

EVALUATION OF TRANSDISCIPLINARY RESEARCH

M. Krott

Professor, University of Göttingen, Germany

Keywords: Applied research, evaluation, interdisciplinary research, media, multidisciplinary research, peer review, participation, political evaluation, science communication, scientific community, scientific evaluation, transdisciplinary research

Contents

1. Investigating the Significance of Transdisciplinary Research
 2. Evaluation by a Scientific Community
 3. Fact Finding by Meta Scientific Evaluation
 4. Meta Scientific Explanations of Transdisciplinary Research
 5. Evaluation by Politics
 6. Evaluation by Communication with the Public and the Media
 7. Participative Evaluation
 8. Tailoring Evaluation
- Glossary
Bibliography
Biographical Sketch

Summary

In an evaluation of transdisciplinary research the progress of research is investigated by comparing the performance with the aims of the research. Due to the complexity and high risk of transdisciplinary research, evaluation is very important to improve the standard of this type of research. (1) Evaluation by the scientific community assesses facts and values of the project from the point of view of the scientific community. Experienced transdisciplinary peers, specific guidelines of the disciplines for the peers, and pluralistic allies with groups of the field are needed. (2) Meta scientific evaluation analyzes the progress of research with scientific methods only. Based on disciplines like economics, logic, or sociology, specific aspects of projects can objectively be proved and the performance can be explained better than the peers or the researchers themselves can do it. (3) Political evaluation is driven by facts, values, and the interests of the participants of the political system. The rationale might be weak but the impact on the decisions is the highest. Transdisciplinary projects have specific abilities to use evaluation by markets. Media works best as lighthouses to establish contact between research and potential users for further evaluation. The strengths of the three types of evaluation have to be checked with regard to a specific transdisciplinary project. Orientated to the needs of the users of the evaluation and the available resources, the optimum evaluation concept can be geared to them.

1. Investigating the Significance of Transdisciplinary Research

Transdisciplinary research arouses high expectations. Integrating this practice into the research should increase the ability to solve problems in the real world. Especially in the

field of environmental protection, the low impact of research should be overcome by new transdisciplinary methodology. With highly complex problems, the new methodology involves much uncertainty on the progress of the transdisciplinary research, too (see *Methodology of Transdisciplinary Research*). Therefore, there is a great need for information on the strength and weakness of specific research projects. Such information can be produced by evaluation. Evaluation investigates research activities and compares them with standards in order to determine performance. Evaluation is aimed at providing specific information to the researchers, stakeholders, and the whole of society that can be used to improve the research projects.

Evaluation focuses on two parts of transdisciplinary research projects: scientific rationale and management. The rationale starts with choosing the problem in the field to be solved. The evaluation should clarify the importance of the problem the research is dealing with because the biggest need of society should have priority. Problem solving is the key element of research. In order to find the best solutions, the right (realistic!) aims have to be defined and the underlying processes have to be described and sufficiently explained. The specific added value of transdisciplinary research projects is that they do not stop with explaining the world but they intervene in the problems directly (see *Unity of Knowledge and Transdisciplinarity: Contexts of Definition, Theory and the New Discourse of Problem Solving*). The evaluation has to check the measurements of intervention and the final impact on the problem in practice. In many cases, transdisciplinary projects make use of multidisciplinary and interdisciplinary approaches because the combination of disciplines fits better the needs of problem solving in the field. The evaluation has to check the specific added value of combining and integrating disciplines. With regard to management, the information and decision making process in the project is important (see *Management of Transdisciplinary Research*). The resources as well as researchers and technical equipment are to be evaluated. The ultimate aim is a project with highest competence focused on the most important problems carrying out highly efficient research. The additional challenge for transdisciplinary projects is the integration into practice. The quality of the participation of target groups and stakeholders is a major subject of evaluation.

