Natural Resource Management in the South Australian Arid Lands Region: Methodological Considerations for a Policy Network Study

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ABSTRACT

This paper discusses a specific combination of quantitative and qualitative research methods that may be suitable for a study that aims to investigate policy networks as an effective form of governance. The proposed context for this study is a Desert Knowledge Cooperative Research Centre project that focuses on the establishment and operation of regional natural resource management boards and associated institutions. Under new Australian Government policy, and new South Australian Natural Resource Management legislation, it is envisaged that the regional boards may better deliver government policy and programs for management of natural resources. The primary outcome of this paper is a 'methods matrix', which may provide not only a summary of the most appropriate methods for use in this investigation but also a 'template' that could be used in related ongoing investigations.

KEYWORDS

Policy Networks, Good Governance, Democratic quality, Desert Knowledge Cooperative Research Centre, Natural Resource Management, South Australia, Methods Matrix

1.   INTRODUCTION

As discussed by Thompson and Pforr (2005), assessing policy networks as a form of 'good governance' may require the implementation of specific combinations of quantitative and qualitative research methods. The methods selected could provide opportunities to collect data from a wide range of actors within policy structures formed on a specific policy issue. In so doing, it is envisaged that more complex issues and underlying concerns of policy and decision-making might be better understood and, ultimately, addressed. The project '*Better governance for dispersed populations: A South Australian case study*', funded by the *Desert Knowledge Cooperative Research Centre (DK-CRC)*, provides a possible framework for which to design, and within which to apply, such an assessment: it uses a participatory action research methodology in the context of the recently introduced South Australian Natural Resource Management legislation. This paper examines ways of combining quantitative and qualitative methods that are already being used widely in policy network research to collect data to evaluate, specifically, the democratic quality of existing policy network structures in the proposed case study area.

In Section 2 the paper first provides background information on adaptive natural resource management, principles of Ecologically Sustainable Development (ESD), the DK-CRC partnership and the associated research project *Better Governance for Dispersed Desert Populations: a South Australian Case Study*. Section 3 then discusses wide-ranging combinations of research methods that may be applied in this context. This is followed in Section 4 by an outline of a matrix that summarises the most appropriate methods. Section 5 justifies the application of these methods.

2.   BACKGROUND: NATURAL RESOURCE MANAGEMENT

The emphasis in recent years has been on 'adaptive' natural resource management. Adaptive natural resource management tries to meld the rational, scientific approach (which accounts for uncertainty and complexity) with the changing perceptions of individual stakeholders, communities and society, and, the impacts of policy and politics (often irrational and uncertain, even volatile). Some examples of adaptive natural resource management include Integrated Catchment Management (ICM), Landcare, bioregional planning, off-reserve biodiversity conservation and 'beyond regulation' approaches to environmental protection (Dovers 2003). Essentially, adaptive natural resource management provides "…meeting grounds for community, science and policy" (Dovers 2003: 137).

In Australia, while these and other strategies and approaches can boast successes, many environmental problems remain: river systems are in poor to fair condition, wetlands are in decline, soil erosion, salinity and acidification persists (NRMC 2002). These problems remain, in part, not because of adaptive natural resource management strategies *per se*, but because of the traditional approaches to their implementation that involved much specialisation. For example, soil specialists attempted to solve salinity problems on the land; water management specialists attempted to solve water pollution problems. There are, of course, obvious advantages to employing specialists but they are often countered by decisions being made in isolation (NRMC 2002). To help overcome such problems, reforms are being implemented, which include, *inter alia*, working towards better governance and improving natural resource management legislation (NRMC 2002). These natural resource management strategies and reforms are underpinned by concepts of sustainability.

2.1 Sustainability and Natural Resource Management in Australia

Since the 1980s, natural resource management, economic and social development in Australia has been based broadly on principles of *Ecologically Sustainable Development* (ESD), and, subsequently, on the *National Strategy for Ecologically Sustainable Development* (NSESD). However, while national, state and local governments have endorsed the national strategy, it remains primarily a broad strategy and as such not legally binding. In particular, local government authorities are not bound by the terms of the strategy (Australian Government 1992, 2004; Hamilton 1998). This situation, however, appears to be changing. For example, if communities and organisations involved in ESD projects wish to receive appropriate funding they must now apply through the National Heritage Trust (NHT) partnership, the National Action Plan for Salinity and Water Quality (NAPSWQ) program and/or the National Landcare Program (NLP). For applications to be successful they must meet strict criteria. In South Australia specifically, such restructuring has in part contributed to two policy initiatives in the areas of economic and social development and natural resource management: *Outback South Australia* and the *Integrated Approach to Natural Resource Management* (INRM).

