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20 Years Bonn Science Shop Mediating between all sides

The future, strategies and the history of the Bonn Science Shop – an interview with the Managing Director, Theo Bühler

? *In German, the term "Wissenschaftsladen" (Science Shop) sounds more like a dusty bookshop than an innovative citizens advisory centre ...*

! **Bühler:** The name shows where we come from: from the 80s, a time when *Läden* (centres or shops) were being set up everywhere and citizens were coming together to make a small mark politically in order to get something moving. The name may sound old-fashioned, but our idea – building a bridge between science on the one hand and citizens on the other – is more up-to-date than ever before.

? *Has anyone actually heard about Science Shops?*

! **Bühler:** In the Netherlands every child knows what a Science Shop is and they are also held in high regard at the EU. Over the last few years, Brussels has spent hundreds of thousands of euros in promoting the projects of the European Science Shops. The reason is simple: today's scientific community can only function properly if, along with good scientists, there are also people who are good at communicating scientific ideas.

? *Why haven't Science Shops caught on in Germany?*

! **Bühler:** The Bonn Science Shop has caught on. With 25 members of staff and an annual turnover of 2 million euros we are not only the biggest Science Shop in Europe but also play a leading role in the EU project. It was the Science Shop **movement** that did not catch on in Germany.

? *Is there a lack of public funding in Germany?*

! **Bühler:** That's only one reason why things are going better in the Netherlands. Another is that, when the ecology movement arose 20 to 25 years ago, eco-institutes sprang up and they were the real revolutionaries in the public eye, challenging old theories with new ones. At the same time Science Shops were set up at twelve German universities with the aim of bringing ecology closer to ordinary people in a practical way. We got lots of enquiries, but the work was unspectacular by comparison. One of our first projects, for example, was to test washing powder from an ecological perspective and to publish the results.

? *Public money has tended to go to institutions like Stiftung Warentest which tests consumer products or the Verbraucherzentrale (consumer advisory agency) instead of to the Science Shops ...*

! **Bühler:** ... though one mustn't forget the transfer offices at the universities. They ought to be paid by businesses because they are the ones who process research results so that they can be passed on to the appropriate companies. However a while ago we decided to carry out a practical test and circulated a "citizen's questionnaire" around the colleges and universities of North Rhine-Westphalia: if anyone bothered to answer at all, their answers were often wrong or the transfer offices simply did not feel competent enough to reply – despite the fact they had the backing of their university.

? *Consumer advisory agencies, eco-institutes, transfer offices – does one really need anything else?*

! **Bühler:** Definitely: There's enough information and knowledge being produced today but there are not enough organisations like ours capable

CONTENTS

Interview with the Managing Director Theo Bühler	1
Greeting from State Secretary Christiane Friedrich	3
Projects and Milestones	3
Working Areas	6
Information Pamphlet "arbeitsmarkt" ...	7
Knowledge Transfer in Germany	8
Science Shops Internationally	10
Staff, Quotes, Imprint	12

of identifying development trends, of closing gaps in information and of bringing these together as a service to the public. Take our project *Stiftungsnetzwerk* (Network of Public Foundations) for example: anyone who is familiar with the scene knows that more and more *Agenda 21* groups are having difficulty because funding from local authorities is drying up. At the same time more and more people would like to invest their money in a meaningful way in public foundations. Recognising this fact and bringing it all together is what we do. Supported by the Federal Environment Ministry and the Federal Environment Agency we develop guidelines and provide workshops and advice to support local groups in founding their own citizen organisations.

? *In what areas does this still work?*

! **Bühler:** A large area for us is the job market and the enhancement of qualifications. It's true that studies on unemployment are constantly being published by well-known institutes, but which of these institutes actually has any contact to the people who are looking for jobs and the unemployed? Do they have any idea what is important to them or where their practical problems lie? For more than ten years now, the Bonn Science Shop has been publishing an information pamphlet called "*arbeitsmarkt*" (The Job Market) each week in which we analyse the job areas of the environmental and natural sciences as well as those of education, culture and the social services and assess vacancy announcements. Even if one can't assume that the people who read our pamphlet are typical of all those looking for jobs, we nevertheless receive a lot of feedback – have an ear close to the ground, so to speak – and gain a perspective which is different from that of other institutions. Our strength is that we are always in close contact with everyday life.

