised the discussion about cyclists' and which problems they experience in the traffic and that they perceive the bicycle as a transportation means on equal terms as cars or public transportation. [DCF: Jens E. Pedersen, phone interview]

One campaign, which DCF is in the process of initiating, is a campaign addressing the bicyclists' behaviour in the traffic. The idea to the campaign rose when DCF realised through the results of the research, that the biggest problem for the cyclists' is the other cyclists' behaviour in the traffic. Previously they had assumed that the problems cyclists' experienced in the traffic were related to cars and public transportation. [DCF: Jens. E. Pedersen, phone interview]

In relation to the forthcoming campaign, the Director of DCF wrote an editorial[3] in the organisation's members newsletter regarding cyclist's behaviour in the traffic, and the points and conclusions made in the article, was based on the results of the students' research. [DCF: Jens. E. Pedersen, phone interview]

The organisation also used the research to plan a project in co-operation with the municipality of Næstved, regarding how to maintain bicycle paths. The Ministry of Traffic has granted 100.000 D.Kr. for the project, which are going to be started in May 2003. [DCF: Jens. E. Pedersen, phone interview]

Through the project DCF also got more knowledge about the focus group interview approach, and the dynamics and information these interviews can highlight, which has enabled the organisation to use it in later projects. [DCF: Jens E: Pedersen]

Enhancement of knowledge is also an impact the Director of the organisation mentioned. When the research began, he had just been appointed Director, and he had very little knowledge about which problems and issues the bicyclists' perceived, but through the discussions with the students the Director enhanced knowledge, which was unknown to him. [DCF: Jens. Pedersen, phone interview]

When the research was over DCF and the students wrote an article in the organisations newsletter, because the organisation felt it was important to pass the results of the research over to its members.

[3] Editorial in 'Cyklisten' no.1/2001: Bedre trafikkultur efterlyses (in English: Improved traffic-culture inquired') by Jens E. Pedersen, DCF.

> *"We made an article with them [the students. red.] for our members newsletter 'the Cyclist'. […] I have used the knowledge as background information. […] Most of the research we have done by outsiders, are researches covering issues, which may not be new knowledge, but more characterised as basic research, which we can use in our further work".* [DCF: Jens E. Pedersen]

> *"The knowledge this project produced, have been used when our editor made an interview with Jan and Rune for the newsletter 'the Cyclist'. And in this way the knowledge were transferred to the members, and this means that some members in the local committees will start using the knowledge".* [DCF: Jens E. Pedersen]

> *"The information from the project has been used in our considerations around how we can motive more people to use the bicycle, and it has been used when we developed and discussed ideas for campaigns to enhance the bicycle traffic"* [DCF: Jens E. Pedersen, email correspondence]

Despite of how the organisation have used the results of the research, it was both the students' perception that DCF had not been able to use the results in the report to anything specific, like changing how bicycling policy is debated or planned. This is due to the fact that the report did not point out recommendations or solutions to how to solve the specific problem of how to encourage more people to use the bicycle for transportation.

> *"The results of the project were not something they [DCF. red.] could use to solve a specific problem".* [Student: Jan Luxenburger]

> *"I think they [DCF. red.] had expected something less theoretical and something more practical. Especially when people come from DTU, then one may expect something like the development of a new luggage carrier or similar outputs, like they have experiences with from previous students".* [Student: Rune Asmussen]

> *"The use of the results was a problem for them. We experienced this when we after the presentation were to write an article together for their members' newsletter. It was difficult to write something reasonable, because the project was too theoretical, to write in a language everyone would understand".* [Student: Rune Asmussen]

> *"As far as I know, they [DCF. red.] have not used it [the results in the project. red.] for anything. Neither have I seen our conclusion used in political papers written by them. The result was not something they could take in their hands and use for a direct purpose".* [Student: Jan Luxenburger]

Even though the students have the impression that DCF has not been able to use the results for anything specific, one of the students mentioned:

> *"I think they used a little bit, because they began to experience a member get-away in the period when we finished the project, and they started to change their image and the design of the members newsletter".* [Student: Jan Luxenburger]

<u>The students</u>

The students have mainly used the experiences they got of using and practising the methods applied in the project. The results of the project are not something they have used neither in their further studies or after they have graduated.

> *"I do not think we came up with anything concrete, but we managed to do research and reflect upon the problem. What we certainly got from the project was to test the interview methods and especially the focus group method, and we discovered how difficult it is to analyse interview transcriptions".* [Student: Rune Asmussen]

> *"What I primarily have been using the project for, has been an exercise in the methods as preparations for my Master Thesis".* [Student: Rune Asmussen]

> *"For Jan and Rune, the project was a preparation in using the methods".* [Supervisor: Morten Elle]

The co-operation in the project led to an agreement between the students and the organisation about continuering the co-operation when the students were to perform their Master Thesis.

> *"My Master Thesis was done in co-operation with DCF, and it was based on the fact that we had co-operated in this project".* [Student: Jan Luxenburger]

> *"The subject for our Master Thesis was something we found in co-operation with DCF, because we knew them from this project, and we had agreed, when this project ended, that we wanted to continue our co-operation when doing research for our Master Thesis. It was Jens Pedersen who came up with the idea and subject for our Master Thesis".* [Student: Jan Luxenburger]

<u>The supervisor</u>

The supervisor has not used the results in the project for anything in relation to his research or teaching at DTU, but he used the project to get an understanding of the students' skills and engagement, which were useful when they discussed subject and research area for the students Master Thesis.

> *"I think it was an interesting project. What I have used it for, has been for them to make their Master Thesis, and in this relation it has been very useful, because through this project they tested methods, and I had a clear idea of Jan and Runes' capabilities, and what I could expect from them.* [Supervisor: Morten Elle]

The supervisor further pointed out that the students research rose new ideas for projects.

> *"Jan and Rune's project has caused new ideas for other projects based on the same approach, but no students have continued the research they [Jan and Rune. red.] started".* [Supervisor: Morten Elle]

The Science Shop

When the research was over the Science Shop published an article in the magazine 'Applied Science'.

> *"What we have done, was to publish an article in 'Applied Science'. Each year we [the Science Shops in DK. red.] have to publish 4 editions, and we [the Science Shop at DTU. red.] try to have an article published in each number. Usually we ask the students, the claimant or both parties if they want to write an article about the research".* [Science Shop Manager: Michael Søgaard Jørgensen]

The research done by the students has not been used by the Science Shop neither in connection to recruitment of more students to perform projects through the Science Shop, nor has the research caused any follow-up projects or developed new ideas for future projects.

> "*I have not used it, as far as I remember. Maybe some of the student assistants' have used it when they have held presentations at different courses here at DTU. And I do not remember, what we discussed at the evaluation meeting. We will typically discuss mediation [of the research. red.], and whether or not the claimant have ideas for new projects during the evaluation meeting".* [Science Shop Manager: Michael Søgaard Jørgensen]

> *"No, I do remember [if the research caused the development of new project ideas within the organisation. red.]. They [the organisation. red.] had already several requests. DCF is a claimant we have had a lot of co-operation with, among others we have initiated a co-operation between the organisation and some American students'".* [Science Shop Manager: Michael Søgaard Jørgensen]

> *"I do not remember any students [have showed interest in doing a follow-up to the research. red.]. But that would have been nice. What we write in 'Sletten' [a DTU monthly magazine. red.] is mostly about the requests we have from claimants, and in rare occasions about researches that has*

been performed, of course with the hope, that someone will reflect on it [the projects. red.]. But with the resources we have to our disposal, it cannot be different. In reality we could imagine a lot of things [which could be done in order to continue projects or communicate results to the students at DTU. red.], like having the student [assistants'. red.] to make more presentations, or write more articles in 'Sletten', or to involve the supervisors to a larger extent. As I remember, traffic planning is not Morten Elle's research area, and as far as I remember, we did not discuss the possibility of follow-up projects. But it is something I try to bring up at the evaluation meetings, I try to get a feeling of whether the supervisor is interested in the topic and in further co-operation". [Science Shop Manager: Michael Søgaard Jørgensen]

3.1.5 Evaluation by Participants

3.1.5.1 DCF

DCF was very pleased with the co-operation and the results the students came up with, and the representative from the organisation does not feel the project should have been planned or designed differently.

"The aim was to analyse why young people uses the bicycle or not, and how they use it and for which purposes, and that I think is described very well here [in the report. red.]". [DCF: Jens E. Pedersen]

"I had not written down my expectations before, but I think it was very interesting what they came up with. Maybe they should have had more guidance in doing the focus group interviews, so that they had succeeded in performing two full focus group interviews". [DCF: Jens E. Pedersen]

"This project could not have been made differently" [DCF: Jens E. Pedersen]

3.1.5.2 *The Students*

One of the students' reflections on the project were, that they chose to work very isolated, meaning not including the organisation or their supervisor to the extent, as they maybe should have done.

> *"If it had been important for us, that the results should have been useful to them [DCF. red.], then we would probably have involved them more in the planning of the project".* [Student: Rune Asmussen]

> "*Jan and I have always been very autonomous, and I think this project clearly highlights that, because we may have excluded ourselves from aspects, by not using the others, both our supervisor and the people in DCF".* [Student: Rune Asmussen]

Another reflection made by the other student relates to the use of the focus group interview approach, which he thinks has been a very interesting experience for him.

> *"It was a very positive experience to perform the focus group interviews, and see that it is possible to obtain information which can be used in research, but also the interview situation was very positive. It was great to experience that you as student are able to start up processes with people, which leads to them changing behaviour, and that it at the same time can be used in scientific research".* [Student: Jan Luxenburger]

The co-operation with the Science Shop is not something the students found to be successful, mostly because they did not play a role in the process, except by arranging the first meeting between the students and the organisation, and the last meeting; the presentation of the results. Another aspect one of the students mentioned was that when they in the beginning wanted to take contact to the organisation, they had some difficulties.

> *"The announcements [in the Science Shop catalogue. red.] were old, more than just a couple of years old, and the contact person stated, did no longer work in the organisation. When we approached them, they [DCF. red.] did not remember that they had requested assistance through the Science Shop, so*

> *they had to review their proposal in order to find out, what they wanted the students to investigate".* [Student: Jan Luxenburger]

One of the good things by the co-operation with the Science Shop, was that the report is available through the Science Shop library, so the students do not have to think about distribution of the report to interested parties.

> *"They [the reports. red.] are stored in the Science Shop, and you can request them there. I think it 60 D.Kr for one copy".* [Student: Jan Luxenburger]

> *"It is possible to request the report through the Science Shop, and that was good for us, if people are interested, then we do not have to copy it. And this is where we have had an advantage in co-operation with the Science Shop, this and that the report is part of their library".* [Student: Rune Asmussen]

3.1.5.3 The Supervisor

It is the supervisor's impression that even though DCF were involved in the project and in formulating the research aim and question, the project was mainly Jan and Rune's project and very much focused on them practising the methods applied in the research.

> *"In this case, it was to a large extent Jan and Rune's project, even though they did co-operate with DCF. But it was them who took control and formulated the project in that co-operation".* [Supervisor: Morten Elle]

3.1.6 Round Off

Characteristic for this project was that it was based on a very theoretical approach, which the students' performing the research wanted to test on a hypothesis they had developed about different actors understanding and perception of the bicycle as technology. The focus of the research was defined mostly by the students, but done in co-operation with the NGO requesting assistance through the Science Shop at DTU.

Through the research the students' were confirmed in their hypothesis, and they were further able to conclude that the problems the politicians and traffic planners perceives in connection to bicycle planning are not the same problems as the users experiences. And that bicycle traffic planning often is planned and carried out without the involvement of the users. The NGO requesting the research has used this information both in the political debate and as background information when planning new initiatives.

3.1.7 References

Student report: "Hvad er en cykel? – en socialkonstruktivistisk analyse af mulighederne for at fremme brugen af cyklen". Udarbejdet af Jan Luxenburger og Rune Asmussen. Juni 2000. Videnskabsbutik nr: 1996.009.

Project proposal from DCF to the Science Shop at DTU.

Email correspondence with DCF, October 15, 2002.

Email correspondence with Jan Luxenburger, November 12, 2002.

Phone interview with DCF: Jens E. Pedersen, November 20, 2002.

3.2 The Vognporten Case

3.2.1 Fact Sheet

Danish report title: "Økologiske fødevarer i daginstitutionen Vognporten – med fokus på opbevaring og lokalforsyning af frugt og grønt." Udarbejdet af Susie Sinding Ebbesen og Katrine Ligaard Nielsen. Videnskabsbutik nr: 95.019.

English report title: "Organic food in the day care centre Vognporten – with special focus on storage and local supply of fruits and vegetables". Written by Susie Ebbesen and Katrine Ligaard Nielsen. Science Shop number: 95.019.

Request: Made by the day care centre Vognporten through the Science Shop at DTU.

Aim: To investigate the possibilities of storage and local supply of organic fruits and vegetables to the day care centre Vognporten.

Duration: From February 1996 to June 1996 (one semester, e.g. 13 weeks)

Students: Two M.Sc. Engineering students in the middle of their studies.

Costs**:** No costs involved in the research.

Outcomes:

- Official report to DTU and the day care centre Vognporten with the Danish title as stated above.
- Article published in the local newspaper: *"Økologiske nøddeknækkere".* Albertslund Posten. September 11, 1996.
- Two brochures produced by the students to the day care centre. One brochure regarding information on how to implement organic fruits and vegetables in day care centres and one brochure regarding storage of organic fruits and vegetables.

Working methodology:
Literature review, and informal interviews with the leader of the institution and the kitchen assistant.

Publications:
"*Økologisk kost i Daginstitutionen – Ideer og gode råd til omlægning*" by Susie S. Ebbesen and Katrine L. Nielsen. (In English: "Organic diet in the day care centre – ideas and recommendations to how to reorganise to organic diet"). 1997.

"Opbevaring af økologisk frugt og grønt" by Susie S. Ebbesen and Katrine L. Nielsen. (In English: "Storage of organic fruits and vegetables"). 1997.

Follow up project: Development of the two brochures. This was not a part of the project, but something the students developed separately afterwards.

Interviews:
- One of the students: Susie Barfod (former Ebbesen) (Level 1 interviewee)
- The leader of the institution: Laila Rasmussen (Level 1 interviewee)
- The students' supervisor: Thorkild Nielsen (Level 1 interviewee)
- The Science Shop Manager: Michael Søgaard Jørgensen (Level 1 and 2 interviewee)
- Two of the researchers behind the establishment of organic food as a research area at DTU, one of them were a student assistant when the Science Shop was initiated at DTU, and the other one the Manager of the Science Shop. Eco-group: Niels Heine and Michael Søgaard Jørgensen (Level 2 interviewees)
- Eco-researcher: Niels Heine (Level 2 interviewee)
- Leader of the Children Department in the municipality of Albertslund: Lill Knudsen (Level 2 interviewee)
- The chairman of the parents board for children and youth institutions in the municipality of Albertslund: Walther Scout (Level 2 interviewee)
- Head of Department of Manufacturing Engineering and Management: Leo Alting (Level 2 interviewee)

3.2.2 Summary of the Project

The project was carried out from February to June 1996 by two M. SC. in Engineering students in co-operation with a day care centre; Vognporten. Vognporten had in 1995, through the Science Shop at DTU, requested assistance for research about *environmental management in the day care centre.*

The aim of the project was partly to investigate storage possibilities of organic fruits and vegetables and partly to establish contact to a farmer, whom the day care centre

could use as a visiting place, and at the same time buy their fruits and vegetables locally.

The aim was answered through a literature study of storage possibilities and through informal talks with the day care centre staff around needs and resources.

[Source: Student report]

3.2.3 Participants

- **Science Shop:** Videnskabsbutikken, DTU
- **Organisation:** Vognporten
- **Students:** Susie Barfod, former Ebbesen and Katrine Nielsen
- **Supervisor:** Thorkild Nielsen

3.2.3.1 Science Shop at DTU: Videnskabsbutikken DTU

The Science Shop at DTU was established in 1985. The purpose of the Science Shop is to give access (free of charge) to university research to people or organisations for whom contact with universities is not normal practice, and further to initiate interdisciplinary courses and research based upon the problems of the inquirers. The Science Shop's task, when they get a request from an organisation or group of people, is to establish contact between the organisation and students or scientists at DTU.

Science Shop interviewee: Michael Søgaard Jørgensen

3.2.3.2 Institution: Vognporten

Vognporten is a day care centre in the municipality of Albertslund. The day care centre is a pre-school institution for around 50 children in the age of 0 to 6 years.

Vognporten was one of the first institutions in the municipality that started to think about environmental and organic food concerns as part of the everyday life of the children and the staff.

The institution tries actively to involve the parents and children in the daily decisions and duties, but also in the more long-term plans related to the institution and its future.

Organisation interviewee: Laila Rasmussen.

3.2.3.3 Students: Susie Barfod and Katrine Nielsen

Two students in the middle of their studies responded on the request made by Vognporten. Both the students studied Environmental Engineering, but they had only little knowledge of organic food as a subject, before they started on the student research project for Vognporten.

Student interviewee: Susie Barfod.

3.2.3.4 Supervisor: Thorkild Nielsen

The students' supervisor main focus is research around organic food.

Supervisor interviewee: Thorkild Nielsen

3.2.4 Project Description

3.2.4.1 Background

The municipality of Albertslund decided in 1997 that all institution in the municipality providing food for children should re-organise their procedures in the kitchens so all food provided to the children would be organic food products.

> *"It [implementation of organic food in the institutions. red.] was a political wish. Albertslund's profile has been 'green' development for many years, and we are one out of two municipalities who provide food for pre-school children, so it was a natural thing for the politicians to decide all food in the institutions should be organic food".* [Municipality: Lill Knudsen]

This process was already started in Vognporten in 1993. Vognporten had implemented the use of organic food long before it was made a municipality decision, because the staff in the institution believed that providing the children with organic food would give the children a healthier life.

> *"We began to eat organic food in 1993, and started to buy what we could get, and in 1994 we began to have this process*

> *under control, when we hired our catering officer, who was hired with the aim of spreading and implementing organic food [in the institution. red.]. And then after this, they [the municipality. red.] stated to discuss it and define aims for this [implementing organic food in all institutions. red.], on the political level".* [Vognporten: Laila Rasmussen]

> *"It is [implementation of organic food. red.] to give the children the healthiest, or to give the children the best possible upbringing. Organic food is that the children are given the healthiest food possible, so they obtain the healthiest bodies and optimal energy, and also to avoid additives".* [Vognporten: Laila Rasmussen]

Another advantage by introducing organic food in the institution and to the parents was, that the use of organic food and the whole idea behind organic food, would provide the animals with a better life.

> *"And then we had the side effect, we saw during those days how the animals were treated in the agricultural sector, and to us, this was all wrong […]. We felt bad about how farming was done, and we wanted to act towards this development somehow".* [Vognporten: Laila Rasmussen]

After having started the implementation process in regards to organic food, Vognporten experienced a problem about storage of the vegetables and fruits. The institution was designed to store small amounts of food, because they used to get food delivered every day or every second day.

Through a parent in the institution Vognporten got knowledge about the possibility of co-operation with the Science Shop and students.