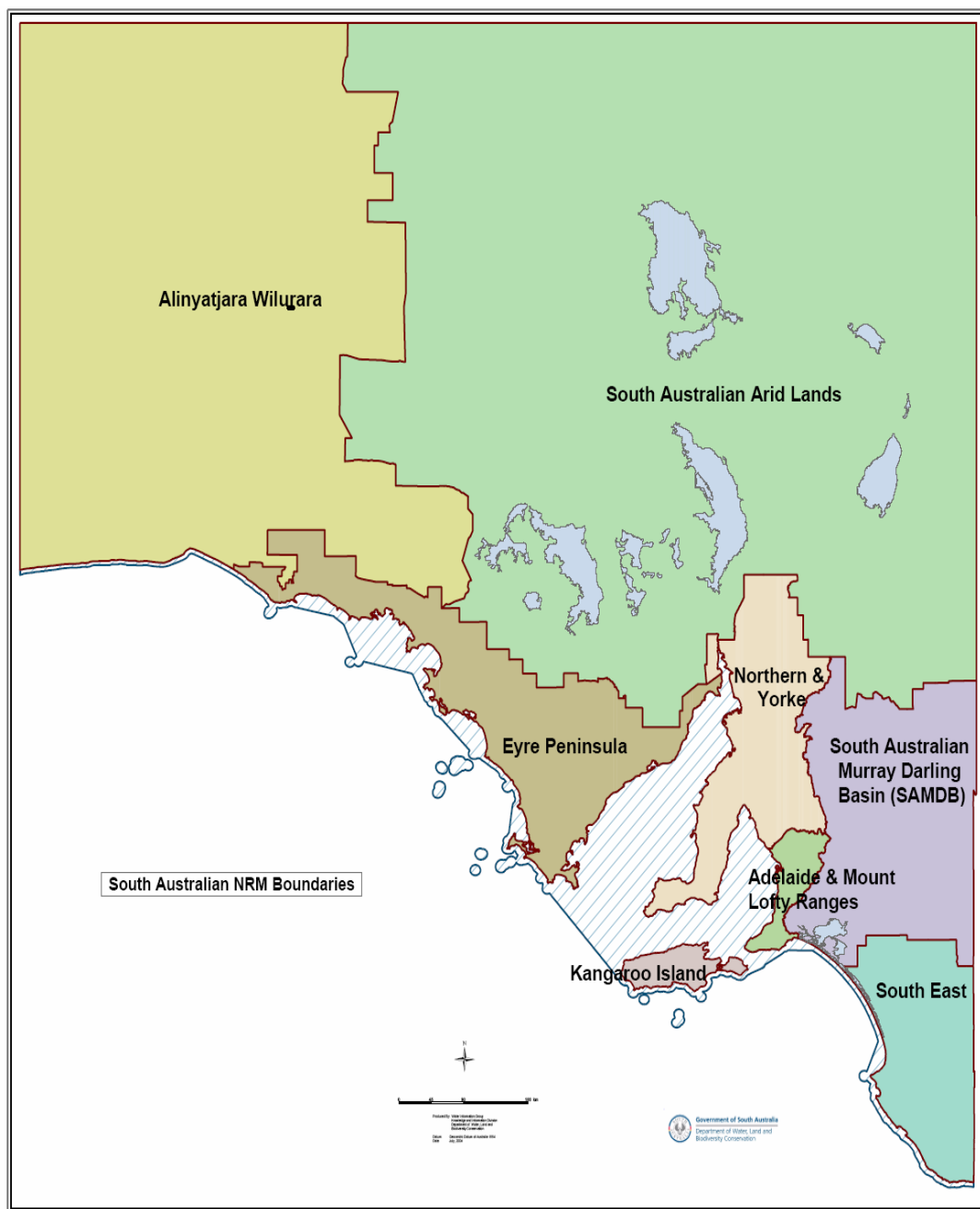## 2.2 Regional Natural Resource Management in South Australia

Despite the introduction of partnerships and programs like the NHT, NAPSWQ and NLP, people living and working in the sparsely populated outback region of South Australia (which covers 50% of the state) felt that the provision of services and infrastructure still was not adequate. The INRM approach is therefore of particular importance, as is its counterpart the recently introduced *Natural Resources Management Act 2004*[1]. The Act is designed to ensure that INRM policy can be better implemented, not only by the South Australian Government but also by the Federal Government via NHT funding. To achieve this goal, natural resource management in South Australia has been formally 'regionalised' to provide a better vehicle for implementing the partnerships and programs outlined above (Government of South Australia 2004a): "The NRM Act aims to promote a more integrated approach to NRM with a strong focus upon community input and coordination at the regional level" (Mount Lofty Rangers & Greater Adelaide Regional Steering Committee 2004: 1). In practice, this means that under the NRM Act 2004 eight new NRM Regions[2] have been established in South Australia for NRM planning and implementation purposes (Map 1):

- Adelaide and Mount Lofty Ranges
- Alinytjara Wilurara
- Eyre Peninsula
- Kangaroo Island
- Northern and Yorke
- South Australian Arid Lands
- South Australian Murray Darling Basin
- South East

