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Social Learning: A complementary approach to managing water at the catchment scale in Victoria, Australia

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Abstract
While the Australian landscape is renowned as being old, flat and salty', water underpins the wellbeing of Australian society, its economic development and unique biodiversity. Despite this, legislation, policy tools and market driven strategies intended to protect and enhance Australia's natural water resources have been disjointed, predominantly used in isolation and remain insufficient to catalyze sustainable water management. Inspired by the limitations of commonly used policy tools and its successful use internationally, a social learning approach to managing water at the catchment scale is gaining prominence. Comprehensive evidence exists to suggest that, as a complementary policy tool, large scale individual and institutional change can be achieved through deliberate investment in social learning at the catchment scale. Drawing on the findings to date of a co-operative inquiry undertaken with the Corangamite Catchment Management Authority (CMA), in south-west Victoria (Australia), this paper will examine the conducive and constraining factors for using and facilitating a social learning approach as a complementary management tool for integrated catchment management in Australia. It will also discuss the extent to which, and in what ways enhanced social learning for catchment sustainability contributes to broader policy objectives such as building the social capital that underpins resilient and sustainable communities, and improvements in the conservation status of natural resources.

Key words
Social learning, integrated catchment management, multiple stakeholder processes, water policy, Australia.

BACKGROUND

The Australian landscape holds three million kilometers of rivers and creeks, at least 16 million hectares of nationally important wetlands and more than 1,560 estuaries. While these natural water assets underpin the wellbeing of Australian society, its economic development and unique biodiversity the ancient Australian landscape is in fact old, flat and salty. Currently, Australia is in the midst of a long cycle of water crises. The south eastern State of Victoria, specifically, is in its twelfth year of drought and is projected to become drier, endure more hot days and more storms (DSE 2004). Projections such as these serve to demonstrate that the relationship between Australia's water resources and its people is characterised by risk and uncertainty. As a result, significant community concern is emerging around the sustainability of Australia's water resources.

Blame for the current state of uncertainty surrounding Australia's water resources is being pointed in a number of directions. Those drawing from the pages of Australian history claim that since European settlement, over two centuries ago, serious mistakes in environmental management have been made while attempting to alleviate concerns over Australia's water

supply. As such, they place primary blame on the direct transfer of 'European principles of land and water management to a completely different geographic setting' (Mercer et al 2007). The impact of these 'mistakes' can be seen today as Australia's precious water resources are being placed under increased pressure from growing demands for agriculture, industry and a highly urbanised population with rising expectations about quality of life, the state of the environment, and the maintenance of a robust competitive economy (Pigram 2006). Others label Australia's Federal and State governments' performance in terms of water policy as 'fair to poor' and question whether the allocation of constitutional power between the Commonwealth and State governments is to blame or whether Australian citizens simply remain unconvinced that radical cultural change is required to conserve and manage Australia's water resources (Dumsday 2001).

Traditional policy responses prescribed to manage Australia's water resource dilemmas have included community-government-industry partnerships; community participation in water quality monitoring; integrated catchment management (ICM); environmental communication and education; social marketing; capacity building for individuals and local organizations; and market driven incentives and strategies including the establishment of new institutional arrangements for permanent water trading in many parts of the country. While these strategies have had some impact, they have often been dislocated, used in isolation, and inadequate to ensure sustainable water resources for the driest inhabitable continent on earth (Pigram 2006; Stafford Smith 2003). Several explanations have been offered to account for the limited success of Australia's water management strategies to date. Authors, such as Ison (2005), suggest that one of the most significant barriers to the success of environmental policies is that it is commonplace for environmental policy 'ends' or 'goals' to be pursued with little or no consideration for the process by which the ends are met. In other words they do not take account of new knowledge and the dynamics of social and economic systems or make allowances for the future (Ison 2005). Similarly, Lee (1993) argues that policy systems that seek to produce a particular end result have little relevance to the pursuit of sustainable development. Additional arguments include the failure to include civil society in democratic decision making processes; and the failure of regulatory legislation to inspire environmental citizenship (Dobson & Bell 2006).

