

TRANSDISCIPLINARY RESEARCH IN DEVELOPMENT COOPERATION: ORIGINS AND PARADIGMS

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Summary

Transdisciplinarity in development cooperation must include interactions between scientists and the population concerned, as well as interactions between different disciplines, mainly the natural and social sciences. Only if these two main aspects of transdisciplinarity are taken into account is a balanced approach possible, challenging the disciplinary paradigms in responding to the needs of the local population. But responding to needs is not enough. A common vision, the concept of sustainability, can lead to goal-oriented research, making different views and values negotiable. Since 1970, the design of research projects in development cooperation has undergone many changes. While at the beginning researchers defined the problems and how to solve

them, with time the affected population, with support from outsiders, became active in decision making, thus participating in the research process. Experience showed that without participation, the resulting measures and outcomes were likely to be rejected or ignored by the local population. New approaches and methods, such as rapid rural appraisal (RRA) and participatory rural appraisal (PRA), have been developed. They integrate the local population into the research process in an active way.

But more than participation is needed to solve pressing social, economic, and ecological problems in the South. Interdisciplinarity in development cooperation is also essential in dealing with the complex problems often encountered in developing countries. The history of approaches to development in developing and transition countries is a history of increasing awareness of complexity. Social, political, economic, and environmental problems were increasingly perceived as complex clusters of phenomena, which showed trends that varied greatly between different countries or even within the same region or country. Against the background of the newly perceived complexity and diversity of development problems and trends, it became obvious that the formerly dominant set of theories—modernization and dependency theories in the social sciences—had only limited explanatory power. New ways of dealing with complexity were sought. The syndrome approach of the National Center of Competence “North-South”: Research Partnerships for Mitigating Syndromes of Global Change (NCCR “North-South”) launched by the Swiss National Science Foundation in the year 2001 is one possible way to put a transdisciplinary research project into practice.

There are certain difficulties in implementing transdisciplinary projects. Researchers are forced to enter new territory that lies "between disciplines," where there is no scientific community and no quality standards. So researchers face a severe problem of socialization and orientation. Although transdisciplinary projects in development cooperation are carried out on the scientific level, they often stop at the level of practical development cooperation. The reason is that most experts and planners are trained in one single discipline and are not used to transdisciplinary projects. On the personal level, the social competence of researchers taking part in transdisciplinary projects must be very high, in order to sustain disorientation and question one's own disciplinary paradigms. Although transdisciplinary projects must overcome certain obstacles, there is a need for different branches of science to work together, not stopping at disciplinary boundaries, in service to and in exchange with society, helping to solving urgent environmental, social, and economical problems (see *Unity of Knowledge in Transdisciplinary Research for Sustainability*).

1. Introduction

The practice of transdisciplinary research has developed in different contexts and, within these contexts, different types of transdisciplinary research have emerged with different research goals. One type of transdisciplinary research aims to achieve scientific systematization of specialized knowledge. A second type concerns the increasingly close collaboration between third-level institutions, industry, and the private sector. A third type involves addressee-oriented research that attempts to improve the competencies of actors in practice, whereby the role of experts as advisors and intellectual pioneers is being increasingly questioned and replaced with a concept of

mutual learning. All affected actors should participate, thus enabling actors to bring their local knowledge and interest to bear on the process. This means that the experts' knowledge becomes more context-relevant (see *Methodology of Transdisciplinary Research*). Research for development cooperation belongs to the third category. We will show how it emerged in the field of development cooperation and is actually complemented by approaches of the first type.

1.1. Two Main Aspects of Transdisciplinarity

We differentiate between two main aspects of transdisciplinarity. One is the aspect of interaction between science and society, which means that the local population and the involved decision makers participate in the research process, thus making experts' knowledge more context relevant. The second aspect is that of interdisciplinarity, meaning the interaction between different disciplines, particularly natural and social science. If we visualize these two aspects in the form of a cross, then transdisciplinarity takes place where the two branches meet: participation of the affected population which have influence on the whole research process and the overcoming of mere disciplinary knowledge (see *Unity of Knowledge and Transdisciplinarity: Contexts of Definition, Theory and the New Discourse of Problem Solving*).

1.2. Focus on Common Goals

What is the connection between sustainable development and transdisciplinarity? In transdisciplinary research projects, it is necessary to define common goals. This goal orientation leads, for example, to the normative concept of sustainability, which then forms a framework for the negotiation of different values, norms, and views of the involved groups and persons. From another perspective, sustainable development is a comprehensive and overall concept that includes science, with all its different disciplines, as well as society. If one wants to contribute to the process of sustainable development, one automatically ends up with assignments that are summarized today under the heading of "transdisciplinarity." After the Rio Summit in 1992, sustainable development was postulated as an explicit development goal. Before that, development goals were, for example, poverty reduction and increase in production, but no integrated development concepts existed. In other words, the political acceptance of sustainable development as the main goal of development strategies led automatically to the rise of transdisciplinary approaches in development cooperation.