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[1] The NRM Act was passed by the SA Parliament and assented to on 5 August 2004.
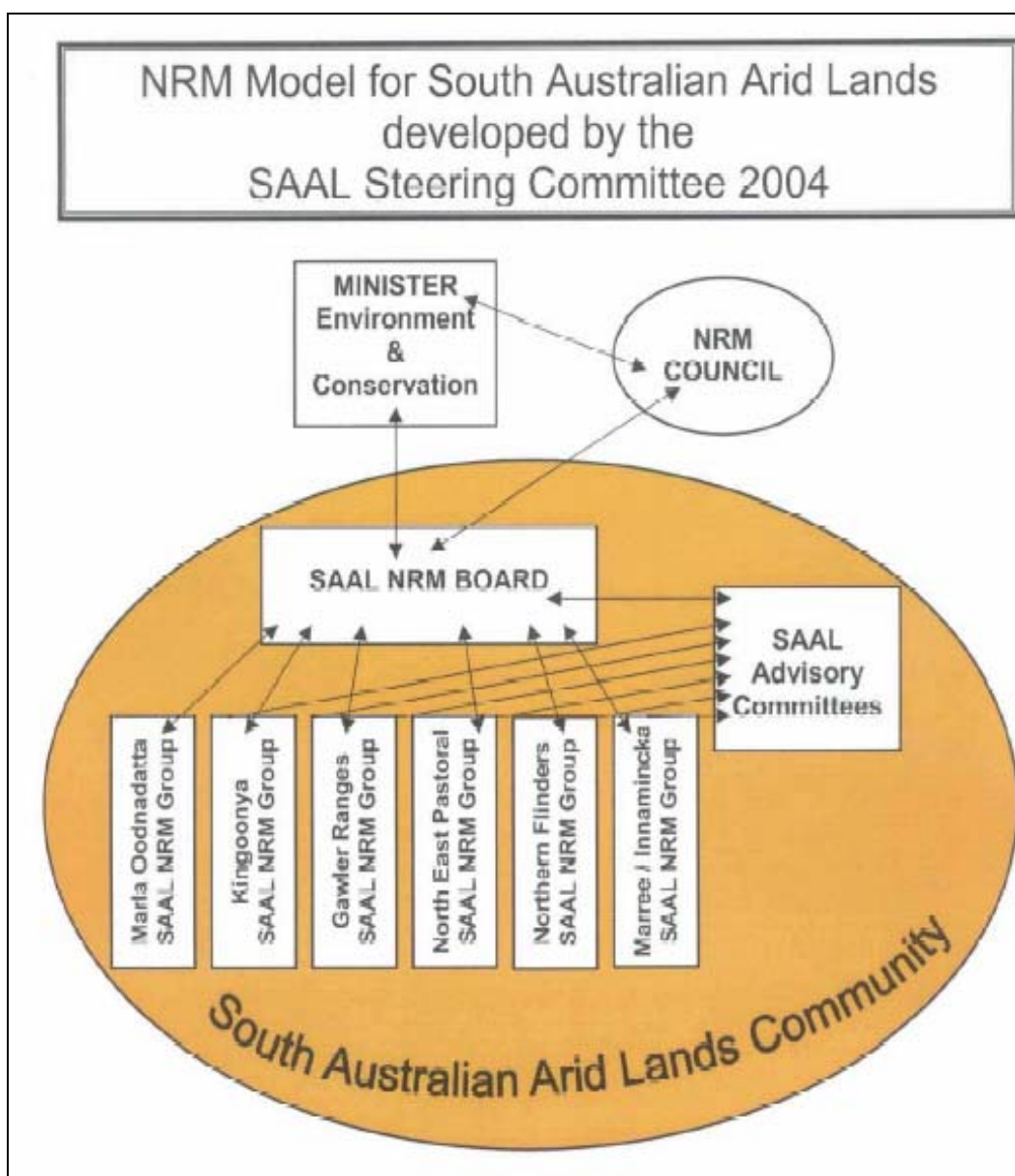[2] The 8 new NRM Regions were formally gazetted on 2 September 2004.

Map 1: South Australian NRM Boundaries

Source: South Australian Arid Lands Regional Steering Committee 2004

New institutional arrangements were also put in place along with the natural
resource management regional boundaries (Figure 1).

Figure 1: New Institutional Arrangements

Source: South Australian Arid Lands Regional Steering Committee 2004

The new system is designed to simplify the previous arrangements (i.e. it replaces more than 70 Boards and Committees) and provides a more strategic, integrated and effective approach to natural resource management in South Australia.

'Regionalisation' formally amalgamates natural resource management groups that were once separate and specialised. The purpose of the amalgamation (INRM) is, presumably, to encourage all major stakeholders from local communities, organisations, industry and government involved in natural resource management to communicate and collaborate better at and between local, regional, state and, ultimately, national levels. INRM thus attempts to provide opportunities for a wider range of actors involved in natural resource management, particularly local communities, to participate actively in, and thus help improve the democratic quality of, decision-making processes in natural resource management. The new *Natural Resources Management Act 2004* was introduced to ensure that these improved links are, and remain, strong.

The Desert Knowledge Cooperative Research Centre (DK-CRC) project *Better Governance for Dispersed Populations – A South Australian Case Study* has been set up to examine the current and future effectiveness of the new Regional Natural Resource Management framework.

2.3 The Desert Knowledge Cooperative Research Centre

Broadly, the DK-CRC partnership has been set up to help improve the quality of life of the peoples who live and work in desert regions. It hopes to achieve this by providing 'umbrella' support for research projects - in terms of funding and other resources as well as in-kind support - to organisations and communities working towards improving the quality of life of remote desert communities. Through the implementation of strategic and technical research, supported by the DK-CRC, these communities will thus be able to increase their capacity to create work, improve social capital and build sustainable livelihoods. Examples of the kind of research supported by the DK-CRC include projects that can help desert communities and businesses gain access to international markets, attract more people into desert regions, bridge knowledge gaps (mixing formal and informal knowledge systems), provide better livelihoods through training and enterprise opportunities and - again, importantly - involve indigenous peoples. Specifically, however, projects are grouped into four broad themes: 'Natural Resource Management', 'Community Viability', 'Governance Systems' and 'Business and Regional Development'. There is also an additional 'Education and Training Program' (Cheers 2004).

2.4 Governance in the South Australia Arid Lands Region

The South Australian project, *Better governance for dispersed populations: A South Australian case study* falls within Theme 3 'Governance Systems', or, more specifically, 'Governance, Management and Leadership' (Cheers 2004). The main aim of the South Australian project is to "…investigate and build stakeholder understanding about the characteristics of good governance, management, and leadership in desert regions, and create an environment for institutional development and change that promotes these characteristics" (Cheers 2004: 2). The existing 'Outback South Australia Initiative' (OSAI), over the past three years, has already begun to "…institute institutional and governance reform for the unincorporated outback region of SA, encompassing natural resource management, economic development, and social development". Also, a Bill has been introduced recently that "…integrate[s] natural resource management legislation across the State" (Cheers 2004: 5). These developments provide an ideal context within which to collect baseline data and then conduct ongoing participatory action research (see below) to trace the progress of the OSAI. Appropriate recommendations for improvements can then be made, if necessary, in line with the South Australian project's aims and objectives (Cheers 2004).

