

## **When ecologists meet economists (and vice versa): controversies, methodologies and outcomes of a search for transdisciplinarity**

### **Summary:**

This paper proposes a qualitative and historical analysis of two transdisciplinary concepts which have been developed in the framework of ecological economics, namely 'coevolution' and 'ecosystem services'. Our analysis aims at retracing the conceptual history (by mobilizing key articles published on these topics by ecological economists over the past 25 years) of these concepts, their epistemological trajectories and branching-off points.

The paper will first trace the conceptual and epistemological history of the concept of coevolution (1). Then we will apply a similar analysis to the concept of ecosystem services (2). The last section (3) will draw from the previous analysis the main lessons on the relations between ecology and economics and on the kind of transdisciplinarity at work.

**Keywords:** Ecological economics, transdisciplinarity, epistemology, conceptual history, coevolution, ecosystem services.

**Long Abstract:** In the late 1980's, the aim of the founders of Ecological Economics, understood here as a new paradigm, was explicitly to develop a transdisciplinary approach to meet the challenges of sustainable development, both at the scientific and political level (Baumgärtner *et al.*, 2008). Ecological economics was even defined at that time as the "science and management of sustainability" - this is the title of the book published after the first symposium of the International Society for Ecological Economics, held in Washington D.C., in 1990 (Costanza (ed.), 1991a). Some of the early writers of this emerging field were envisioning a full integration of economics and ecology, whereas others were limiting the dialogue between economists and ecologists as a process of cross-fertilization (Costanza & Daly, 1987).

Because ecological economists claim to be a transdisciplinary network<sup>1</sup>, it is interesting to look at the development of this stream of research from an historical perspective. Are ecological economists really engaged in a transdisciplinary approach? Is it possible to identify various forms of relationships between the two main disciplines engaged in ecological economics? Moreover, because ecology and economics are far from being monolithic disciplines, how the study of the emergence and development of this research agenda can help us to learn about the controversies inside disciplines and across the disciplines?

As mentioned in the general presentation of the special session "Scientometric analyses as a way to assess the state of ecological economics: understanding the present to see the future", there are several ways to assess the various dimensions of the scientific practices

---

1 According to Costanza (1991b:335), for instance, "*Ecological economics* is a new *transdisciplinary* field of study that addresses the relationships between ecosystems and economic systems in the broadest sense. These relationships are central to many of humanity's current problems and to building a sustainable future, but are not well covered by any existing scientific discipline" (stressed in the original).

and beliefs prevailing in ecological economics. From a methodological point of view, we will propose a qualitative and historical analysis of two concepts which have been developed in the framework of ecological economics, namely ‘coevolution’ and ‘ecosystem services’. Our analysis aims at retracing their conceptual history (by mobilizing key books and articles published on these topics by ecological economists over the past 25 years - for instance Norgaard, 1994; Costanza et al., 1997; Fisher et al., 2009; Gómez-Baggethun et al., 2010), their epistemological trajectories and branching-off points. Done in conjunction with the historical development of Ecological Economics and its transdisciplinarity claim, these epistemological and conceptual histories of ‘coevolution’ and ‘ecosystems services’ will serve to make a comparison with the specific histories revealed by scientometric analyses, that are generally based on data coming from papers’ summaries..

The outline of the paper is the following. The first section will trace the conceptual and epistemological history of the concept of coevolution. The second will apply a similar analysis to the concept of ecosystem services. The last section will draw from the previous analysis the main lessons on the relations between ecology and economics and on the kind of transdisciplinarity at work. ...

## References

- Baumgärtner S., C. Becker, K. Frank, B. Müller, M. Quaas, 2008, Relating the philosophy and practice of ecological economics. The role of concepts, models and case studies in inter- and transdisciplinary sustainability research, *Ecological Economics* 67(3), pp. 384-393.
- Costanza R. (ed.) 1991a, *Ecological Economics: The science and management of sustainability*, New York, Columbia University Press.
- Costanza R., 1991b, “Ecological Economics: A Research Agenda”, *Structural Change and Economic Dynamics*, Vol. 2, n°2, pp. 335-357.
- Costanza R., Daly H.E., 1987, “Towards an Ecological Economics”, *Ecological Modelling*, 38, pp. 1-7.
- Costanza R. et al., 1997, “The value of the world’s ecosystem services and natural capital”, *Nature*, vol. 387, May, p. 253-260.
- Fischer B. et al., 2009, “Defining and classifying ecosystem services for decision making”, *Ecological Economics*, 68/3, pp. 643-653.
- Gómez-Baggethun E., de Groot R., Lomas P., C. Montes, 2010, “The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes”, *Ecological Economics*, 69, pp. 1209-1218.
- Norgaard R.B., 1994, *Development Betrayed: The End of Progress and a Coevolutionary Revisioning of the Future*, London; Routledge.