

A triologue model for ecosystem governance

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Abstract

The *International Symposium on Ecosystem Governance* held in South Africa during 2005 enabled scientists from several disciplines to debate issues relating to governance. The symposium provided an opportunity to explore the concept of governance, particularly as it relates to ecosystem governance, by interrogating the concepts of a Triologue Model; and helped to develop a set of pointers for research on ecosystem governance that could stimulate future cooperation.

The working hypothesis is that the Triologue Model consists of six essential elements, and that successful governance—i.e. *good governance*—depends on the balance that is achieved between these elements.

The key issues relating to ecosystem governance are presented in this special edition of *Water Policy*. Each paper interrogates the Triologue Model, while the pointers for research on ecosystem governance provide a useful way forward for the implementation of government tools. The Triologue Model of governance provides a simple conceptual construct that directs discussion about current governance processes and structures at different scales. This introductory paper provides an overview of the papers in this special edition, and outlines the set of proposals for research on ecosystem governance.

Keywords: Ecosystem governance; Good governance; Research Agenda; Triologue Model; Water governance

1. Introduction

The *International Symposium on Ecosystem Governance* recently held in South Africa provided an opportunity for scientists from various disciplines to debate issues relating governance. The symposium aimed to:

- unpack the concept of governance, especially as it relates to ecosystem governance, by interrogating the concepts of a Triologue Model which was presented at the symposium, and
- develop a research agenda on ecosystem governance to stimulate future cooperation on research.

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This special issue of *Water Policy* contains a collection of the key issues relating to ecosystem governance and each paper interrogates the proposed Trialogue Model. The pointers for future research on ecosystem governance provide useful ideas for the implementation of government tools.

This paper provides a synthesis of the concerns raised by the various symposium speakers regarding ecosystem governance, and presents an overview of the research agenda that was developed at the symposium.

The working hypothesis is that the Trialogue Model (Figure 1) consists of six essential elements, and that the degree of successful governance—i.e. what can be referred to as *good governance*—depends on the balance between these elements. First, governance requires the existence of effective science, government and society processes. Secondly, governance also requires effective interfaces between each of the three processes, namely (i) society and science, (ii) government and society, and (iii) society and science (Turton *et al.*, 2007).

The interfaces between the various elements need to be balanced in the appropriate form and timescale to ensure good governance. In essence, good governance promotes democratic management of ecosystems and, by inference, prudent water resource management. Consequently, it is likely that the type of governance that occurs most often within fledgling democracies (these usually being developing countries) might differ from the situation that prevails in those countries with more deeply entrenched or mature democracies (typically the more highly developed or industrialised countries). This intriguing notion suggests that there is a highly nuanced set of nested hierarchies that need to be explored to fully understand governance as a concept (Turton *et al.*, 2007).

2. Interrogating the trialogue model—the special edition papers

The papers that were selected for this special edition of *Water Policy* represent a cross section of the areas of expertise, organisations and experiences in ecosystem governance. The value of these papers is

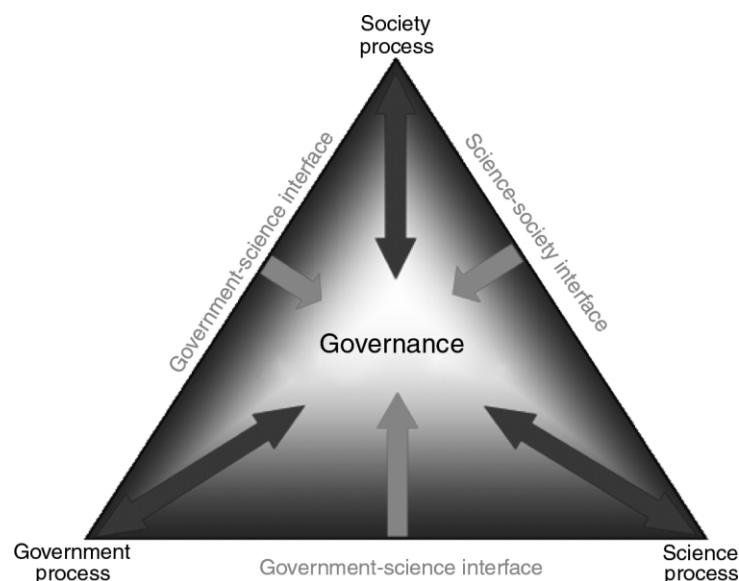


Fig. 1. Schematic representation of the Trialogue Model, showing its three elements and their interfaces.

that their authors, who range from practitioners responsible for the implementation of ecosystem governance to those who are actively involved in research on governance issues from both the social and ecological science perspectives, investigate the Trialogue Model from a wide range of perspectives. An evaluation of the model from the perspectives of government (e.g. Heyns, p.149), global non-government organisations (e.g. Tropp, p.19), universities or research organisations (e.g. Mitchell and Breen, p.169; Colvin and Saayman, p.127; King, p.51; Fabricius & Collins, p.83; Marin *et al.*, p.113; and Van Wyk *et al.*, p.99) and lawyers (e.g. Barnard, p.31), illustrate the range of viewpoints and perceptions that are held on ecosystem governance.