> *"We discovered that we could request assistance through Science Shops, it was a parent, who studied at DTU, I think. So we called and established contact [to the Science Shop at DTU. red.], and explained our problem and need. At that point in time, we had introduced organic food [in the institution. red.], but it was very new, and we lacked information and knowledge about storage".* [Vognporten: Laila Rasmussen]

The request Vognporten defined to the Science Shop at DTU was:

> *"The day care centre Vognporten is a more than 27 years old institution, which are to be expanded to an integrated institution including pre-school children. After the expansion Vognporten will have 50 children and 10 staff members. The staff in the institution wants to run the institution in an environmental sustainable manner, and our plans and wishes are:*
>
> - *The new constructions are built with careful considerations to material and construction design.*
> - *The food provided should be organic food, and local farmers and dairies should deliver the food, in order to minimise the energy consumption for transportation.*
> - *Rainwater is to be collected and used for toilets. Or is it better to construct mould toilets and use the rainwater for something else?*
> - *The indoor climate should be optimal, which is a problem because it requires a large ventilation system, is this possible in a sustainable manner by the use of a heat exchanger?*
> - *In connection with a playground, which is to be built, we have plans for a storage room for our food products. What we would like to have investigated in this connection is, how long the different products (especially carrots) can last by the right temperature.*
>
> *We have a lot of ideas, and it is possible only to address one of the aspects, but we would prefer if all the ideas were to be addressed or thought through at the same time".* [Project proposal]

The reason why the Science Shop took up the request from Vognporten was because the request suited into one of the research areas the Science Shop covered. When the Science Shop was established in 1985 it was based on the idea, that if many organisations requested assistance within the same research area not existing at DTU, the Science Shop should help initiating the area as a research area at the university. [DTU: Eco-group]

During the 1980ties the Science Shop experienced an increasing interest from organisations requesting assistance in relation to organic food and students interested

in doing research within the field, and in 1987 the Science Shop in collaboration with a centre called 'the Interdisciplinary Centre' at DTU started the process of establishing organic food as a research area within the university. The Science Shop and the interdisciplinary centre succeeded in establishing organic food as a research area at DTU. And in 1995 the Eco-group at DTU started a research project in co-operation with the country of Copenhagen around organic food in catering kitchens, and since Albertslund was part of the country, it was very natural for the Eco-group and the Science Shop to take up the request from Vognporten, and natural for supervisor to take up the task of being the supervisor for the students' doing the research fro Vognporten. [DTU: Eco-group and Supervisor: Thorkild Nielsen].

> *"We worked and did research about change over processes to organic food in catering kitchens, in that point in time. Back then we experienced an increase in the interest to change over to organic food among many institutions, both small and large institutions, but also catering kitchens at hospitals. This began as part of the local environmental work, and we experienced an increasing interest from the municipalities. Based on this increasing interest for organic food in catering kitchens, we made a research project aiming at highlighting the change over processes on a more general level".* [Supervisor: Thorkild Nielsen]

Prior to the research project initiated by the Eco-group, the people behind the Science Shop had several discussions about the view of official institutions requesting assistance through the Science Shop.

> *"Previously we had discussions about [accepting. red.] schools and day care centres, and which claimants do we accept from the official institutions. What we do, is that we accept local institutions, requests from staff or where the claimant represents some users".* [Science Shop Manager: Michael Søgaard Jørgensen]

The project done in Vognporten became part of the large research project the Eco-group at DTU carried out, and the students could use the information and knowledge achieved among the Eco-group members in their own research project concerning Vognporten. [DTU: Eco-group]

Vognporten was not the first institution in Denmark, which changed their kitchen to organic food.

> *"When we got the request from Albertslund, some pilot projects had been initiated in Jutland on some hospitals, so this was not the first initiative [within the area of changing over catering kitchens to organic food. red.]".* [Science Shop Manager: Michael Søgaard Jørgensen]

The reason why the two students responded on the request from Vognporten, was partly because they wanted to do research which would have direct benefit for an organisation, and partly because the students had an interest in organic food, and they wanted to study this subject in detail.

> *"When we were about to write our midway project, we had to find a subject for it. Why we thought about a project through the Science Shop, I do not remember, but I think it was because we had seen their brochure. Then we went to their office and found the request from Vognporten, the day care centre in Albertslund, and their plans for organic food, and this suited to Katrine and my interest for organic food, we thought it sounded interesting".* [Student: Susie Barfod]

> *"A project through the Science Shop was different and interesting, and we thought it was very interesting the fact that we could do something out of the house, that we could do research which could be used, it had an aim, and that was probably the motivation throughout the whole project".* [Student: Susie Barfod]

Before the students had the first meeting with Vognporten, they thought they were to help the institution in the process of implementing organic food in the kitchen. During the first meeting they realised that organic food were already implemented, and what the organisation needed help for, was first of all to find a local farmer who could provide the institution with vegetable and fruits and at the same time functioning as a farm the children could visit and where they could learn about animals, vegetables and fruits. A second aim was for the students to do research about how to store the organic vegetables and fruits, so that the energy consumption for storage could be reduced. [Student: Susie Barfod, Vognporten: Laila Rasmussen and Supervisor: Thorkild Nielsen]

> *"At first we thought we were to help them implement organic food to the institution, but when we came out there the first time, this was already introduced. So our project was meant as a continuation, we were to help them find local suppliers or farmers, and it was also about storage of the organic products. We were to find some sort of solution to how they could store the organic food products, and that ended with the suggestion of an igloo placed under the playground. So it ended up to be something different than we had thought in the beginning, but we did not mind that".* [Student: Susie Barfod]

3.2.4.2 Objective and Research Questions

The institution wanted to get more knowledge about how to store vegetable and fruits, and which products to keep together and which to keep apart. The institution also had a wish for buying the products locally, but had no knowledge about if it was possible to find interested farmers in their neighbourhood. Vognporten did not feel they had the capacity to find out all these information by themselves, so they requested help from the Science Shop. [Vognporten: Laila Rasmussen]

> *"The background for the project, was based on a request from Vognporten, the day care centre Vognporten, who was to start, who had some ideas to how the institution could became more environmental sustainable, and they had political support from the mayor in Albertslund, who thought they had some very interesting ideas. The leader was very active, and good in networking, and they had some ideas, they wanted to rebuilt the institution, and had ideas to how organic food could be an integrated part of the whole rebuilding process. They had more than one request for a project, among other something about ventilation, and how to run the whole institution in a more environmental sustainable manner, but what we said, if we had to demarcate, then we choose the organic food part, because they had already started this process and wanted to move further. […] They wanted a co-operation with a local farmer, which the children could visit and get an idea of how the carrots grow, this with the aim of giving the children an experience of how the food they eat are produced […]. Their most urgent problem was that they*

> *experienced problems of storage. They had an idea of having a storage room or igloo. The aim for the project then came to be to investigate the possibilities of establishing contact to a local farmer, and the possibilities of storage […]".* [Supervisor: Thorkild Nielsen]

> *"Then we decided to work with storage, because this was the problem we experienced, which products to keep together, when to eat what during the whole year".* [Vognporten: Laila Rasmussen]

3.2.4.3 Working Methodology

The decision about research methods was not something the institution was involved in, not that the students did not want to involve the institution in that choice, but they felt the institution did not have knowledge about it. [Student: Susie Barfod]

> *"This was something she [Laila Rasmussen. red.] was not involved in, I guess. We held meetings with her during the whole research process, when we had something to discuss with her or if we wanted information from her, but she had no involvement or effect on the way we worked and planned our work".* [Student: Susie Barfod]

<u>Interviews and meeting held during the project:</u>

- Informal discussions with the leader of Vognporten
- The kitchen assistant
- 9 local farmers
- Organic researchers, energy researchers and municipality representative

3.2.4.4 Time Frame

Vognporten requested assistance through the Science Shop in 1995. In January 1996 the two students responded on the proposal and co-operation between the students and the institution was agreed to begin in February 1996 and end in June 1996.

After having finished the research report, the students agreed with the institution to develop two brochures. These were made during the summer of 1996.

3.2.4.5 Budget and Finance

The project did not require a budget for the everyday duties, but a trip to Sweden to look at igloos had some costs involved. The participants do not remember exactly who paid for the trip.

> *"The transport when we held meeting, that I think we paid ourselves".* [Student: Susie Barfod]

> *"Either it was Vognporten, it could have been them, or it could have been, not the institute, rather the Science Shop".* [Student: Susie Barfod]

> *"We did find some money for it, I think, but I am not sure, it was the institute [that paid. red.], I do not think the Science Shop has resources for that".* [Supervisor: Thorkild Nielsen]

3.2.4.6 Channels of Communication

The project was very much based on a participatory approach. Throughout the whole project, the students had a very good communication and co-operation with the staff in the institution. And it was very important for the students that the results they would come up with, would be suited for the institution, and based on the needs and wishes of the institution. [Student: Susie Barfod and Vognporten: Laila Rasmussen]

The institution did not comment on the writings done by the students during the research process, because this was not something they had expressed a wish for. What was important for the institution was the results the students came up with, and not so much which methods they used in order to find the results. [Student: Susie Barfod]

> *"She never approved any chapters we wrote, she only got the report when it was finished, but she was very much involved through discussions throughout the whole process".* [Student: Susie Barfod]

The institution opened up the door to the students and did everything they could to provide the students with the information they needed and make sure that they felt comfortable when they were in the institution, and this was an important motivation factor for the students. [Student: Susie Barfod]

> *"The day care centre Vognporten was very interested in our work, and they were very open and kind to us right from the beginning".* [Student: Susie Barfod]

> *"We were welcomed there, also by the young girl in the kitchen, who felt very strong for organic food, and we followed her a whole day in the kitchen, where she told us about the procedures and the tools she uses".* [Student: Susie Barfod]

The students, the leader of the institution and the kitchen assistant had regular meetings during the whole research process. This was done because the institution wanted to be part of the project and not only wait for the results. [Student: Susie Barfod and Vognporten: Laila Rasmussen]

> *"I think all parties participated with the knowledge and resources they had, Laila was always available for meetings, if we needed them, and we were allowed to follow Christina [the kitchen assistant. red.] for a whole day, who told us about her view on organic food. When we asked if something was possible, if we could get some information, they were always willing to participate with their practical knowledge, whereas Katrine and I deepened down in the more theoretical aspects".* [Student: Susie Barfod]

> *"I think it was an interesting process when we started it, because we spoke different language, but we succeeded in communicating across this, and ended up with a very fine result".* [Vognporten: Laila Rasmussen]

> *"They [the students. red.] were here a lot […]. Very quickly they settled down here, and they almost became part of the staff".* [Vognporten: Laila Rasmussen]

The students' supervisor participated in the official meeting together with the Science Shop, the day to day meeting between the students and Vognporten, was not something he was involved with, but he had meetings with the students every month during the whole process.

> *"We had fixed supervisor meetings every month".* [Student: Susie Barfod]

The students were asked to present their project and results to the parents in the institution, because the institution wanted the parents to participate in the process of deciding which storage opportunity they should chose. [Student, Vognporten]

> *"We participated in a parent meeting, where we explained about our project. This was something Laila asked if we were interested in. She finds it very important to involve the whole house, both the parents but also the children to the extent they are able to understand it, so we participated in a parent/staff meeting".* [Student: Susie Barfod]

The research the students did on storage possibilities caused that the students, the leader of the institution and the kitchen assistant went on a trip to Sweden to look at some igloos for vegetables and fruits storage. [Students: Susie Barfod, Vognporten: Laila Rasmussen and Supervisor: Thorkild Nielsen]

> *"She [the leader of Vognporten. red.] participated a lot when we investigated storage possibilities for organic food, and we found different models, one of them an igloo under the soil, and we found a supplier in Sweden. So we spent a Saturday by going to Sweden, and Laila and the kitchen assistant went with us".* [Student: Susie Barfod]

> *"We arranged a study trip together, we went to Sweden, because we had decided that we wanted an igloo, so we went on a study trip, paid by the institution, where we went to look at different types of igloos, and they [the students. red.] had established the contact and made the arrangements".* [Vognporten: Laila Rasmussen]

When the research was over and the students had written their report, an official presentation was held at DTU. The leader of the institution, the kitchen assistant, and the students' supervisor were present during this presentation. [Student: Susie Barfod]

> *"This was the first time Laila went to visit us in our department".* [Student: Susie Barfod]

The Science Shop initiated the contact between Vognporten and the students, and they arranged the last meeting. Further involvement of the Science Shops was not needed. [Student: Susie Barfod]

> *"The Science Shop initiated the whole process, Katrine and I discussed afterwards if it had had any effect that the project was done through the Science Shop, or if it had been a project proposed through Thorkild. I do not think it [the Science Shop. red.] played any major role. I remember they wrote about our project in a magazine afterwards [in 'Anvendt Viden'. red.]".* [Student: Susie Barfod]

Due to the fact that the leader of Vognporten was very eager and felt strongly for environmental sustainability in the institution, the supervisor remembers a conflict, which the students experienced in the project.

> *"I think, I remember that the girls, the students felt a bit frustrated sometimes, partly due to the requires from the institution. Laila is very enthusiastic, and may sometimes appear a bit strong, and not willing to compromise. I think there was a discussion about the kitchen, I do not remember it clearly, you have to ask Susie and Katrine if they recognises it, but they had a discussion, where they felt Laila was pulling too much in a certain direction, and they would have liked to talk to the kitchen assistant alone, I think, something like that".* [Supervisor: Thorkild Nielsen]

The situation was solved through discussions between the students and the supervisor on how the students were to tackle the situation.

> *"I remember we discussed it, how could we move forward, it was not a problem which could not be solved, but there were also something about the role of Laila […]. I think this was a smaller conflict, which were never discussed, but nothing which spoiled the co-operation".* [Supervisor: Thorkild Nielsen]

3.2.4.7 Key Findings and Recommendations

The results of the research were that the most sustainable way to store vegetables and fruits is in an igloo (underground storing). The students did not succeed in

establishing a contact to a farmer, but they were able to identify possible farmers, who the institution could contact themselves in order to establish partnership. [Student: Susie Barfod and Vognporten: Laila Rasmussen]

> *"We learned about how to store the different vegetables and fruits. We learned that apples excrete a lot of the substance ethylene, a maturation substance, which causes, if other vegetables or fruits are stored together with them, the vegetables or fruits to maturate faster, so if you are not interested in this, you have to keep the apples separate from other vegetables or fruits. So we made a brochure about how to store the different vegetables by which temperatures and humidity, like a guidance".* [Student: Susie Barfod]

> *"They [the students. red.] investigated the area of igloos, and they talked to people with experiences in this area, I think they went to Sandholm, and some co-operatives, and they went to Sweden, because there were somebody who had invented a igloo made by fibre glass. They pointed out several opportunities, including the option of building the igloo by soil and stones, and they presented it to the institution".* [Supervisor: Thorkild Nielsen]

> *"A part of the project was a guidance in how to store vegetables in a igloo, and a lot about humidity and temperature, how apples, carrots, and onion, which should be put together and how long they can be stored. Simply outlining a guidance in how to store vegetables in a igloo".* [Supervisor: Thorkild Nielsen]

> *"The aspect about the local farmer, this was never ended, because we did not succeed in establishing this co-operation. I think we wrote up some possibilities, because we did talk to some farmers".* [Student: Susie Barfod]

> *"Where they [the students. red.] got in troubles were around the establishment of a co-operation between the institution and a farmer, it was difficult to find a farmer in the neighbourhood, who had resources to such a co-operation".* [Supervisor: Thorkild Nielsen]

3.2.4.8 Impact Usages

This project has had an influence on the political debate; it has been used both by the municipality in promoting organic food in other institutions, and by the Eco-researchers at DTU, in connection with a research project they carried out in connection to change-over processes to organic food in catering kitchens. The project has further had an impact on several other actors besides the involved participants in the project.

Internal Impact

Vognporten

As a result of the research, Vognporten was able to get funding from the municipality to buy the igloo the students recommended in their report.

> *"We succeeded, because we had this fine report, and could apply [for funding. red.] and go to the mayor. Our parents did this, because they had been informed at in a board meeting".* [Vognporten: Laila Rasmussen]

> *"We would never have got the igloo, if we had not had the report to show [to the municipality. red.]".* [Vognporten: Laila Rasmussen]

> *"It ended with, that they went and brought the Swedish fibre glass model".* [Supervisor: Thorkild Nielsen]

The students developed two brochures after the project had ended, based on the information they had written in the report. These two brochures were made because the institution needed the results of the research presented in a more accessible way than the research report. Furthermore the institution wanted to pass their experiences on to other institutions and brochures were seen as the perfect way to obtain this. [Student: Susie Barfod, Vognporten: Laila Rasmussen and Supervisor: Thorkild Nielsen]

> *"She [the leader of Vognporten. red.] wished some material, which she could pass on to others".* [Student: Susie Barfod]

> *"I think it [the agreement of developing some brochures. red.] was mentioned at a meeting in Vognporten, where we had several meetings, and I think we during one of the last meetings discussed how we could use the report and communicate the information to others, because the report is rather heavy, and it would be fine if some of the main points could be passed on to others".* [Supervisor: Thorkild Nielsen]

> *"It was something we wanted, because we wanted and needed a overview of which products to use during the year in the organic food kitchen. And how to store them in the igloo, so we did not end up using it wrong, and we lacked this knowledge. Further we wanted to pass on our experiences in the kitchen to others".* [Vognporten: Laila Rasmussen]

The brochures were not something the students and the institution had agreed on from the beginning, but a need they discovered at the end of the process.

> *"It was not defined from the beginning that we should end up developing the brochures".* [Student: Susie Barfod]

> *"I think it was a good exercise, it is good to end up with a product at the end, and brochures are easy to access and use in praxis. And we thought it was funny, the part of communication of not only the report which requires time to read and understand".* [Student: Susie Barfod]

> *"We saw the report as a result which should be approved by DTU, it was based on this that we were to be evaluated".* [Student: Susie Barfod]

The brochures were developed in co-operation between the students and the institution as in the main project, but it was the students that did the writing and designed the brochures.

> *"They [the students. red.] wrote, they did all the writings, we only talked. The writing process was theirs, they found the material, and we participated with our knowledge and explained our processes, and in this way we helped each other".* [Vognporten: Laila Rasmussen]

Due to the expertise, within the field of organic food in day care centres, the institution has managed to enhance, the leader of the institution and the kitchen assistant have been asked several times to give lectures about their experiences in courses arranged by an NGO called Økologisk Oplysningsforbund (in English: Ecological Adult Education Association) to other institutions. [Vognporten: Laila Rasmussen]

As an indirect impact of the project, Vognporten established co-operation with some students taking a course on how to develop a video. This led to the development of a video and three brochures explaining how the environment is thought into the institutions in the municipality of Albertslund.