? *What does the Science Shop do with this know-how?*

! **Bühler:** We are particularly interested in the job market "renewable energy", for example, which ranks as a growth market. What is most exciting about this job market is that, although there is not yet a lack of qualified labour in this sector, there soon will be. Had we run one of our usual career days for university graduates, for example, hardly a company would have come. However, if well-trained employees are to be available in the future, training institutions, companies, employment agencies and also the unemployed from this business sector have to get together today and agree on future qualification parameters and the requisite training programmes. That's exactly what we made possible in 2004 in Bonn with a conference of experts, trade workshops, and a job and education fair within the framework of the worldwide conference "Renewables".

? *The work you do has been described as contact management and the mediation of knowledge, but what you offer in the area of the environment and health still sounds much more like a consumer advisory agency.*

! **Bühler:** The topics which the Bonn Science Shop deals with have accumulated gradually over the last 20 years. Our base is electrosmog, environmentally-sound textiles, healthy nutrition, energy-saving driving, environmental communication and also ecological building and construction – fields we have been active in for a long time and topics which concern ordinary people daily. That's what the enquiries we get show. Nevertheless, even with consumer topics, we still try to offer something different from other organisations.

For instance, our electrosmog expert has his roots both in the sciences and in

practice – much more than consumer organisations are normally able to do. He not only evaluates scientific studies but also goes out to ordinary people and measures exposure to radiation on-site.

? *Half of the staff of the Bonn Science Shop have been around for ten years. Doesn't the work get boring sometimes?*

! **Bühler:** The great thing about our work is that we always get involved at just the point where something is happening in society: where citizens and citizen groups need support – not theoretical but rather very tangible support. The Bonn Science Shop would not receive funding for anything else in any case.

? *The Bonn Science Shop as the perfect job?*

! **Bühler:** Not for everyone. Anyone who needs a boss to tell him what to do won't be happy here. The same applies to someone who only wants to work in the purely scientific field ...

However, even though we feel like a team rather than a collection of individual professionals, we still need to have some entrepreneurial skills. All the colleagues that have joined us recently know that their jobs are only safe if they are refinanced via projects.

? *The Bonn Science Shop is 20 years old. What does the future hold?*

! **Bühler:** Hopefully a few more institutions that work like we do – building bridges between various actors – and that are at the same time constantly in touch with citizens' needs. There are enough projects which make sense from an economic point of view in which we can gather information. What we, the Bonn Science Shop, want to do is to systematically uncover further gaps in information and thus gain access to new and exciting topics. bp ■



Greeting

State Secretary Christiane Friedrich, Ministry of the Environment, NRW

In the present situation, institutions which are independent and which can communicate knowledge, ones that examine information critically, put it into perspective and present it in a way citizens find acceptable, are gaining in importance.

The Bonn Science Shop (*Wissenschaftsladen Bonn e.V.*) is just such an institution. Just recently under its guidance scientists set up a website dealing with the topic of land use in North Rhine-Westphalia (NRW). One aim of the project, which is supported by the Ministry of the Environment of NRW, is to offer information on a scientific basis which can be

readily understood. But the Bonn Science Shop does not stop at merely passing on information; rather it is a question of showing citizens how they can champion lower consumption of land at the local level. The website gives the names of towns and institutions, for example, that can be used as models for low land consumption. Where there are experts to answer questions, internet users can discuss online or can run individual workshops around the topic of local land consumption.

I wish the Bonn Science Shop continued success in building such bridges between science and the public at large.

The amount of information every person in Germany receives every day is enormous. Experts are already talking about a lack of information within the flood of information: the average quality of what is available is declining while those on the receiving end are no longer able to process the information.

Bonn Science Shop: Projects and Milestones

The Bonn Science Shop started up in 1984 by answering citizens' questions and by giving unpaid lectures at Bonn University. Although the Bonn Science Shop still deals with the topic "Environment/Health" today, other main areas of work have been developed – as its range of projects shows.

2005 *Stiftungsnetzwerk* (Network of Public Foundations) | (Project begin 2002) Support of Agenda 21 groups in forming citizen foundations through publications, internet platform and workshops; Project funding: Federal Environment Agency and the Federal Environment Ministry

2005 Improving Science Shop Networking | (Project begin 2003) Thirteen European Science Shops set up a Science Shop network aimed at giving



citizens EU-wide access to the results of scientific research, presented in a way they can understand. The task of

the Bonn Science Shop is above all to design and produce newsletters and a Science Shop periodical (*Living Knowledge*); Project funding: EU

2004 Land use in NRW | Production of the website "Land use and consumption in North Rhine-Westphalia (NRW)", a project conducted *inter alia* with researchers from the universities of Bonn and Karlsruhe under the leadership of the Bonn Science Shop; the goal: to produce an information and discussion platform which will allow local areas to be observed via satellite photos, show up problem zones and collect best-practice examples; Project funding: Environment Ministry NRW