1.3. A Head Start of the South in the Field of Transdisciplinarity

The pressing complex problems in the developing countries required transdisciplinary approaches, long before they were termed as such. It was not only the failure of more traditional projects that made it indispensable to include the local population and decision makers in the organization of projects; the politics of research in developing and transition countries also contributed to the promotion of transdisciplinarity. Only the kind of research is sponsored that can make a contribution to the urgent problems developing and transition countries face. Moreover, social observation is stronger and pushes research in the direction of relevance. Another reason for the early formation of transdisciplinarity in development cooperation is that in the countries of the South the

resistance of research institutions is not as strong as, for example, in Europe (see *Differentiation of Scientific Disciplines. Causes and Consequences*). All these factors led to early development of transdisciplinarity in the “South.” “Researchers from the South are more accustomed than we are to interdisciplinary and particularly transdisciplinary work,” says Professor Hans Hurni, leader of the NCCR “North-South.” “Here is a field where the North can also learn.”

2. Science and Society—Dealing with Relevance

Since the 1950s, shortly after many African and Asian states declared their independence, increases in production were seen as the central means in development cooperation to resolve the problems of hunger and population explosion. Concepts like the “green revolution” based on the importance of increased production, were to achieve this with a technological leap. What we call modernization took place even in the most remote rural areas, where it affected agriculture and led to the introduction of new crops. New seed varieties replaced the traditional varieties used by women and men who practice agriculture in these areas. But the technology transfers from the North to the South often proved to be ineffective. These development strategies failed for two main reasons: Either recommendations were not accepted by the society concerned, or the results of introduced methods for achieving increases in production were devastating: monocultures led to ecological destruction. Alcoholism, a high suicide rate, and other after-effects were signs of destruction on the sociocultural level. The focus on consumption generated by new demands led to a loss of culturally based knowledge of traditional resources and appropriate forms of resource use. This loss was accompanied by a breakdown of social order and traditional value systems and systems of belief.

For example, in Kenya, irrigation systems for rice production were established to make the country independent of rice imports. A lot of external input was needed and, although the introduced system functioned quite a long time in terms of production, it failed to take account of smallholder society, which fell apart and suffered severe cultural damage. Development organizations were forced to find new ways of dealing with problems in developing countries. It was clear that there could be no reasonable approach without the participation of the local population to find solutions accepted by local society and integrated into local culture and livelihood systems.

2.1. Development of Participation

Since 1970, development cooperation has gone through two stages dominated by outsiders and has been entering a third stage. In the first stage, the outsiders made most of the decisions. They decided what the problems were, and how to solve them. They designed the project and set the project objectives and activities. They provided the necessary inputs and management, and then monitored and evaluated progress, to see that their objectives and activities had been carried out. The results were not encouraging. Community interest often decreased over time. Very seldom were activities continued by the community after the outsiders withdrew.

In the second phase, the outsiders still made most decisions, but they began to ask insiders more questions. Overall, the outsiders’ role was much like their role in the first

stage, except that studies of the community done by outsiders to help them establish the needs of the community offered new insights into community preferences and motivation. The result was that outsiders began to realize that insiders knew a great deal. Insiders could often identify why activities had or had not worked. The origin of approaches and methods known as rapid rural appraisal (RRA) can be attributed to this second phase.

In the third stage, insiders, with support from outsiders, are active in decision making. Insiders identify their problems and appropriate solutions. Outsiders adopt a participatory approach, encouraging insiders to identify their own needs, set their own objectives and manage, monitor, and evaluate the activities. The results are promising. Approaches and methods known as participatory rural appraisal (PRA) can be attributed to this third stage. PRA is a further development of RRA. The participatory approach has begun to show encouraging results. It leads in the direction of empowerment: People are encouraged and supported to take control of decisions that affect their own lives and environment. With time and experience, this approach will continue to develop methods and tools that hold great potential for sustainable development (see *Actor Participation and Knowledge Dissemination in Transdisciplinary Research*).

2.2. Rapid Rural Appraisal (RRA): Origin and Evolution

The philosophy, approaches, and methods known as rapid rural appraisal (RRA) began to emerge in the late 1970s in association with Robert Chambers. RRA had three main origins.

The first was dissatisfaction with the biases, especially the antipoverty biases, of rural development tourism—the phenomenon of a brief rural visit by an urban-based professional. These biases were recognized as spatial (visits near cities, on roadsides, and to the centers of villages); project-related (where projects were being undertaken, often with special official attention and support); personal (meeting men more than women, elites more than the poor, the users more than the nonusers of services, and so on); seasonal (going in the dry and cool rather than hot and wet seasons which are often worse for poor rural people); and diplomatic (where the outsider does not wish to cause offence by asking to meet poor people or see bad conditions). All these biases can combine to hide the worst poverty and deprivation.