To sum up, the evaluation should check the quality of the rationale and the management, focusing on the specific goals of transdisciplinary research, which are to design significant innovative solutions in the field. Evaluation has to answer a wide range of questions and applies an immense variety of different methods. Nevertheless, there are three basic approaches evaluation can follow: evaluation by a scientific community, meta scientific evaluation, and political evaluation.

- (1) The evaluation by a scientific community means that scientists soundly assess the scientific research of their colleagues. The scientists compare the research activities with the standards for research and for impacts of research. The standards have to be developed in the scientific community with respect to the values of society and to public goals for research and policy. The assessment includes facts and values from the point of view of the scientific community.
- (2) In contrast to this, meta scientific evaluation makes no value judgments but analyzes the progress of research by scientific methods only. The transdisciplinary project becomes the subject of a scientific analysis producing

facts about performance. Values are not produced by value judgments but are freely chosen just for analytical purposes. They can be changed in whatever direction the users of the evaluation prefer.

- (3) Political evaluation is driven by facts, values, and the interests of the participants, who include stakeholders, the media, and other groups. The rationality of such judgments might be weak but the judgments have much more impact on the political process than the results of the other two types of evaluation.

All three types require specific opportunities and necessities of the evaluation procedures. First, the basic requirements will be discussed with special attention to the specific problems of transdisciplinary research. Second, it will be shown how to use such insight in order to choose and design an evaluation concept of a specific transdisciplinary project for specified users.

-
-
-

TO ACCESS ALL THE 15 PAGES OF THIS CHAPTER,
Visit: <http://www.eolss.net/Eolss-sampleAllChapter.aspx>

Bibliography

Chen H.-T. (1990). *Theory-Driven Evaluations*, 326 pp. London: Sage. (The overview shows theoretical aspects of evaluation.)

Gibbons M. and Georghiou L. (1987). *Evaluation of Research: A Selection of Current Practices*, 77 pp. Washington, D.C.: OECD Publications and Information Centre. (This book gives an overview of the classical instruments for evaluating research.)

Interdisciplinary Center for General Ecology (1999). Evaluating transdisciplinary research. *Panorama Special Issue 1* (Newsletter of the Swiss Priority Programme (SPP) "Environment," Bern). (This brochure is a detailed guide for evaluation.)

Nelkin D. (1995). *Selling Science. How the Press Covers Science and Technology*, 217 pp. Rev. edn. New York: Freeman. (Nelkin shows how science can successfully deal with the media.)

Patton M.Q. (1997). *Utilization-Focused Evaluation, The New Century Text*, 431 pp. 3rd edn. Thousands Oaks, Calif.: Sage. (This book focuses on methods for improving the impact of evaluation on decision making.)

Rossi P.H., Freeman H.E., and Lipsey M.W. (1999). *Evaluation. A Systematic Approach*, 500 pp. 6th edn. Thousand Oaks, Calif.: Sage. (This book gives an overview of the state of the art evaluation research.)

Biographical Sketch

Max Krott was born in Sweden in 1955. He has studied forestry at the University of Agriculture in Vienna and political sciences at the Institute of Advanced Studies in Vienna, Austria. He was associate professor for forest policy at the University of Agriculture in Vienna from 1988 to 1994; since 1995 he

has been chair of forest policy and nature conservation policy at the Georg-August University of Göttingen, Germany. Krott has taught at several universities in Europe and the U.S. He has been member of the executive board of the International Union of Forest Research Organizations (IUFRO) since 1990 and editor-in-chief of the international Elsevier journal *Forest Policy and Economics*. Krott has been a member of the scientific advisory boards of the European Forest Institute since 1998 and of the Forestry Research Institute in Freiburg since 2001. His main fields of research are forest and nature conservation policy in Europe and research policy. He has written and published 10 books and published as editor 11 books. Krott has been scientific controller of the interdisciplinary Austrian research program cultural landscapes since 1994. He has evaluated applied research programs in Austria, Germany, and Switzerland.

UNESCO – EOLSS
SAMPLE CHAPTERS