2004 Job and education fair "Renewable energies" | The Bonn Science Shop planned and organised the first country-wide career day in this economic sector, with workshops for

Projects

specific job areas and a conference of experts; Project funding by the Federal Environment Ministry within the framework of the worldwide conference "Renewables 2004" in Bonn



2003 "A Matter of Faith (*Glaubenssache*) – Religion in Bonn" | A publication, in book form (in German), on the topography of religion in Bonn; an objective and easily understood presentation of the 30 different religious communities in Bonn, compiled in an academic manner; the aim: to promote co-existence through better mutual understanding; Own project of the Bonn Science Shop

2003 Nutrition: a discovery walkway | Development and production of a didactic environmental concept for the Neanderthal Museum in collaboration with the Information and Advisory Centre for Environmental Education; Topic: Forms of nutrition in the history of mankind; On behalf of the Neanderthal Museum

2002 The SCIPAS Project | In the fore-runner project to ISSNET, 20 European Science Shops – including the Science Shop in Bonn – agreed on both a definition of and working areas for Science Shops within the EU; Project funding: EU

2002 Training seminar: Managerial assistants | Joint project of the Bonn Science Shop and *Netz NRW* (Network NRW) offering additional qualifications for women re-entering the job market; Project funding: European Social Fund

and the Ministry of Labour, North Rhine-Westphalia

2000 Fourth Theatre Festival of the Environment in Mainz | As with the previous Theatre Festival of the Environment, the aim was to increase awareness of and information about the environment through drama and other forms of art; Project funding: Central Office for Environmental Awareness, Rhineland-Palatinate

1999 Pilot project "Environmentally-sound driving" | Driving training and presentation of the Science Shop publication "*Der Weg zum sparsamen Fahrstil*" (How to drive economically) on the occasion of the City of Bonn Action Day on the same subject; Project funding: City of Bonn

1999 Expert seminars "Eco-audit and Eco-profit | Community projects for the economy and the environment within the Local Agenda 21 process". The aim of the seminars was the further development of environmental management systems; in collaboration with the Federal Environment Ministry and the Federal State ministries



1999 Theatre competition for Expo 2000 | Development of the concept for a competition on the topic of "People, Nature, Technology" for Expo 2000 on behalf of the Environment Ministry of NRW; followed by the actual competition itself "Environmental Theatre for Expo 2000" in conjunction with the third Theatre Festival in Bonn

1998 "Urban infrastructure network" | The result of the project was a handbook documenting the research results of European specialists along with methods and solutions in the area of "Promoting a sustainable urban infrastructure"; Project funding: EU

1998 "Local Agenda 21 Handbook" | This information and methodology guide (in German) was produced jointly with the registered association "TU WAS (Do something) e.V."

1998 Extension of the educational programme | by taking over the Ecological Education Centre in Sankt Augustin near Bonn

1997 "Development of a project to implement Local Agenda 21" | Concept for and management of seminars in various towns; Project funding: *Ökologiestiftung* (Ecology Foundation), NRW

1997 Pilot projects "Reintegrating people receiving social security into the job market" | Together with the Social Security Office of the City of Bonn, the Bonn Science Shop offered those participating in the project further training and regular advice; Project funding: City of Bonn

1996 Second Theatre Festival of the Environment in Bonn | On behalf of the State of NRW

1995 Expert congress "Citizen participation as the driving force in the politics of local climate protection" | Climate congress in cooperation with the City of Bonn, the *Ökologiestiftung* (Ecology Foundation) NRW and the Climate Alliance of European Cities

1995 "Information and animation of the consumer in regard to natural textiles" | Guidelines, videos and workshops on the theme "Can Fashion be ecological?" as well as – together with

Projects

the City of Bonn — a concept for and organisation of a municipal Environment Day under the same motto; Project funding: EU



1995 "Art as a medium for environmental education" | The guidelines and the exhibition in Bonn came about as a result of research and colloquia with the participation of artists, the University of Lüneburg and the Cultural Research Institute NRW; Project funding: *Deutsche Bundesstiftung Umwelt* (German Federal Foundation for the Environment)

1995 Project "Environmental education in kindergarten" | The manual was the result of seminars and working groups in which environmental educationalists, child care workers and specialists took part; Project funding: BUND Freiburg

1995 Information pamphlet "*arbeitsmarkt Bildung und Kultur*" (The Job Market: Education / Culture) | Weekly dispatch of a pamphlet containing job market analysis and evaluations of job vacancies in the field of education and culture; Own project