The second origin of RRA was disillusionment with the normal questionnaire surveys and their results. Repeatedly, the experience was that questionnaires were too long and too difficult to administer. The analysis and evaluation of questionnaires was sometimes so time consuming and expensive that the effort did not seem legitimate.

The third origin was more positive. The search for more cost-effective methods of learning was helped by the growing recognition by outsider professionals of the obvious fact that rural people were themselves knowledgeable on many subjects which touched their lives. What became known as indigenous technical knowledge (ITK) was then increasingly seen to have richness and value for the practical use by outsiders. It would be cost-effective to use that knowledge more. The main question, as it seemed then, was how to tap ITK as a source of information most effectively.

At the beginning, RRA had a reputation as the second best when compared to traditional methods. In the 1980s, the family of approaches and methods known as RRA gained increasing acceptance. The RRA approaches and methods increasingly elicited a range and quality of information and insights inaccessible through methods that are more traditional. Tools like diagramming, ranking, workshops, mapping, semistructured interviews, and many more are used in the process of RRA. Perhaps more than any other movement, agroecosystem analysis, pioneered in Southeast Asia by Gordon Conway and others at the University of Chiang Mai and elsewhere, established new methods and credibility. In the mid 1980s, the University of Khon Kaen in Thailand was the world leader in developing theory and methods, especially for multidisciplinary teams, and in institutionalizing RRA as a part of professional training.

2.3. Participatory Rural Appraisal (PRA)

RRA began as a better way for outsiders to learn. But its mode is mainly extractive; rural people's knowledge counts—but for our purposes. In the late 1980s, some RRA approaches moved beyond this in a participatory direction and evolved into what has come to be called participatory rural appraisal (PRA).

PRA has increasingly shifted the initiative from outsider to villager. It has developed rapidly. Any summary of its evolution is likely to omit much that has been happening in parallel in different parts of the world. PRA has several antecedents, and draws on several traditions, including the community development of the 1950s and 1960s, the dialogics and consciencisation of Paulo Freire, participatory action research, and the work of activist NGOs in many parts of the world, who have encouraged poor people to undertake their own analysis and action (see *Methodology of Transdisciplinary Research*). The term PRA was probably first used in Kenya to describe village-level investigations, analysis and planning undertaken by the National Environment Secretariat in conjunction with Clark University, USA.

The major difference between PRA and old-style RRA is in roles, behavior, and attitudes. In RRA, the outsiders are dominant. They determine the agenda, extract information, analyze it, and plan. In PRA, these roles are largely reversed. The outsiders encourage the insiders to be dominant, to determine more of the agenda, to gain, express, and analyze information, and to plan. The outsiders act mainly as facilitators, learners, and consultants. Metaphorically, and sometimes literally, the outsiders “hand over the stick” which symbolizes authority, and let the insiders identify the priorities. Of course, there is a wide range of implementations to be classified with the two described approaches, which form a continuous spectrum of developed methods according to circumstances and context. One of the advantages of PRA has been the lack of a blueprint and openness to innovation. Participation generates diversity; villagers play a part in interpreting, applying, and sometimes inventing the methods themselves.

Up to now, we have become familiar with many positive aspects of PRA. There are also certain dangers: PRA is “in fashion,” there is the danger of using it as a label without substance. Another danger is rushing, and the third danger Robert Chambers identifies is potential formalism. In the long term, the third danger may prove the most difficult

because, with any innovation, there is an urge to standardize and codify in the name of quality. Chambers, however, argues that the initial lack of a manual for PRA in India has been an advantage. Practitioners have been forced to learn, not from books, and not in the classroom, but from colleagues, through sharing, and from their own improvisations and experiences in the field. The largest and heaviest manual in India is that produced by Ravi Jayakaran of Krishi Gram Vikas Kendra. The reader opens it to find printed boldly on the first page: “use your own best judgement at all times”; the other pages are all blank.

PRA faces problems of dissemination, scale, and quality assurance. It seems important to find a balance between a certain degree of standardization, while keeping the “spirit” of PRA alive in means of creativity and potential for innovation.

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Bibliography

Brand K. (ed.) (2000). *Nachhaltige Entwicklung und Transdisziplinarität*, 224 pp. Berlin: Analytica Verlagsgesellschaft. [This book reflects experiences of sustainable research in different institutional and thematic contexts in Germany, Austria, and Switzerland.]

Center for Development and Environment (1995). *Sustainable Use of Natural Resources*, Development and Environment Reports No. 14, 46 pp. Berne: University of Berne. [This report shows a conceptual approach to sustainable management of natural resources in the context of development.]

