Resilience management or resilient management? A political ecology of adaptive, multi-level governance

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Abstract

Multi-level governance may facilitate learning and adaptation in complex social-ecological circumstances. Such arrangements should connect community-based management with regional/national government-level management, link scientific management and traditional management systems, encourage the sharing of knowledge and information, and promote collaboration and dialogue around management goals and outcomes. Governance innovations of this type can thus build capacity to adapt to change and manage for resilience. However, critical reflection on the emergence of multi-level governance and its many implications for community-based conservation and natural resource management is warranted.

Drawing on examples from the North and South, this review examines the challenge inherent in fostering adaptive, multi-level governance and overcoming entrenched management systems. A framework to facilitate analysis is developed by integrating concepts from three complementary bodies of scholarship: common property theory, resilience thinking and political ecology. Core value and attributes of resilience management are identified, and include participation and accountability, leadership, knowledge building learning and trust. However, political ecological interpretations help to reveal the challenge of actualizing those values, and the contextual forces that make entrenched, top-down management systems resilient to change. These forces include the role of power, scale and levels of organization, the positioning of social actors, social constructions of nature and problems confronting governance efforts, knowledge valuation and the roles of ecological systems as agents of social change.

Introduction

Innovative institutional and organizational frameworks are required for effective governance in the context of social-ecological uncertainty, and the challenge of monitoring, interpreting and responding to system feedback (Berkes et al., 2003). The importance of designing and managing projects, programs and policies which are adaptive and responsive to evolving socio-economic circumstances, political complexity and ecological surprise have been stressed in diverse disciplines, including public administration and rural development (Johnstone and Clark, 1982; Uphoff, 1986; Brinkerhoff and Ingle, 1989; Rondinelli, 1993), management studies (Senge, 1990; Stacey, 1993, 1996), and natural resource and ecosystem management (Gunderson et al., 1995; Gunderson and Holling, 2002; Walker et al., 2002; Berkes et al., 2003).

Governance in a multi-level world involves developing and sustaining functional feedback loops among social and ecological systems at different scales. Cooperation, collaboration and the linking of different social actors in functional networks thus play a crucial role in the development of social learning and adaptation in response to feedback. A number of different terms are used to describe multi-level institutional frameworks, including adaptive co-management (Ruitenbeek and Cartier, 2001; Olsson et al., 2004b; Armitage et al., forthcoming), adaptive governance (Folke et al., 2005; Brunner et al., 2005) and polycentric or multi-layered governance approaches (Ostrom et al., 2002; Ostrom, 2005). Although varying somewhat in terms of scale and disciplinary focus, there are elements of both the iterative learning orientation of adaptive management and the linkage orientation of

collaborative forms of management in which rights and responsibilities are jointly shared and clearly defined (Olsson et al., 2004a,b).

Adaptive co-management is perhaps the most specific in making the connection between learning and collaboration. Ruitenbeek and Cartier (2001:8) define adaptive co-management as a long-term management structure that permits stakeholders to share management responsibility within a specific system of natural resources, and to learn from their actions. Olsson et al. (2004b:75) suggest adaptive co-management is a flexible, community-based system of resource management tailored to specific places and situations, and supported by and working with, various organizations at different scales. Folke et al. (in Olsson et al. 2004b) further define the approach as a process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, on-going, self-organized process of learning-by-doing. This requires actors and institutions that learn to live with change and uncertainty; nurture diversity for re-organization and renewal of social and ecological systems; combine different types of knowledge systems for learning; and create opportunities for self-organization in support of social-ecological sustainability (Folke et al., 2002).

Folke et al. (2005) suggest that adaptive governance is operationalized through adaptive co-management systems in which the role of social capital, relationships, learning and trust building are emphasized. Elsewhere, collaborative decision making arrangements, flexible policy conditions and social organization have been identified as the stimulus of social learning and adaptive capacity (Woodhill and Roling, 1998; Armitage, 2005). Systematic learning and purposeful adaptation under conditions of uncertainty are more likely to emerge in the context of meaningful social interaction (Plummer and Fitzgibbon, 2004, 2006).