To demonstrate the intricacy of ecosystem governance, Tropp (p.19) suggests that new forms of governance should focus on the complexity of the processes that determine how water is governed. This highlights the need to develop alternative forms of organisations that are able to work effectively with integrated approaches. The author also indicates that greater emphasis should be placed on the different roles of government, since many core functions have been neglected in the new forms of governance that have emerged in recent debates. Finally, the paper highlights the need for additional *sociocratic* knowledge, and improved capacity development amongst water managers and decision-makers, to enable them to implement these new forms of governance.

Barnard (p.31) addresses the effectiveness of governance from a private sector perspective, and shows that, while the current governance processes that relate to environmental legislation in South Africa are adequate, they are not used advantageously. With particular reference to the implementation and effectiveness of Integrated Environmental Management (IEM) in South Africa, the legislation appears to be adequate, though it is applied unevenly. The author links this lack of effective implementation to an absence of integration across all of the sectors that are responsible for environmental management, including water. The author then analyses existing weaknesses in environmental legislation and recommends the facilitation of greater integration through the use of available environmental and water governance processes.

Governments, societies and aid institutions are concerned with supporting the development process in order to provide social and economic stability and raise the welfare in underdeveloped countries. In line with the need for sustainable development, it is essential for governments, society and the private sector to find co-operative solutions with which to manage scarce natural resources effectively. By doing this, the outcome is more likely to reflect *good* governance. The role of resource economics in environmental and water governance is explored by evaluating the role of economic valuation tools to address the inefficient use of environmental goods and services. King (p.51) suggests that the use of suitable economic valuation approaches could help participants to understand and incorporate the “true” value of ecosystem goods and services in the decision-making processes that deal with environmental management. This, in turn, would help to promote and attain the ideals of good governance in the water sector.

Knowledge of corruption, in the form of the bribery of public officials, is important when trying to understand the motivation for and outcomes arising from any covert activities underlying ecosystem governance processes; yet this topic is often neglected. Using public-domain information arising from various court cases, Earle (p.69) shows that corruption had strongly negative impacts on the relationship between society and government, as it relates to the Trialogue Model. In turn, corruption had a detrimental effect on the various interfaces, thereby rendering the Trialogue Model ineffective and resulting in bad governance outcomes. By using the array of available governance tools, including rule-making, rule-application and rule-adjudication, the Government of Lesotho made an important contribution to good governance in the water sector, as can be seen in litigation arising from the Lesotho

Highlands Water Project. International funding institutions and non-governmental organisations, together with local civil society, can play important roles in encouraging the governments of developing countries to view the threat posed by corruption in a serious light, and to initiate and support processes and partnerships that help to combat corruption. This paper is an interesting and welcome addition to this volume as this subject is often avoided in the scientific literature for fear of litigation against the researcher or publisher. This has been overcome by focusing only on the public domain outcomes of various court cases.

Community-based Natural Resources Management (CBNRM) focuses on the collective management of ecosystems, including water, to improve human wellbeing by devolving authority for management to the local (community) level. In their paper, Fabricius & Collins (p.83) postulate that aspects of governance are essential to buffer CBNRM against unexpected change and conflicts. Formalised decision-making structures, clearly defined and legitimised conflict resolution procedures, legitimacy and acceptance of the structure, formal commitment to well-defined roles and responsibilities by key individuals in the network, tangible incentives and professional facilitation to promote communication, are all key factors in this process. This paper highlights the key characteristics of CBNRM governance systems that can act as buffers and elaborates on the role of scientists, society and government in promoting good governance through the formation of adaptive learning networks.

Van Wyk *et al.* (p.99) address the important issue of capacity development in ecosystem and water governance, by examining the challenges that science-and-society partnerships face in an emerging democracy. The authors base their findings on a South African case study which examined the suite of issues relating to the access to, and use of, natural resources. The case study revealed that significant delays in attempts to address differentials in empowerment and trust in the context of the science—society partnership, and a lack of support for the civic science endeavour by existing policies, were significant barriers to the ability of civic science to be an effective vehicle for deepening democracy. The authors conclude that, unless the imperative for civic science to support democratic governance is institutionalised through policy and strategy, it is unlikely that there will be sufficient human and financial investment in civic science as a means to promote democratic governance in the water sector.