Chambers R. (1983). *Rural Development: Putting the Last First*, 246 pp. Essex: Longman. [This book challenges preconceptions dominating rural development. The central theme of the book is that rural poverty is often unseen or misperceived by outsiders].

Davis C.D. (1990). *The Community's Toolbox: The Idea, Methods and Tools for Participatory Assesment, Monitoring and Evaluation in Community Forestry*. Rome: Food and Agriculture Organization of the United Nations. [This book includes a toolbox for Participatory Assesment, Monitoring and Evaluation.]

German Advisory Council on Global Change (WBGU) (1997). *World in Transition: The Research Challenge*, Annual Report 1996, 200 pp. Berlin: Springer-Verlag. [This book describes how Earth is altered by human intervention, how these processes are influenced in turn by natural changes in the planetary ecosystem, and whether and to what extent there are ways to control global change.]

Häberli R. and Grossenbacher M.W. (1998). Transdisziplinarität zwischen Förderung und Überforderung. Erkenntnisse aus dem SPP Umwelt. *Gaia* 7, 196–213. [This article discusses the definition of transdisciplinarity, success factors, and criteria for evaluation on hand of their experiences in environmental research.]

International Mountain Society and The United Nations University (2000). *Mountain Research and Development*, Volume 20, Number 1 February, 104 pp. Berne: University of Berne. [This journal contains examples of integrated management of mountain resources in different contexts.]

Mittelstrass J. (1992). Auf dem Wege zur Transdisziplinarität. *Gaia* 1, 250. [This editorial defines the term transdisciplinarity as interdisciplinary and referring to social and environmental problems.]

Schellenhuber H.-J., Block A., Cassel-Gintz M., Kropp J., Lammel G., Lass W., Lienenkamp R., Loose C., Lüdeke M.K.B., Oldenhauer O., Petschel-Held G., Plöchl M., and Reusswig F. (1997). Syndromes of Global Change. *Gaia* 6, 19–34. [This article describes the syndrome approach.]

Wiesmann U. (2001). Umwelt, Landwirtschaft und Tourismus im Berggebiet—Konfliktbearbeitung im Leitbild "Grindelwald 2000." *Die Umwelt. Konfliktbearbeitung und Kooperation. Schriftenreihe des Österreichischen Studienzentrums für Frieden und Konfliktlösung, ÖSFK (Hrsg.). Münster: agenda Verlag.* Band 7, pp. 237–249. [This article describes the process of designing and implementing a concept of sustainable community development in Grindelwald, Switzerland in a participatory manner.]

Biographical Sketches

Jeannine Brutschin, 1973, is a Scientific Assistant at the Center for Development and Environment (CDE) at the Institute of Geography, University of Bern. She works in the project “National Center of Competence in Research (NCCR) North-South: Research Partnerships for Mitigating Syndromes of Global Change,” headed by CDE, in the Individual Project 1: “Conceptual Framework and Methodologies for Research on Syndrome Mitigation.” She completed her studies with MSc in Geography with a main focus on migration, intercultural dialogue and qualitative research. Her MSc was about cultural boundary crossing of Thai women living in Switzerland.

Urs Wiesmann, 1952, is professor and codirector of the interdisciplinary Center for Development and Environment (CDE) at the Institute of Geography, University of Bern, Deputy Director of the Swiss National Center of Competence in Research (NCCR) North-South on “Research Partnerships for Mitigating Syndromes of Global Change” and Head of the NCCR Individual Project 1 on “Conceptual Framework and Methodologies for Research on Syndrome Mitigation.” He is mainly engaged in the following areas: Responsible for the projects of CDE in East Africa, South-East Asia and the Swiss Alps; coordinator of socioeconomic research among the projects of CDE; collaborator of CDE’s environmental mandates for Swiss Agency for Development and Co-operation (SDC), lecturing on regional development and on geography of developing countries. From 1978 to 1984 he was a part-time scientific coordinator of the MAB-Grindelwald Program (Swiss National Program on “Socioeconomic development and carrying capacity in the Alps” within the framework of the UNESCO “Man And Biosphere” Program; Grindelwald (Bernese Alps, Switzerland) being one of four test regions, involving researchers from 12 institutions). From 1988 to 1991 he was a research coordinator of the “Laikipia Research Program” (LRP), based in Nanyuki, Kenya. (LRP: Interdisciplinary research program of the Government of Kenya in collaboration with the Universities of Nairobi and Bern, dealing with development and environmental problems in semi-arid and highland-lowland areas). In Kenya he also did research for his professorial thesis on sustainable regional development in semiarid smallholder areas and is now also Visiting Professor at the Department of Geography, University of Nairobi.