

Theories Themes and Methods: A Synthesis and Some Discussion Points

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INTRODUCTION

There are five papers in this section. All reflect considerable insight and practical experience in terms of attempting to implement their integrated approaches in real management situations. At first the papers look quite disparate although there is a commonality of issues in the Brunckhorst and Jakeman and Letcher discussions of understanding and representing integration at a regional and local level.

The issues covered include the development of the notion of ecosystems services (Cork and Proctor), methods of measuring values with humans and the challenges posed by each for integrated decision making (Lockwood) ; the problems of fragmentation of planning systems (Dale and Cowell), a description of landscape as an integrating notion for social, economic, environmental and institutional components of decision making (Brunckhorst) and the need to develop better integrated assessment through more appropriate computer modelling incorporating sensitivity analyses (Jakeman and Letcher).

The paper of Cork and Proctor describes an innovative Ecosystem Services Project that ran for four years. It engaged community to encourage better appreciation of these benefits in policy and land management. Partnerships among researchers and between researchers and community representatives were developed in which knowledge and understandings were shared across disciplines and backgrounds. The idea of ecosystem services encompasses the relationship between humans and nature in terms of measurable services. As a starting point a compendium of relationships between land uses and ecosystem services was developed. This was followed by more detailed interpretation. The study identified that the perceived worth, of ecosystem services depends on people's understanding and perceptions which may not be based on detailed knowledge. A new integrative tool with multi-criteria evaluation and deliberative decision making was developed. This enables thought about the best available information in comfortable participative circumstances.

Lockwood's paper concentrates on how we think about, measure and interpret values. Theoretical positions from philosophy, economics, sociology, politics and psychology are examined. In relation to the concept of integration the alternative rationalities that



are applied in environmental choice processes are examined, followed by a classification of environmental values. The social and political theories that underpin the incorporation of citizen values into decision making processes are then examined along with thoughts about post modernism and integration. Values, rationality and procedural justice issues are then brought together in a review of methods for value integration in environmental decision making.

Dale and Cowell trace the evolution of planning theory from the rationalist beginnings to more communicative and adaptive forms of planning literature concerning what constitutes a long term and fair planning system. But even though inclusiveness in planning in terms of process and outcome is occurring sporadically it does not seem to be on a systematic or participative basis on any theoretically defensible framework. Individual agencies need to consider the overall planning system in political and functional terms. Moreover an increasing international literature points to such systemic planning deficiencies. To deal with this issue the authors consider that *all* planning activity needs to be placed more clearly in the context of the overall planning framework. Finally fundamental principles and constituents of responsive planning systems for regional planning systems are described.

Brunckhorst sees rural landscape management as dealing with complex social-ecological systems intertwined at many spatial scales across time. He provides some examples of interdisciplinary research that has integrated economic, environmental and social factors, through intensive engagement with residents and communities or through developing grounded experimental models in a mutual learning context. In each project integration has been attempted using spatial, policy and institutional analysis. The result of this integration has been the development of real options that provide flexibility in creation of alternative futures.

Finally, Jakeman and Letcher introduce the concept of Integrated Assessment (IA). They regard IA as an emerging discipline and process that attempts to address the demands of decision makers for management. As with other papers in this section ecological, social and economic values and considerations are included in the framework. This paper summarises the features of IA and advocates the need for models and information systems. To meet decision maker demands the broad objectives of IA modelling should be to understand the directions and magnitudes of change in relation to management interventions. This will require better methodologies to deal with uncertainty and sensitivity analysis to assist decision choice. Three case studies are presented. It is emphasized that modeling is as much a process as a set of outcomes a conclusion in sympathy with procedural justice researchers.

It is not intended to summarise each paper in detail. They are in fact in themselves brief summaries of substantial and effective programs. Rather it may be worth asking some questions that emerge out of the collection of papers.

INTEGRATION AS AN OUTCOME OR INTEGRATION AS A PROCESS?

All papers required adaptive learning for optimal achievement between the key players whether planners, scientists or the public. This begs the question of whether there will ever be a theory of “integration” as it may rely on procedures rather than evaluation of outputs. This is highlighted in the Lockwood paper where Habermas’s reliance on the quality of process rather than the quality of analysis is emphasised.