> *"We have also had a video made, I do not remember if it was through the Science shop at DTU. It was about how to cook organic food, and we did it in co-operation with another institution".* [Vognporten: Laila Rasmussen]

> *"We put up a request at DTU, and then some students responded, and we had some preliminary meetings about focus, and we did also co-operate with another institution, because we do not have hen, and they did. They [the students doing the video. red.] also went to Sweden to take photos of how to compost, this was also included in the brochure, because they also made a brochure, with the title 'Organic food and Agenda 21 in Albertslund'".* [Vognporten: Laila Rasmussen]

Vognporten had three brochures made in connection with the video. The students developing both the brochures and the video, attended a course called Læreanstalternes Fælles Miljøkursus (in English: The institutions for higher education common environment course), and the brochures and video were part of their final report with the Danish title: "Grøn omstilling I børnehaver" (in English: "Green change over in day care centres") made by Alice Olsen, Louise Dreyer, Tine Unger, Bjarke Nielsen and Gabriella Holsby

Titles of the three brochures:

- Danish title: "Dyrkning i børnehaven" (in English: "Agriculture in the day care centre")
- Danish title: "Kompostering i børnehaven" (in English: "Composting in the day care centre")

- Danish title: “Hønsehold i børnehaver” (in English: “Hen farming in day care centres”)

The institution had another project done through the Science Shop at DTU after the project regarding storage of vegetables and fruits had ended. This project concerned collection of rainwater and the use of the rainwater for flush in toilets. [Vognporten: Laila Rasmussen]

> *“We had a project, where we did not succeed, and I hardly remember it. It has something to do with the people involved. It was a girl, and she did something about rainwater collection and toilets. Her results were fine, but we never succeeded in getting a close relationship as we did in this project, and I think it has something to do with the people involved and how we were able to communicate with each other. She did a fine report, but she did not focus on the process between her and us, or that we should feel ownership as well, she did it by herself. She interviewed us, and then she wrote the report, which means that we were not actively participating, and that is a very important aspect, because otherwise you are not willing to put energy or time into the project. I think it [the project. red.] was overlooked, we were busy, because at that point in time we were relocated to another institution, where we took care of the children, and at the same time we had the rebuilding processes here, so we were very busy, and we are probably also to blame, and that maybe she did not feel welcome”.* [Vognporten: Laila Rasmussen]

<u>The students</u>

The students gained a lot of knowledge on food storing and organic food, which they have used in their daily life afterwards. [Student: Susie Barfod]

> *“The thing about storage of vegetables, I think about that often, and it was through the project I learned about it. I do also explain it to people as often I get the opportunity, but it is not something I have communicated in other relations besides in private situations”.* [Student: Susie Barfod]

After the research was over, both students wanted to study organic food in more detail, but at that time there were no courses at DTU regarding this subject, and it

required too much time and efforts to arrange to take courses outside DTU. So the students focus changed and they started to study soil pollution. [Student: Susie Barfod]

> *"We jumped from organic food, we thought it would be fun and interesting to continue our studies around this, and we tried to find courses at Landbohøjskole, because there were no such courses at DTU, so if we wanted to continue, we had to find something else, which we never really did. We never succeeded in continuing our studies around organic food, instead we focused on soil and groundwater pollution".* [Student: Susie Barfod]

> *"At that point, we really wanted to continue, because it was our interest, and we thought it was interesting to buy organic food […], so I think, if there had been some courses, I think we would then have continued in that direction".* [Student: Susie Barfod]

When the students were to do research for the Master Thesis, they looked through the Science Shop catalogue again, but did not find anything of their interest.

> *"I think we looked through the catalogue in relation to finding the subject for our Mater Thesis at the end of our studies, but we did not find anything interesting".* [Student: Susie Barfod]

<u>DTU (Eco-group and the Science Shop)</u>

The research project carried out for Vognporten had an effect on the Science Shop and the Eco-group. It has been a part of a larger research project carried out by the Eco-group. [Eco-researcher: Niels Heine]

> *"In relation to the topic, it was obvious the Eco-group should continue, and Niels and Thorkild [two researchers in the Eco-group. red.] had already started doing research within this area".* [Science Shop Manager: Michael Søgaard Jørgensen]

Vognporten and the igloo they brought as a results of the recommendations in research has been used as case illustration, when a lecture and a previous Science Shop employee had a research project about Science Shop in Malaysia. [Science Shop Manager: Michael Søgaard Jørgensen]

> *"I remember, when we had visit from Malaysia in connection to a Science Shop research project run by Arne Wangel and Børge, the visitors were shown the igloo as an illustration of a project through the Science Shop".* [Science Shop Manager: Michael Søgaard Jørgensen]

The supervisor has used the project and the results of the project both to understand the change over processes in a specific case. But the results and the institution have also been used in regards to seminars.

> *"It was very useful for me to come close to the institution, and close to the changing processes, how they have changed over, because they are the ideal illustration of an institution, who have all the preconditions which are required, and where it is possible to see a specific case, with political support, a mayor who had requested it. And a leader in the institution who was very much involved in the change over process, and who was good in involving the staff and the parents in the discussions".* [Supervisor: Thorkild Nielsen]

> *"We used it [Vognporten as a case and illustration. red.] later, when we held seminars for people from the North, who were to see and understand the Danish model and how it had developed, and we went there to visit them. So we have used it in our work".* [Supervisor: Thorkild Nielsen]

The research has not been used by the Science Shop to promote projects or the possibilities performing projects through the Science Shop can give the students. But the Science Shop has used the project when they have held presentations outside the university.

> *"We have from time to time participated in exhibitions, for example in an exhibition in Ballerup [a town outside Copenhagen. red.] related to Brundtland. Here we promoted the project and mediated contacts between people in Ballerup and people in Albertslund. My impression was, that the requests [in relation to this project and the research project the Eco-group carried out. red.] came directly to the Eco-*

> *group [and not through the Science Shop. red.]".* [Science Shop Manager: Michael Søgaard Jørgensen]

The research did not cause any follow-up project afterwards, but the Science Shop did get a request from a school in the municipality of Tåstrup, who was to change over their catering kitchen to organic food. But the change over process progress did not lead to any specific requests for assistance.

The research carried out by the students have further showed the Eco-group that projects requested through the Science Shop can be relevant for their own research, and even point out new ideas for projects or issues to address. [Eco-researcher: Niels Heine]

External Impact

The public

The institution involved the local newspaper in the project, by having them writing an article about the project. The institution did this because they wanted the local community to gain the same knowledge as the institution gained, so that their experiences could be rooted in the community.

> *"What we also did was to have the local media to cover the process, we thought it was funny, so we wrote to our local newspaper, and they followed our process".* [Vognporten: Laila Rasmussen]

The municipality and other institutions in the municipality

The brochures made to Vognporten have been passed out to all kitchen assistants in the municipality and further to everyone who have showed an interest in how to reconstruct kitchens to organic food. Vognporten has made several reprints of the brochures because there has been a large demand for the brochures. [Vognporten: Laila Rasmussen and Municipality: Lill Knudsen]

> *"It has caused, that we could present some material, which the others [other institutions. red.] have received, and used, and we do still present it, when we are out giving lectures to people who want to start this process. It is material, that is still being used, and we have had to reprint it several times. It has been an inspiration to them [other institutions and the municipality. red.], and I think they were surprised, because*

> *they were not aware that we had those brochures made […]. Yes I think we have inspired others and showed them that it is possible, I believe that".* [Vognporten: Laila Rasmussen]

> *"The experiences Vognporten learned through their processes have been used in the project [the change over process to organic food in all the municipality's institutions. red.], maybe not explicit, but they were included".* [Municipality: Lill Knudsen]

> *"Vognporten was used as an illustration to others, on how to start and continue the process, because they succeeded, and they have been in this process for many years. In this way have the knowledge Susie and Katrine gained been spread to the whole country, and defiantly it has had an effect on a more general level besides the institution".* [Supervisor: Thorkild Nielsen]

The Green Guides

The students' supervisor has passed on the report and the brochures the student made, to some 'Green Guides'[4], because they showed an interest in the findings of the students.

> *"There have been an interest among the Green Guides, I have sent them [the brochures and the report. red.] to many Green Guides. They recommended it [the report. red.] in the Green Guide Network, even though we had not approached them, and this caused that I was contacted by many who wanted the it [the report. red.], and I have also sent it to the Green Guides, because they can use it, when they are working with similar institutions and problems".* [Supervisor: Thorkild Nielsen]

Organisations

Organic food as a research area at DTU, has meant that a number of NGOs, kitchen staff, counties, and small and medium companies etc. have got access to research

[4] The Green Guides are persons who work as a local environmental interpreter. Their main task is to collect and communicate knowledge about 'green behaviour' through different campaigns and events raised in local areas.

and knowledge about the subject, which they did not have the capacity to research themselves. [Supervisor: Thorkild Nielsen]

3.2.5 Evaluation by Participants

3.2.5.1 Vognporten

Vognporten was very pleased with the co-operation, and the results the students came up with, especially because the report and the information gathered by the students was the main reason why the municipality funded the igloo Vognporten brought after the co-operation between them and the students had ended.

> *"In general I think it was very interesting, and it could be interesting if we could define more projects like this, because the process has been very positive for us".* [Vognporten: Laila Rasmussen]

> *"I think it has been very interesting, because they introduced new solutions and ideas. That Susie and Katrine participated in our staff and parents meetings, where they explained about the project, has also been an exercise for them. I think it has inspired us, and helped us realise that dreams and visions can be implemented".* [Vognporten: Laila Rasmussen]

> *"What was a relief was that I did not have to do the investigation and all the writings, that were great. We split the duties between us, and I knew that they would do what we had agreed, so I did not have to worry or think about it, before they came the next time, unless I had promised to do something, which I also did during the process".* [Vognporten: Laila Rasmussen]

The institution does not believe that the project should have been done differently or concerned other issues than it did, because storage of the organic food was the main problem they experienced when the students responded to the institutions request through the Science Shop at DTU.

> *"Back then, storage was the most urgent problem to be solved, so it could not have been different. I do not think anything in that process with Susie and Katrine should have*

> *been done different than we did".* [Vognporten: Laila Rasmussen]

Because Vognporten experienced less success with the project regarding rainwater, it has made the leader to reflect over the situation, and she has realised that preliminary discussions about focus is one of the most important aspects, which has to be done, but also some kind of evaluation is needed.

> *"Which preconditions we have from the beginning, I can see that now, that is very important, and I think we lacked discussions with her [the student doing the rainwater project. red.], or maybe that was not the way she preferred to work, but we never got to the part of evaluation, maybe evaluation should be done when ever we finish a project".* [Vognporten: Laila Rasmussen]

> *"It requires time to have this kind of co-operation, and you have to be aware of that, that you have to contribute with our resources".* [Vognporten: Laila Rasmussen]

3.2.5.2 The Student

The student mentioned that maybe they had written the report too technical because she remembered that the institution had some problems in understanding all the information gathered in the report.

> *"I am not quite sure, but I think she [the leader. red.], she read the report with interest, but I think, I remember she had some problems with it, because it was not written to her, it was written as a report to DTU, with our academic language".* [Student: Susie Barfod]

3.2.5.3 The Supervisor

The reflections the supervisor has made afterwards concerning the project focused on how detailed the students were in their presentation of different types of igloos and the difficulties they experienced in trying to establish the contact between the institution and a local farmer.

> *"They presented many different types of igloos, and I think, that they should maybe just have picked one out and then gone more into detail with that one, and have done more investigation concerning that specific one".* [Supervisor: Thorkild Nielsen]

> *"Maybe, the part about a local farmer should have been minimised, because I think they took upon themselves too much. This part of establishing contact to a local farmer, maybe a Science Shop project should not be involved in this, because here it is about buying products, having to make different deals, and a student, researcher or investigator have a different role, than the ones who are to buy the carrots, and discuss amounts and prices. I remember they [the students. red.] had some problems with that, and they used quite at lot of time on it, compared to what they achieved, and maybe we should have discovered that faster and minimised that aspect, and just have given names and addresses on local farmers to the institution".* [Supervisor: Thorkild Nielsen]

It was the supervisor's belief that the students performed very well and that they proved important engineering skills such as the capability to enhance knowledge and communicate it to others.

> *"They [the students. red.] showed, and they got high marks, the capability to enhance knowledge fast, as far as I remember they did not have any knowledge about organic food before they began the project, and despite of this, they borrowed technical literature and read it, and were able to select between important information and less important information in regards to the situation they had".* [Supervisor: Thorkild Nielsen]

3.2.5.4 The Science Shop

The Science Shop felt the project was deeply rooted within the Eco-group.

> *"I perceived it to a large extent to be a project which were deeply rooted among Niels and Thorkild [the Eco-group. red.]. The scientific area is the supervisor's responsibility, and it was*

> *my impression that it [the project. red.] was rooted with Niels and/or Thorkild".* [Science Shop Manager: Michael Søgaard Jørgensen]

3.2.6 Round Off

Characteristic for this project has been dialogue and active involvement of the client in the research. The research focus was defined on the basis of the client's direct need, and the design of the research was based on a participatory approach, the client was to be an active partner in the research and contribute with the capacity they had in regards to investigate and reflect on the research focus.

The solution recommended in the report behind the research was adopted by the institution, and through participation of the parents, the institution managed to get funds from the municipality to buy the suggested igloo recommended in the report.

The research and co-operation further developed to the making of two brochures direct usable for the institution, both for internal use within the institution, but also externally, i.e. passing the experiences on to other institutions.

The dissemination of the knowledge enhanced in this research shows that the students' research has contributed in the political debate in regards to rearrangement to organic food in catering kitchens. The knowledge has been used in many different connections and by different institutions and organisations both within the municipality of Albertslund, but also on a more general level as part of the Eco-groups research in regards to rearrangement to organic food in catering kitchens. Because through the research done by the students', the Eco-researchers enhanced in-depth knowledge on how change over processes to organic food can be done given the ideal conditions, i.e. an engaged and motivated leader, participation of both staff and parents and political support.

The request from Vognporten and the research done by the students' has also been part of the process of establishing organic food as a research area at DTU, and justify its future existence at the university. Through the establishment of organic food as a research area at DTU, civil society organisations, catering kitchen institutions, small and medium companies etc. have got access to but research and knowledge in regards to organic food, which they may not have been able to or have had capacity to research by themselves.

3.2.7 References

Student report: "Økologiske fødevarer i daginstitutionen Vognporten – med fokus på opbevaring og lokalforsyning af frugt og grønt." Udarbejdet af Susie Sinding Ebbesen og Katrine Ligaard Nielsen. Videnskabsbutik nr: 95.019.

Project proposal from Vognporten to the Science Shop at DTU.

3.3 The DN Frederikssund Case

3.3.1 Fact Sheet

Danish report title: "Biomanipulation i lavvandede, eutrofe søer – et studie af interaktioner i fødenettet og ligevægtstilstande" Udarbejdet af Tine Amhild, Jill Grenaae, Søren Olsen og Louise Aa. Zimmer. Videnskabsbutik nr: 97.43.

English report title: "Biomanipulation in shallow eutrophic lakes – a study of food web interactions and lake equilibria". Written by Tine Amhild, Jill Grenaae, Søren Olsen og Louise Aa. Zimmer. Videnskabsbutik nr: 97.43.

Request: made by a local committee of the NGO the Danish Society for the Conservation of Nature (DN) in Frederikssund through the Science Shop at Roskilde University Centre (RUC).

Research questions:

- Is it possible through biomanipulation to reach a sustainable situation of the water being clear in an eutrophic lake?
- Is it possible to reach a sustainable situation of clear water in Lille Rørbæk village pond through biomanipulation?

Duration: From February 2001 to June 2001 (One semester)

Students: Four M.Sc. Environmental biology students at their 4th semester.

Costs: The students' institute covered all cost in relation to the research. It has not been possible to gain knowledge about the budget for the project.

Outcomes:

- Official report to RUC and DN local committee in Frederikssund with the Danish and English report title started above.
- Newspaper articles in two local newspapers:
    - "Mulighed for et rent gadekær i Lille Rørbæk" (in English: "Possibility of a clean village pond in Lille Rørbæk"). Frederikssund Avis. September 11, 2001.
    - "Ingen plan for gadekær" (in English: "No plans for village pond"). Frederiksborg Amtsavis. September 14, 2001.

- "En plan for Oppe Sundby gadekær" (in English: "Plans for Oppe Sundby village pond"). Frederiksborg Amtsavis. September 21, 2001.

Working methodology:
Theoretical considerations about biomanipulation in shallow eutrophic lakes, and tests and water samples done in Lille Rørbæk village pond.

Interviews:
- Group interview with three of the four students performing the research: Louise Zimmer, Jill Grenaa and Søren Olsen. (Level 1 interviewees)
- The RUC supervisor: Benni Hansen. (Level 1 interviewee)
- Science Shop Manager: Lene Andersen. (Level 1 and 2 interviewee)
- NGO representative, (the former chairman): Helge B. Christensen. (Level 1 interviewee)
- Head quarter NGO representative (the co-ordinator for the local committees): Thomas Leth Jess. (Level 2 interviewee)

3.3.2 Summary of the Project

The project was carried out from February 2001 to June 2001 by four Nat-bas[5] students in co-operation with the NGO; DN Frederikssund. DN Frederikssund had in 1997 approached the Science Shop at RUC with a request of getting students to do research about the pollution level in some village ponds in the municipality of Frederikssund and how they could be rehabilitated.

The research questions were answered by combining tests and water samples done in the village pond with figures for ideal conditions in a village pond.

[Source: Student report]

3.3.3 Participants

- **Science Shop:** Videnskabsbutikken, RUC: Lene Andersen
- **NGO:** Danmarks Naturfredningsforening Lokal Komite i Frederikssund (DN Frederikssund): Helge B. Christensen
- **Students:** Tine Amhild, Jill Grenaae, Søren Olsen and Louise Zimmer

[5] Nat-bas is the Danish abbreviation for Natural Science Basic Studies

- **Supervisor:** Benni Hansen

3.3.3.1 Science Shop at RUC: Videnskabsbutikken RUC

The Science Shop at RUC was established in 1988. The purpose of the Science Shop at RUC is to establish contact between civil society organisations and students at RUC. Students who want to do projects through the Science Shop have to have finished their second year in their studies.

Science Shop interviewee: Lene Andersen

3.3.3.2 NGO: DN Frederikssund

DN is a national wide large NGO with 160.000 members working towards protection of nature and the environment.

DN has around 170 local committees, which can be viewed as small NGOs, situated in different areas in Denmark. *DN Frederikssund* who requested the project is one of these local committees. The local committees are involved in local issues that are threatening to nature and the environment.

NGO interviewee: Helge Bach Christensen (former chairman)
NGO head quarter representative: Michael Leth Jess

3.3.3.3 Students: Tine Amhild, Jill Grenaae, Søren Olsen and Louise Zimmer

Four environmental biology students responded on the request from DN Frederikssund. At that time they were all at their 4th semester, and were about to perform a group project including experimental work.

Student interviewees: Jill Grenaae, Søren Olsen and Louise Zimmer

3.3.3.4 Supervisor: Benni Hansen

The students' supervisor is lector at the Environmental Biology institute at RUC, and his main focus is on aquatic marine biology.

Supervisor interviewee: Benni Hansen

3.3.4 Project Description

3.3.4.1 Background

In the middle of the 1990ties DN Frederikssund was made aware of the Science Shops existence and what they can offer small and medium NGOs, through a letter from the Science Shops at RUC and KU. The organisation saw this offer as a perfect opportunity to get research done about the pollution level in some village ponds in some villages in the municipality of Frederikssund.

The problem with the village ponds was that they were polluted, and the municipal authorities were not interested in rehabilitating the village ponds. DN Frederikssund lacked scientific prove of the pollution level in the village ponds and what needed to be done in order to rehabilitate them. This was not something the organisation had capacity to do themselves, so they requested help through the Science Shops at both RUC and KU.