Marin *et al.* (p.113) discuss three examples of water governance in Mexico using the Trialogue Model and conclude that there was improved governance in two of the cases where a stronger science or society element was present. These authors also show how a group of scientists, working through the Water Network of the Mexican Academy of Sciences, have helped to improve water governance in Mexico by developing stronger interfaces between science and society.

The Trialogue Model can also be assessed in terms of the governance processes that relate to groundwater management. Colvin & Saayman (p.127) examine the governance of groundwater in the city of Cape Town, focusing specifically on government processes, social processes and a review of the scientific understanding of groundwater resources within the city limits. The authors demonstrate that social drivers and impacts can be mapped within the framework of natural resource management, when the processes are related to the Trialogue Model. They also provide an alternative model to help understand ecosystem governance, which includes the resource base as well as the governance elements of formal government, the market and the knowledge base (including science).

The Permanent Okavango River Basin Water Commission (OKACOM) has a collective responsibility to advise the three Okavango River basin states (Angola, Botswana and Namibia) concerning the best options for joint utilisation and protection of the basin, and is responsible for ensuring good collective governance. Heyns (p.149) examines the possible relevance of the Trialogue Model to the operations of

OKACOM and reveals the importance of maintaining a close relationship between the political will to create a management institution through a clear understanding of the needs of civil society, and facilitating the scientific investigations required for planning purposes.

A further proposal related to the Trialogue Model recognises that cooperative governance is the cornerstone of successful management of the use of ecosystems. Mitchell & Breen (p.169) show that where good institutions exist, they need to act collectively to help society balance conflicting goals and values in a process of structured co-learning. These authors present a framework for evaluating the role of research in informing the governance process, and suggest that research enables informed collective action and is central to informed governance of the use of aquatic ecosystems. A selection of case studies is used to assess the Trialogue Model and show how research has informed governance.

The topics addressed in this edition of *Water Policy* show that the Trialogue Model represents a potentially useful simplification of the complex concept of ecosystem governance. However, while the Trialogue Model provides useful insights into the multi-dimensional nature of ecosystem governance, it is also clear that further enquiry and research is needed to achieve a common understanding of this complex concept, specifically as it applies to the water sector.

3. Is the proposed trialogue model valid?

While the Trialogue Model can perhaps be regarded as an oversimplification of a very complex concept, it can still be used for further investigation and research on ecosystem and water resource governance. An explanation of the underlying assumptions, the possible differences in strengths of the interfaces, the attributes of the interfaces and the links to resources, scale and level will potentially strengthen the applicability of the model in the real world of water resource management.

The evaluation of the Trialogue Model has shown that while it is a useful tool for helping to improve our collective understanding of ecosystem and water resource governance, it still requires revision or modification. For example, while there is good agreement that society and government are two key components in the governance Trialogue, there would appear to be several possible alternatives that can be considered for the third component of “science”. One proposed alternative to “science” as an actor is “knowledge, science community”; this would likely depend on the particular context under consideration, as well as specific conditions in which the Trialogue Model is embedded. The processes of knowledge acquisition and learning can be viewed as an overlying or cross-cutting theme for the Trialogue Model.

Additional amendments that have been suggested for the Trialogue Model include the need to incorporate a clear distinction between governance processes and governance structures. While both are applicable to the model, greater clarification is needed to clarify whether or not a particular issue concerns the governance process, the governance structure, or both.

One aspect where there is clear agreement in assessing the Trialogue Model relates to the different ways in which governance is implemented in either developing or developed countries. While many possible factors can influence the effective implementation of good governance, the situation becomes confused by ambiguous terminology or the incorrect and inconsistent use of specific concepts. There is strong support for the suggestion that there is a real need for further research that would provide a fuller understanding of the governance structures and processes that operate within “developed” and “developing” countries. The different types of relationship that exist between government and society in developing and developed countries add further complexity. A strong government, which places more

emphasis on centralised command-and-control management methods, with less importance accorded to social engagement, represents the typical approach to natural resource management in countries where governance processes are still developing. Societal engagement is typically stronger in those countries where governance processes and structures are relatively well developed. Within these paradigms, many other factors such as water scarcity, hydro-climatic variability, scarcity of manpower and financial resources, strength of government, stage of social and economic development and the level of political stability in a particular country, also exert a variety of influences on the way that governance is implemented and perceived.