One project aim is to establish frameworks and instruments to map policy networks in South Australia before comparing them with networks in other jurisdictions (Cheers 2004: 2-3). In that context a case study will be conducted to explore the issues associated with the establishment and composition of the new regional NRM Boards, focussing, in particular, on the recent establishment of the South Australian Arid Lands (SAAL) NRM Board. The purpose of this study is to investigate how effectively stakeholders communicate, collaborate and interact in the SA Arid Lands Region in the transition phase from the previous NRM framework to the new institutional arrangement.

Based on the above outlined context of the case study and also on the more theoretical account on policy networks and good governance (as outlined in Thompson and Pforr 2005) the paper will discuss methodological issues in greater detail to facilitate the empirical research component.

3. PUTTING THEORY INTO PRACTICE

Policy networks are promoted as a new pattern of political exchange and conflict management beyond hierarchy and market as the traditional forms of governance. Policy networks as a new form of governance ('good governance') foster the inclusion of stakeholders in the policy making process as the basis for consensus and shared decision making. To begin to provide an indication of the effectiveness of policy networks as 'good governance', the standards and evaluation procedures proposed by Thompson and Pforr (2005) will determine, firstly, the policy context. Policy actors will be identified, and the relational constellations of the underlying policy network structures associated with the new SA Natural Resource Management legislation will be mapped. In particular, the purpose is to measure communication and collaboration effectiveness among stakeholders in the newly established NRM region South Australian Arid Lands. This quantitative starting point will then be followed by a more in-depth analysis of the related policy and decision making processes. In particular, it will be explored if the policy network structures provide a framework for 'good governance' insofar that they are able to enhance the utilisation of community and government capacity in the delivery of government policy and programs in outback South

Australia. To assess the democratic quality of the existing network structures they will be compared and contrasted with an 'ideal' network, the normative assumption that 'good governance' refers to the democratic quality of policy networks (see Thompson and Pforr 2005). This evaluation procedure may thus be regarded as a way to enhance the efficiency and legitimacy of complex and dynamic policy making processes in outback South Australia.

The above mentioned discussion on policy networks and good governance supports the South Australian project's core objectives of exploring ways of developing good governance, management and leadership for dispersed desert populations in South Australia through shared knowledge and understanding. Identifying and combining the most appropriate empirical data collection methods for this evaluation, however, remains problematic and warrants a more comprehensive discussion which is presented below.

3.1 A Mixed Method Approach

Very few policy network studies are either *purely* qualitative or quantitative. Most studies already combine quantitative and qualitative research methods to some extent. For example, a number of policy network studies, while using mapping and/or similar quantitative techniques to select respondents also include face-to-face informal, semi-structured and/or structured interviews. To support these methods highly specific secondary data (e.g. articles, reports, statistics, surveys, interviews and case studies that can provide useful baseline data) are often collected as part of a content analysis and familiarisation with the case study's policy environment (see Provan and Milward 1995; Melbeck 1998; Pappi and Henning 1999; Carrol and Carroll 1999; Chatterton 2002; Thurmaier and Wood 2002; Van Bueren *et al* 2003; O'Toole and Burdess 2004). Other studies combine quantitative and qualitative data collection methods, often incorporate modelling and/or advanced statistical analyses, to investigate better ways of measuring the effectiveness of policy networks (see Hoeffer 1994; Stokman and Berveling 1998; Egdell 2000). Many studies are, therefore, already beginning to combine quantitative and qualitative methods in policy network research. However, few policy network studies combine methods in ways that facilitate the collection of relevant data so that they can be readily measured and applied (including the provision of better feedback) in ongoing action research projects like the South Australian initiative (see Section 2).

To help facilitate such collection of relevant data the paper suggests to combine quantitative mapping techniques with some carefully selected qualitative methods. Firstly, based on identifying the system of actors and the policy environment, designing and implementing surveys that have been standardised using a structured analytical framework (e.g. 'mutual relevance'), and then following these surveys up, secondly, with in-depth interviewing techniques (e.g. those that are more conducive to a person's, community groups' and/or organisations' circumstances and environments), may improve the quality of baseline data collected. This combined approach will facilitate a more effective measurement of the democratic quality of policy networks. Thirdly, and perhaps most importantly overall, this process may form the basis for better ongoing monitoring of democratic quality. It is hoped that this might be achieved by selecting combinations of methods that may not only improve the quality of measurement - by eliciting the underlying and often more complex issues - but may also facilitate the participation of a wide range of actors by encouraging them to see the relevance of the evaluation to their lives (see also Section 2; and, especially Rhodes 2002).

3.2 Appropriate Data Collection Methods

Pavlovich's (2003) study of the *Waitomo Caves Tourism* venture in New Zealand provides a practical example of how a combination of quantitative and qualitative methods could be used in the South Australian project. She combines mapping with qualitative research very effectively: History, oral history, archival data, interviews (some taped, over 150 hours) and observations of central and peripheral organisations over five years are first analysed and then mapped using traditional network diagrams.

Pavlovich began by formally interviewing the owner-manager, which, subsequently, developed into informal discussions that led to interviews with others – managers, employees and other *Waitomo* community members. These discussions, in turn, developed into routine conversations. Communities then began to 'open up' more, providing oral histories about their community for example, which contributed to debunking any myths and/or prior assumptions of the researchers. The development of network relationships within the *Waitomo Caves* tourism venture was then mapped chronologically. In this case mapping is thus *the final phase* and is based on the collection of qualitative data.

The quantitative and qualitative methods used by Pavlovich (mapping, interviewing and relevant secondary data) are therefore the result of ongoing, long-term empirical policy network research.