1995 Opening of the testing and advisory office for electrosmog | Own project

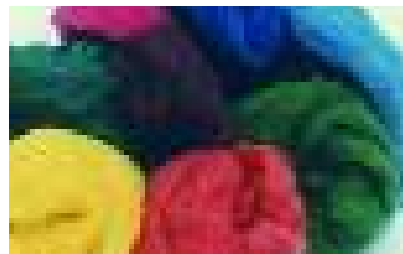
1994 First countrywide Theatre Festival of the Environment in Bonn | Concept and realisation of an event in which environmental theatre groups were given the opportunity to present themselves and their ideas; Project funding: *Deutsche Bundesstiftung Umwelt* (German Federal Foundation for the Environment)

1994 Crockery mobile | Operation of a mobile crockery trailer to reduce the amount of waste produced at events; Project funding: City of Bonn

1994 Coordination of national libraries for the environment | Publication of a library guide to environmental libraries; Project funding: Federal Environment Agency

1994 Information pamphlet "*arbeitsmarkt Umweltschutz* (The Job Market: Environmental Protection)" | Weekly dispatch of a pamphlet containing job market analysis and evaluations of job vacancies in the field of the environment; Own project

1993 Designation of textiles | Production of working materials for multiplicators; Own project



1992 "The environment: Practical field of work and job market" | This series of seminars was supported by the Federal Institute for Vocational Education and Training, and the Federal Education Ministry

1991 Second round of further education measures "Specialist for environmental protection" | Support from the relevant employment offices; third round of further education measures 1992

1991 "Ecologically-sound building" | Meeting of experts; in cooperation with the City of Bonn

1991 Nation-wide amalgamation of Science Shops | into the association "*Arbeitsgemeinschaft der Wissenschaftsläden (AWILA)*"

1990 First edition of "*Wila Extern*" | Quarterly publication informing about the work of the Bonn Science Shop, later renamed "*WILAinform*" ; Own project

1990 Environmental Theatre UNVERPACKT (Unwrapped) | Setting up of the theatre group; Project financed by the ABM centres which promote work opportunities

1989 Pilot project: Further education and the opening up of new occupational areas | Environmental consultant for households, local administration and businesses (specialist for environmental protection); Project funding: European Social Fund and the Employment Office Bonn (until 1990)

1989 Opening of the environment library | Own project

1989 "Water used to be ... clean" | Series of lectures within the framework of the *Studium Universale* at the University of Bonn

1989 "Guidelines for Environmental Consulting" | Publication (in German) based on a study entitled "Environmental consultant — Job profile and training concepts"

1988 "The individual, the environment & philosophy" | Publication of a book (in German) based on the series of lectures "Philosophical problems in the relationship between the individual and the environment" held within the framework of the *Studium Universale* at the University of Bonn

1987 Study on training measures for environmental consultants | Job profiles, situation and developments in the area of environmental consulting, and the corresponding training; production of environmental consultant guidelines; Project financed by the ABM centres which promote work opportunities am ■

Fields of Work

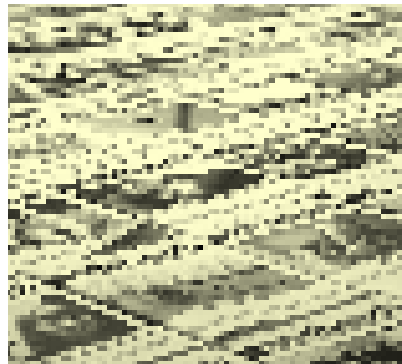
It is the task of the Bonn Science Shop (Wissenschaftsladen Bonn e.V.) – with roughly 25 members of staff the largest of the 58 Science Shops in Europe – to keep track of the social and ecological questions that citizens are concerned with. At a time when problems are getting more and more complex, when the media often spread reports uncritically and when research results frequently contradict each other, the Science Shop strives to provide concrete and comprehensible guidelines on how to act in day to day life.

The environment and health

The researchers of the Bonn Science Shop analyse and evaluate information and research results in order to make them both readily accessible and practically relevant to the consumer. The Science Shop compiles reports and specialist publications, offers, for example, on-site measurement and analysis, and advises consumers and public institutions on the following subjects:

- Electromog
- Ecologically-sound building and living conditions
- The environmental and health compatibility of textiles
- Nutrition and food safety
- Cars and the environment

In addition to this, the Education Centre introduces adults to environmentally-sensitive topics through training courses and individual seminars for educationalists/trainers as well as performances by the Environmental Theatre "UNVERPACKT" (Unwrapped) for children.



