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Taking Complexity Seriously. Policy Analysis, Triangulation and Sustainable Development

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subsequent phase of constitution building analysed here. This silence is not something that can be expected to last for ever. In the midst of the welfare systems outlined in this volume lie many of the precursors of the new social movement formation obvious in France and Germany throughout the 1970s. The latency period of these conflicts may be a matter of some debate but their eventual arrival, given their importance within the 'initial conditions' of the revolutions of 1989, is not an issue for this writer (see Tickle & Welsh, 1998 for an elaboration of this argument).

These critical comments aside, this is a valuable source of comparative analysis on four of the countries embroiled in the transition process. It is an important read for politics and area studies students and should be of interest to a range of professionals including those with an interest in European economic development.

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TAKING COMPLEXITY SERIOUSLY. POLICY ANALYSIS, TRIANGULATION AND SUSTAINABLE DEVELOPMENT. Emery Roe, Boston, Kluwer Academic, 1998. ISBN 0-7923-8058-4. \$98.50, £65 or NLG 215 (hardback). xii + 138 pp.

Do your chances of enlightening a moving and ill-defined target with one illusory spotlight improve if you use not one, but four, different yet equally illusory, ones simultaneously instead? Highly condensed and simplified, this is the question policy-analyst Emery Roe sets out to investigate in his book *Taking Complexity Seriously*. Roe focuses on sustainable development, a serious and very complex target indeed. Policy-analysis of complex issues, and analysis of four different approaches to sustainable development (Girardian economics, cultural theory, critical theory and the local justice framework), using the tool of triangulation, forms the core of the book. Roe

defines triangulation as 'the use of multiple [approaches, for example] methods, databases, theories, disciplines and/or investigators to study the same object, event or phenomenon' (p. 85). Each of the approaches outlined above are used to answer four questions about sustainable development: What is it? Why is it an issue? What needs to be done (to achieve it)? What can be done?

Roe builds his book around the debate in the journal *Ecological Applications* (Levin, 1993), following the publication of the paper by Ludwig *et al.* (1993), entitled 'Uncertainty, resource exploitation and conservation: lessons from history'. This debate was largely restricted to dilemmas surrounding resource management and the carrying capacity of ecosystems. Although these dilemmas are highly relevant in the context of sustainable development, there are many other relevant aspects of the concept lying outside these dilemmas. The broad definition of the World Commission on Environment and Development (WCED) testifies to this:

In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both the current and future potential to meet human needs and aspirations (WCED, 1987, p. 46).

This raises several questions. Does Roe's strong emphasis on sustainable development from a resource management perspective unduly restrict his meta-analysis and the conclusions drawn from it? What is complexity? How sensitive is the outcome of his analysis to the approaches he selected? Why did he choose these four specific approaches and not four others?

Regarding the last question, Roe reiterates repeatedly that the approaches need to be orthogonal (i.e. very different) in order to be used in the triangulation procedure. His selection fulfils the latter objective, but is it sufficient? Three of his four methods are neither mainstream, nor well known and the fourth, cultural theory (Thompson *et al.*, 1990), lacks empirical support (Boholm, 1996). One might argue that lack of wide recognition or support would not interfere with the criterion of approaches being very different, yet it makes one wonder increasingly just how sensitive Roe's analysis is to the answers provided by his four approaches, and more importantly, to the very nature of these approaches. Roe addresses this very important methodological issue by stating that triangulation is especially helpful in identifying and compensating for biases and limitations

in any instrument. He continues by citing Sorensen (1992), who believes that detecting bias is fundamental to complexity analysis and management and 'reducing or correcting for bias is one of the few things that managers and analysts can actually do when addressing highly complex and uncertain issues' (p. 262). Roe emphasizes that triangulation 'is about convergence and confidence' (p. 24), but such a line of reasoning on the issue of analysis outcome sensitivity is curious and unconvincing.

Now what about complexity? In Roe's view (system), complexity typically has three elements: the number of components in the system, differentiation among these components and interdependence between them. He adds 'surprise' as a most important feature of complexity, implying that complexity means that the full causality of the way things work in a system is generally unknown. In ecological and physiological literature, surprise is generally not mentioned; the principle of emergent properties is used instead. This states that at each more complex level, some properties are different from those at simpler levels. The properties of the more complex organization could not have been inferred from the less organized components. Moreover, complexity in ecosystems generally makes the system more robust. Complexity in the latter sense is not necessarily understood better by triangulation in applying more different investigative methods simultaneously. Rather, a well-balanced mix of analytical (reductionist) and integrative (synthetic) methods is called for. Prior to using new positional instruments in travelling unknown territories, one might as well use the familiar compasses.

One might argue that complexity in policy issues, such as sustainable development and complexity in ecosystems are different things. However, Roe himself uses the simplistic treatment of complexity by ecologists and policy-analysts alike as grounds for severe criticisms to both groups of professionals.

In conclusion, Roe has written a book on the very important topic of analysing sustainable development that opens up a range of questions that are not answered very successfully. I have used the book as a guide in a student discussion group on sustainability issues, which made the omissions in the book all the more visible.

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THE INTERNATIONALIZATION OF ENVIRONMENTAL PROTECTION. Miranda A. Schreurs and Elizabeth C. Economy (editors), Cambridge, UK, Cambridge University Press, 1997. ISBN 0-521-58536-8 (paperback). xiii + 238 pp.

This book's intention is to investigate the influence of the internationalization of environmental politics on domestic political institutions and policy-making processes, and the ways in which domestic policy priorities in turn influence international environmental negotiation. In this case, the editors define internationalization of environmental politics as the response to the emergence of new types of environmental issues, the efforts by international actors and institutions to set national policy agendas, and influence policy formation and implementation processes. The environmental issues may be new understandings of the regional or global impacts of local activities, or simply old problems viewed in new ways. Environmental problems can certainly be international, because the internationalization of the economy has intensified pressures on local ecological systems.

The findings of this book are drawn from seven case studies. These studies compare and contrast the responses of China, Japan and Germany to climate change issues, those of the USA, the UK, Japan and Germany to ozone layer protection, environmental protection in the USSR and its successor states, Zimbabwe and the Convention on International Trade in Endangered Species (CITES), the policies on biodiversity in the USA and UK, and environmental protection within the European Union. The