This observation is also paralleled in the social psychological social justice literature which underscores the significance of procedural justice issues and their pivotal role in the acceptance of outcome (Lind and Tyler, 1988). If the outcome of integrated research is to be couched in terms of planning decisions resulting in sustainability this is a very significant point. Process is important.

There is no escape to process however if one wishes to consider integrated research in the more abstract and theoretical sense. The Cork and Proctor paper emphasises the difficulty that some economists had with the outcome of their highly process driven view of production functions and other quasi economic thoughts. This may be partly because the outcomes of the ecosystems services project were counter to established findings from the economics discipline. It also may reflect a feeling of lack of involvement and control by economists once alternative solutions to their own discipline were offered. Such a reaction is of course not limited to economists!

In any event the importance of process has to be acknowledged and as Lockwood infers we will need to grapple with the balance between logical analysis and discursive interpretation if the purpose and function of integrative theory and methodology are to be addressed.

In this way there may be no theory of integration as people involved with traditional disciplines understand it. Does everything need to be reinvented for specific combinations of biophysical and socio-economic circumstances with some fairly general process theory guidelines?

WHERE CAN WE START?

There are a variety of diagrams in each paper demonstrating an integrated version of a system from one point of view or another. The Ecosystems services paper is clearest. We start from the defining the services that contribute to our production function. Intuitively we have an orienting point that we can use to examine the system. That is, given realistic understanding of the resources available, we tend to have to prioritise by selecting particular stakeholder’s viewpoints. But Dale and Cowell are adamant that if our insights and priorities are to be turned into good outcomes then the overall system of planning needs examination.

In Dale and Cowell's view there are many individual ways in which policies administered by separate agencies can provide sub-optimal or even contradictory outcomes. This has been recognised by many European planners in urban settings who trace modern fragmented planning to the rationalist planning movement following the Second World War that split planning problems into differing specialist professional areas (Cars et al 2002). This is why we have separate departments of Social Services, Transport and Environment even though the three areas overlap. Brunckhorst would suggest that it is in the overlap that emergent understanding will occur. Unfortunately the synergies have been too little evaluated.

The clear inference of all papers is that we need to look at the "system" first. However, as a caution, both Lockwood and Dale and Cowell allude to the illusory but vital issues of power, negotiations, trade-offs and transaction costs.

If one views the system in the absence of these there can be systematic intellectual identification of system "orienters" and analysis of human values, needs and ethics which underpin them (e.g. Peet and Bossel (2000)). But analyses such as these tend to assume that people live in an ideal or predictable system in terms its processes. Lockwood points out that while the social methods available for systems analysis can provide strong informational guidance they cannot command the fundamental issues such as power, networking and social influence.

Given the reality that in any case study trade-offs will have to be made about what misses out because research resources will be limited and our case studies will be part of a larger system, selecting where to start will be difficult. Where we start will affect how we frame questions and I suspect the way we integrate our findings to get to an agreed outcome. This is an issue in network analysis. Egocentric networks can tell you something about how the network works but are only one interpretation of the functioning of the whole.

ACHIEVING ADAPTIVE LEARNING: "LOCAL" KNOWLEDGE, "EXPERT" KNOWLEDGE AND EMERGENT PROPERTIES

All papers support adaptive learning or at the very least the exchange of information between integration "scientists", stakeholders and the community (although this section does not deal with the massive question of how we maintain it). Further, all acknowledge the need for social and economic analysis within the learning process. In this case it seems self evident that real people (i.e. non scientists) should be involved. This is a given in that local communities are part of the "subject" under investigation and therefore should have an input into the definition of the question and in conjunction how it should be answered. If they are part of the learning, by definition, their knowledge has to be included. In the end especially in measuring values and trade-offs (Lockwood) it will be the community who will be the judge of the adequacy of alternative methodologies based on their local knowledge. Nevertheless, we as scientists are still not certain how to responsibly deal with this.