The job market and further qualifications

Through its two publications, "*arbeitsmarkt Umweltschutz und Naturwissenschaften*" (The Job Market: Environmental Protection/Natural Sciences) and "*arbeitsmarkt Bildung, Kultur und Sozialwesen*" (The Job Market: Education/Culture/Social Services) the Bonn Science Shop provides those seeking employment with a weekly overview of the vacancy notices in their corresponding field of work. To do this, experts assess more than 100 daily and weekly newspapers and specialist publications as well as job lists on the internet. Along with this the publications offer readers comprehensive and up-to-date background information on their particular field of work together with tips for job applications, contact addresses and dates.

In view of the worsening situation on the job market, the educational centre of the Bonn Science Shop has extended what it has to offer in the area of job enhancement measures. Workshops and courses on how to present oneself well, application strategies, me-

diation, or the professional elaboration of projects, for example, aim at helping participants to develop further as individuals and at the same time to extend their professional skills.

As an officially recognised educational institution the education centre offers job enhancement courses and events in the following main areas:

- Key qualifications
- Environmental education
- Health
- Creativity

Civil society and sustainability

Through its projects and choice of working areas the Bonn Science Shop strives to encourage citizens to participate actively in democratic processes. It is the aim of the projects to involve actors from a wide variety of groups and to close gaps in knowledge in a non-compartmentalised and objective manner.



The main areas in which it does this are:

- Agenda 21: Support in the setting up of citizen foundations
- Land use: Website und information forums on land use in NRW
- Intercultural activities: Information on religious communities in Bonn
- Networking: Establishment of an international Science Shop network called *Living Knowledge*. ■

"arbeitsmarkt" – A Success Story



face and where solutions need to be found. Because of this and its choice of subject matter our information service has always managed to stand out against usual vocational and career magazines.

Research and teaching profit

At the same time, universities and research institutes as well as the national employment agency became interested in our evaluations and our team of experts. Our analyses are regularly used as the basis for research projects and academic studies. Similarly, interest is growing in the experiences we have made with our target groups and their special problems; hence the team dealing with university and college graduates at the national employment agency (Bundesagentur für Arbeit) and the graduate associations of several universities and colleges themselves are particularly keen to invite our editors to give lectures and help run information events. >>>

There was something in the air. It was the beginning of the nineties; our further education courses for unemployed academics entitled "Specialist for Environmental Protection" were moving into their third round. For a long time we had not only been offering further qualifications to the participants of our training courses but had also been trying to support them in accessing their job market. Week for week we analysed the vacancy notices in the most important daily newspapers, making this assessment available to the participants in the form of a newspaper. Gradually word spread, and soon there were a few hundred subscribers outside the course itself interested in our job market analysis.

But it didn't stop at that: in view of the increasing unemployment, more and more academics in the arts and social sciences began asking for a similar service for their target group. That's why, as early as one year after the start of our information pamphlet "arbeitsmarkt: Environmental Protection", we began publishing an additional pamphlet "arbeitsmarkt: Education/Culture".

More than just a job service

From the very beginning we were offering our subscribers more than just a job service. And as our publications began to spread, the number of letters, telephone calls and mails we received increased. In them readers asked for advice or inquired after tips and information about job applications, occupational support measures, further qualifications and new occupational areas. Since then, the editorial department of the Bonn Science Shop which was consequently expanded has been analysing and reporting on the current situation and the on-going developments of selected job markets. At the same time, the exchange of information between the subscribers and the editorial staff quite literally keeps the publication alive: on the one hand, people looking for jobs write very openly in the column "Readers' letters" about success or lack of success in finding work, thus passing on their experiences. On the other hand, the feedback from readers also helps the editorial staff to orient themselves as to the problems job seekers

Readers' comments on »arbeitsmarkt«

Your articles are extremely informative – right on the ball, so to speak. The tips about seminars and publications are also exceptionally useful. With the publication "arbeitsmarkt" you are providing objective and emotional support at a time when, at first sight, nothing seems to be working. U.S.

Your info services helped me to find a job. Keep up the good work – for the unemployed you are truly a glimmer of hope. D.B.

*The publication "arbeitsmarkt" has been my window on the job market over the last one-and-a-half years.*A.D.

Philosophy: changes should not be rushed

At the end of the nineties the experts prophesied that the end of the print media was imminent. However the demand for printed information services has remained high and we have therefore not switched to online editions.

Of course there were changes in other areas because of the internet: vacancy notices have partially moved from the daily newspapers to the net. This is the reason why the most important online sources have also been assessed since 2002 along with printed sources. This means that, despite a drop in vacancy notices in the printed media, we still have substantial pamphlets with 200 to 300 jobs per edition.