DN Frederikssund approached the Science Shops at both RUC and KU with a request saying:

> *"The Danish Society for Conservation and Nature's local committee in Frederikssund are working on finding long-termed solutions and improvements for the six village ponds within the municipality's boundaries. The local committee approached the municipality, but they have no future plans for improving the existing maintenance. The local committee request assistance from students, who would be interested in doing investigations related to the six village ponds, and based on these results make recommendations to how to improve the nature in and around the village ponds.*
>
> *The local committee lacks information about:*
> - *Water quality and nutrients*
> - *In- and outlet*
> - *Hydrophytes*
> - *Fish population*
> - *Vegetation*
>
> *The local committee expects to use the results to point claim on the municipality in order for them to take responsibility to improve the nature in and around the village ponds.*

> *The local committee can offer contact to the actors in play and give input on practical matter and supervision".* [Project Proposal]

DN Frederikssund's motive for requesting this investigation done was made clear to the students, who responded and took up the task, from the beginning.

> *"They [DN Frederikssund. red.] wanted the municipality to clean up this village pond".* [Student: Louise Zimmer] *"Or all four village ponds. They wanted proof for money was needed and that it would be possible [to rehabilitate the village ponds. red.] and that it would be worth spending money on it".* [Student: Jill Grenaae]

The motive of the four students' from RUC, who responded on the request from DN Frederikssund, for doing the project, was partly because they had to in accordance to the curriculum to do a group project including some experimental work, and partly because they wanted their research to be beneficial for a partner outside the university. [Student: Louise Zimmer]

> *"We had this idea of making a project through the Science Shop, so we looked through their catalogue".* [Student: Louise Zimmer]

> *"We had been introduced to it [the Science Shop. red.] I think, one year before, and one had to be at the forth semester, I think, to be allowed to write through the Science Shop, and we wanted to try this, to have the contact to somebody outside and to try and make a project, which others could have use of. So we looked through the catalogue, and found something in our interest and we took contact".* [Student: Louise Zimmer]

But even though the contact to someone outside the university was important for the students, the most important motivation factor for the students was though the academic qualifications they could obtain through the work with the project and not so much the qualifications they could obtain by having a co-operation partner. [Student: Jill Grenaae & Louise Zimmer]

> *"We did not do it for the sake of the DN Frederikssund, we did it for our own sake, and that was something we made clear from the beginning. We do this for our sake and not for anybody else".* [Student: Jill Grenaae]

The students' supervisor was very sceptical when they told him, that they wanted to do this project. First of all, because the project was through the Science Shop, who the institute do not have a very good working relation to, and secondly because their supervisor found the project lacked scientific interest. [Student: Søren Olsen]

> *"It was a requirement from his [the supervisor. red.] side, that we would be in charge throughout the whole project, because he was not interested in being controlled by somebody from DN, it [the project and investigation. red.] was not going to be commissioned work".* [Student: Søren Olsen]

The supervisor chose to accept the project the students found interesting of a different reasons than the content of the project proposal. He chose to accept being the students' supervisor, because the four students were very motivated and seemed engaged, and because he could see a recruitment perspective in it for the future.

> *"The people [the students. red.] concerned approached me, they were, like many other students on the basis part, they had made some considerations of what they wanted".* [Supervisor: Benni Hansen]

> *"They [the students. red.] approached me, and say they have an aquatic research question inspired from the Science Shop. The group we are talking about, it was four people, a bit atypical because two of the students were a bit older than the others, and had a totally different background. […]. Strongly motivated people, and they had formed a group with two younger people, who also showed interest, and that is always fun. Then the subject is less important, as long as the people are motivated and interested. So they approached me with this research question which was based on the small green catalogue from the Science Shop, and that activated my reflective prejudices.* [Question: Why?] *Because I have been supervising many basis projects, and the proposals in the*

Science Shop catalogue are, to my opinion, at a low scientific level". [Supervisor: Benni Hansen]

"They [the students. red.] had rather early established contact to a person in the country [of Frederiksborg. red.], who could tell them that the knowledge about the village pond were almost nothing, so they [the country of Frederiksborg. red.] thought it would be interesting to go into this, they called it co-operation, but I think, they had an interest in getting a practical job done. They had further a contact to a local biologist, who found it very interesting, and who in fact had knowledge and skills in this field. And that was why I accepted to go into it, though still with my resolutions of having it lifted to a higher scientific level. I talked to them [the students. red.] about this, and that I thought they had to take care of not becoming a political tool, because a basis report can never, no matter how ambitious the young people were, then the data in a basis report can never be taking as the only truth". [Supervisor: Benni Hansen]

"And then there is a recruitment aspect, if we treat people with respect, then they will be back, and they will become our students rather than studying German or Chinese". [Supervisor: Benni Hansen]

3.3.4.2 Objective and Research Questions

DN Frederikssund's request included research on six village ponds, but during the first meeting between the students, the organisation and the Science Shop, the students told the organisation, that they wanted to concentrate on only one village pond. Besides wanting to help the organisation, it was very important for the students to obtain academic qualifications through the project, and they felt that investigating more than one village pond, would not give them the opportunity to go into depth with the analysis it required to be able to give an answer to the pollution level of the village pond. [Student: Louise Zimmer]

"He [DN Frederikssund representative. red.] wanted all six village ponds investigated, but we said that it would not be possible given our time frame, so we wanted to take one [village pond. red.] and go more into depth with that, because

> *otherwise it would be to superficial, and in our studies it is important with absorption".* [Student: Louise Zimmer]

During the first meeting between the partners, it was agreed that the research questions should be:

- Is it possible through biomanipulation to reach a sustainable situation of the water being clear in an eutrophic lake?
- Is it possible to reach a sustainable situation of clear water in Lille Rørbæk village pond through Biomanipulation?

[Student report]

3.3.4.3 Working Methodology

> *"They were very good in finding literature and good in finding focused scientific questions, so I asked them to start up a measuring programme on the lake [village pond. red.], and the measuring programme became a compromise, as everything does, when you have the time you have. So we had to decide on some choices and select some parameters and dismiss others, which may have shown relevant".* [Supervisor: Benni Hansen]

Interviews made:

- Unofficial talks with NGO representative, the municipality and the local people in the area around the village pond.

3.3.4.4 Time Frame

DN Frederikssund requested assistance through the Science Shops at RUC and KU in December 1997. In February 2001 four students responded to the proposal, and the project was carried out until June 2001.

3.3.4.5 Budget and Finance

DN Frederikssund did not have any expenses in relation to the investigation except expenses for transportation to RUC.

> *"We did not have any expenses except my transportation to RUC, but the students had, they had expenses, they had quite a lot of expenses in connection to this [the investigation. red.]".* [DN Frederikssund: Helge B. Christensen]

The student had expenses both to equipment and to transportation.

> *"Precise where the money came from, I do not know, but I think, I do not think it was the Science Shop, I think it was paid by the university".* [DN Frederikssund: Helge B. Christensen]

> *"It is the institute who has to cover the expenses [in connection to a project through the Science Shop. red.]".* [Science Shop: Lene Andersen]

> *"It was paid by RUC through our supervisor".* [Student: Louise Zimmer]

> *"I did [pay the expenses related to the investigation. red.], we usually do that".* [Question: Do you have a budget for that?] *"No, there is no money for that, because on basis, there is no money for projects, but we allocate it from the funding we get for teaching on basis. I hardly remember how much the expenses were, but it was around a couple of thousand".* [Supervisor: Benni Hansen]

> *"When it is transportation, we have our own cars, and they [the students. red.] can apply the student council, I think they got the transportation covered by the student council".* [Supervisor: Benni Hansen]

DN Frederikssund felt that the students would have liked if DN Frederikssund had contributed financially to the investigation, but DN Frederikssund did not have any means, in form of a budget, they could use on expenses in relation to the investigation.

> *"It was unspoken, but it felt like they had hoped we [DN Frederikssund. red.] would cover some of the expenses, but I had to disappoint them, because we have no money for such initiatives. Lately this has changed, now we are able to pay lecturers. I think there are allocated money for this now, project money, which we can apply for, but that was not an opportunity back then".* [DN Frederikssund: Helge B. Christensen]

3.3.4.6 Channels of Communication

The research was not based on a participatory approach. When the research questions were agreed, the students did their testing and analysis, without involving the organisation further than having informal talks about the history of the village pond.

The contact between the students and the NGO was initiated through the Science Shop.

> *"The Science Shop did it for us, they had been contacted by Helge, who wanted this investigation, so they established the contact and arranged for a meeting between us, where he told us about his expectations and we told him what was possible within our time frame".* [Student: Jill Grenaae]

The only role the Science Shop played for the projects was to initiate the contact between the students and the NGO.

The students and the organisation only held two meetings together, one meeting when the first contact was established and the second meeting when the students had written the report and presented the results to the organisation. [DN Frederikssund: Helge B. Christensen]

> *"I was very enthusiastic for the evaluation [presentation. red.], where I got the opportunity to have discussions with them about the things they had done, because I read the report very carefully, it was very interesting".* [DN Frederikssund: Helge B. Christensen]

> *"I think it was very excellent [the presentation of the results. red.], it was performed in a room with AV, and the whole report was presented, and they each presented a chapter. I think the presentation was good. I was the only one present, when you are in a local committee you have limited resources, and you have to use them, if you are chairman, you know which resources available, it is volunteer work, people have been to work for 8 hours, 1,5, hours transportation to work and 1,5 hours transportation back from work. You know the*

> *resources, and use them where they are most needed, and in this case, we had only resources to send the chairman".* [DN Frederikssund: Helge B. Christensen]

During the research process the students informed the organisation about their progress through email contact. The organisation was satisfied with this arrangement, they did not feel they needed to be included more in the research, because the organisation did not have the same expertise as the students had. [DN Frederikssund: Helge B. Christensen and Student: Louise Zimmer]

> *"I asked to be informed about the progress, and that I was, I was informed. And I had told that if they experienced any practical problems, they should contact me, and since they never contacted me, I assumed they got the help they needed from the local people, and that it was not necessary with my assistance. But I remember they send some emails about what they did and what they planned to do. My only reply was that if it was done in order to reach their objectives, then it was fine by me".* [DN Frederikssund: Helge B. Christensen]

> *"We held him informed continually, we told him when we had been out there, but I do not think he was aware of how much it required of each of us".* [Student: Louise Zimmer]

> *"We emailed to him, and told him about our progress, and then we had a meeting when we had written the report. Here we explained our results".* [Student: Louise Zimmer]. *"And if there were something he needed explained, so that he would be able to use the report for his purpose".* [Student: Søren Olsen]

During the research process the students did not feel that they had to involve the organisation more, than just updating them about progress. If there had been more co-operation it would have had a negative effect on the learning processes they went through during the process. [Student: Søren Olsen]

> *"There was no need for more co-operation, I think".* [Student: Søren Olsen]. *"Maybe because of the scientific level, we had a certain scientific level, and wanted to reach a higher level, which is why we put stress on the scientific aspects in the*

> *project, whereas when we were to communicate this project to Helge, we had to lower our level, so to speak. But of course he could give input".* [Student: Louise Zimmer]. *"But we did get input, he told us what he knew about the village pond, that the water used to clear, and that there used to be a lot of zooplankton, the stories he had heard up there, that was what we could use him for, and then the article in Frederiksborg Amtsavis".* [Student: Jill Grenaae]

> *"It was suitable, if it had been more [co-operation. red.], it would have ruined our work, I think, if there had been more co-operation than that, because you have defined research questions together, and you have agreed about what needs to be investigated, and then we need some room to carry out the investigation, and after that you can evaluate. It is no good, I think, to discuss new ideas in the middle of the period, I think, that is a very bad idea when you are doing experimental work".* [Student: Søren Olsen]

> *"It is important to be able to draw a line, and say that it is our education, and they can use the results, but our education is the first priority".* [Student: Louise Zimmer]

The students' felt that DN Frederikssund in the beginning did not have an idea of how much it requires in order to document the aspects the organisation wanted knowledge about. But after having reached an understanding between the two partners, the students felt DN Frederikssund participated with what was expected in regards to the investigation.

> *"He [Helge. red.] was a bit disappointed in the beginning, because we were not to investigate all six village ponds, but he did understand".* [Student: Jill Grenaae].

> *"Helge had probably imagined that it was just about taking some water and run it in a machine, and then it was over, this was my impression. He did not imagine how many test you have to do in order to document your results".* [Student: Søren Olsen]

> *"It was my feeling, that they [the students. red.] felt welcomed and treated nicely, they felt motivated by him [Helge. red.] as a person, and they felt he supported them. I am not aware of how many meetings they [the students. red.] held with him [Helge. red.], that I can not answer, but they [the students. red.] did referrer back to me, that it was a co-operation they had [with DN Frederikssund. red.]".* [Supervisor: Benni Hansen]

> *"His [Helge's. red.] contribution has been to outline the project proposal to what we have been investigating, and then we have used what we felt was needed".* [Student: Louise Zimmer]. *"And he [Helge. red.] established the contact to the municipality for us".* [Student: Jill Grenaae]

The students informed the residents around the village pond about their research and why they were there. This led some of the residents to offer boat capacity and other services to the students when they were doing their experimental work. [DN Frederikssund: Helge B. Christensen]

> *"We wrote a letter, and delivered it to all the houses in the village, and people came down and looked and thought it was very interesting. Vi also got a friend out there, whom we borrowed a boat from, two actually, so they [the local people. red.] were very interested in what we did, and we had also explained why we were there, and that we were not going to spoil their village pond. So we were welcomed".* [Student: Louise Zimmer]

> *"They [the local people. red.] also contributed. If somebody live closely, then they have experienced the water level, the high water level and the low water level, they have experienced the village pond, many of them, when it was clear, and aquarium dealers all the way from Copenhagen came to the village pond to fish for mosquito larva, this was what they had experienced, and these information were communicated [to the students. red.]. Also how the municipality's sewer system drained the village pond, because there was a leakage on one of the pipes, and when they closed the leakage, the water level increased again […]. It is*

> *more than 30-35 years ago".* [DN Frederikssund: Helge B. Christensen]

> *"What was so nice about this project, was that they [the student. red.] had support from the local people. People were curious, and they came and talked to them [the students. red.]. And the four youngsters, they were, I had asked them to meet the local people in a positive manner, and tell about RUC and why this was interesting to investigate, and they got fine support, they borrowed a boat form a man. And I asked them to inform people in the area about the outcome, so they spread out information notes to people".* [Supervisor: Benni Hansen]

The students also contacted the municipality in order to hear about their plans and get permission to do the investigation.

> *"We went to talk to them, and everything that included spending money was out of the question, that was the attitude of the municipality from the beginning".* [Student: Louise Zimmer]

The students held meetings with their supervisor around once a week. Before they began doing the research they had never before worked with him before, but they had heard about him from others.

> *"It was ourselves [who took the contact to the supervisor. red.], we went to him, our supervisor, even though we had never co-operated before, so we went to him and explained that we wanted to write under his supervision. In the beginning he was a bit sceptical because it was a Science Shop project, and because of the research proposal, he said several times, that this was not science, we were not to think that this was science, it was an analysis".* [Student: Søren Olsen]

> *"I think we held meetings once a week, very often long meetings, because they [the students. red.] gave feedback"* [Supervisor: Benni Hansen]

DN Frederikssund did not have influence on how the investigation was designed or carried out, this was a requirement from the supervisor for accepting the task as being the students' supervisor.

> *"There was no debate that way".* [Supervisor: Benni Hansen]

The supervisor never attended a meeting with DN Frederikssund during the project period, he only meet the representative from the organisation at the examination at the end.

> *"The claimant was present at the examination, and that was a nice experience. No [he never meet the with the organisation before that. red.], and maybe that is because of my perception of, that [e.g. meetings between the organisation and the students. red.] was not something I had to participate in, because I see my self as the educational supervisor".* [Supervisor: Benni Hansen]

3.3.4.7 Key Findings and Recommendations

The research highlighted the pollution level in the village pond and what needed to be done, if the village pond was to consist of clear water. The report did not point out who should be responsible for the rehabilitation. This was an aspect the students' deliberately had chosen not to discuss in the report, because they did not found this discussion interesting or felt they had to be involved in that. [Student: Jill Grenaae]

> *"What is recommended is biomanipulation, and that is not costly, so in principle it would be possible to begin".* [DN Frederikssund: Helge B. Christensen]

> *"We were very happy about the project, because the methods are clearly pointed out, in many reports this is unclear, but this was a very user-friendly report, because there is written what needs to be done in order to obtain a certain result".* [DN Frederikssund: Helge B. Christensen]

> *"Our focus was not whether or not the village pond was rehabilitated or not, somehow this did not interest us, we were interested in the biological processes, so we did not at all*

> *focus in the report about what should be done, the costs and when it should be done".* [Student: Søren Olsen]

> *"We were not interested in, if we had studied Technology and Society then we would have been interested in the processes between the country and the municipality, but this did not interest us at all. What was our interest were the biological problems in the village pond and to learn about methods".* [Student: Jill Grenaae]

3.3.4.8 Impact Usage

This project did not cause any new policies, and the results in the project were only to a small extent used to put pressure on the municipality.

DN Frederikssund

DN Frederikssund has to some extent used the report the students wrote to put pressure on the municipality to rehabilitate the village pond. When the report was done, they send it to the municipality, and to the local newspapers, because they wanted the public to know about the results and recommendations. During the research period, the organisation also sent out press releases in the local newspapers about the project and explained why they had required help from scientists. [DN Frederikssund: Helge B. Christensen]

> *"What we did, was of course to study it [the report. red.] carefully, and we had an article in both Frederiksborg Country Newspaper and Frederikssund newspaper, and somebody went out to take photos of the village pond. It [the report. red.] was sent to the chairman for plan and environment in the municipality of Frederikssund, but what happened was, that after the election, he was no longer chairman, and we have not contacted the new chairman, but I have heard, that the case have been handed over to the biologist in the municipality of Frederikssund".* [DN Frederikssund: Helge B. Christensen]

> *"We have not given up on it [rehabilitating the village pond. red.], and we will keep on asking to the case. We use to say, that we wait for an opportunity, and when it comes, we react".* [DN Frederikssund: Helge B. Christensen]

> *"There was written and article in Frederiksborg Country Newspaper".* [Student: Louise Zimmer]

> *"A small story was published in a local newspaper that is what I know. I think that is very impressive and they [the students. red.] were proud of that".* [Supervisor: Benni Hansen]

> *"It is as it always is [that the report is stranded on a municipality officers desk. red.], money are not prioritised for that kind of things. But maybe some day the opportunity will come. It is my impression that the biologist was satisfied with the report".* [Supervisor: Benni Hansen]

DN Frederikssund was very satisfied with the report, because they felt it was written in a way that enabled "ordinary" people to understand the conclusions and recommendations, and not only people with an academic background. [DN Frederikssund: Helge B. Christensen]

> *"It is a strength to have a report which is reliable and scientific, which is made at the university, that was a very positive thing for DN".* [DN Frederikssund: Helge B. Christensen]

The students are not aware of what the organisation has used the results in the report for. After they presented the results in the report to the representative in the organisation, they have had no contact to the organisation. [Student: Jill Grenaae & Søren Olsen]

> *"We have had no contact to Helge since then".* [Student: Jill Grenaae]

> *"None of us have had an interest in knowing when the report reached the municipality or the country".* [Student: Søren Olsen]. *"Also because we have continued with other things, and we have not had the time or the interest in getting knowledge about what happened afterwards".* [Student: Jill Grenaae]

> *"He [Helge. red.] tried afterwards to have us to do a new investigation, but we said no to him".* [Student: Louise Zimmer]

DN Frederikssund has after this project ended, defined more project requests through the Science Shops at RUC and KU, because they were very satisfied with the research done in connection with the village pond. Unfortunately they have not got any responds to the requests they have send to the Science Shops yet. [DN Frederikssund: Helge B. Christensen]

> *"We had some aspects which we had some doubts about, so we thought we needed assistance from the Science Shop again. […]. We had been asked about our opinion about a future highway to Frederikssund and new plans for extending the railway system, all in all comments on the infrastructure, which were to be redesigned. And we had no idea what to answer, we knew what we wished, but felt we needed someone with expertise to look at it, look at it from outside. So we defined at proposal for RUC concerning the expansion of the traffic plans in Frederikssund. And it [co-operation with RUC students. red.] began nicely, but after a while I stopped hearing from them, and I can see in the project list, that the report was never finished".* [DN Frederikssund: Helge B. Christensen]

> *"I could very well imagine that we in the future will request assistance from the Science Shop again, but for the moment we have no proposals".* [DN Frederikssund: Helge B. Christensen]

<u>The students</u>

The students have not used the results in the project for anything after having finished the investigation, but they have used the methods they learned through the investigation.

