



Methodological and Ideological Options

Identifying Five Different Perspectives on the Ecosystem Services Concept Using Q Methodology

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ABSTRACT

The objective of this paper is to recognize and categorize the various ways that ecosystem services researchers perceive the concept and purpose of ecosystem services (ES). To do so, we employed the discourse analysis approach of Q methodology, where 33 researchers ranked 39 statements on ES derived from the literature. Factor analysis of the Q sorts allowed for the interpretation of five main perspectives on ES: a pragmatic view on nature conservation, seeing ES as useful tool (“Non-Economic Utilitarian”), a strongly value-focused perspective with a skeptical view on ES (“Critical Idealist”), an opposition to a utilitarian approach to nature conservation but seeing ES as more encompassing approach (“Anti-Utilitarian”), a focus on a methodological rather than a critical approach to ES (“Methodologist”), and a rather economic approach to environmental decision-making, in which ES is a useful tool (“Moderate Economist”). We see this plurality as illustrating both the potential of the ES concept to serve as a boundary object for collaboration, but also the threat of ineffective collaboration due to the lack of a common conceptual ground. However, as pluralism can be fruitful if handled transparently, we suggest the need for open dialogue about underlying assumptions when using a value-laden concept like ES.

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1. Introduction

Research on ecosystem services has grown exponentially (Abson et al., 2014). The concept of ecosystem services (ES) has catalyzed a wide variety of innovations in interdisciplinary research (understood as a significant transformation of knowledge achieved through integrating ideas or tools from two or more research traditions) (Khagram et al., 2010), as well as transdisciplinary research conducted together with stakeholders. Ecosystem services are increasingly in demand for policy applications (e.g., the establishment of the Intergovernmental Platform on Biodiversity and Ecosystem Services by over 100 governments to provide scientific information in response to policymaker requests (www.ipbes.net)). There is a growing desire to better translate the concept into practice (e.g., Daily et al., 2009), as evidenced by the European Commission recently funding two large consortium projects, each spanning 5 years and totaling over €20 million including several hundred researchers, with the goal of operationalizing ecosystem services for policy and practice.

From the start, the ES concept aimed to label the benefits that humans derive from natural ecosystems and biodiversity in order to include their value into decision-making frameworks (Braat and de Groot,

2012). The novelty of the concept was the framing of the link between humans and nature in a pragmatic way (Potschin and Haines-Young, 2011). Utilitarianism, defined as “taking advantage of the greatest possible mix of resulting benefits [for humans]” (Daily and Ellison, 2002, p. 229), was considered an essential ingredient to the new approach. With this focus on the instrumental value of nature for humans, the ES concept has been argued to mark a shift in the perception of the human–nature relationship towards a more anthropocentric one (Braat and de Groot, 2012; Flint et al., 2013; Gómez-Baggethun et al., 2010; Lamarque et al., 2011).

However, despite this ostensibly clear conceptual core behind ecosystem services that was meant to serve as unifying framework (De Groot, 1987), the concept's rapid adoption and application to a wide variety of contexts (De Groot et al., 2002) has led to criticisms concerning its vagueness (Schröter et al., 2014). A variety of definitions and underlying paradigmatic assumptions can pose a barrier to effective interdisciplinary research (Luederitz et al., 2015) and potentially jeopardize the concept's effective implementation in practice (Ash et al., 2010; Nahlik et al., 2012; Seppelt et al., 2011). Therefore, while empirical evidence applying the ES concept is widespread, many of these examples may have proceeded with the concept uncritically or used it as a mere “buzzword” (Brown et al., 2014, p. 329). As a recent meta-analysis by Abson et al. (2014) indicates, ES research requires a stronger engagement with conceptual differences and underlying normative foundations. This is important first, for researchers to design, carry out, and

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communicate research clearly, as well as to effectively contribute to our knowledge about ecosystems and how to manage them.

A successful research concept is both specific and vague. It must be specific because the successful application of a concept in practice, in this case the operationalization of ES, starts with the clarification of conceptual differences in the scientific community (MacMynowski, 2007). However, in order for a concept to function as a “boundary object” (Star and Griesemer, 1989) between researchers, it needs a certain degree of vagueness and has to allow for diversity in understandings.

Seeing these two features as complimentary rather than contrary to each other, we understand clarification as the need to create awareness for existing differences and for actively engaging with these differences. To recognize and categorize differences in how researchers perceive the concept and purpose of ES and explore their implications, we selected a case of a large ES research consortium pursuing collaborative research projects. Within this case, we pursued two objectives: to (1) assess potential differences on ES using Q methodology, and to (2) deduce recommendations on how to handle these differences effectively, which are relevant for the wider research community around ES.