There is agreement that there is a difference in the implementation of governance in mature democracies, as opposed to that in young or fledgling democracies. Moreover, there is uncertainty regarding the definition of “democracy”, the implications of “young democracy” and “mature democracy”, and whether or not the state or level of a country’s socio-economic development can be equated to a crude concept such as a “young” or a “mature” democracy. This issue raises some interesting questions about the relationship between developing versus developed countries, and indicates that the concept of democracy also requires further exploration within the context of ecosystem and water resource governance. Importantly, the topics addressed in this edition of *Water Policy* highlight the importance of learning a variety of governance lessons from “mature” democracies and then adapting them to “fledgling” democracies.

4. Research on ecosystem governance

The pointers for future research have been posed as questions and allow for further exploration of some of the key global trends in ecosystem and water resource governance. The main elements are listed below.

4.1. How do we ensure that good governance will enable science to be used in the service of society?

This research question seeks to gain a better understanding of the link between science and society by exploring the society—science interface. The phrase used to describe the research that is undertaken here is “science in the service of society”. This question specifically targets the issues of decision-making, policy formulation, goal setting, consensus seeking and problem solving. It also deals with the social conscience of scientists and the thorny issue of the possible independence of science in a world driven by dependence on defined funding streams.

4.2. How important are institutional structures in promoting good governance?

Understanding the institutional structures that enable a government to function effectively is essential if good governance is to be promoted. Specific issues identified within this research question include: customary, traditional and scientific forms of knowledge, decision-making structures and processes (or tools for decision-making), organisational learning, and social, institutional and ecological adaptability. The research question is applicable at all levels of government, from local institutional

structures to international, transboundary structures. The current interest in global climate change is nested within this question, specifically with respect to adaptive responses.

4.3. What is the role (and importance) of scale in achieving good governance?

The issue of scale, in terms of time, space and levels of collaboration, is critical. The choice of a particular scale can influence the outcomes of governance structures and processes and therefore scale can be viewed as both a problem and a potential solution. The question has implications for all three actor-clusters in the Trialogue Model. The research question specifically looks at spatial scale, from local to global constituencies, temporal scale and the scale of collaboration (single- to multi-party, across and between disciplines and sectors). A key concern that has been highlighted is the mismatch between scales, where administrative boundaries differ from ecological boundaries. This has implications for the scale of decision-making in terms of space and time (e.g. catchment versus local government boundaries), as well as the levels of collaboration required between the various responsible institutions and role players. This is a classic manifestation of transboundary aspects of water resource management, which in essence are about the linkage of different scales.

4.4. How can (strong) leadership contribute to good governance?

Strong leadership is a key element for good governance and includes the ability to ensure effective decision-making, policy-formulation, goal-setting, consensus-seeking and problem-solving skills. Good leadership skills are necessary within all three of the actor-clusters in the Trialogue Model.

4.5. How do we ensure good groundwater governance?

The need for a specific focus on groundwater resources governance has been identified as a critical element in water resources governance.

Having noted these five specific research questions, it is evident that there are overarching questions that apply to all of them. These include:

- How to strengthen existing institutions?
- How to determine the rules of the game?
- How to understand and appreciate the norms, standards, values and world views particular to a specific locality? and
- How to promote access to knowledge and information?

5. Conclusion

This special edition of *Water Policy* presents a series of papers that explore ecosystem governance from a variety of disciplinary perspectives. Links are drawn to water resource management as a sub-set of

ecosystem management, and each paper highlights a different interpretation of the Trialogue Model. This collection of papers highlights the wide range of factors that contribute to the complexities of governance structures and processes, and improve our understanding of why universal effective implementation is often so difficult to achieve. Furthermore, the papers show that an important component of the future for ecosystem governance research lies in realising the additional value that can be obtained by engaging a wider range of actors, often with different problem-solving techniques. In particular, a case is made for multidisciplinary in the field of water policy research. There is clearly a difference between *governance* and *good governance*. The latter implies active roles for government, society and science within a multifaceted set of institutions and drivers that can differ greatly around the globe.

The Trialogue Model of governance provides a simple conceptual construct which helps to clarify and focus discussion about current governance processes and structures at different levels of scale. The interfaces between government, science and society are often the points where conflicts and misunderstandings may arise, because it is here that feedback loops occur and active learning takes place. Further research into governance would benefit from a more systematic exploration of these interfaces, to determine how they function, as well as new insights in the overarching elements of collaborative learning systems, leadership and communication processes.

The research pointers presented here represent a starting point for participants to initiate collaborative research on water policy. An exciting aspect of governance is that it provides a meeting point for science, society and government to explore the complexities of good governance. From a research perspective, it is a melting-pot of academic disciplines ranging from natural to social sciences, which enables cross-disciplinary learning. It is also the crucible from which effective water policy is likely to emerge and is therefore of central concern to the readers of this journal.

References

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