However, the time taken to implement these methods, and hence their cost effectiveness, means that at this preliminary stage of the South Australian project they may be impractical. If the process were reversed - that is, if mapping was implemented as the first step followed by a qualitative phase with in-depth interviews with selected policy actors – it may be possible to incorporate some aspects of the quantitative and qualitative methods employed by Pavlovich in ways that are more suitable for this project's set frame. The initial mapping technique suggested by Thompson and Pforr (2005) may facilitate this 'reversing' process. It is designed to help identify not only network elites but also peripheral actors from the outset. Once identified, these actors can be approached in an attempt to better include them in the network structures. A mapping technique that attempts to identify peripheral actors from the outset may also be more time, and hence cost, effective in the sense that a wider range of participants may be encouraged to participate in ongoing evaluations (see Section 2) sooner rather than later.

Cross, Borgatti and Parker (2002) show how this might be achieved. They use methods and techniques from social network analysis to better understand the forces influencing the emergence of informal networks within organisations (see also Thurmaier and Wood 2002). Initially, they use the results of short surveys to map the structure of informal 'invisible' networks in business. The network diagram (map) is then presented to participants to generate discussions and follow up interviews. However, many of the participants in the presentations were managers and executives. Other, less prominent members of groups, companies and organisations were not as well represented. These problems, however, may be addressed simply by reflecting more (see Duke 2002) on the ways in which the combined quantitative and qualitative methods are designed and implemented. For example, this may involve selecting, and possibly adapting, some of the quantitative and qualitative methods used by Pavlovich (2003) to construct simplified versions of network diagrams for presentations that can reach a wider range of actors (see Section 4).

A combination of the methods used by these authors, therefore, provides a basis, or a 'template', for data collection that is not only technically feasible (in the sense that the data collected should be more relevant for measuring the democratic quality of policy networks), but also has the potential to include a wider range of participants and their views in the research process on an ongoing basis (Rhodes 2002). To achieve this, however, some empirical methods used by other policy network researchers (see authors listed above) may be incorporated into this methodological 'template' to make it more workable in the context of the South Australian project.

Carroll and Carroll (1999) argue, within the *Civic Networks* framework, that in policy network research it is mainly those groups with a clear link to the policy sector that are more likely to become involved in any study. Broader cross sections of society are usually overlooked. The authors address this problem by proposing a methodology that includes people and organisations that are usually less prominent. While still distributing their surveys and questionnaires by mail to government members, they also created a directory of non-governmental groups that had, at least, attempted to influence government policy making. These organisations came from business sectors, trades unions, social services, environmental and ethnic groups (ethnic groups were further sub-divided). This process is similar to the 'snowball' technique, which aids in identifying a system of actors in public, private and non-profit organisations. Creating follow-up directories of less prominent actors may be relevant to the template suggested above in the context of the South Australian project. That is, during and perhaps as a result of, the 'mapping' process researchers may be directed towards an even broader cross-section of people, communities and organisations that would have otherwise been overlooked. Chatterton (2002) demonstrates the importance of creating such a list.

Chatterton (2002) interviews a wide range of individuals and organisations that are engaged in sustainable development projects across the northeast of the UK to explore why strong ecological sustainable development (ecologism) is still marginalised, in contrast to the more managerial approach to environmental problems (environmentalism). The extent of these interviews revealed that central government and business, via established policy networks, still control the policy making agenda despite devolution of power to the regions (e.g. via regional development agencies): Policy networks can either form their own hierarchies, or, are formed in the shadow of hierarchy (i.e., central government). Chatterton reveals complex historical and geographical reasons for this, some of which may include the effects of globalisation and a history of non-participation in decision-making.

Extensive interviewing therefore may be fundamental in the context of the South Australian initiative. Firstly, understanding the policy environment (e.g. the political, historical, socioeconomic and cultural

contexts in which policy making occurs) may give the researchers a much better insight into the underlying, often more complex issues. Secondly, because many of these issues may be particularly relevant to local peoples in remote desert communities, they may also serve as topics for discussion, which, in turn, may encourage them to participate in ongoing evaluations/action research (see Section 2; and, especially Melbeck 1998 also discussed below).

This last point is especially important. It is hoped that the evaluation procedures and methods suggested by Thompson and Pforr (2005) will, in the long term, be applied more extensively on an ongoing basis. In the context of the South Australian initiative this will probably involve comparing and contrasting a number of case studies that are spread over vast areas. The methods used in the following studies provide some insight into how extensive interviewing might be achieved in a necessarily time saving and cost effective way.

3.2.1   Balancing Quantity and Quality

The methods discussed in Section 3.2 have major significance, in terms of contributing to the improvement of the methodological 'template' suggested for the South Australian project. They not only help to bring to light more complex issues but also suggest ways of reaching, and communicating this information to, a wider audience - for example during ongoing monitoring. But, given the constraints placed on researchers related to time, distance and logistics and cost, particularly in the context of the South Australian initiative, how can this be achieved effectively? The following data collection methods may contribute further to the development of the template by suggesting appropriate methods for selecting and then reducing large numbers of respondents, groups and/or organisations to more manageable sizes.

Egdell (2000), for example, provides some insights into how large numbers of respondents might be reduced to a significant few using the traditional content analysis/snowball technique. She began by conducting a survey of a large number of respondents concerned with the *Countryside Premium Scheme* in Scotland by first obtaining written consultation responses (71). This information was available to the general public. Three quarters of those who responded were then interviewed by telephone – the number that was able and willing to be interviewed in this way – using simple questionnaires. Some of these data may concur with primary data collected, initially, from fewer respondents to provide additional supporting evidence. Thus a large number of respondents have been reduced to a significant few. But how can techniques such as this be adapted in the context of the South Australian study?