Stable demand – fair prices

As the circulation of both our information publications has developed in a stable and generally positive way over the last ten years, we have only had to raise the subscription price once – and that was fairly moderate. In view of the increasing deterioration in the social situation, especially of the long-term unemployed, we have offered subscribers who need them special conditions since 2001. This target group would be especially hard hit if they had to do without our information services for financial reasons.

What we wish for the coming years is that as many readers as possible continue to use our services even if – or perhaps precisely because – they have found their way back into the work market with our help.

Andreas Pallenberg ■

The Transfer of Knowledge in Germany

The “dialogue” is still a monologue

Technical and scientific topics are money-spinners, according to the Berlin expert of communication, Professor Winfried Göpfert. In 2002, the news magazine *Der Spiegel* even used the term “goldmine”. Never before had there been such widespread interest in Germany in such subjects. What is on offer has increased accordingly: daily newspapers report more often and on a larger scale than was previously the case about science; specialised publications have a constantly high circulation; numerous newsletters offer information on the latest research results. Even academia itself is going public with its programme – large-scale science nights, “chemical labs on wheels” or specially made films.

While it is true that the transfer of knowledge is a lucrative source of income for publication houses, it is in fact much more than that: in the research community a well-functioning transfer of knowledge literally pays off in economic terms as well. The British Bodmer Report, one of the basic studies on “Public Understanding of Science”, came to the conclusion as early as 1985 that if society has a higher knowledge at its disposal, such as the knowledge of scientific facts, national prosperity increases. The idea behind this is that an informed society acts in a more rational way, makes more precise decisions and is thus more efficient.



Knowledge has not increased

There is indeed interest in Germany in scientific topics, along with contributions from the media and researchers. And yet the transfer of knowledge only appears to function well in Germany when viewed superficially. The studies carried out by the Berlin Professor Winfried Göpfert show that the interest is not enough to increase actual knowledge. The expert for communication noted: “Any scientific thinking the readers have comes from their school days”. Scientific journalism, for example, hardly contributes to raising the actual level of knowledge.

But what are the reasons for the fact that little knowledge is retained even though much is obviously consumed? What are the obstacles preventing a successful transfer of knowledge?

At the International Conference on Public Communication of Science and Technology in Berlin in 1998 scientists and journalists passed the buck back and forward between them. The scientists criticised that the journalists' reports were too abridged, often with misleading analogies, and that they thus wrongly portrayed scientific statements. In addition there was no quality control at the editorial offices.

The journalists retaliated by saying that many scientists were not good experts in that they were far too spe-

Knowledge Transfer

cialised to be able to communicate their results. A study by the American sociologist Gordon R. Shepherd revealed that more than two-thirds of experts cited by the media had never themselves researched the subjects they were answering questions on. Hence, as advocated by Hans Peter Peters, a social scientist in the programme group "Humans, Environment, Technology" (*Mensch, Umwelt, Technik*) of the German Research Centre Jülich, academia and the corresponding scientific communities require to ensure that there are enough scientists among them who, as public experts, are capable of gearing scientific knowledge in such a way as to shape public opinion.

Transferring knowledge in the wrong way

Insufficient care on the part of the journalists and an absence of the ability to communicate on the part of the scientists may well be factors contributing to preventing the effective transfer of knowledge. But the decisive obstacle in Germany is the approach on which the transfer of knowledge is based: scientists and journalists both proceed in a demand-centred manner. To put it bluntly: what is propagated – or rather, scattered – is that which has been researched; often records, premiers, pioneering events and bizarre facts from the world of science. According to the educational specialist Stephanie Conein, knowledge transfer in Germany answers the unspecific ignorance of the citizens with a just as unspecific spectrum of results from research and technology geared to public taste. At best this leads to an arbitrary (and usually short-lived) accumulation of half-truths, and not to the high level of knowledge and understanding demanded within the scientific community.

The question scientists in Great Britain asked themselves years ago

should also be seriously addressed by German scientists. What is it that ordinary people are interested in? After all, the results of the theory of learning and of educational science show that people learn and retain information above all in areas which affect them emotionally. Absorption of information increases with degree of interest. And as knowledge increases, so too does the ability to answer even complex questions in a rational and precise way and thus to force political decision-makers into a rational discussion about the consequences of their political strategies and actions.

Scientists must consult the public

If science wants to reach out to people, if it wants to get its ideas over, then it must first ask what these people are interested in and which current questions in society require scientific answers. It must engage in communication with citizens – from which both sides can profit. For informed citizens will formulate their questions more actively and more precisely and this will in turn render science literally more clever.

Take the question of nuclear energy: it was not until citizens protested against the nuclear energy plant in Wiehl that scientists no longer occupied themselves only with the immense advances of nuclear technology but also with its dangers. This created the scientific base on which to weigh up the pros and cons of nuclear energy and to provoke a discussion about precautions and safety risks.