The limited success of legislation, policy and programs to establish a culture of commitment to sustainable water management and conservation in Australia supports the notion that it is not viable to aim for 'everlasting' 'optimal' institutional arrangements for sustainable water management. In trying to do so, Australia's institutional arrangements have neglected the dynamic nature of managing Australia's water resources. In other words they have neglected the fact that change is constant in social-ecological systems. For example, human use changes water resource systems; water systems themselves undergo change processes; and human needs and interests in water resources change. While the continuous adaptation of management practices is promoted as the means to ensure the sustainable management of water resources, the question of whether and how this ongoing adaptation can be facilitated must be addressed (Maarleveld & Dangbegnon 1999).

From the dust of these 'mistakes' a new paradigm for water management has risen. At its simplest level, this new paradigm is based around the principles of equity; efficiency; and diverse knowledge integration (Pahl-Wastle et al 2008). It rejects merely boosting supply as the way to address water demands and instead prioritises more effective management of available water resources. Within this new paradigm, reform of water institutions and organisations is high on the agenda of federal and state governments, which brings to light the important role that effective and adaptive governance plays in managing water resource dilemmas. Emphasis is

placed on the integrated management of water resources and the devolution of water resource management to the catchment and regional scale. Additionally, water policy is scrutinised in daily media coverage and debated openly by concerned citizens (Pigram 2006, Pahl-Wastle et al 2008). Within this emerging paradigm, there is a strong case for enhancing social learning as a means for 'analyzing' and 'catalyzing' collective decision making in the management of Australia's water resources. This, Ison (2005) suggests, can be complementary to existing policy instruments by introducing in the policy some aspects related to the decision-making process itself rather than the end result.

The social learning approach to sustainable water management at the catchment scale

The concept of social learning is not new. Woodhill (1999) has described the way in which social learning was proposed by Dunn as the new paradigm for the social sciences in 1971; motivated by a concern for improved practice in economic and social development. Since then, general definitions of social learning describe it as a key cognitive process responsible for the acquisition of new knowledge by people being exposed to each other in a common environment. Conte and Paolucci (2001) suggest that many complex social phenomena lead to social learning; yet, imitation and social facilitation are highlighted as the most important. Today, however, social learning is increasingly viewed as another way of conducting public business 'alongside regulation, compensation, stimulations and the operations of the (free) market' (Ison 2005). Social learning has also been promoted in recent years as essential for the management of 'complex' natural resource problems and a key process of adaptive management (Ison 2005). However, when social learning is applied to or considered in the context of natural resource management (NRM), definitions such as the one above prove lacking.

In the context of 'good' NRM, Ison (2005) neatly describes social learning as 'the process of collective action and reflection among different actors directed toward improving the management of human and environmental interrelations'. In this context, social learning does not happen by accident; rather, it requires conscious design and facilitation. Accordingly, Woodhill (1999) proposes that social learning has two main concerns; 1) the ways in which different people or groups engage with each other to understand, contest, and influence the direction of social change; and 2) how society understands itself and its relation to the world around it. Social learning processes, therefore, allow societies to adapt their traditions, assumptions, beliefs, systems of social organization and approaches to problem solving in order to deal with external threats or achieve particular objectives (Woodhill 1999; Woodhill 2004; Bouwen & Thaillieu 2004; Maarleveld & Dangbegnon 1999; Ison 2005).

In 2001, the European Commission funded a multi-country project that aimed to investigate the socio-economic aspects of the sustainable use of water. The project title was SLIM, which stands for 'Social Learning for the Integrated Management of Water at the Catchment Scale'. The main focus of the SLIM research lay in understanding the application of social learning as a 'conceptual framework', an 'operational principle', a 'policy instrument' and a 'process of systemic change' (SLIM 2004; Ison et al 2004). The project ran in parallel with the implementation of the European Water Framework Directive (WFD) by all European Union member states (Ison 2005 in Keen et al 2005). The WFD, published in 2000, is a legally binding document that requires all member states to implement water management strategies that will achieve good overall water quality for European water bodies within fifteen years (Steyaert & Ollivier 2007). The WFD has significant implications for social learning especially given the mandatory nature of public participation and demands for transparency in decision making (Ison 2005), which necessitates what Williams (2001 in Ison 2005) describes as 'a joined up strategy' to bring all affected stakeholders together. The twelve SLIM case studies were undertaken by

thirty researchers from six countries in four European countries, namely France, Italy, the Netherlands and the UK. SLIM researchers studied social learning or determined the factors that enhanced or constrained the social learning process as a 'purposeful policy and praxis option' (Ison 2004, Ison 2005 in Keen et al 2005). Evidence from the analysis of these case studies indicates that deliberate investment in social learning, or 'multi-stakeholder learning partnerships' at the catchment scale achieves the necessary change in individual and institutional behavior at the large scale. This, Ison (2005) suggests, occurs due to the fact that the social learning approach 'provides a context for a dynamic decentralized process, and, in the case of large watersheds, for concerted parallel processes'. As such, SLIM researchers propose that social learning processes should be seen as complementary governance mechanisms (Ison 2005).