Pappi and Henning (1999) also collected data from large groups and developed research methods along similar lines. These methods contribute to the development of the methodological template because they can address the difficulties associated with selecting elites for interview, of which there are only a few, and interest groups, of which there are many. Identifying important governmental actors was relatively easy for Pappi and Henning; they began with the person most responsible for agricultural policy, who acted as a general guide for identifying representatives of corporate actors. Overall, 33 representatives were interviewed. However, because of the many interest groups involved, such a procedure was not possible. Therefore, while 214 interest groups were identified initially (from information already gathered by the authors on the members of the agricultural advisory committees of the Commission), the number was reduced to a more manageable 92 by identifying where groups overlapped, creating possible information links. This number was further reduced following questions about general influence reputation, eliminating those groups with only a peripheral interest in agricultural policy to 53. Using these or similar methods to search for specific 'information links', either between individuals, groups or organisations, may help to effectively reduce the number of respondents in the (ongoing) evaluation procedure without jeopardising, too much, the quality of data collected.

The fundamental question is, therefore, if we are going to reduce the numbers of actors, necessarily out of expediency in large, ongoing studies, how can we do this more effectively? While the studies reviewed above shed some light on how this might be achieved, combining these methods with those used by Melbeck (1998) may be most relevant. Melbeck's international empirical study that compares local policy networks in Germany and the USA is, necessarily, reductionist for obvious pragmatic reasons. To begin with, Melbeck limits his study to a single policy domain and a particular phase of policy making. Moreover, his study is issue-specific. These limitations, though quite usual in policy network studies of this kind, will affect the quality of data collected because of the constraints they place on procuring a wide range of views and opinions from people outside of these narrowly defined spheres who may be still quite influential in policy making.

However, to overcome these limitations Melbeck considers - in addition to the traditional power-reputation network in which information is provided about how actors can influence each other by supporting or opposing one's views - the possibility of a 'discussion network of community-relevant matters' (Melbeck 1998: 543). A discussion network, which also includes additional social contacts not necessarily associated with the power network, may be established systematically and quite quickly. To achieve this goal, questions that are put to people within the narrowly defined spheres above do not simply ask for their opinions about certain issues (issues that are very relevant to the participating communities and therefore can act as effective topics for discussion), but also whether they had discussed these issues with others, and, if so, with whom. This information is then used to help identify people outside the usual spheres of influence quickly and efficiently. For example, people from the community, district, land or federal levels that would otherwise not be named, could be named and included in a discussion network. Compare this method with that of Pavlovich, whose study relies more on *ad hoc* referrals to people for discussion, which of course is fine but does take quite some time. Combining Melbeck's methods with those above may help to make the earlier suggested mapping process more relevant in terms of engaging a wider range of actors, and thus highlighting some underlying and more complex issues, both quickly and efficiently.

In summary, this section has discussed possible methods that could be combined and/or adapted for use in the South Australian case study. In short, combining these methods may facilitate the collection of more relevant data for assessing the democratic quality of policy networks in the case study area. Section 4 develops this notion further and considers ways in which these methods might be applied in the field.

4.   A METHODS MATRIX

The methods selected for assessing the democratic quality of policy networks are summarised in a 'Methods Matrix' (Table 1). The matrix is divided into four sections and two sub-sections. The divisions highlight, at a glance, not only the most appropriate quantitative and qualitative methods to be combined but also *why* they have been selected and *how* they might be applied in the field. The matrix thus acts as 'filter' whereby the methods discussed (or referred to briefly) in previous sections are first précised, then briefly analysed and finally considered for use in the field. It is hoped that such a matrix might be useful as a simple guide. For example, initially, how the methods will be combined and applied in the field is based on theory and discussion. Not until these methods have actually been applied will the researchers be able to gauge properly whether the combinations were appropriate or not. Therefore, using a matrix means that additional columns could be added quite easily so that brief notes could be made in the field that record how useful the methods were and why, or why not. Following analysis, alternative methods could be suggested, and, if necessary, quickly entered into the matrix to be trialled during subsequent assessments. The matrix is also a simple format that could be used by other researchers who may wish to replicate this study in the future, or as a basis for discussion with the wider community. The matrix therefore is a simple but effective research tool that has the potential to be applied and developed on an ongoing basis and is thus very relevant to this case study and the South Australian initiative.

Table 1   Methods Matrix

STUDY AND POLICY FIELD	EXISTING QUANTITATIVE METHODS	EXISTING QUALITATIVE METHODS	A COMBINED APPROACH	
			Problems and/or Prospects	**Potential Application in Case Study Area**
Carroll & Carroll (1999) *Civic Networks, Developing Countries*	**Government Groups** • Surveys mailed to civil servants • Questions open-ended. **Non-Government Groups** • Directory of most appropriate groups created • Groups categorised • Census created.	**Interviews** • Cross-section of employees • Select members of ethnic groups	• Selects only most powerful actors in groups!	• Ascertain specific themes/issues for initial mail surveys • Create separate directories • Identify overlapping issues (e.g. government and non-government; between ethnic groups) • Reduces respondent numbers • Does not sacrifice, too much, the quality of data collected.
Chatterton (2002) *Sustainable Development. Environmental Policy at the Regional Level*	**None**	**Interviews** • Wide range of organisations, individuals (e.g. statutory, NGO micro-enterprises and community groups)	• Costly and time consuming • Provides plenty of 'food for thought'	• Helps focus on specific and most relevant issues • Helps develop topics for discussion in focus groups.
Cross, Borgatti & Parker (2002) *Informal Networks of Employees*	• Quick surveys • Assesses knowledge flow among groups • Relevant peoples' names placed on a network diagram	• Network diagram a basis for discussion in follow-up sessions • Quick survey sensitive to issues	• Involves a wider range of people • Ensure all are comfortable, not just managers! • Explores deeper issues	• Use in mapping phase • Questions based on themes (from document study, literature review) • Encourages wider participation from outset

