

*People in context:
critical social dimensions
in complex landscape
systems.*

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Australia.

Declaration

I hereby certify that the work contained in this thesis is my own work, and that I have cited in the references all works and sources consulted in the writing thereof.

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Dedication

This thesis is dedicated to the Zulu people of southern Africa who taught me the poetry in landscapes, and the Indigenous peoples of Australia who have showed me the meaning of belonging in landscapes.

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Preface

Research for this thesis has been presented at numerous fora that have assisted in synthesising research questions and results. Opportunities for feedback and testing new ideas have been presented through papers presented at:

- **Systems Thinking and Complexity Science: Insights for Action**, 11th Annual ANZSYS Conference/Managing the Complex V, Christchurch, NZ, December 2005
- International Conference on **Engaging Communities**, Brisbane August 2005.
- **World Congress of Rural Sociology**, Trondheim, Norway, July 2004.
- **International Soils Organisation Conference**, Brisbane, July 2004.
- International Association for Landscape Ecology Congress, Darwin, 2003.
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- **The Sociological Association of Australia**, annual conference, Armidale 2003.
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Publications that have arisen from the research conducted for this thesis include:

- Wardell-Johnson, A.** (2005) *Social relationships in landscape systems: identifying values and variables that drive social interactions*. For proceedings for **Systems Thinking and Complexity Science: Insights for Action**, 11th Annual ANZSYS Conference/Managing the Complex V, Christchurch, NZ, December 2005.
- Wardell-Johnson, A.** (2005) A Sense of Place: valuing landscapes in the Condamine Headwaters. Proceedings of **Asia Pacific Extension Network: Building Capacity for Sustainable Resource Management Conference**: Toowoomba, 28 – 29 September 2005.
- Wardell-Johnson, A.** (2005 in review). *Participatory Frameworks and the Community: the relationships between definition and inclusion*. **World Congress of Rural Sociology**, Trondheim, Norway: submitted for Rural Society Special issue on Governance and NRM.
- Cook, F.J., X. Su, A.P. Campbell, G.D. Carlin, **A. Wardell-Johnson**, B. Nancarrow, A. Rixon, S. Asseng (2005) *Uncertainty In Modelling Human-Landscape Interactions*. **International Congress on Modelling and Simulation**, December 2005, Melbourne, Australia.
- Campbell, P., Asseng, S., Su, X., and **Wardell-Johnson, A.** (2005) Coupling Bio-physical and Social Models: Conceptual Model and Implementation Details for a Simulation of the Katanning Zone, West Australian Wheat Belt. Proceedings of The Agent-Based Modelling Working Group and Human Ecosystems Modelling with Agents (CABM-HEMA-SMAGET) Workshop: “**Smart models? Good uses?**”, Les Arcs, France.

Abstract

Landscape-based approaches to solving environmental issues have been widely recommended by scientists and policy makers. These issues are found at the interface of social and ecological systems. Understanding the social dimensions of landscape issues has been suggested as part of the solution. This doctoral research integrated theoretical concepts with survey-based numerical taxonomy and qualitative analysis to explore three social dimensions underpinning decision-making at the landscape scale in rural Australia.

These linked social dimensions that provided a research focus were sense of place and accompanying social capital that is embedded within private, social and institutional practice in discourses of the environment. Complex systems theory provided the framework to explore the interactions and relationships between these dimensions and to describe the emergent processes.

The first phase of this research developed theoretically and empirically derived conceptual models for the three dimensions. These models provided a basis for operationalisation for the survey-based numerical taxonomy in the second phase. Data for this analysis was collected through survey questionnaires (124 returned with 60% response rate) from two social catchments (the Katanning Zone in the Blackwood Basin in Western Australia and the Condamine Headwaters in the upper reaches of the Murray Darling Basin in Queensland). The results from the numerical taxonomy provided a focus for semi-structured interviews (24 representative participants) that provided further analysis through qualitative methods in the third phase.

Combining conceptual models with quantitative and qualitative analysis was used to expose three emergent processes that maintain resilience in these landscape systems. The first was formed through the interactive social relationships between communities of place, identity and interest that constitute social catchments. The second emergent process formed at the nexus of local,

scientific and Indigenous frameworks of knowledge. The interactive social catchment relationships and three knowledge frameworks dictated the relative weightings of social, ecological and economic values of the triple bottom line, which formed the third emergent process. It is suggested that the interactions of these emergent processes characterised resilience in these systems.

The social dimensions in this thesis provided a focus that suggests that the interactions between community in a social catchment governs the predominance of knowledge form and the accommodation of the values in the triple bottom line. The integration of theoretical, quantitative and qualitative approaches can be couched within a complex systems framework. This contributes to a re-framing of the social relationships in landscapes to identify social catchments as the appropriate focus for interaction in decision-making at the landscape scale.

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