Professor Gerd Antos, a scientist specialising in the transfer of knowledge, has a vision: in future, universities and colleges should offer themselves as discussion forums for those providing and those asking for information; they should give assistance in the classification and evaluation of knowledge. But such forums do not arise spontaneously

– except in individual cases such as nuclear energy. Usually they have to be initiated and organised to suit current areas of discussion. Even the Science Shops which have adopted this approach since the very beginning should do this more consequentially in future, covering gaps in information systematically and bringing citizens and scientists together.

But along with the practical application of this approach, a broadly based, theoretically elaborated process of the mediation of knowledge does not exist in Germany. Not only German scientists but also the Science Shops have failed in this respect. While the organisation *Wissenschaft im Dialog* (Science in dialogue), founded by leading German scientific organisations, enjoys its science shows, the United Kingdom and the United States are forging ahead. There, according to the educational specialist Stephanie Conein, there is an intensive dialogue about concepts taking place – and about the resulting measures and research projects. bp ■

ON THIS TOPIC

In 1988 the futurologist and activist Robert Jungk said: "Since the beginning of the Science Shop movement in Amsterdam I have stood up for this decisively important effort at democratising science and I hope that these efforts will increase. If the research communities and universities do not build any bridges to the people, if scientists lock themselves up in their specialist towers, then in essence they are acting unscientifically because they are ignoring the dimension of public acceptance or rejection and are thus doomed to propagate an inhumane form of science which must ultimately lead to catastrophe."

The International Perspective

Mediators of knowledge throughout Europe

At the beginning they made the headlines; then, for a while, you didn't hear much about them. Now, however, Science Shops are once again on the ascendant – on the European stage, that is: the EU Commission is promoting the Science Shops as important mediators in the knowledge society of today.



Science shops: a Dutch invention or not?

That the universities were not only rigid and hierarchical but also that, with an eye to profit, they supported large companies was the criticism levelled at them by students and scientists in the Netherlands in the middle of the seventies. Their demand: that researchers should at last devote themselves to topics which interested citizens, such as health and ecology, for instance. Ordinary citizens who could normally not afford to pay for scientific services or who were not in a position to interest the established scientific

community in their questions and problems should at last be given access to knowledge and the results of scholarship.

Critics acted. They set up the so-called *Wetenschapswinkel* (Science Shops) as a counterbalance to the scientific system of the time. Many started in a small way, like the chemistry shop in Groningen which at first only found room in the corner of the faculty bicycle shed. The Amsterdam shop began with a letterbox for enquiries. But the Science Shops soon found supporters in the Dutch universities and ministries. Within ten years every university there had its own, independent Science Shop.

This development took place at a time when project-orientated work was

beginning to be accepted at the universities and was being encouraged by a growing sensitivity on the part of the public towards questions of the environment. From the way they worked, the first Science Shops were mediators: they took in enquiries, looked for the appropriate scientific resources at university institutes, brought those with questions together with those capable of answering them and supported the process of finding an answer. The various different scientific disciplines were to be linked up. Research results, formulated in a readily understandable way, were at last to be made available to all those interested.

In the eighties, neighbouring countries followed suit. Admittedly the Science Shops set up in Germany, Austria, Denmark, Belgium and France were seldom directly linked to universities. They worked independently and in cooperation with other research institutes or cultural and science centres. Nor was mediation any longer the primary activity.

Although the Science Shop movement itself began in the Netherlands, the first Science Shop was set up in a completely different place, according to Henk Mulder of the Science Shop for chemistry in Groningen: "Science Shops have just as little to do with 'Holland' as tulips. Tulips come in actual fact from Turkey and the first Science Shop was called *Boutique de droit*, that is, 'The Law Shop'. It already existed at the end of the 19th century in France, more than 100 years before the founding of the Bonn Science Shop."

Independent research projects were carried out. Training courses, education measures and various different services completed the individual profiles of the Science Shops.

Professionalisation and spread

The initial euphoria was followed at the beginning of the nineties by a certain disillusionment over the European Science Shops. The staff either no longer wanted to, or were no longer able to, carry out their tasks on an honorary basis. Most German Science Shops, all French and Belgian ones, and even some shops in the Netherlands and Denmark closed. The Science Shops that remained gradually began to be run on a more professional basis, developing their own niches and specialising in particular fields and topics.

At the same time, however, the idea spread further afield: new Science Shops sprang up in England, Northern Ireland, New Zealand, Australia, Israel, South Korea and Malaysia. American scientists working at research institutes orientated to the public good joined up to form a network called the Community Based Research Network (CRN). In Canada, the government financed the setting up of Science Shops with a grant of several million dollars.