Curtis, Britton & Sobels (1999) *Environment, Agriculture, Landcare*	• Examines attendance records • Ascertains numbers of participants in network meetings	**Interviews** • Semi-structured • Interview questions structured on themes emerging from literature review **Other Methods** • Participant observation • Document study of minutes from network meetings	• Opportunities for wide range of people to participate • People in own environment; feel more comfortable • Themes a good idea. Relevant issues, generates discussion • Encourages participation • Explores deeper issues • Too costly, time consuming!	• Helps decide themes for subsequent questions/topics for discussion • Helps select participants (reducing numbers) without losing quality data
Duke (2002) *Prisons Drug Policy*	• Official published indicators/statistics • Explores nature and extent of problem over time	**Interviews** • Semi-structured • Wide range of policy actors interviewed who belong to a core of influence • Other Methods • Policy documents, reports • Guides direction of interviews; provides historical and contextual analyses	• Useful, but limited to most powerful actors!	• Could helps select a wider range of actors: from powerful actors a wider 'discussion network' created
Egdell (2000) *Agri-environmental Policy Networks*	• Survey of publicly available documents • Telephone surveys; respondents selected from above\Statistical methods (Chi squared and t-tests)	**None**	• Could help reduce the number of respondents to a relevant few • When making selections avoid omitting less powerful actors!	• Helps select appropriate discussion themes for further telephone interviews and subsequent discussions / focus groups

Hoeffer (1994) ***Social Welfare, Policy Making,*** ***Group Interests***	• Mail survey of active interest groups • Groups identified through publicly available information • Content analysis of responses • Statistical analyses (compare objective, independent and dependent variables)	**None**	• Similar to Egdell (2000), but no interviews	• Statistical analysis useful, particularly in final analysis, but only if more people actually participate (*via* choice of themes, interviews, discussions etc) from the outset
Melbeck (1998*)* ***Local Policy Networks***	• Content analysis (e.g. local newspapers, pamphlets, directories) • Compiled lists of organisations and leadership positions • Reduces list to relevant actors using other criteria than social, cultural economic specifically (these sectors over represented) • List given to local experts who named most important persons	• Important people interviewed but also given lists of actors • Snowballing • A highly relevant 'discussion network' formed which included less prominent, but often influential, members of networks	• All methods useful. Good starting point to explore deeper issues • Respondents selected initially by experts rather than community. Too many assumptions made at the outset about which themes are important!	• Reduces number of actors in large study quickly without sacrificing, too much, quality of data collected • 'Discussion network' effective, but more so if wider range of people involved in choosing themes from the outset

O'Toole & Burdess (2004) *Community Governance in Small Rural Towns*	• Rural towns selected from list of councils • Identified by size, geographical spread, local authority, degree absorbed into cities • Local community development groups recommend potential interviewees	**Interviews** • In depth, face-to-face interviews • Conducted in peoples' local environments	• Reduces lists of respondents • Good to conduct interviews in local environments; improves understanding of local issues. • Good way to explore deeper issues	• Could improve content analysis, and help select themes appropriate to wider range of actors from the outset
Pappi & Henning (1999) *Common Agricultural Policy*	**Government Groups** • Identified actors with authority (ministers) • Selected relevant people for interview • Respondents check list of organisations and indicate from which they receive expert advice **Interest Groups** • Larger numbers, therefore select those that overlap in terms of committee memberships • Create informational links • List organisations by type of actors or branch of interest • Select most influential actors	• Carried out 40 to 50 interviews with respondents • Respondents name organisations with which they have a certain type of relationship	• Use to reduce number of respondents effectively • Limited in terms of relevant themes and selecting less prominent actors!	• Could help create informational links to reduce numbers of respondents • Better if combined with selection of themes relevant to wider range of actors from the outset, which leads to more informative discussions

Pavlovich (2003) *Tourism, New Zealand*	• Mapped networks chronologically • Map based on initial qualitative data (opposite)	**Interviews** • Interview with owner leads to informal discussions with manager, employees and then communities **Other Methods** • Oral histories, archival data, participant observation	• Good methods for exploring deeper issues • Time consuming and not cost effective!	• Could be used in latter part of this study, in 'discussion network' phase • Less prominent actors may wish to provide additional information. Worth exploring in more depth. • Some methods could also be used to help select more appropriate themes for discussion from the outset
Pforr (2002) *Tourism, Northern Territory, Australia*	• Key respondents identified from publicly available information • Standardised questionnaires sent to key respondents by mail • Core actors and nature of interaction elicited • Network of actors mapped to highlight most powerful	**None**	• Traditional mapping methods • Good framework to use to begin SA case study • Without modification little chance of including less prominent but equally important actors in policy network!	• Use as a starting point • Combine with other methods to explore themes relevant to a wider range of actors from the outset • Could make further questions (for discussion network) more relevant
Provan & Milward (1995) *Community Mental Health Systems*	**Sites** • Cities chosen on basis of comparable size, medium to large (from census data) **Networks** • Surveys mailed to heads of four agencies including cover letter and letter of support from cities core agency • Questionnaire developed	**Networks** • Travel to each site, met with heads (of funding and support groups) • Explained procedures, sought further co-operation • Presented, discussed and refined list of organisations • Developed list of other agencies • Avoided including only	• Authors establish good working relationships with all respondents (individuals, communities, organisations) from the outset • Good methods for exploring deeper issues, builds trust • Time consuming and costly!	• Use in transition from initial mapping phase to discussion phase (focus groups?), and beyond (ongoing assessments?) • Helps form good working relationships – one main aim of SA case study • Could help respondents feel more valued and want to participate on an ongoing basis • A more efficient evaluation procedure developed