> *"Some of the problems we worked with are something we have had lectures about afterwards, after we finished the project, so we had already knowledge about it, that was good".* [Student: Louise Zimmer]

> *"We defiantly learned something, we learned many things about testing and analysing, I think it has been a learning experience for us".* [Student: Louise Zimmer]

The supervisor

The project have had the impact that the supervisor have hired one of the students as a student assistant and recruited two of the students to do their Master Thesis in connection with one of his research projects.

> *"I have through the project become aware of them and their skills, and I have hired one of them as my student assistant, and agreed with two of them to perform their Master Thesis, a development project, one of my projects, which I fund, and I have invited them into this project".* [Supervisor: Benni Hansen]

The municipality

The Municipal authorities have not initiated any activities around rehabilitating the village ponds. The report has been passed on to the biologist in the municipality, and to DN Frederikssund's knowledge, this person do not have any plans for rehabilitating the village ponds in the near future. [DN Frederikssund: Helge B. Christensen]

> *"The municipality was not directly involved, but they knew what we were doing, and knew the report would be sent to them, they could not avoid knowing this, because it was in the news papers".* [DN Frederikssund: Helge B. Christensen]

> *"I think they have changed their mind a little bit, because they have handed it over to the biologist"*. [DN Frederikssund: Helge B. Christensen]

3.3.5 Evaluation by Participants

3.3.5.1 DN Frederikssund

An advantage by having projects done through the Science Shops is that the organisation does not have to take care of all the administration, because this is the task of the Science Shop. [DN Frederikssund: Helge B. Christensen]

> *"The Science Shop deals with all the administration, which volunteers impossibly, would have resources to administrate in their spare time, when they also have other things to do. There I think the Science Shop played an important role".* [DN Frederikssund: Helge B. Christensen]

> *"I always felt welcomed in the Science Shop, the students were engaged and motivated nice people to work with, and I had the positive experience that the Science Shop arranged what they were supposed to, and played their role perfectly. There were never any doubts about what was going to happen and everything happened as scheduled. The report was also positive, because there we had a guidance to how to rehabilitate this village pond biologically, that was a nice experience. And I was very happy about the students, it was positive to experience their interactions with the local people. It was a very fine co-operation".* [DN Frederikssund: Helge B. Christensen]

DN Frederikssund felt that the students answered all the research questions in a very impressive manner.

> *"I had reflected on the research problem, and was very interested in eutrophic lakes and what is known as biomanipulation in lakes, and I think they managed to cover all aspects. The only thing they did not discuss or write anything about, as fare as I remember, was vegetation, but they explained, that this was not interesting in this case, because the biological processes happens in the water".* [DN Frederikssund: Helge B. Christensen]

> *"I think, there were some tests they [the students. red.] did not manage to perform about oxygen, the testing was done in April, and it would have been better to do them in July or August, but that did not suit into their [the students. red.] time frame".* [DN Frederikssund: Helge B. Christensen]

DN Frederikssund did not have any troubles in understanding the report, or felt it was too technical or scientific for them to understand.

> *"No it is not [too scientific. red.] and I do not think it is possible, and such as report should not be written differently, because then it will loose it qualities".* [DN Frederikssund: Helge B. Christensen]

> *"I do not think they [reports made through the Science Shop. red.] should be made more popular, I think the level is fine, because if they are made more popular, they lose some of its values, according to my opinion".* [DN Frederikssund: Helge B. Christensen]

3.3.5.2 The Students

The students themselves have to find a supervisor for projects done through the Science Shop. Finding a supervisor is not something the Science Shop assist the students' in. [Student: Søren Olsen and Science Shop: Lene Andersen]

A disadvantage for the students when doing project through the Science Shop is, that the client often does not have an academic background, which causes the students to use a lot of time on communicating their results, so the organisation is able to understand them. [Student: Louise Zimmer & Søren Olsen]

Projects through Science Shops are often based on a specific problem experienced by an organisation, and those projects are rarely to include science, which the biology study is based on. In accordance to the students projects through the Science Shop are more aiming at students on the first two years of their studies, than students' who are further in their studies. Although the Science Shop has the criteria that the students has to have finished their second year of studies in order to perform a project through the Science Shop. [Student: Louise Zimmer & Søren Olsen]

> *"Our investigation was small compared to documentation, documentation of the lake, the water, requires a whole year, and it requires a lot more testing and different analysis methods than we did".* [Student: Søren Olsen]

> *"This project as a 4. semester project was fine, but it would not be suitable after the basis level".* [Student: Louise Zimmer]

> *"Should we have continued with this project, we would have made some measurements of sediments because we only focused on phytoplankton, zooplankton and fish".* [Student: Louise Zimmer]

3.3.5.3 The Supervisor

The supervisor felt the students learned a lot through the project, especially in regards to taking samples and analysing them in the laboratory.

> *"I felt the students learned a lot from taking those samples, and bringing them back to the laboratory, and they learned about some standard methods. This was the scientific input I wanted to give to them".* [Supervisor: Benni Hansen]

The supervisor mentioned some positive aspects about the project and the different actors' roles throughout the whole project period.

> *"Positive is, that they approached me with a research question, I did not find interesting, but which ended successfully, that is positive, and shows that if you want something bad enough, then it is possible to persuade me, I have learned something from that. It was positive that even though they [the students. red.] were very different, they quickly learned to co-operate, and they shared all responsibilities and tasks, I think that was very positive, and they were at the same time very effective, which is rather rare to see".* [Supervisor: Benni Hansen]

> *"It was positive that they [the students. red.] managed to create a network around themselves, and they got support from the local people, that is rare".* [Supervisor: Benni Hansen]

> *"It was positive that they [the students. red.] managed to build up a grounded theoretical introduction, even though it was based on a trivial research question. This [the theoretical introduction. red.] may somehow have been hard for the claimant to understand, but it caused that their [the students. red.] scientific skills were raised to a higher level, I think that was positive".* [Supervisor: Benni Hansen]

3.3.6 Round Off

Characteristic for this project has been that it was based on a direct need for documentation of a problem experienced by the organisation requesting assistance through the Science Shop. The focus of the research was defined in co-operation between the students and the organisation, based on the organisations problem.

Another characteristic of the research was that when the aim was defined, the students and the organisation had very little dialogue and discussions throughout the research period.

The way the students and the organisation chose to co-operate could be seen as a consultancy agreement. The organisation had a problem they wanted scientific documentation for, and the students needed to do experimental work including applying new testing and sampling methods, and at the same time, the students wanted their research to be beneficial for a user. Co-operation and discussions throughout the research was not important for neither the students nor the organisation. Both parts felt that agreeing on the research questions was enough in order to obtain their individual needs and wishes for the co-operation and the out coming results. The way this project was carried out indicates that dialogue and active involvement of the organisation throughout the research period, is not a precondition for a successful co-operation, which both parts are satisfied with at the end.

The NGO has to some extent used the results to put pressure on the municipality of Frederikssund, whom are the responsible part for the village pond and its biological and environmental condition.

3.3.7 References

Student report: “Biomanipulation I lavvandede, eutrofe søer – et studie af interaktioner I fødenettet og ligevægtstilstande” Udarbejdet af Tine Amhild, Jill Grenaae, Søren Olsen og Louise Aa. Zimmer. Videnskabsbutik nr: 97.43.

Project proposal from DN Frederikssund to the Science Shop at RUC

4 Discussion with Respect to Impact

The aim in this case study report is to investigate the impact of intermediaries such as the Science Shops, on research and curricula development, on capacity development in civil society organisations and universities in general. Due to a wish to broaden the points from the interviewees in these case studies, it has been chosen to analysis each actor-group (client, students and researchers, and Science Shops) in separate paragraphs, but highlighting the interactions of the actors. Through this division, it is possible to discuss how knowledge were produced, and how the knowledge were used by actors to gain impact either on research development or the political or social discourses.

4.1 The Client Perspective

The social role of the three clients in the cases described in this case study report is very different from each other. DCF is a medium sized NGO initiating both local and national campaigns and activities in order to promote the use of bicycles. The NGO also participates in the political debate concerning traffic planning as members of different governmental committees and councils. The membership of these committees and councils gives the organisation legitimacy to act as an actor representing the bicyclists in the traffic planning debate, and it is through these structures the organisation tries to influence the policy-making. The aim of the NGO is to obtain sustainable traffic planning, which means minimising the use of private cars and increasing the use of bicycles.

Vognporten is a local governmental institution within the municipality of Albertslund, and can be seen as one of the local initiators of the process of changing over to organic food in day care centres. The institution changed over to organic food in their kitchen before it became a political vision in the municipality of Albertslund. The institution's motive for this change over was based on a wish to improve the health of the children. The change over process to organic food was also a way for the staff in the institution to act against the way animals was treated in the agricultural sector. The changes implemented in the institution were decided in mutual agreement between the staff members and the parents in the institution, and it was through the parents active involvement and engagement, the institution succeeded in implementing the change over to organic food. An important objective for the

institution is also to spread their experiences to other institutions and through this sharing of experiences and knowledge the institution's intention is to spread their vision of an environmental sustainable society

DN Frederikssund is a local committee of a national NGO working towards protecting nature and the environment. DN Frederikssund is addressing local issues in regards to protection of nature and the environment in order to reach local sustainable development. They initiate local campaigns, participate in political hearings, and comments on the municipality's strategies and plans for the environment and the nature within the boundaries of the municipality.

4.1.1 The Question in its Original Context

The three clients all needed knowledge about a certain topic or issue, when they requested assistance through the Science Shops. But the type of knowledge needed differed. DN Frederikssund experienced lack of actions and concern from the municipality towards some village ponds, which due to years of pollution, was in a very bad shape. The NGO felt they needed scientific documentation of the pollution level in the village ponds in order to get the municipality to take up their responsibility of rehabilitating the village ponds, because previous attempts of addressing the problem had failed, because of lack of scientific documentation.

Both DCF and Vognporten had a need of enhancement of knowledge when they addressed the Science Shop. Vognporten faced a problem of storage of organic food and vegetables. Organic food in catering kitchens was a new development in Denmark in the early 1990ties, and the institution did not feel they had the capacity to investigate or explore storage possibilities themselves. DCF approached the Science Shop because they felt a need of enhancing their knowledge about how strategies for bicycles are planned as transportation mean. Their need of enhancing knowledge about the topic was not an urgent problem for the NGO, and due to lack of resources available, they did not have the capacity to initiate activities related to non-urgent issues.

Besides enhancement of knowledge, both clients (i.e. DCF and Vognporten) also needed input to development of new perspectives. Vognporten felt they needed new perspectives and ideas to how they could implement the 'organic thought' into the whole of the institution and not only the kitchen, and ideas to how they could spread out their visions to other institutions and the public in general. DCF hoped that the research requested, could develop new perspectives on how to motivate more people

to use the bicycle as their transportation mean and develop new perspective on how the NGO should address and debate bicycle traffic planning.

4.1.2 The Transformation of the Question by the Mediation and the Result of the Project

The themes pointed out in this subsection are that research done through university structures are perceived by clients as impartial, and can be used in a political debate to create legitimacy. Co-operation with intermediaries, such as the Science Shops further contributes to enhancement of knowledge within the civil society organisations, and it can develop new perspectives around a certain. Perception of knowledge production and for whose purpose knowledge is produced is also an issue for discussion in this subsection.

When clients approaches the Science Shops, they are usually asked to write down their request specifying the problem and why they feel a need for research done within this problem area. If the clients have difficulties in formulating their need, the Science Shops assist in this process. In the three cases described in this cases study, all three clients formulated their requests to the Science Shops by themselves, after having had a talk with the people from the Science Shops. But transforming the original questions from the clients into research questions differed in the three cases. In the case of Vognporten, the development of the research questions was done based on discussions between the institution and the students. In the case of DN Frederikssund, the research questions were already defined by the organisation, when they approached the Science Shop. And finally in the case of DCF, the focus of the research was suggested by the students, because the students had a hypothesis they wanted to test.

The request from Vognporten to the Science Shop contained four elements, including the aspect of storage of organic food. Both the students and their supervisor felt that addressing all four elements would be too extensive given the time frame the students had for the project. The students discussed this with the institution, and they agreed to focus on the most urgent need for the institution. The process of transforming the topic of storage of organic food and supply of organic food products from a local farmer, into a scientific research question, complying with university requirements, was done by the students in co-operation with their supervisor. But identification of storage of organic food and local supply of vegetables and fruits, as the most urgent needs the institution faced was done by the institution themselves, without the involvement of neither the students nor the students' supervisor.

In the case of DN Frederikssund, the students had to announce that investigating 6 village ponds, which were the wish of the NGO, would be impossible, when they had to obtain scientific skills, such as in-depth knowledge about the biological processes in a village pond, and in-depth knowledge on the analysis methods. The students' argument of only investigation one village pond was based on instructions from their supervisor. When the student approached their supervisor, he was a bit sceptical towards the project, because he felt the research lacked scientific content and enhancement of knowledge for the students. He pointed out to the students, that in order for him to accept the project, they had to focus on only one village pond, in order to gain in-depth knowledge about sampling and analytical methods, which were required due to university requirements about enhancement of scientific skills. DN Frederikssund accepted the students' requirement of only investigating one of the village ponds, due to the fact, that the NGO would get a comprehensive analysis of the condition of the village pond.

The supervisor further instructed the students, that they should be aware of not becoming a tool in a political play, because this had been seen in earlier projects through the Science Shop, and caused that insufficient research had been used in a political debate. The students explained to the organisation that they did not want to become a part in the political debate, or discuss who should be responsible for the quality of the water in the ponds and why. They would make a scientific investigation of the conditions in the village pond and make recommendation to how rehabilitation could be done, but the research would be based on scientific methods and not based on the organisation's wishes or hopes for the outcome. DN Frederikssund accepted these requirements because their main objective of approaching the Science Shop was to get access to a scientific report addressing and clarifying the pollution level, which the organisation then could bring forward to the municipality as evidence.

The case of DCF is a bit different from the two other cases in regard to how the client's need was transformed into a scientific question. DCF did not have a clearly defined problem they wanted investigated, but more a subject they found interesting to have investigated. The students' who responded on the request had a clear idea (a hypothesis they wanted to test) of what they thought could be interesting to investigate. The students' hypothesis was discussed among the client, the supervisor and the students, and the NGO found it interesting and agreed on the focus of the research.

A problem raised by a representative from DN was the way results of projects made through university structures are communicated to the clients. Students have to present the results in a certain standard in order to comply with university rules, and

this way of presentation is in most cases not the most appropriate way in order for the client to be able to use the results of the research for their purposes. These case studies also raise this issue, and the interviews made with both the students and the clients show, that communication of the results are something which the students think about throughout the research period and when they hand over the final results to the clients. DN Frederikssund wanted a scientific report, which they could hand over to the municipality, so in this case, it was important that the results was communicated scientifically, and not made too popular. A popular presentation of the research and its results would, according to the representative from DN Frederikssund, have made the problem look too simple. The legitimacy of university research was also brought up in this case.

> *"Access to research and knowledge through a co-operation with the Science Shops are strengthening the civil society organisations when they are addressing local problems, because a neutral investigation often is more powerful than an investigation performed by the individual organisations".* [DN Frederikssund: Helge B. Christensen]

By this statement, the representative emphasis that projects done through the university structures are seen as scientific impartial. The organisation feel that by having projects done through a university, they feel empowered through higher legitimacy in the political debate, and feel that their arguments are stronger than if they had produced the results themselves.

Communication of the results in the two other cases, Vognporten and DCF, was important parts of the students work throughout the research because the results were something the clients were to use in order to develop their institution/organisation. The research made in co-operation with DCF was based on a theoretical approach, which the NGO did not have any knowledge about before the research, so it was important both for the students and the NGO that the NGO understood the methodology, and how conclusions was made based on the frames of the approach. The way the students and the NGO agreed to tackle this problem and see to that the NGO understood what was written, was through having the NGO read and comment on the analysis and conclusions forthcoming. This showed to be a very good procedure, because it caused the students to be more explicit in their conclusions, and explain and argue in a less theoretical manner, than if the NGO had not been part of the process of commenting on the writings. The involvement of the

NGO in the writing process further caused the NGO to develop knowledge about the theoretical approach, SCOT (Social Construction Of Technology).

In the case of Vognporten, the institution did not comment on any of the students' writings during the research period, but they had close communication throughout the whole process, and the students discussed their findings with the institutions, before writing them. Despite this, the students experienced the problem of having to comply with university standard and at the same time deliver a product to the client, which they would be able to use to develop the institution further. The report the students had to hand in and be evaluated on was too technical and less user-friendly compared to what the institution had imagined. Both the institution and the students became aware of this when the research were finished, so as a mean to target the client's need, the student and the institution agreed to develop two brochures, containing the results of the research. The development of the brochures was not part of the original agreement between the institution and the students, but something they agreed to do as a separate part. These brochures communicated in a popular way the results of the research, and made it possible for the institution to use the knowledge enhanced through the research both to develop the institution, but also to communicate their experiences to other institutions, which were to implement organic food in their catering kitchens.

As discussed in this subsection the communication process between the students and the clients differed in the three cases. In the case concerning DN Frederikssund, communication and knowledge transfer was not an important aspect to any of the actors. What was important was the scientific report. Due to this priority it was not important to the organisation that they would develop their understanding of the problem. In contradiction to this, the case of DCF shows, that the NGO, through the co-operation process, changed their understanding of which problems the bicyclists' experience in the traffic, and which issues the organisation needs to address. Through the research done with Vognporten, the institution developed a broader understanding of environmental sustainability within the area of organic food. Before the research was initiated the institution main focus was on decreasing the energy consumption of food storage, but through the research they became aware of aspects such as humidity and temperature are important for the durability of the food products.

4.1.3 The Action Perspectives of Clients' in Relation to the Results

The cases described and analysed in the case study report all represent different kind of knowledge enhancement, and the researches has had different impact on client, students, supervisors and the political sphere. Common for all three cases has been

that the clients to some extent have used the results of the research to influence the political sphere and debate, and they through the co-operation with the Science Shops and students feels capacitated to bring forward the research and its results in order to debate the topic of concern.

Vognporten managed, due to the research done by the students, and the parents' involvement, to get the municipality to fund an investment recommended by the students, and thereby a solution to their storage problem was found. The development of the two brochures further enabled the institution to communicate their experiences to other institutions. Through the work of implementing organic food in the institution's catering kitchen, and the work the institution had with the students, the institution felt capacitated to give lectures about their experiences to other institutions, through courses arranged by a national wide NGO working towards awareness about organic food, and sustainable development. The brochures the students developed to the institution have been widely spread both within the municipality of Albertslund, and to organisations and institutions outside the municipality's boundaries.

