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Chaos theory and assessment of forest stakeholder attitudes towards Australian forest policy

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Abstract

The Regional Forest Agreement process has dominated Australian forest policy for the past decade. The RFA process set in place a mechanism by which benchmark conservation values were established for forest ecosystems, whilst addressing the needs of the timber industry. The outcomes of a number of RFA's have been fraught with controversy. Key stakeholder groups have shown disagreement with processes and outcomes of methods employed by government both in establishing conservation reserves and areas allocated to timber harvesting. This research uses non-linear techniques to examine the dynamical behavior in stakeholder responses and to identify patterns of behavior that may lead to prediction of stakeholder responses. The method developed in this research provides a bridge between social sciences and Chaos theory.¹

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1. Introduction

Forest management policy decisions in Australia have caused considerable conflict during the last five decades. Inadequate participation of stakeholders in policy decisions, lack of knowledge of stakeholders' values, attitudes and preferences and difficulties in

quantifying economic, environmental and recreational values of forests have been at the centre of most forest conflicts. Commonwealth–State conflicts have figured prominently in Australia's forest management debates. The Lake Pedder and Franklin River issues involving the damming of rivers in pristine Tasmanian wilderness are two prominent forest conflicts in Australia involving State–Commonwealth disagreements (Kellow, 1989).

In 1992, the Commonwealth and State governments entered into Regional Forest Agreements (RFAs) to minimize some of these problems (Dargavel, 1995, 1998; Kanowski, 1997). The RFA process is one of the most comprehensive and expensive forest planning exercises ever undertaken in Australia (Dargavel et al.,

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¹ The method, analysis and results described in this paper are based on the doctoral thesis entitled *A Chaos theory interpretation of community attitudes towards Australian forest policy* (Musselwhite, 2003).

2000). The RFA process has dominated Australian forest policy for the past decade (Commonwealth of Australia, 1992). The RFA process involves the formulation of agreements between the Commonwealth and State governments for the future management of specific forest areas (Coakes, 1998). RFAs were designed to resolve disputes over forest resources, provide future certainty to all stakeholders and to improve community participation and conserve the pristine old-growth forest (Mercer, 2000; Lane, 1999). The RFA process set in place a mechanism by which benchmark conservation values were established for forest ecosystems, whilst addressing the needs of the timber industry (JANIS, 1997). The main objectives of the RFA are to:

- (a) protect environmental values in a Comprehensive, Adequate and Representative (CAR) reserve system² based on nationally agreed criteria³;
- (b) encourage job creation and growth in forest-based industries, including wood products, tourism and minerals; and
- (c) manage all native forests in an ecologically sustainable manner (Commonwealth of Australia, 1999).

The States in Australia have been divided into eleven RFA regions, each having a separate agreement. Twelve RFA's have been signed between the Commonwealth and four Australian States. These regions have unique characteristics such as population levels, demographics, industry development, plantation sector, and levels of native vegetation clearing.

² The CAR reserve system requires the following conditions: (a) comprehensiveness: a full range of forest communities (fauna and flora) recognized by an agreed scientific classification at appropriate hierarchical levels, (b) adequacy: maintenance of ecological viability of populations, species and communities, and (c) representativeness: reserves should be selected to reflect the biotic diversity of the community in question.

³ Commonly referred to as JANIS criteria (1997) (Joint ANZECC/MCFFA National Forest Policy Statement Advisory Committee). They guide the establishment of the CAR reserve system, and require the specification that 15% of the ecological vegetation cover before 1750 (pre-1750 EVC) of each forest ecosystem to be protected under the reserve system. If the ecosystem is vulnerable, then 60% of the remaining extent is to be protected. All remaining areas of rare and endangered forest ecosystems are to be preserved (Commonwealth of Australia, 1999).

Recent assessments indicate that the RFAs have not completely reconciled the various conflicts and that State–Commonwealth differences still thwart efforts in implementing RFAs (Bartlett, 1999; Lane, 1999; Brunet, 2000). Forest stakeholder values and attitudes towards Australian forest policy are described as incompatible, with entrenched opposing points of view (Mobbs, 2001). Numerous other problems such as tree clearing in Queensland have continued unabated (Brunet, 2000; Sherwin, 2000; Bartlett, 1999; Forsyth, 1998). Several commentators have highlighted the inadequacy of public participation in the RFA process (Lane, 1999; Kirkpatrick, 1998; Mercer, 2000; Mobbs, 2001). They argue that stakeholders had little role in identifying issues, developing alternative management options and prioritizing choices (Dargavel et al., 2000). Edwards and von Winterfeldt (1987) highlight the importance of stakeholder participation in clarifying and communicating issues, developing management options acceptable to stakeholders. Key stakeholder groups have shown disagreement with processes and outcomes of methods employed by government both in establishing conservation reserves and areas allocated to timber harvesting (Slee, 2001).

Inadequate understanding of stakeholder attitudes, responses and behaviours is a serious constraint to developing policies acceptable to stakeholders. A thorough understanding of the dynamics of forest policy making and adoption by stakeholders can help develop policy scenarios that have a greater degree of success. Uncertainty of forest policy outcomes has further exacerbated the complexity of forest policy decision environment.

Uncertainty and complexity have been successfully modelled in ecology and biophysics using non-linear dynamic theories although this is new to social sciences. Developments in non-linear dynamics have opened the door to better understand the dynamics involved in forest policy implementation and their adoption by stakeholders. Non-linear approaches can help identify the existence of patterns in stakeholder behavior, attitudes and values (Dent, 1994). This approach can assist in predicting the behaviour of stakeholders and help identify policy scenarios that may be acceptable to the majority of stakeholders.

The objective of this study is to use Chaos theory concepts to identify the dynamics of stakeholder attitudes in accepting forest management strategies

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