	- for each agency - Telephoned each after 10 days to resolve any initial problems setting up interviews (see opposite) - Some agencies eliminated at this point - Questionnaires collected after interviews or returned by mail - Follow up telephone interviews to collect missing data and check for inaccuracies **Clients** - Selected from 5% random sample in each community	those agencies well-integrated - Visited each site jointly interviewing members of every agency **Interviews** - Interviews non-structured: collected views, impressions, histories, function and agency's role - Extensive notes taken, compared and contrasted - Follow up on important points during interviews - During interviews also reviewed questionnaire items (eliminated more agencies and added new ones) - Collected funding data from docs and interviews with officials **Clients** - Decisions about who to select made by professionals - Clients contacted and asked if they wish to participate - Met individually with trained personnel - Structured interviews		

Rhodes (2002) *Ethnograph*	**None**	• Don't assume, listen • Build trust, be nice, slow and gradual • Build rapport, but not too friendly • Self-reflect	• Some very valid general points • Very important if wish to explore deeper issues • Ethnographic research methods too expensive and time consuming (at least at this point in time)!	• General approaches in ethnographic research could be applied here from the outset, but particularly during interviews (Remote communities, indigenous and non-indigenous, suspicious of outsiders?)
Stockman & Berveling (1998) *Local Politics, Amsterdam*	**None**	• Overview of selected issues presented to representatives of organisations • Representatives indicate most relevant issues • Representatives presented with a list of organisations from which they receive advice plus a list of power resources • Representatives indicate on a Leichhardt scale important and unimportant advice and power resources	• Helps reduce large number of respondents • Potential to be too selective in terms of issues and representatives (Authors decide most relevant issues for representatives to consider)!	• Could be used to reduce number of actors, and identify where issues overlap

Thurmaier and Wood (2002) *Public Policy, Interlocal Agreements (ILAs)*	• Open-ended questions, pre-determined before interviews	**Interviews** • Conversations developed from pre-determined questionnaire **Other Methods** • Comparative case study (counties and cities, different local governments, histories and demographic qualities • Contextual analysis (histor., geogr.)	• Very useful methods if a wider range of people were involved • Relied too much on suggestions of powerful actors about who to contact for follow up interviews!	• Could use these methods to improve background knowledge/context of case study area • Could use methods to select follow-up interviewees; but make questions more relevant from the outset by basing them on wide ranging themes (see previous methods) • Could help create a better 'network diagrams' and/or 'discussion network' to include less powerful players
Van Bueren, Klijn & Koppenjan (2003) *Environmental Policy, Dutch Zinc Debate*	• Questionnaires mailed to key players	**Interviews** • Structured interviews with key players **Other Methods** • Document analysis • Final presence-absence analysis (breakthroughs vs. impasses of collective action)	• Good methods to use for selecting and interviewing elites • Limited potential for including a wider range of actors (less prominent in networks)	• Could use in conjunction with other methods to help familiarise with policy environment (context) and hence selecting themes

5.   CONCLUSION

This paper has revealed specific combinations of quantitative and qualitative research methods that may be appropriate in the context of the DK-CRC research project '*Better governance for dispersed desert populations: A South Australian case study*'. It is argued that by selecting specific combinations of research methods these evaluation procedures are able to engage a wider range of respondents and gain a better insight into more complex issues, which may have otherwise gone unnoticed, in ways that may be cost effective and time saving. Using these combinations, better quality data may be collected and hence better measurements of democratic quality of governance networks made. It is also suggested that by employing such methods there is greater potential to make the evaluation procedure more accessible to remote desert communities; provision is made for desert communities to become more involved (participate) in the evaluation procedure if they wish. In particular, this paper suggests that data collection methods should be improved during the initial phases of the evaluation.

Following the initial mapping phase - in transition to the discussion phase - provision should be made to improve the quality of questions by basing them on up-to-date themes or issues that are most relevant to respondents (see Curtis *et al.* 1999 and Cross *et al.* 2002). While this method has been used as a part of traditional content analysis, it appears that the themes are chosen, in the main, by the researchers. Not enough attention has been given to the current views of respondents, especially those respondents that are less prominent in networks. This paper argues that by improving the quality of questions in this way there is more chance of including a wider range of actors in the evaluation; people begin to feel that the evaluation is relevant to their lives from the outset.

Provision should also be made at this stage to reduce the numbers of respondents (necessary in large studies like the SA initiative) to measure the democratic quality of governance networks without compromising the value of the data collected. Using combinations of the 'overlap' and 'information links' methods - again part of traditional policy network research (see Pappi and Henning 1999) – may help to achieve this goal. However, to improve these methods this paper suggests that respondents are asked if they have discussed any of the emerging issues with others and if so with whom. After employing the combinations of methods suggested so far, a 'discussion network' may be created (see Melbeck 1998) that also includes - and which may encourage the participation of - less prominent members of networks.

Once these initial phases have been completed consideration can then be given to setting up meetings or focus groups in which network diagrams can be used as a basis for discussion to allow respondents to make their comments, in this case about the democratic quality of governance networks. Following completion of this phase data can be analysed and peoples' perceptions better quantified. Of course, all methods employed in this study should be approached with great care and sensitivity (see esp. Rhodes 2002 and Provan and Milward 1995).

In summary, the specific combinations of research methods presented in this paper suggest how to better enhance the quality of data collected in an evaluation of the democratic quality of good governance networks as a form of effective governance in the context of a South Australian case study. The authors intend to demonstrate the application of the methods matrix, and the results they obtain, in the field following the completion of initial exploratory studies currently being conducted by DK-CRC in South Australia.

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