The SLIM research was undertaken in part as a process of co-learning between researchers and case-study partners and action research. The SLIM project sought to understand and reflect on the role that social learning processes played in the transformation of situations towards concerted action for sustainable water management at the catchment scale. While the study focused on one particular approach to social learning, namely the 'co-construction by interdependent stakeholders of a resource management issue and of ways to resolve or improve it' (SLIM Introduction 2004), the study illustrated the variety of ways in which an inquiry based around social learning as a complementary catchment management tool can be designed and undertaken.

The SLIM researchers engaged three methodological positions in their case studies. The first entailed 'researcher as observer', which is considered traditional case study research in the sense that it provides the researcher with the opportunity to reflect, understand and consequently learn. The second concerned 'researcher as facilitator' through the use of tools, skills, data and the involved others learning. The third methodological position involved systemic action research through co-research and revolved around 'co-constructing knowledge-in-action with stakeholders in a joint process with shared responsibility' (SLIM Introduction 2004). The SLIM researchers engaged a combination of these methodologies in each of the twelve case studies.

The final product of the SLIM project was a conceptual framework for 'organizing, analysis and action in situations of complexity, connectedness, controversy, multiple perspectives and uncertainty, such as water catchments' (Ison 2005). The framework was developed by SLIM researchers so that others can understand and promote the use of social learning for integrated catchment management and more broadly for addressing 'complex' natural resources issues (Ison 2005; SLIM Framework 2004).

Applying the social learning approach for sustainable catchment management to Australia

Today, key social learning thinkers in Australia suggest that the case for enhancing social learning in catchment management is built around the need for equitable learning partnerships between the combined expertise of communities, professions and governments; learning platforms that enable interdependent individuals and groups concerned with common environmental issues to meet and interact in forums to resolve conflicts, learn collaboratively and take collective decisions towards concerted action (Roling 2002 in Keen et al 2005); and a recognition that social change requires a transformation in our thinking and in the learning values that underpin learning processes (Keen et al 2005). Keen, Brown and Dyball (2005) highlight five key components of the social learning approach, which they describe as the 'braided strands' of social learning; these are: reflection, systems orientation, integration, negotiation, and participation.

The social learning approach to managing water at the catchment scale is particularly applicable to Victoria's commitment to integrated catchment management (ICM), which theoretically underpins the Victorian State Government's approach to managing Victoria's water resources. Table 1, below, summarizes the six principles that govern the way catchment management is implemented by Victoria's ten Catchment Management Authority.

Table 1: Summary of the Victorian Catchment Management Structure.

1. **Sustainable Development**
   Victoria's whole of catchment approach to natural resource management seeks to deliver social, economic and environmental outcomes for the community and reduce our ecological footprint.
2. **Community Empowerment**
   Catchment management is a partnership between community and Government. Planning and implementation of natural resource management programs should maximize opportunities for community engagement.
3. **Integrated Management**
   Management of natural resources should recognize the linkages between land and water and that the management of one component can impact on the other.
4. **Targeted Investment**
   Government and community need to ensure that resources are targeted to address priorities and deliver maximum on-ground benefits.
5. **Accountability**
   Those making decisions on natural resource management should be clearly accountable to Government and the community, both in a financial sense and for biophysical outcomes.
6. **Administrative Efficiency**
   To maximize on-ground results catchment management structures should facilitate more efficient procedures and practices.

Source: DSE 2004.

In 2004 the Victorian Government, through the Department of Sustainability and Environment (DSE) released a White Paper titled 'Securing Our Water Future Together'. In an effort to ensure the future of Victoria's water assets, the White Paper set out a fifty-year strategy for the integrated management of Victoria's water resources. A number of 'Sustainable Outcomes' were identified within the strategy. This study is being undertaken to particularly contribute to two community-related outcomes identified within the strategy, namely:

- "Communities that truly appreciate all the services that water provides, that are able to make considered choices about how those services are delivered; and
- Communities that have a stronger ethic of water conservation".
  (DSE 2004)

While these community-related outcomes represent the 'human dimension' of water management (Pahl-Wostle & Hare 2004), their achievement depends on a number of factors that entail social learning for sustainable catchment management. Some of these include development of knowledge and understanding of water management issues; positive experiences that clarify and promote a water sustainability ethic, ethical discernment to integrate personal wishes and community needs in judgments about water issues, and commitment and skill to act, both individually and as part of a wider community (Lee 1993, Fien & Skoien 2002, Woodhill 2004, Keen, Brown and Dyball 2005).