The case of organic food in Vognporten is an example of a bottom-up initiative, which is supported and encouraged by local political structures. The local political interest caused that the knowledge enhanced locally within the institution were spread to other institutions and network organisations both within and outside the municipality of Albertslund, because the municipality later decided to implement organic food in all day care centres. The project is the only case presented in this report, showing the influence and impact of a partnership between staff, users and politicians. By forming partnership with the parents, and having them presenting the report made by the students to the municipality, Vognporten succeeded in getting funds for a storage facility. This shows that Vognporten knew how to act within the existing structures in the municipality.

When the students collaborating with DN Frederikssund had finished their research, and handed over the results in form of a report to the NGO, the NGO took two steps of actions. They handed over the report to the municipality, and they involved the local newspapers, in order to start a debate about the future of the village pond, and the responsibility of the municipality. Despite of the documentation of the pollution level in the village pond and the debate started in the local newspapers, the municipality has not up to this moment taken any steps towards rehabilitation the village pond or started a dialogue with the NGO. After handing over the report to the municipality, the NGO has not made any attempts to put pressure on the municipality. Neither has the organisation seen the articles in newspapers as a way of starting a debate among the general public about the future of the village pond. The DN Frederikssund case shows

that knowledge does not in all cases lead to influence. Influence is shaped by the support and actor-constellations which are created around a certain topic, and in the case of DN Frederikssund, it was not possible for the organisation to create this actor-constellations with the local environmental administration, which would make the authorities prioritise rehabilitation of the village ponds in the municipality.

The research done in co-operation with DCF, have had impact both on the organisation, and the political debate. The knowledge enhanced through the research in regards to which problems the bicyclists experience in the traffic, have been used by the NGO in the political debate. The NGO is represented in different governmental committees, and through these committees, they have stressed the views of the bicyclists, which the students pointed out in their research. The knowledge enhanced through the research have also been used by the NGO to plan a project in co-operation with a municipality, funded by the Ministry of Traffic, which is going to start up in 2003. The project is going to address maintenance of bicycle paths and the behaviour of bicyclists in the traffic. The organisation has existed since 1905, and as the only organisation in Denmark representing bicyclists, DCF have obtained a high position both on national and regional level, when it comes to bicyclists interests. The organisations position as members of national committees, and their strong roots in the civil society have made it possible for the organisation to establish own structures and get involved in governmental structures, in which they both can gain knowledge, spread the knowledge they have enhanced and use the knowledge enhanced to influence the political debate.

4.1.4 Impact of the Research on Social and Political Discourses

As written in the chapter 1.3: *Key Points from The State-of-the-Art Report,* Denmark has a tradition of bringing in stakeholders and interest groups in the discussions and decision-making processes regarding environmental and technological science. This tradition has further developed a strong environmental movement in the country, whom is able to influence the political debate, and to some extent set the agenda for policy-making. This tradition is also reflected in two of the cases presented in this report. We have seen that DCF has used the research about bicyclists' problems in the traffic to start a debate with the politicians, and thereby they introduced a discourse about bicyclists' behaviour and culture in the traffic into the political debate, which the politicians may not have been aware of, before DCF started the debate. An interesting perspective in this regards, is that the organisation by opening this debate, also put forward a critical view about some of the actors which the organisation are representing, e.g. the bicyclists which do not respect other bicyclists in the traffic. By

bringing forward this perspective, the organisation has realised that they do not represent a homogenous group.

The DCF case highlights how knowledge can contribute to action within existing structures, e.g. the committees and councils the organisation are members of. On the other hand the case (and other experiences from projects made for the organisations) also shows the limited influence an organisation such as DCF have in the political debate about traffic, where the private car lobby is stronger represented than actors promoting public transportation or the use of bicycle. An example of the weak position an organisation such as DCF has in the political traffic debate can be illustrated through another project the organisation had done through the Science Shop at DTU concerning bicycles on bridges and tunnels. Due to this project made through the Science Shop at DTU, the organisation managed to re-open a discussion about access for bicycles on the bridge between Denmark and Sweden, but even though the discussion was re-opened, it did not change the political decision about no bicycle paths on the bridge.

This previous case shows that technology in Denmark now always is shaped through consensus building, as written in the Danish part of the State-Of-the-Art Report, based on a general analysis of the role of environmental NGOs in Denmark. DCF is a member of some of the structures discussing traffic planning in Denmark, but whether they are members because other actors want to have this actor-group represented in order to meet their interests, or because they do not want them as an opposition, is not for the authors of this case study report to assess.

DN Frederikssund used the research to put pressure on the municipality, but they did not succeed in getting the municipality to rehabilitate the village pond, even though they had scientific evidence of the pollution level in the pond, and managed to involve the local media. This indicates that even though Denmark have a tradition of strong environmental movements, which feels empowered to challenge the political structures by for example bringing in scientific evidence, if they feel something needs to be addressed, it does not always mean that they succeed or manage to persuade other actors about the importance of the issue. The organisation chose (directly or indirectly) not to use the public arena as the forum for discussing the issue, which indicates that for this organisation co-operation with the responsible authorities is seen as the right way to reach their objectives, instead of putting pressure on the authorities by opening a public debate about the issue.

The Vognporten case shows, opposite to the case of DN Frederikssund, how a bottom-up initiative might influence local decision-making. The whole discussion

about changing over to organic food in day care centres in Denmark started in the early 1990ties and shows a mixture of top-down and bottom-up initiatives. In some municipalities the decision about changing over to organic food in day care centres was made as an political decision by the politicians before the actual implementation, whereas in other municipalities, such as Albertslund, the political decision was made based on initiatives taken by the individual institutions.

4.2 The Research Perspective

In all three cases presented in this case study report, university students did the research. Professional researchers participated as supervisors for the students, without direct involvement in carrying out the research. The case of Vognporten and organic food in catering kitchens though differs from the two other cases, because the students' supervisor at the same time as the students' did their research project ran a research project within the same topic. The fact that the researcher became supervisor on a project related to his own research, has implied an interaction between the students' work and the research of the supervisor, which was not seen for the supervisors in the two other cases.

4.2.1 The Transformation of Question into a Research Perspective

The focus of the discussion in this subsection is which consequences the process of transforming the requests from the clients in the three cases has had on the students and researchers involved. The issue raised by the students and researchers involved were the scientific level of the projects, lack of understanding from the clients about the fact that students doing these kind of projects are constrained by a time frame, and a fear of some students being used as a tool in a political debate.

The risk of research being used as a political tool, or being used to confirm the client's pre-assumptions, was mentioned by two of the supervisors as problematic when doing projects for a client. The discussion of the research being used for the wrong purposes or as a tool in the political debate was not something, which influenced the research done in co-operation with Vognporten or DCF. The students performing the research with DCF, were both active in the organisation, and felt that the topic under investigation lacked in the political debate. The research done in Vognporten aimed at finding a solution for the institution to a specific problem. That the research done in co-operation with Vognporten later had an impact on the political agenda was only seen by both the students and the Eco-group at DTU as a bonus to promotion of organic food in the civil society.

Time frame was another aspect mentioned by some of the researchers and students involved in the three cases. Often the clients seem not to be aware of how much time investigations requires, or the students' uses much more time on the research, than expected in regards to the credit points they achieve for doing the research, because they get very engaged in doing this kind of project.

> *"A problem when students works together with organisations is, that often the students will experience some time frame problems, either because the time needed does not suit into university time schedule or because they end up using much more time than planned".* [Supervisor: Morten Elle]

> *"One problem in projects through the Science Shop, because one are co-operating with clients without scientific background within the field of investigation, is that they do not understand that the topic they want investigated both requires time and finances".* [Student: Søren Olsen]

In all three cases the students put emphasis on which time frame they had when they discussed research purposes with the clients at the preliminary meetings, and due to this, none of the students experienced a pressure from the clients to use more time on the projects than they had available.

The third issue raised by the supervisor and students from RUC was the scientific level of the projects requested through the Science Shop. The students and the supervisor from RUC pointed out, that the projects through the Science Shop at RUC, often lacks opportunities for development of new scientific knowledge, which is seen as an important aspect in order to educate the students to become researchers, because the Science Shop projects often are based on practical problems the clients need investigated. They further argued that the projects, provided through the Science Shop at RUC, aiming at the natural scientific science students often are more suited for engineering students, because of the focus on solution of practical problems. By instructing the students only to investigate one of the six village ponds DN Frederikssund wished investigated, the supervisor tried to improve the scientific interest in the project, which caused that the students gained more in-depth

knowledge about the biological processes and the sampling and analysis methods needed for this kind of investigation.

The aspect of lack of scientific interest in the Science Shop projects was not mentioned by any of the students or supervisors involved in the cases from the Science Shop at DTU, on the contrary both students and supervisors from DTU, mentioned that the combination of addressing a practical problem combined with a scientific approach was the reason why they chose to co-operate with the Science Shop at DTU.

This discussion could indicate that the term science and what it includes is perceived differently, depending on which scientific background the students and supervisors have, and that this may be something the Science Shops need to address in the future. This discussion and what the Science Shops can do in relation to the criticism of lack of scientific content in the projects continues in subsection *4.3.3: Researchers' and Students' Evaluation of the Science Shops.*

4.2.2 The Research Process

The themes for discussion in this subsection are knowledge production and knowledge transfer, which developed between the students and the clients as the research process progressed. The cases show that engagement of the clients, the academic requirements and the frequency in shifts of NGO members influences the process of knowledge production to be either a mutual knowledge production or only enhancement of knowledge of students'.

Projects through an intermedia such as the Science Shop, which are based on co-operation with clients from the civil society were seen by both the involved students and researchers as an interesting challenge, in order to encourage the students' communication and co-operation skills. But also the challenge of obtaining a certain scientific level in the projects while addressing a need felt by the clients, were emphasised by both the students and the researchers as an interesting aspect. But the main motivation factor for the students to co-operate with the Science Shops and clients from civil society was the fact that the results were going to be of use for someone, and not only be a desktop study.

A strength emphasised by students and researchers, by doing research through the Science Shop and in co-operation with the civil society, is that the students have a direct user, and that the clients need the results the students and the clients reach together. It was further emphasised that the fact that the need and problem is defined

by the clients in co-operation with the students and not entirely by the students alone, is very beneficial for the students' studies and work in the future. One of the students put is like this:

> *"The biggest advantage is, that often they [the clients. red.] do not have an academic background, which I find very beneficial, because I believe in the thoughts behind the SCOT approach, the idea of people perceiving things differently, and that you have to take this into considerations, and that it is of no use to anybody, if the engineer is unable to understand what other people thinks about the technology in question".* [Student: Jan Luxenburger]

The supervisor on the bicycle case mentioned that when doing projects in co-operation with civil society organisations, most students experience the dilemma between the academic requirements about theory and methods, and the wish to end up with a final result, which the client understands and are able to use for their intended purpose. This was also mentioned by the supervisor on the village pond case, who is of the opinion that enhancing professional skills should be the most important element for the students, no matter which wishes the client have.

> *"What they [the students. red.] are to obtain through their studies are professional skills, so the impact to the client, should be of less importance to the students, because they are to enhance new skills, and obtain their needs. And if this [the research. red.] can have an impact to the client, then it is fine, but it should not be the main objective".* [Supervisor: Benni Hansen]

This statement of the supervisor from RUC indicates that he perceives the role of university researchers and students as being the producers of knowledge, and the civil society as receivers. Whereas knowledge production is understood as a common process between university people and civil society, by the researchers and students from DTU. In the case of DCF, it was part of the research process to discuss the theoretical approach and analysis with the organisation, and in the case of Vognporten, the students also put emphasis on discussions with the institution, because mutual knowledge production was important to the students, the supervisor and the institution.

Another aspect also having impact on the knowledge production, which was mentioned by the researchers and students, was the aspect of engagement of the clients. The supervisor and eco-researcher for the project carried out for Vognporten, put emphasis on this, because he feels that when doing projects through the Science Shop, the engagement of the clients are secured, because they themselves have requested assistance from students. Whereas if students by themselves find an organisation to co-operate with, they may experience less engagement and motivation from the organisation, because the topic of investigation not necessarily is as important for them as for the students performing the research. Engagement from the clients though can not always be taken as a guarantee because some organisations experiences frequent changes in the involved members, which in some cases causes that new members are not aware of the intentions behind the request to the Science Shops. This was to some extent the case in DCF, when the students approached the organisation, but the students managed to make the newly employed Director interested in their hypothesis, and thereby make him engaged in the research.

In the case of the research done for DN Frederikssund, engagement of the clients was less important for the students, because they put emphasis on their own scientific learning process rather than the learning processes connected to co-operation and communication processes. For these students the most important was to enhance new scientific skills, and more co-operation with the client than the two meetings they had, would have been perceived as a disturbance to their work and own learning processes.

The supervisors for the three projects were involved in different ways and had different motives for their involvement in the projects. The supervisors from DTU participated in some of the meetings held between the clients and the students, because they felt it was important to meet the clients and understand their needs, in order for them to supervise the students properly. The supervisor for the students co-operating with Vognporten further had a professional interest in the research done, because he himself was involved in a research project concerning the same kind of change over processes to organic food in catering kitchens. The supervisor for the students from RUC had another perspective towards the role of being supervisor for a project through the Science Shop. He did not attend the meetings with the client nor did he communicate with DN Frederikssund, before the day the students presented the results of the research, because he felt that his role was to supervise the students' scientific learning processes, which did not involve the client.

> *"My rigid opinion was, that that [meeting and communication with the client. red.] was not something I needed to be involved in, because I see my role as the scientific supervisor".* [Supervisor: Benni Hansen]

One motivation factor, which was common for all three supervisors, was that they all saw a recruitment aspect for future projects, in being supervisors for the students. The supervisor on the bicycle case explained that he through being supervisor on the project could get an idea of the students' interests and skills, which would be very useful if he was to be their supervisor in later projects. The supervisor from RUC accepted the role as supervisor in the research, because it would give him an opportunity to get to know the students and make them interested in continuering their studies at his institute.

The last aspect, which the students and supervisors mentioned in relation to knowledge production and knowledge transfer in the co-operation process with clients from civil society, was how the results of the research are communicated to the clients. Both students and supervisors sees the communication process as one of the biggest challenges when co-operating with civil society organisations, because in most cases the clients does not have an academic background, which means that the students have to be able to communicate the scientific results in a popular way in order to make sure the knowledge production do not only take place within the university. DN Frederikssund wanted a scientific report, so communicating the results was not something the students in this case, had to worry about. Whereas Vognporten needed something less academic and more popular in order for them to use the knowledge enhanced through the research. The students was aware of the academic level in the report, which they, as earlier mentioned, compensated by developing two brochures to the institution containing the information the institution needed. The challenges of communicating the results to the clients, was also something the students co-operating with DCF experienced. After having finalised the report, the students and the organisation were to write an article to the organisation's member newsletter, in order to spread the knowledge enhanced through the research to the whole organisation. This process caused the students and the organisation's journalist some troubles; turning over a theoretical report into popular language was very difficult. They did however succeed, but the students doubt that the ordinary members understood the article to its full extent.

Knowledge production happened at different levels in the three cases. In the case of DN Frederikssund it was not important for the organisation to understand to its full

extent, what was written in the report, as long as the report was scientific and made within the university structures. In this case the knowledge production happened among the students, and the organisation was seen as an inactive receiver of the knowledge produced. In the two cases from DTU, knowledge production included a two-way process for the students and the clients. This was seen in the case of DCF, where the organisation commented and discussed the students writings throughout the whole research process, and it was seen in the case of Vognporten, when the students realised that their report due to its scientific analyses, had become too scientific for the institution to use directly in practise, and they decided to develop the two brochures.

4.2.3 The Scientific Outcome and its Impact on Students and Researchers

Doing research through intermedia such as the Science Shops not only have an impact on the clients involved, it also has an impact on the students and supervisors. The three cases in this study have shown that the research can lead to development of a new research and teaching areas (organic food), job opportunities for the students, and development of the students' skills both scientific and socially.

The impact the research has had on the students, has mainly been enhancement of new knowledge and perspectives regarding the issues addressed in the projects. Through the research done in cooperation with DCF, the students were confirmed in their hypothesis about how politicians and planners perceive the bicycle as technology differently than the bicyclists. This knowledge is however not something the students have used in their further studies or in their later work. What have had an impact on the students are the practical experiences they got through the research and the later co-operation with the organisation in relation to the students' Master Thesis, which caused that one of the students was offered a job as administrator for public transport in a municipality before he had graduated. This student is of the perception, that one of the main reasons to why he was offered the job, was because he through both researches done in co-operation with DCF, had analysed and had got an understanding of the political processes of traffic planning.

Organic food as research and teaching areas was not fully implemented at DTU when the students co-operating with Vognporten finished their project, so even though they had a wish to continue their studies within this field, they felt it to be too overwhelming to continue, because it would have meant that they had to design courses and projects themselves. Due to this, none of the students have used the knowledge gained in a professional manner, but they have used it in private situations, especially

the knowledge gained about which fruits and vegetables to keep together and which to keep apart, is something one of the students still uses in her everyday life.

The outcome of the research done in co-operation with DN Frederikssund is not something the students have used in their further studies. But through the research the students gained knowledge about sampling and analysis methods, which has been very useful for them in their further studies. Three of the students have chosen to continue their studies within the field of aquatic biology, one of the students have been offered a student assistant job by the supervisor, and two of the students have been invited to do their Master Thesis in relation to the supervisor's research project. All this offered to the students because through the research done in co-operation with DN Frederikssund, the supervisor became aware of their skills, motivation and engagement.

This shows that even though the students may not have used the outcome of the research for any professional matters, an impact of a co-operation process with a client from the civil society can lead to further specialisation within the field or job opportunities.

The Vognporten case is the only case presented in this report, which have a correlation to science and research, partly because organic food as research area already had been initiated through the Science Shop around five years earlier based on external funding, and partly because the results of the students' project contributed further to the research done within the area at DTU. Vognporten as case has been used by the Eco-researchers during seminars and workshops, as an illustration of how organic food can be implemented in institutions or catering kitchens, and what this change-over process requires both of the staff, parents, children and municipality. The research done by Eco-researchers at DTU can be characterised as research including lay people knowledge in the production of research knowledge, and to a large extent this includes direct interaction with lay people. This kind of research is inspired by the DTU Science Shop model.

The question one could ask next is why did the two other cases not lead to research or teaching development within the university? One explanation could be lack of research interest in the topics among the researchers, or it could be due to the researchers' perception of the academic level in the Science Shop projects.

The research area of the supervisor, in the DCF case, is within the field of the invisible urban infrastructure, such as planning and management of waste handling, drainage and sewage, and due to his focus in his research, it may have caused that he did not

find the research made with DCF interesting enough for him to engage himself further in developing the area into research or teaching activities. Another explanation to why the co-operation may not have lead to further research activities at DTU, could be that the Science Shop did not try to initiate activities in order to develop this area, such as in the case of organic food. There are two explanations to why the DN Frederikssund case did not lead to research or teaching development at RUC. Firstly, the Science Shop at RUC does not aim at establishing new research or teaching areas, based on requests and needs of the clients, and secondly the Science Shop projects are perceived by the supervisor as lacking scientific interest, and therefore he is sceptical towards to the role the Science Shop can play for scientific research and science development.