To enhance communication and a perception of trust between the scientist and the community Jakeman and Letcher suggest the need for incorporation of intelligible means of analysis of uncertainty and an important role for sensitivity analysis to enhance a belief of realism and validity of outcomes.

In relation to knowledge the Cork and Proctor and Lockwood papers discuss the possible need for scientists to inform the community so that “deliberative” judgments or input can be made by citizens or by stakeholders in conjunction with scientists. The assumption here seems to be that a better “informed” community will lead to better decisions. One problem is, however, (Lockwood) how to achieve a better informed community at a large scale. Another major issue is the fact that all decisions are not reached on information and logic, especially when trust or risk issues are involved. The resolution of these issues may be assisted by examining the sociological literature on pragmatic knowledge (e.g. Stehr, 1992) and developing it to fit the circumstance of integrated natural resource management. It may be that we need to accept that decisions are at least partially made at emotional and intuitive levels and this is an inevitable part of being human!

Finally, Brunckhorst suggests, at least at the bioregional level that there will be emergent landscape properties from integrated analysis. These will provide novel insight to problem solving. Such is the hope of complex systems science. This is an important observation. If there is adaptive learning and the scientist adopts a “service” role in problem solving the identification of emergent properties may become the key role for leadership by scientists.

WILL INTEGRATION BE LIBERATING?

This is a hard question for this group to answer as we are here because we believe in the benefits of integration. We are a group that have found the strictures of limited disciplinary approaches often too narrow for the questions we have wanted to ask and the clarity of the answers obtained. There is a tendency to regard those who push disciplinary answers as being relatively “narrow” minded. Even when specific methods have been discussed it has been in an eclectic sense (Lockwood).

We must remind ourselves however that for multivariate problems integration of all factors may not necessarily provide the guidance that people require. Recent interest in the framing problem has shown that people select early on a smallish sample of all possible preferred solution pathways depending on the circumstances and the nature of the problem. Integrating all factors to arrive at a decision may simply be too costly or slow. An elegant resolution to a critical problem along the decision pathway from a disciplinary perspective may be more useful (Brunckhorst).

It is also significant to note that the usage of the term integration has been relatively sparse in the papers in this section and that the meaning for each of the papers may be somewhat different. Certainly, as noted above, there were different starting points

(ecosystem services to governance) which may not lead to compatible outcomes. There is a requirement for us to clarify meaning of the integration concept itself to know when it will be “liberating”.

Certainly we need to consider the long term future of integrated theory and methodology. We must remember that the advent of disciplines were liberating in their development. Scientists and social scientists have and still gain satisfaction when solving problems by precision of theory or methodology. It is just as knowledge and society have evolved the mismatch between societal evolution and traditional science (Cork and Proctor, Lockwood) has required evolution in our thinking about both. Hard as it may seem to imagine at the moment, what we are “inventing” at this workshop may become inappropriate for the next generation of thinking.

CONCLUSION: THE CULTURAL EVOLUTION OF INTEGRATION: A MUSICAL ANALOGY

While preparing ourselves for developing an integrated approach for research we must think consciously about our role in the genesis of research in the functioning of society. We must acknowledge the vibrancy of the disciplinary contribution now and in the past and create long term energy of our own.

To use a musical analogy I see our transit as being similar to that from the blues to jazz. Both still exist and to great benefit. Blues (like disciplinary science) developed as a new music to express emergent cultural needs and a new way of thinking. But as it was incorporated within conventional society an agreed upon formula was developed. Stripped to the essentials blues came to be built on just three chords arranged in 12 bar sequences that somehow would allow for an infinite number of directions. This is what psychology represented for me in the 1970's. It still does to some extent.

But blues while starting as a radical influence was gradually enmeshed in church music and became part of the status quo for society. It became deficient for the new kids on the block. Jazz emerged then as the secular form of representing innovation, group performance and personal expression. It has survived as a controlled form of chaos since, principally because it has gone through many forms. It has, however, survived and developed because it has been conscious that what was played last night may not be appropriate or sufficient for tonight. If devotion to integration is to develop and survive as an important contribution to intellectual concerns it will need to adopt the same ethos.

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