METHODS

At its most basic level, this study is being undertaken to determine whether a social learning approach can help achieve these outcomes as a complementary management tool for catchment management in Victoria. In doing so, the study aims to contribute to the Victorian state government's agenda of ensuring sustainable water resources; and the broader agenda of social learning for sustainable catchment management by producing:

- Practical guidelines for ensuring that social learning complements other policy instruments and is integrated into a comprehensive approach to managing catchments sustainably; and
- Practical guidelines for developing the organizational frameworks and training programs needed to ensure that local communities are effective participants in planning and decision making for sustainable catchment management.

The study is also seeking to identify the ways in which social learning can complement other policy instruments to encourage an integrated approach to managing water sustainably. It is analyzing the strategies for, and the drivers and barriers to, facilitating the kinds of social learning that can develop the understanding, commitment, ethical discernment and purposeful individual and collective action needed for successful public appreciation of the importance of water issues and catchment management needs. Additionally, it is evaluating the extent to which, and in what ways, enhanced social learning for catchment sustainability contributes to broader policy objectives such as building the social capital that underpins resilient and sustainable communities, and improvements in the conservation status of natural resources.

The Pennyroyal and Deans March Creeks restoration project has been selected as an ideal case study to investigate social learning as a complementary approach to water management at the catchment scale in Victoria. The Pennyroyal Creek and its major tributary, Deans Marsh Creek, are situated within the Corangamite catchment in south west Victoria. The catchment region covers an area of 13,340 km^2 and is populated by 330,000 people living within regional cities, coastal and inland towns, and rural farming districts. Important water assets of the region include the estuaries of the Great Ocean Road, which are considered some of the most diverse in Australia. (DSE 2005). The Pennyroyal Creek is considered the most connected Creek to the Barwon River, which flows into the Lake Connewarre estuary system, a wetland of international significance listed under the Ramsar International Convention. The lower reaches of the Pennyroyal and Deans Marsh Creeks have been channelized and are incised. The Creeks are affected by bank erosion as a result of bed incision and other factors such as riparian vegetation loss, willow infestation[1], uncontrolled live stock damage, and fluctuating water quality. The restoration project is being managed by the Corangamite Catchment Management Authority (CCMA) and is being undertaken in partnership with the Upper Barwon Landcare Network, the local Water Authority Barwon Water, and local landholders.

This study is being undertaken using qualitative research techniques. As an interpretive study, a phenomenological approach is being used to understand and explore the experience of social learning amongst stakeholders of the Pennyroyal and Deans Marsh Creeks restoration project. It seeks to uncover a deeper meaning of the phenomenon of social learning. This study does not rely on measurable variables, but adopts a more open-ended approach, allowing 'truth' to emerge through use of in-depth interviews and the analysis of personal experiences through narrative.

[1] Willows are listed in Australia as a 'weed of national significance'.

The method underpinning this research is known as 'enthusiasm'. The 'enthusiasm' method is an approach to case study research and involves listening to people, especially to their stories of the past and present, and provides them with the opportunity to voice their hopes and wishes for the future. As such, it involves creating opportunities for dialogue from which learning and personal, social and/or environmental change may result. Whilst relatively uncommon, the enthusiasm method has been successfully used and championed by researchers such as Ray Ison; for example during participative rural development projects in New South Wales (Ison & Russell 2000).

The 'enthusiasm' method is underpinned by the biological and theoretical understanding of the enthusiasm 'drive' itself. The key to using enthusiasm as a research method is that the researcher does not re-direct a participant's energy – rather it is the researcher's initial task to discover where a participant's energy lies. Ison suggests that this can be done by asking the 'right' sorts of questions. Some of these questions could include 'what do you want to do…?' or 'why are you involved with…?' or 'what is it you get out of this activity that you find satisfying?'. Ison recommends that engaging participants with this sort of conversation requires respect for the individuality of participants and acceptance that whatever they are going to say is valid. This, he suggests, is based on the notion that it is the god within a person that has to be respected. In giving the participants the opportunity to be actively listened to they will have the opportunity to tell the story of where their energy comes from, how they see it expressing itself and what they consider as obstacles to the manifestation of their energy. Underpinning all this is the ethical implication that research participants' have 'control of the process (Ison & Russell 2000).