4.2.4 Impact from and within the Research System

The analysis have pointed out that the two cases from DTU have had an impact on the political debate regarding the topics the researches addressed, but this impact on the political debate has only lead to an impact on the research system in the case of Vognporten.

By bringing in the aspect of bicycle behaviour in the political traffic debate, DCF succeeded in creating political awareness about the aspect, to such an extent that the organisation was granted funds for a project investigating the topic more in-depth. This initiative, which partly is due to the results of the research done through the Science Shop, indicates that the results of the research done by the students have had an impact in the political debate, e.g. bicycle behaviour is now sought discussed among the politicians and planners. But opening this political debate has not lead to any research development. If the organisation had seen research perspectives in the project to be initiated, and tried to involve either the supervisor or the Science Shop in the project as contributors to the research perspective, the Science Shop project and the project to be initiated might have lead to an impact on the research system.

The information enhanced through the research done in co-operation with Vognporten has contributed to scientific research and to the societal discourse around the topic. Organic food as a research area at DTU initiated by the Science Shop, was built on a model of interaction and network building with civil society organisations and other actors within the field. Research topics developed through the network. One of these projects inspired of the network, and carried out by the Eco-researchers, was a project concerning change-over processes to organic food in catering kitchens in the country of Copenhagen, where the case of Vognporten was included. The case contributed to the development of the research area at the university, because the

supervisor saw the case as an interesting case. This means, as supervisor at the Science Shop project, the researcher got knowledge about some experience relevant for the research of the group he is part of. The results of the Vognporten case was both communicated within the networks the Eco-group and the Science Shop interacted with. Example of this are the Green Guide Network, who contacted the supervisor, because they had heard about the project and found the information enhanced in the project interesting. The Green Guide Network found the project so interesting and the information so useful that they passed the information on to society groups working with organic food, and the magazine 'Grøn Information' (in English: Green Information) that published articles about the results of the Science Shop project, which caused an increased demand for the brochures developed from civil society groups all over Denmark.

Even though research done through the Science Shop at DTU, not always leads to research development at DTU, it is the perception of the Head of the Department which the Science Shop is part of, that all projects done through the Science Shop have an impact on both students and researchers involved, and that it broadens their perspectives and perceptions of the world and the role they are playing in development of technology. Therefore the Head of the Department sees the Science Shop as an important part of the Department and the university.

4.3 The Mediation Perspective

Clients, students and researchers all have a view of what the role of the Science Shops should be, what they expected from the Science Shops, strengths and weaknesses in the Science Shops procedures and what they thought could be done in order to improve the work of the Science Shops. In this subsection the issues mentioned by all involved actors, will be discussed, and recommendations put forward for the Science Shops to consider.

4.3.1 The Role of the Science Shops before, during and after the Projects

This subsection analyses the role of the Science Shops in the three case studies. The models the DTU and RUC Science Shops differ from each other, as described in the introductory chapter, in the sense that the Science Shop at DTU also put emphasis on having a role as incubator and mediator in curricula and research development, whereas the Science Shop at RUC only act as mediator between the civil society and university students.

The role of the Science Shop at RUC in the DN Frederikssund case was as mediator between the organisation and the students. When the contact between the partners had been established at an introductory meeting, the Science Shop withdrew from the co-operation, and left the structuring of the research and the co-operation process to the students and the organisation.

The Science Shop at DTU normally organises three meetings during a project: an introductory meeting, a mid-term meeting and an evaluation meeting. At the introductory meetings the knowledge need of the client is discussed and maybe also challenged, in order to develop a holistic approach to the problem. Normally the co-ordinator of the Science Shop participates in the introductory meeting in order to ensure a social science based approach to the dialogue about the knowledge need of the client and the role of the client, the students and the supervisor during the research process. The role of the meeting is to ensure an agreement about the framing and the organisation of the project, which take into account the competence and the time frame of the students and the role of the client during the research process. The Science Shop at DTU has developed template agendas for meetings and checklists, which can serve as basis for the planning of the meetings and the dialogue during the meetings. Normally a mid-term meeting is organised in order to ensure dialogue between the client and the students and the Science Shop also ask the students to inform the Science Shop about the progress in the project.

The role of the Science Shop during a project depends on the type of project and the approach of the supervisor. In the two DTU cases the dialogue between the students and the client was rather close during the research process due to the roles the clients. The two supervisors were also very much committed to a dialogue approach in their research. This made the role of the Science Shop less important in terms of ensuring dialogue during the research process, which made the Science Shop rather invisible except at the meetings. This caused that the students in the case of DCF found it strange that the Science Shop wanted to set the agenda for the evaluation meeting. At the evaluation meeting the results are discussed, including the possibilities for the clients to use the results, the possibilities for disseminating the results through newsletters etc. The need for follow-up projects through the Science Shop is also discussed as well as the interest of the supervisor in working with the topic as part of her or his research. By putting the use and the dissemination of the results on the agenda the Science Shop also had a role in the agreements about writing an article based on the bicycle project and the writing of two brochures in the organic food case. Follow-up research activities in the case of Vognporten was discussed at the evaluation meeting, but due to the research interest of the supervisor

himself, it was not necessary for the Science Shop to get involved. In the case of DCF the Science Shop did not have resources itself to try to initiate follow-up activities, since the supervisor was not interested.

One of the areas where the Science Shop at DTU has acted as incubator is within the area of organic food. The Science Shop and its then existing umbrella organisation Interdisciplinary Centre succeeded in 1990 in establishing organic food as a new research area at DTU rooted in a network with civil society organisations and other actors. Besides research within the field of organic food the Eco-researchers also teach in organic food production. However, during the late 1990ties reconstruction and budget cuts took place at DTU, which also reduced the resources available for the Science Shop, which has implied that the Science Shop to less extent than previous is able to act as incubator and mediator in curricula and research development.

One of the Eco-researchers mentioned that, even though not all projects through the Science Shop at DTU have an impact on curricula and research development, some of them have had an impact on setting the agenda for some topics in the environmental debate in Denmark. He thinks this aspect and impact also should be understood, when addressing the role of Science Shops.

> *"Some of the projects done through the Science Shop are participating in setting the agenda for the debate about the environment, maybe not directly, but in some cases, they are part of starting a debate. The impact of the Science Shop can be seen through the use of the results from a specific project by the client. One have to be aware, that the Science Shop may not be directly profiled, when results are put forward, but it does certainly not mean that the Science Shop should not be credited for putting forward the problem".* [Eco-researcher: Niels Heine].

4.3.2 Evaluation of the Relationship between Clients and Science Shops

The three clients represented in this case study report all agree that if it had not been for the Science Shops, they would never have had the opportunity to have the research done, due to lack of capacity in their organisations and institutions. Despite this, clients, the supervisors and Managers pointed out some issues, which they feel

the Science Shops need to address in order to improve the relationship to the clients. The topics concern the aspect of urgency of the project, mediation and marketing.

By offering the civil society organisation access to science and research as an intermedia, the Science Shops contributes to possibilities for capacity development in the NGOs. The representative from DCF has no doubt about the importance of the Science Shops existence for the small NGOs. Without access to free research resources many small NGOs would not have a chance to bring forward their points and views in the political and public debate. As mentioned earlier, also the representative from DN Frederikssund emphasises the importance of the Science Shops, because he is of the perception that knowledge produced at universities has a higher legitimacy in the political debate than knowledge produced by civil society organisations themselves.

An aspect mentioned by almost all interviewees, is that clients do not know when students will respond on their request for research through the Science Shops. The representative from DCF mentioned that due to this uncertainty when and if students will find their project interesting, the projects often are not defined within an urgent need for DCF, but rather based on a need for background information.

> *"A weaknesses in the Science Shop concept, is that one can not order [a project done. (ed).], meaning that it is of no use to request a urgent need, because one has no guaranty that the project will be done. The most urgent needs, we have to deal with ourselves, even though we do not have the resources".* [DCF: Jens E. Pedersen]

> *"The reason why you request assistance through the Science Shop is not because you have an urgent problem, but more because the organisation wants this co-operation and contact".* [Supervisor: Morten Elle]

The representative from DCF further pointed out, that due to uncertainties of when students respond to a request, the results and impact of the researches are in most cases neither to be seen in the public debate, nor are they directly influencing the political agenda. The researches done through the Science Shops are mainly used in the organisation as background information, or information which can be put forward if the organisation find a opportunity to debate the topic in the public sphere or to start a

project based on the results. An exception is the project the organisation had made about bicyclists on bridges and tunnels, which as mentioned earlier, re-opened the debate about bicycle paths on the bridge between Denmark and Sweden after the politicians had closed the debate.

The representative from DN and one of the DTU researchers suggested, in order to solve the problem of lack of urgency in the projects, to set up a database of students:

> *"If one designed a database of students, a register of students based on their interests in different topics. When a request from a client come, the students interested in the topics can be contacted".*
> [Supervisor: Morten Elle]

A representative from DN further suggested that all Science Shops designed a common workspace, gathering all Science Shops in Denmark. This would ease the clients, because in this way, a client only had to approach one place and not several Science Shops with different procedures of how to request assistance and define their problem. He thinks that by creating a common workspace for the Science Shops in Denmark, students from the different universities, would get a chance to work together on the same topic, like most of them will do when they finish their education and get a job. The Science Shops on Zealand already have an agreement of forwarding requests among the shops, if requests are addressed to the "wrong" Science Shop, but this agreement may be invisible for the clients.

The Science Shops at Zealand have organised a network in order to co-ordinate information, activities, exchange project proposals and discuss Science Shop experience. One activity was an information campaign aiming at informing the general public through the libraries and civil society organisations through direct mail about the service the Science Shops offer. The network also co-operates around a magazine called 'Anvendt Viden' (in English: 'Applied Knowledge'), which is published four times per year with articles about experience from Science Shops projects written by students, Science Shop staff or the clients. The magazine is distributed to civil society organisations and internally at the three universities.

Marketing of the Science Shops and what they can offer civil society organisations was another aspect mentioned by the clients.

Both DCF and DN were of the impression that the clients requesting assistance through the Science Shops mainly have been made aware of the Science Shops

through students or previous students from the university. They are also of the impression that many civil society organisations are not aware of the existence of the Science Shops, and the opportunity for access to science and research this kind of institution can offer.

> *"The Science Shops should take direct contact to the civil society organisations, invite them for discussions, and illustrate from previous projects which kind of research that is accessible".* [DCF: Jens E. Pedersen]

The Head of Department of Manufacturing Engineering and Management at DTU agree with the opinion of DCF.

> *"Marketing and profiling is something the Science Shop may need to consider in the future, in order to start a dialogue with the NGOs. One way of marketing the Science Shop could be by putting emphasis on the different projects the students have to perform during their studies, and which requirements each project contains both in regards to content and time frame. Through this, the organisation would get an understanding of what they can expect of projects done through the Science Shop".* [Head of Department of Manufacturing Engineering and Management: Leo Alting]

4.3.3 Researchers' and Students' Evaluation of the Science Shops

This subsection presents a number of topics and recommendations students and researchers think could strengthen the relationship between the university researchers and students, and the Science Shops:

- The role of the Science Shops in the projects.
- Students feel that "old" project proposals decrease their interest in doing projects through the Science Shops.
- The time frame of the projects: how can the projects be designed, so the students do not use more time on the projects than expected due to points and university time frame.

- The relation to the university researchers could be strengthened by more direct interaction with the researchers, setting up thematic networks or counselling committees consisting of both representatives from university institutes and civil society organisations.
- The relation to the students could be strengthened by involving the students' organisations, and/or students who already have performed projects through the Science Shops.
- Lack of scientific interest in the projects can be avoided by involving the university institutes in the process of defining requests from clients to the Science Shops.
- The Science Shops need to be more visible both within and outside the university.

One of the aspects mentioned by some of the students was the role of the Science Shop in the projects. They felt that the role of the Science Shop was unclear during the research, and they lacked a clear agreement of roles if problems or disagreement would occur. That the project proposals are too old, was an other aspect mentioned by all the students and some of the researchers. When some of the projects offered through the Science Shops are several years old, they can not be perceived as urgent needs of the clients. The need of research for the client is a very important motivation factor to the students, when responding on a request, so when they see a project, which has been requested for several years, they might think the request as not important to the clients, and maybe choose another project. The Science Shop at DTU tries to ensure urgency and interest of the clients behind the proposals by each year confirming with the clients whether or not the request is still actual and something they still need to have investigated. Only requests, which the clients have confirmed are included in the catalogue the Science Shop publishes each year.

The Science Shops at DTU and RUC would like more engagement and involvement of university researchers in finding students for the project proposals. The Manager of the Science Shop at DTU and one of the Eco-researchers pointed out, that there is a need of strengthening the shop's relation both internally at the institute, but also to the other institutes which use the Science Shop, in order to make the researchers scientifically interested in the requests of the clients and in order to engage the researchers to become more active in the process of selling the request of the clients to students. The relationship could be strengthened by re-establishing a counselling committee with internal and external members, which have existed in the Science Shop at DTU in the past, because this would give opportunities to discuss future expectations, strategies and wishes representatives for students, researchers and civil society organisations. The Manager of the DTU Science Shop further pointed out

that there is a need of discussing which role the Science Shop should take in research development, and that one discussion could be whether or not the Science Shop to a larger extent, as it did in the late 1980'ties and early 1990'ties, should have a role as incubator and mediator for research and curricula development.

Opposite to the Science Shop at DTU, the Science Shop at RUC does not aim at establishment of new research or teaching areas within the university of RUC. Participation in development of new research areas has never been a strategy for the Science Shop at RUC, and this may be one of the reasons why, institutes such as the natural science institute feels the Science Shop projects at RUC lack scientific content.

The supervisor from RUC commented on the lack of interaction between the Science Shop at RUC and the university researchers.

> *"The Science Shop should have a co-operation with us [the different institutes at the university. red.]. Whether we are interested, that I cannot promise, but if it [the Science Shop. red.] is disconnected from us, then it becomes a sort of local bookstore. […]. If the topics and requests are not cleared with us, then we are avoiding a co-operation with them [the Science Shop. red.]. How this could be established, that I have no suggestions to, but maybe the contact could be established through the students counsellor".* [Supervisor: Benni Hansen]

One of the students from RUC also had a point of view towards which kind of clients the Science Shops are aiming at. He felt that allowing private companies to request assistance through the Science Shops would strengthen the interest of the students, because his education are aiming at job in the private companies, and a student project in co-operation with a private company would increase the possibilities of future employment in the company. This point of view was not put forward by the other students interviewed for this case study report. On the contrary, they felt that offering access to research and science to organisations that do not have the resources to buy the research is important in order to capacitate the civil society. They further mentioned that giving private companies access to research and science for free, would cause an even greater polarisation of resources in the society and it would imply that the civil society organisations' position in the society would be weakened.

Strengthening the relationship to the students was also mentioned as a recommendation to the Science Shops by the interviewees, because one of obstacles for the Science Shops is that they have more requests from clients than students interested in doing research through the Science Shop. One way to strengthen the relationship to the students and at the same time strengthen the Science Shops' position at the universities would be to involve the students' organisations. An Eco-researcher at DTU, who was involved in establishing the DTU Science Shop, pointed out that:

> *"Involvement of PF [The students' organisation at DTU. red.] or students who already have done projects through the Science Shop could help strengthening the Science Shop's position at DTU, and make the Shop more visible both within and outside DTU".* [Eco-researcher: Niels Heine]

The Head of Department of Manufacturing Engineering and Management, which the Science Shop at DTU is placed under, also feels that the Science Shop lacks visibility at the university and towards the students.

> *"The Science Shop may need to become more visible towards the students. But given the resources available for the Science Shop, the question is whether the Science Shop at all are capable to manage more requests from both clients and students".* [Head of Department of Manufacturing Engineering and Management: Leo Alting]

The last aspect mentioned by the interviewees in relation to strengthening the relationship to the university researchers and students was how the Science Shops present themselves at the university. Some of the students from DTU pointed out, that when they performed projects through the Science Shop, they perceived the Science Shop as a separate institution at the university, and not as an integrated part of the university. This made the students think, that the Science Shop was not fully accepted at the university, and that doing a project through the intermedia might be less scientifically than doing a project directly for a researcher at one of the institutes at DTU.

4.3.4 Improving the Relation with University Management

The recommendations mentioned in the previous subsection could also improve the relation to the university administration, and make the Science Shops position at the universities stronger. The Head of Department of Manufacturing Engineering and Management at DTU pointed out, that the Science Shop concept as intermedia between students and civil society organisations is important in order to develop the civil society and capacitate the civil society organisations. But it is also important for the researchers because through interaction with civil society organisations, new research questions are developed, which can give the research at the university new perspectives or dimensions.

> *"The Science Shop is a very good media to reach organisations, which DTU does not have daily interactions with".* [Head of Department of Manufacturing Engineering and Management: Leo Alting]

The Head of Department of Manufacturing Engineering and Management at DTU further pointed out, that interaction with civil society organisation is important for engineering students, because these organisations often perceive a problem differently than academics. Solutions should be made to meet the users' actual needs and not the needs thought by the engineers.

In order to inform decision-makers at DTU about the Science Shop, the Science Shop distributes the magazine 'Anvendt Viden' to the members of the University Council and the Education Council at the university. Furthermore, the Science Shop tries to make itself visible by writing announcements and articles in the magazine 'Sletten', a magazine aiming at highlighting activities and initiatives at DTU to students and researchers. By announcing and publishing in "Sletten", the Science Shop tries to make its activities visible and through this recruit students to do projects through the Science Shop. However, the Head of Department thinks the Science Shop should profile itself more actively towards the university management in order to strengthen the Science Shop's position at the university.

4.3.5 Policy Recommendations for University Research and Education

How the values and the knowledge produced at the universities can become more accessible and visible to the civil society was also discussed with the interviewees.

The Head of Department of Manufacturing Engineering and Management at DTU 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. The Science Shops are an intermedia to promote and connect knowledge production and knowledge application, but he feels more structures are needed.

> *"Trainee services, practical trainee work both before and under the studies, and research co-operation with civil society organisation and private companies are tools to apply to hinder this alienation towards the knowledge produced at the universities".* [Head of Department of Manufacturing Engineering and Management: Leo Alting]

The representative from DCF agrees with the points of the Head of Department of Manufacturing Engineering and Management at DTU, and pointed out, that dialogue between the universities and the civil society is the most important tool in order to make the knowledge produced at universities applicable and usable in civil society. He further pointed out, that this may be a difficult process, since the government policy put more emphasis on economic development in relation to science rather than science for the general public. This view is also reflected in Danish part of the State-of-the-Art report.

5 Rounding Off

This short chapter summarizes some general topics with respect to the shaping of the role and impact of Science Shops, which have been identified through the three case studies.

Too low visibility in the general public and among NGO's seem to be an important aspect limiting the societal impact of Science Shops by limiting how many NGO's that are approaching the Science Shops. Another topic a long this line is the fact that NGO's cannot be sure, whether or when students (or researchers) decide to work with their project proposal put forward to a Science Shop. This can have an impact on how many NGO's that approach the Science Shops and with what type of problems they approach the Science Shop (at least those NGO's that already have worked together with a Science Shop and experienced that it might take time before somebody decide to work their project). For some NGO's it seem to imply that they approach the Science Shops with less urgent, but maybe more long-term oriented and strategic problems. Higher visibility also internally at the universities might be a way to make more students aware of the possibility of working with project proposals from a Science Shop as part of the curricula.