Moreover, scientists from the Netherlands actively carried their concept into other countries. With the help of the Dutch Foreign Office, for instance, it was possible to set up Science Shops geared to questions of the environment at four universities in Romania. Currently there are eight Science Shops there and they have now amalgamated.

Start-up by the EU

However the Science Shops were really only catapulted into the public eye Europe-wide by the EU Commission which established the "Science and

Society Action Plan" in 2001. In the centre of this was the dialogue between citizens and scientists, without which the current, short-lived and complex scientific community cannot function. The Commission's support for the mediators acting between the citizens and science was just as strong, namely for the Science Shops and similar institutions.

questing information to work much more closely together. And they also profit from the experiences which scientists and citizens have made with numerous new forms of dialogue and participation.

With the financial support of the European Commission, the Science Shops have managed to organise themselves Europe-wide into a global network

Differing concepts

The strategies and structures of the various Science Shops have developed differently. In Germany, most of the shops are registered associations (*Vereine*). This means that they enjoy greater freedom in the choice of their fields of work on account of their independence from the universities but at the same time must always maintain a solid source of financing. Only a few Science Shops have managed to establish themselves as part of a college or university.

In the Netherlands, the close association to the universities has remained. Here specialised *Winkel* (corners) of the various disciplines, like biology, chemistry and the social

sciences, are active and are coordinated from one central point. This coordination centre takes over the administration and PR work and is at the same time the contact point for the public. The actual research is mainly carried out by students, sometimes as a part of their studies.

In Austria, only a few Science Shops have managed to establish themselves. They tend to have sprung up in the vicinity of well-known social centres in order to gain contact to local initiatives. "As close as possible to people's questions" is their concept. Here solutions are sought by professional scientists and researchers who contact specialists from other disciplines when required.

In France and Belgium, the Action Plan led to a revival of the Science Shop concept, while in Spain the very first Science Shops came onto the board for the first time. In Germany and Switzerland as well several initiatives have since got under way. And yet these actors of the "new generation" differ from those of the founding generation: they tend to be more heterogeneous, orientating themselves to the approach of community-based research, a process which allows those carrying out the research and those re-

called *Living Knowledge*. Online information, training material, empirical reports, meetings and conferences have been developed or organised.

Above all, however, the network is a help for those who wish to open up a Science Shop themselves. They can inform themselves which forms of Science Shop exist and choose which would suit them best. Just recently students have come knocking again: from Greece, Turkey and Island as well as from the new EU-member states in Eastern Europe. *Norbert Steinhaus* ■

Staff

The staff of the Bonn Science Shop (Wissenschaftsladen Bonn e.V.) (front, left to right:) *Christa Witsch-Steinhaus, Brigitte Eckert, Anke Valentin, Andrea Muno-Lindenau, Karin Pallenberg, Günter Beuck, Bernd Assenmacher, Margret von der Forst-Bauer, Antje Lembach, Tuba Amirian* (middle, left to right:) *Rainer Vogelsang, Sabine Kaufmann, Klaus Trost, Ruth Bozek, Cornelia Voß, Krischan Ostenrath, Brigitte Peter, Andrea Steinhausen, Gabi Fremuth, Andreas Pallenberg* (back, left to right:) *Udo Herberz, Olaf Greisler, Theo Bühler, Nina Zastrow, Anne Brown, Tatjana Oelmeier, Norbert Steinhaus, Frank Teller, Katinka Lutze, Tom Klein, Markus Kronenberger*

A selection of comments:

"Recognising the crucial role science shops play in the local community in raising scientific access and awareness, the European Commission has been helping this movement evolve and reach critical mass.

By cutting away the layers separating science and society, science shops are helping to pave the way towards 'science for society' and 'society for science'."

*Rainer Gerold, Science and Society Director,
European Commission*

"Science shops are the best ambassadors for research and development because they are altruistic. They are also an extremely effective way of learning about people's problems and finding ways of solving them."

Jan Staman, Director of the Rathenau Institute (NL)

"Science shops are as diverse as the communities with which they work. Although they are spread across the globe, they are not chain stores with one standard format. In fact, they are not really shops at all."

"Science shops are also seen as engines of creativity that help promote a culture of science."

*From the publication of the EU Commission:
"Science Shops – knowledge for the community", 2004*

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The Bonn Science shop (Wissenschaftsladen Bonn) - with 25 members of staff the largest of the 58 European Science Shops – processes current information and the results of scientific research in order to render them accessible and practically relevant to private citizens.

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