The following features foster the use of enthusiasm as a research method:

- Active listening and cultivation of stories;
- Space for facilitated participation;
- Avoidance of imposed practices that enforce consensus;
- Collective responsibility, transparency, and rituals which create a sense of common purpose.

A case study is being used to inform this inquiry as it gives the researcher great opportunity for insight, analysis and interpretation (Merriem 1988). Three key research techniques are being used to collect rich, meaningful data in the case study. In-depth, unstructured interviews with open ended questions are being undertaken with approximately thirty stakeholders of the Pennyroyal and Deans Marsh Creek restoration project. These interviews allow the research participants to explore and explain their experience with the social learning process; and give the researcher the opportunity to understand the interviewees' experiences with the phenomenon of social learning and the phenomenon itself. Facilitation of the learning process in workshop settings engages research participants with opportunities for social learning. Observation of the social learning process allows the allows the researcher to reflect upon and make sense of the process of social learning through first hand experience and allows the researcher to judge whether a social learning approach is an effective complementary management tool for catchment management. Relatively informal data gathering techniques are also being used. For example, casual conversations and incidental observations also provide a rich source of information to validate or provide a different perspective from interview responses and set the context of the study. Data collected in this way is building a picture of the role that social learning plays in contributing to the restoration of the Pennyroyal and Deans Marsh Creek.

The case study is being undertaken in six clear stages. Table 2 below outlines the events of each stage, the data collection and analysis techniques and how the data is being validated.

Table 2: Case study stages

Stage	What happens	Data Collection /Data Analysis	Validity/Ethics
1	Engage the CCMA to establish an 'invitation' to conduct the study in their region. Establish a relationship of mutual interest/benefit; to prevent the feeling of being invaded or exploited by the researcher; and to prevent power imbalances.	Participant observation (becoming an insider)	
2	Conduct a systems analysis and construct a systems map of the Corangamite catchment region to identify the major water stakeholders; projects being undertaken; and perceived problems in the catchment region.	Interviews Systems Analysis	Face validity Triangulation
3	Conduct an historical analysis of the CCMAs' practices to determine whether social learning is being used to engage stakeholders in decision making processes for water management, i.e. do they already use social learning without knowing it?	Document analysis Interviews	Face validity Triangulation
4	Identify social learning already occurring in the Pennyroyal and Deans Marsh Creeks restoration project.: • What sort of social learning is occurring? • Who is facilitating? • Who is learning? • What impact is social learning having, i.e. changes in social capital, ecological capital, or learning processes?	Document and data analysis Interviews Facilitation of learning process Participant observation In-depth unstructured interviews	Face validity Triangulation
5	Identify co-researchers within the CCMA; test the SLIM framework to analyse social learning processes in the Pennyroyal and Deans March Creeks Restoration Project.	Participant observation	
6	Develop a locally-contextual social learning model for catchment management in Victoria.	Thematic analysis	Face validity

CONCLUSION

There is increasing concern associated with water security in Australia. While Australian Federal and State government's have implemented several new strategies that address water management, using market driven, regulatory, educational and incentive based approaches, none have adequately provided for true participatory and integrative approaches. The need to fill this gap and implement true participatory and integrative approaches to managing water sustainably

is becoming ever more important as the social face of water management gains prominence. The SLIM research undertaken in Europe has demonstrated that a social learning approach can be an effective complementary tool for water management at the catchment scale. Preliminary findings from this research, based around a creek restoration project in south west Victoria, indicate that, as in Europe, a social learning approach can provide stakeholders with an opportunity to become truly involved in the decision-making process. Further, this research indicates that the effectiveness of this approach is reliant on effective facilitation of the learning opportunities and institutional arrangements designed to provide an integrative and adaptive environment.

It is anticipated that this study will be completed in March 2009. The outcomes from this research will include practical guidelines for ensuring that social learning complements other policy instruments and is integrated into a comprehensive approach to managing catchments sustainably; and practical guidelines for developing the organizational frameworks and training programs needed to ensure that local communities are effective participants in planning and decision making for sustainable catchment management.

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