The three cases have shown NGO's with different knowledge needs and different expectations to the role of a Science Shop. One type of knowledge need is the need for scientific documentation of a problem from an impartial institution. Two other types of needs are the need for enhancement of the knowledge of the NGO about a topic and development of new perspectives on how a problem can be solved.

How the knowledge need is approached in the project is decided during the initial interaction between the NGO, the Science Shop and the students and the scientists acting as supervisors. Important aspects in this shaping of the project plan are the time frame of the students and the need to ensure enough scientific depth in the analyses by limiting the number of topics, which is addressed in the project. However, this limitation has not caused problems for the NGO's in the three cases. In some cases the reshaping is crucial in order to ensure enough scientific soundness for a supervisor to accept the project plan.

The interest of the students for engaging in a Science Shop project can be triggered by several factors according to the three cases. It can be a social oriented interest

with focus on the possibility of working with real life problems and/or contributing to the societal change within a certain field. The interest of the scientist has been triggered either by the scientific interest or by the possibility of getting to know the capacity of students through this kind of project.

A Science Shop project can have impact on the topic the NGO is addressing, but can also have impact on the students and the scientists. The ability of the NGO to obtain impact on the problem they want to address depends not only on the results of the project in terms of the knowledge produced during the project, but also on the possibility of the NGO to make alliances with other actors through those societal structures they already are part of. A scientific report from a university is not enough to secure impact. A report might also show a NGO some new aspects of the topic they are addressing. In all three cases the NGO's would not have been able to obtain the knowledge themselves by those economic means they had access to in their institution or organisation.

A Science Shop project can have impact on the students by developing competence, which helps them in getting a job after graduation or it can develop the scientific focus of the student and give new opportunities by developing closer working relations to the supervisor. One of the cases show that a Science Shop can contribute to research and curricula development at the university by acting as an incubator for a new scientific field. This role of a Science Shop, however, seems to demand scientific staff employed in the Science Shop. When a Science Shop contributes to the development of a new scientific field, new possibilities for interaction between the scientists within this field and the Science Shop seem to develop.

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"Kompostering i børnehaven" (In English: "Composting in the day care centre")by Alice Olsen, Louise Dreyer, Tine Unger, Bjarke Nielsen and Gabriella Holsby. Læreanstalternes Fælles Miljøkursus (in English: The institutions for higher education common environment course).

"Hønsehold i børnehaver" (In English: "Hen farming in day care centres")by Alice Olsen, Louise Dreyer, Tine Unger, Bjarke Nielsen and Gabriella Holsby. Læreanstalternes Fælles Miljøkursus (in English: The institutions for higher education common environment course).

The Village Pond Case

"Mulighed for et rent gadekær i Lille Rørbæk" (in English: "Possibility of a clean village pond in Lille Rørbæk"). Frederikssund Avis. September 11, 2001.

"Ingen plan for gadekær" (in English: "No plans for village pond"). Frederiksborg Amtsavis. September 14, 2001.

"En plan for Oppe Sundby gadekær" (in English: "Plans for Oppe Sundby village pond"). Frederiksborg Amtsavis. September 21, 2001.

Interviews

The Case of DCF

[DCF: Jens E. Pedersen]: Interview made with Jens E. Pedersen, DCF. August 12, 2002.

[DCF: Jens E. Pedersen, email correspondence]: Written answers to written follow-up questions. October 15, 2002.

[DCF: Jens E. Pedersen, phone interview]: Phone interview with Jens E. Pedersen, DCF. November 20, 2002.

[Student: Jan Luxenburger]: Phone interview made with Jan Luxenburger, former DTU student. August 12, 2002.

[Student: Jan Luxenburger, email correspondence]: Written answers to written follow-up questions. November 12, 2002.

[Student: Rune Asmussen]: Phone interview with Rune Asmussen, former DTU student. August 14, 2002.

[Supervisor: Morten Elle]: Interview made with Morten Elle, Associate Professor, BYG-DTU. August 13, 2002.

The Case of Vognporten

[Vognporten: Laila Rasmussen]: Interview made with Laila Rasmussen, Leader of the day care centre Vognporten. August 20, 2002.

[Student: Susie Barfod]: Interview made with Susie Barfod (former Ebbesen), former DTU student. Augsut 26, 2002.

[Supervisor: Thorkild Nielsen]: Interview made with Thorkild Nielsen, Associate Professor, IPL, DTU. August 16, 2002.

[Eco-researchers: Niels Heine and Michael Søgaard Jørgensen]: Interview made with Niels Heine, Associate Professor, IPL, DTU, and Michael Søgaard Jørgensen, Science Shop Manager and Associate Professor, IPL, DTU. September 17, 2002.

[Eco-researcher: Niels Heine]: Interview made with Niels Heine, Associate Professor, IPL, DTU. September 25, 2002.

[Municipality: Lill Knudsen]: Phone interview with Lill Knudsen, Children Administration in the municipality of Albertslund. August 27, 2002.

[Parent Council: Walter Hørmark]: Phone interview with Walther Hørmark, Parent council in the municipality of Albertslund. September 24, 2002.

Common for the two DTU Cases

[Head of Department of Manufacturing Engineering and Management: Leo Alting]: Interview made with Leo Alting, Head of Department of Manufacturing Engineering and Management, DTU. September 16, 2002.

[Science Shop Manager: Michael Søgaard Jørgensen]: Interview made with Michael Søgaard Jørgensen, Science Shop Manager and Associate Professor, IPL, DTU. November 26, 2002.

The Case of DN Frederikssund

[DN Frederikssund: Helge B. Christensen]: Interview with Helge B. Christensen, former chairman in DN Frederikssund. August 14, 2002.

[Student: Jill Grenaa]: Group interview with Jill Grenaa, Søren Olsen and Louise Zimmer, RUC students. August 21, 2002.

[Student: Søren Olsen]: Group interview with Jill Grenaa, Søren Olsen and Louise Zimmer, RUC students. August 21, 2002.

[Student: Louise Zimmer]: Group interview with Jill Grenaa, Søren Olsen and Louise Zimmer, RUC students. August 21, 2002.

[Supervisor: Benni Hansen]: Interview with Benni Hansen, Associate Professor, Institute for Biology, RUC. October 25, 2002.

[RUC Science Shop Manager: Lene Andersen]: Phone interview with Lene Andersen, RUC Science Shop Manager. September 16, 2002.

[DN: Michael Leth Less]: Interview with Michael Leth Less, Leader of the department of nature and environment in DN. September 17, 2002.

7 Appendices: INTERACTS – Questions for Case Studies

7.1 Level 1 Interview Guide

Q	NGO key respondent	Researcher / Supervisor	Science Shop
	BACKGROUND		
1	Briefly describe your organisation	Briefly describe the programme of study and institution (student or supervisor) Briefly describe your organisation (research worker)	Briefly describe your organisation
2	Is there any written information on your organisation you can let me have?	Do you know where I could find written information on your course of study?	Is there any written information on your organisation you can let me have?
3	Describe your own role in the organisation	(student / researcher) Describe how the research fitted in to your degree / role at the institution (supervisor) Describe your own role as supervisor for the research	Describe your own role in the organisation
	PROJECT DESCRIPTION		
4	How would you (briefly) describe the research project?	How would you (briefly) describe the research project?	How would you (briefly) describe the research project?
5	What was/were the main research question(s)?	What was/were the main research question(s)?	What was/were the main research question(s)?
6	Did you have an input into the research methods used? If so, what input?	What was your input into the research methods used?	Did you have an input into the research methods used? If so, what input?

7	What were the main findings?	What were the main findings?	What were the main findings?
8	What were the main recommendations?	What were the main recommendations?	What were the main recommendations?
	ORGANISATION OF THE PROJECT		
9	Who initiated the project?	Who initiated the project?	Who initiated the project?
10	Did the project build on previous activities of your organisation? (Why did the project need to be done?)	Did the project build on previous activities of your organisation? (Why did the project need to be done?)	Did the project build on previous activities of your organisation? (Why did the project need to be done?)
11	How was the project planned or negotiated?	How was the project planned or negotiated?	How was the project planned or negotiated?
12	What are the main features you remember of the negotiations / planning? (Was it difficult to reach agreement?)	What are the main features you remember of the negotiations / planning? (Was it difficult to reach agreement?)	What are the main features you remember of the negotiations / planning? (Was it difficult to reach agreement?)
13	What time-frame did you agree on? (Any intermediate milestones?)	What time-frame did you agree on? (Any intermediate milestones?)	What time-frame did you agree on? (Any intermediate milestones?)
14	What was the budget of the project? (Who was finally responsible for the funding?)	What was the budget of the project? (Who was finally responsible for the funding?)	What was the budget of the project? (Who was finally responsible for the funding?)

15	What channels of communication were used? (meetings / phone / email)	What channels of communication were used? (meetings / phone / email)	What channels of communication were used? (meetings / phone / email)
16	How regular was the communication? (How easy or difficult was the communication?)	How regular was the communication? (How easy or difficult was the communication?)	How regular was the communication? (How easy or difficult was the communication?)
17	Was the project to be open-ended and exploratory, or structured and focused? (How did it turn out?)	Was the project to be open-ended and exploratory, or structured and focused? (How did it turn out?)	Was the project to be open-ended and exploratory, or structured and focused? (How did it turn out?)
18	What were your specific interests and expectations for the project?	What were your specific interests and expectations for the project?	What were your specific interests and expectations for the project?
19	How did the knowledge and experience of the different participants contribute to the project? (NGO members / public, student / researcher, supervisor, Science Shop)	How did the knowledge and experience of the different participants contribute to the project? (NGO members / public, student / researcher, supervisor, Science Shop)	How did the knowledge and experience of the different participants contribute to the project? (NGO members / public, student / researcher, supervisor, Science Shop)
	PROJECT OUTCOMES		
20	To what extent did the research actually fulfil the original objectives set by your organisation?	To what extent did the research actually fulfil the original objectives set by your organisation?	To what extent did the research actually fulfil the original objectives set by your organisation?
21	Were there any questions that did not get answered by the research?	Were there any questions that did not get answered by the research?	Were there any questions that did not get answered by the research?

22	How did the results get presented? (reports / oral presentations / press etc.) Who now has access to the results?	How did the results get presented? (reports / oral presentations / press etc.) Who now has access to the results?	How did the results get presented? (reports / oral presentations / press etc.) Who now has access to the results?
23	Are the findings available to the public? (Do you know where I can get hold of a copy / publication details?)	Are the findings available to the public? (Do you know where I can get hold of a copy / publication details?)	Are the findings available to the public? (Do you know where I can get hold of a copy / publication details?)
24	Have you used, or will you be using, the research? (specify, internal to the organisation, external, direct, indirect) e.g. improve service provision, as evidence of outcomes for own funding, raise awareness generally, answer specific questions, put pressure on other agencies	Have you used, or will you be using, the research? e.g. career, publication, degree, curriculum development	Have you used, or will you be using, the research? (specify, internal to the organisation, external, direct, indirect) e.g. promote science shop, raise public awareness of an issue, get other projects, as evidence of outcomes for own funding
25	How successful has this use been?	How successful has this use been?	How successful has this use been?
26	What accounted for the success? (What hindered you achieving success?)	What accounted for the success? (What hindered you achieving success?)	What accounted for the success? (What hindered you achieving success?)

	POLICY		
27	Has there been any long term benefit from the project for your organisation? (How was this long term benefit achieved?)	Has there been any long term benefit from the project for your career / research interests? (How was this long term benefit achieved?)	Has there been any long term benefit from the project for your organisation / research interests? (How was this long term benefit achieved?)
28	How does the project relate to the wider objectives of your organisation?	How does the project relate to the wider objectives of your organisation?	How does the project relate to the wider objectives of your organisation?
29	Has this project led to further projects with Science Shops or related agencies?	(supervisor / research worker) Has this project led to further projects with the same or similar organisations?	Has this project led to further projects with the same or similar organisations?
30	What are the advantages and disadvantages of having someone from outside the organisation investigating the issue you have raised?	What are the advantages and disadvantages of having someone from outside the organisation investigating the issue you have raised?	What are the advantages and disadvantages of having someone from outside the organisation investigating the issue you have raised?
31	What, if anything, was the added value from cooperation with a science shop / intermediary agency rather than directly with a university or research organisation?	What, if anything, was the added value from cooperation with a science shop / intermediary agency rather than directly with a university or research organisation?	What, if anything, was the added value from cooperation with a science shop / intermediary agency rather than directly with a university or research organisation?

	SUMMARY		
32	Can you summarise the most positive aspects of the project	Can you summarise the most positive aspects of the project	Can you summarise the most positive aspects of the project
33	Can you detail any problems or barriers which were encountered (e.g. conflicts, uncertainties, relationships)	Can you detail any problems or barriers which were encountered (e.g. conflicts, uncertainties, relationships)	Can you detail any problems or barriers which were encountered (e.g. conflicts, uncertainties, relationships)
34	(If problem mentioned) How did you deal with the problem?	(If problem mentioned) How did you deal with the problem?	(If problem mentioned) How did you deal with the problem?
35	If you could do it again, would you do the project the same way or differently?	If you could do it again, would you do the project the same way or differently?	If you could do it again, would you do the project the same way or differently?
36	What do you see as the advantages or disadvantages of (social) scientific research being applied to tackle issues in the community?	What do you see as the advantages or disadvantages of (social) scientific research being applied to tackle issues in the community?	What do you see as the advantages or disadvantages of (social) scientific research being applied to tackle issues in the community?
	Thank you very much for your cooperation.		

7.2 Level 2 Interview Guide

Q	NGO (consortium) Manager	University Dean of Research/Teaching	Science Shop Manager
	BACKGROUND		
1	Please describe your own role in the organisation	Please describe your own role in the organisation	Please describe your own role in the organisation
2	How much collaborative research with Science Shops goes on in your organisation / consortium?	How much collaborative research with local NGOs goes on with Science Shops in your university?	How much collaborative research with local NGOs goes on in your university / city with Science Shops?
3	And how much collaborative research with universities not involving Science Shops?	And how much collaborative research with NGOs not involving Science Shops?	And how much collaborative research with NGOs not involving Science Shops?
4	Can you give me an example of Science Shop research?	Can you give me an example of Science Shop research?	Can you give me an example of Science Shop research?
5	Can you give me an example that did not involve a Science Shop?	Can you give me an example that did not involve a Science Shop?	Can you give me an example that did not involve a Science Shop?
6	What comparisons would you draw between Science Shop and non-Science Shop research?	What comparisons would you draw between Science Shop and non-Science Shop research?	What comparisons would you draw between Science Shop and non-Science Shop research?

7	Have you heard of the (case study project)? If so, what do you think of it? (positive outcomes? problems or negative outcomes?)	Have you heard of the (case study project)? If so, what do you think of it? (positive outcomes? problems or negative outcomes?)	Have you heard of the (case study project)? If so, what do you think of it? (positive outcomes? problems or negative outcomes?)
	SCIENCE SHOPS		
8	How much do you know about Science Shops, here and in other countries?	How much do you know about Science Shops, here and in other countries?	How much do you know about Science Shops, here and in other countries?
9	What do you see as the most important features of Science Shop research?	What do you see as the most important features of Science Shop research?	What do you see as the most important features of Science Shop research?
10	Are there any negative features for you of Science Shop research?	Are there any negative features for you of Science Shop research?	Are there any negative features for you of Science Shop research?
	SCIENCE SHOPS EVALUATION		
11	How important is Science Shop activity / community based research for your organisation?	How important is Science Shop activity / community based research for your university?	How important is Science Shop activity / community based research for your university / city?
12	How important is Science Shop activity / community based research for improving the public understanding of scientific knowledge (including social science)?	How important is Science Shop activity / community based research for improving the public understanding of scientific knowledge (including social science)?	How important is Science Shop activity / community based research for improving the public understanding of scientific knowledge (including social science)?

13	What other mediation procedures do you think are important for improving the public understanding of scientific knowledge?	What other mediation procedures do you think are important for improving the public understanding of scientific knowledge?	What other mediation procedures do you think are important for improving the public understanding of scientific knowledge?
14	How important is Science Shop activity / community based research for the development of national science policy (including social science policy)?	How important is Science Shop activity / community based research for the development of national science policy (including social science policy)?	How important is Science Shop activity / community based research for the development of national science policy (including social science policy)?
15	What other mediation procedures do you think are important for allowing public input into the development of national science policy?	What other mediation procedures do you think are important for allowing public input into the development of national science policy?	What other mediation procedures do you think are important for allowing public input into the development of national science policy?
16	How important is Science Shop activity / community based research for building capacity in civil society / empowering NGOs?	How important is Science Shop activity / community based research for the building of capacity in / empowering NGOs?	How important is Science Shop activity / community based research for the building of capacity in / empowering NGOs?
17	What other mediation procedures do you think are important for building capacity in civil society / empowering NGOs?	What other mediation procedures do you think are important for building capacity in civil society / empowering NGOs?	What other mediation procedures do you think are important for building capacity in civil society / empowering NGOs?

18	How important is Science Shop activity / community based research for developing relations between universities and the community?	How important is Science Shop activity / community based research for developing relations between universities and the community?	How important is Science Shop activity / community based research for developing relations between universities and the community?
19	What other mediation procedures do you think are important for developing relations between universities and the community?	What other mediation procedures do you think are important for developing relations between universities and the community?	What other mediation procedures do you think are important for developing relations between universities and the community?
	FUTURE OF SCIENCE SHOPS		
20	Should Science Shop work be developed further? How do you think this work could be developed?	Should Science Shop work be developed further? How do you think this work could be developed?	Should Science Shop work be developed further? How do you think this work could be developed?
21	What are the problems or barriers to its development? (specify: in NGOs, universities, science shops, financial, administrative, political etc.)	What are the problems or barriers to its development? (specify: in NGOs, universities, science shops, financial, administrative, political etc.)	What are the problems or barriers to its development? (specify: in NGOs, universities, science shops, financial, administrative, political etc.)

22	What changes would be necessary to encourage more organisations to take part in Science Shop activity / community based research?	What changes would be necessary to encourage more universities to take part in Science Shop activity / community based research?	What changes would be necessary to encourage more NGOs and universities to take part in Science Shop activity / community based research?
23	How do you see Science Shop activity / community based research relating to Research and Technology policy in this country? And in Europe as a whole?	How do you see Science Shop activity / community based research relating to Research and Technology policy in this country? And in Europe as a whole?	How do you see Science Shop activity / community based research relating to Research and Technology policy in this country? And in Europe as a whole?
24	Do you have any other suggestions about how the concerns of civil society could be reflected in Research and Technology policy?	Do you have any other suggestions about how the concerns of civil society could be reflected in Research and Technology policy?	Do you have any other suggestions about how the concerns of civil society could be reflected in Research and Technology policy?
25	Do you think Science Shop activity is relevant to any other current policies affecting the NGO sector?	Do you think Science Shop activity is relevant to any other current policies affecting universities?	Do you think Science Shop activity is relevant to any other current policies affecting the NGO sector or universities?
	FINALE		
26	Would you like to be kept informed about the INTERACTS project as it develops, and to be involved further in any way?	Would you like to be kept informed about the INTERACTS project as it develops, and to be involved further in any way?	Would you like to be kept informed about the INTERACTS project as it develops, and to be involved further in any way?
	Thank you very much for your cooperation.		