2. Methods

2.1. Case Description

In order to investigate the existing perspectives on the ES concept within the research community, we selected the case of the research project Operational Potential for Ecosystem Research Applications (OPERAs, <http://www.operas-project.eu/>). OPERAs is a European-wide five-year consortium (2012–2017) comprised of 27 partner organizations, most of which are research institutions and universities. The stated goal of the OPERAs project is to enhance “sustainable use of ecosystems by operationalizing the ecosystem services concept,” which is pursued through “a new level of engagement of scientists with practitioners” using a “highly interdisciplinary approach” (OPERAs, 2012, p. 13).

The nearly 100 OPERAs research partners come from various cultural, disciplinary, and institutional backgrounds, but all are working directly with the ES concept, including many leading researchers in the field. We expected that working on a long-term collaborative project would create opportunities for more discussions and reflections on the ES concept, and that therefore this was a good initial representation of the research community, at least based in Europe, where a great deal of research is conducted in large international consortia.

The study was conducted January–March 2014 and thus was set at a rather early stage in the project. We considered this timing as being beneficial for our study as researchers had been working on the project and with the ES concept for a while already but were not too far into the project so that we did not expect their understanding of the concept to be too project-specific.

2.2. Research Methodology

2.2.1. Q Methodology: Background and Objectives

To identify the perspectives on the ES concept held by ES researchers, we used Q methodology, an approach designed to provide structured assessment of human subjectivity (Barry and Proops, 1999; Davies and Hodge, 2007). Q method uses factor analysis of rankings of qualitative statements to identify and understand the range of social perspectives that exist on the topic (rather than to provide a representative sample of the frequency of views held, as a quantitative survey would aim to do) (Winkler and Nicholas, 2016). Using Q method can serve to both clarify points of agreement and disagreement within groups, and to help individuals clarify their own thinking (Webler et al., 2009).

The objective of Q methodology is to identify dominant perspectives on the topic under study. For that, the basic idea is to let participants sort a number of statements into an order that reflects their individual

attitude towards a certain topic. The perspectives then result from clustering and describing similar groups of attitudes — they can therefore be defined as generalizations over comparable attitudes held by people (McKeown and Thomas, 1988). The method is especially relevant for the exploration of perspectives on environmental topics, as an area that is complex, value-laden and disputed (Dryzek, 1997; Frantzi et al., 2009; Nijnik et al., 2013). As an approach “fitting under the broad umbrella of discourse analysis techniques” (Webler et al., 2009, p. 5), it not only allows the researcher to investigate perspectives on a topic, but can also help participants to understand their own assumptions on an issue (Stephenson, 1986).

2.2.2. Q Study: Set Up and Execution

The set up of a Q study typically follows four steps: the identification of the concourse, the selection of statements, the design of the study procedure, and the choice of participants. The subsequent analysis is based on the quantitative derivation of factors that are then interpreted as dominant perspectives among study participants.

2.2.3. Identification of the Concourse

The so-called concourse is represented by the general discussion or discourse that exists around a topic (Brown, 1986). As a qualitative approach, identifying the concourse is a highly subjective step that reflects the researcher's perspectives. In this case, the concourse was represented by the general literature on ES. In order to cut down the vast amount of literature dealing with ES, we searched for articles specifically addressing the underlying elements of the concept, and left out the ones only mentioning ES or applying the concept to a specific case study. For a first overview, we identified peer-reviewed articles on Web of Science with the keywords “Ecosystem Services” + “concept”. We then went on with a snowball approach, reviewing further relevant articles that were referenced in the first set. In addition, we added papers suggested from a semi-structured interview with Gretchen Daily, one of the key founders and champions of the concept (Daily et al., 1996; Daily et al., 2000; Daily and Ellison, 2002). In Q methodology, once the concourse is identified, the researcher's task is to filter out opinion statements that mirror the variety of different perspectives on the topic (Davies and Hodge, 2007).

2.2.4. Selection of Statements

In order to select the statements that participants will rank, the concourse is reduced to a “miniature representation” (Brown, 1986, p. 187) consisting of the minimum number of statements necessary to capture the breadth and variety of the discourse around the topic. For that it is helpful to construct a concourse matrix. A concourse matrix is a tool for categorizing selected statements in the form of a table in order to make sure that statements are as diverse as possible and that they reflect the breadth of the concourse. Therefore, it is necessary to define relevant categories that appear to be the main points or pillars in the debate around a topic. If statements fill the same category within the table, only one of them has to be taken into the study as the other fulfill the same function or present the same point of view.

Based on our literature review and the interview, we therefore developed a first typology of three initial perspectives on the ES concept that we labeled: “Pragmatic Conservationist”, “Instrumental Economic”, and “Broad Societal”. We found that these three very roughly reflected the differences that we noticed most strongly in the literature — the original pragmatic perspective on ES, the economic perspective seeing ES as a tool to put a monetary value on nature, and the reflective societal perspective discussing ES as a new form of expressing the Human–Nature relationship.

We fine-tuned this typology further by defining three sub-categories: “worldview”, “concept”, and “openings for deliberation”. Within each of the three initial perspectives, we identified four statements representing different aspects of worldviews, which captured underlying values and paradigmatic assumptions, e.g., “people are

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