Such ideas can be linked in part to a growing concern with social-ecological resilience. Resilience in social-ecological systems is determined by: (1) the ability of a system to absorb or buffer disturbances and still maintain its core attributes; (2) the ability of the system to self-organize; and (3) the capacity for learning and adaptation in the context of change (Gunderson and Holling, 2002; Berkes et al., 2003). In the realm of governance, Folke et al. (2005) suggest that managing for resilience demands that science and policy accept the constancy of change, social-ecological interactions across temporal and spatial scales, limits of control in non-linear systems, and the complexity inherent in articulating desirable pathways of change in the face of competing social interests

In this regard, resilience thinking helps to direct learning around the key variables that enable linked social-ecological systems to renew and reorganize along sustainable trajectories in the face of perturbation. Social-ecological resilience, however, is a normative concept (i.e., resilience of certain social-ecological system configurations may not be desirable (Carpenter et al., 2001)). Efforts to define resilience must be situated in the context of contested and evolving human interests and the uncertainties of human interaction (Armitage and Johnson, 2006), making efforts to foster resilience management particularly challenging and thus worthy of further reflection.

Several decades of scholarship on institutions in a range of disciplines (e.g., rural development and public administration, management studies and organizational behaviour, critical geography, etc.) illustrate that modifying entrenched governance systems is a significant challenge. Governance systems which are scale insensitive and command-control

oriented (Holling and Meffe, 1996) as typified by the maximum sustainable yield mantra in fisheries and wildlife, for example, have themselves proven quite resilient. Although a number of critiques of conventional management highlight the limitations of command and control, top-down management, and the need to move towards more adaptive forms of governance, the scholarship in this area has focused predominately on identifying prescriptive values and principles, along with a concern with governance structures. The varied, complex and messy social processes that determine whether, if and how those prescribed values are 'actualized' and governance structures lead to sustainable outcomes has been less of a focus (although see Adger et al., 2005; Lebel et al., 2005). There is a need to consider both of these issues. Specifically, it is essential to understand the actual values of social actors that may or may not contribute to an "integrity gap" in the thinking-doing governance nexus.

The purpose of this review is to integrate threads from complementary analytical frameworks in order to work towards an understanding of community-based conservation and natural resource management in a multi-level world. In doing so, I seek to link some long-standing insights from the study of common property institutions (Ostrom et al., 2002; Ostrom, 2005), with concepts from resilience thinking (Berkes et al., 2003; Folke et al., 2005), and critical perspectives on society, institutions and governance encouraged by political ecology (Peet and Watts, 1996; Neumann, 2005; Paulson and Gezon, 2005). The intention is not to argue against resilience management or the development of adaptive, multi-level governance as a basis to support community-based conservation, nor to critique a priori efforts in this regard. Rather, the purpose is to take as a starting point the need to incorporate more explicitly in current debates, the underlying social processes and values which shape adaptive governance efforts. In this sense, the review is intended to offer some general criteria upon which to make that incorporation explicit.

Common Property Theory, Resilience and Political Ecology

A central question in this work-in-progress review is to examine whether multi-level governance approaches can lead to appreciably different modes of operation. Do such arrangements encourage resilience management or do entrenched and at times unexamined social-political interests and ecological dynamics result, inevitably, in resilient management? I seek to locate my response to this question at the intersection three complementary frameworks that coalesce in productive ways: common property theory, resilience thinking and political ecology (Figure 1).

Common Property Institutions
A key outcome of common property scholarship has been the development of design principles for common pool resource institutions. Ostrom's (1990) original design principles (e.g., dealing with group size and homogeneity, benefit and cost distribution mechanisms, the existence of monitoring systems, and clearly defined resource system boundaries) highlight the institutional conditions for collective action and self-organizing systems for community-based management of common pool resources. Such principles have been instrumental in thinking about the development of multi-level governance to support community-based conservation and the management of natural resources. As Ostrom (2005) notes, however, these principles were never intended as blueprints for institutional design, but rather identify

the structural similarities that exist in those contexts with relatively stable management systems with a certain degree of ability to adapt to change.

Berkes et al. (2006) note that the study of relatively simple community-based management systems and single-use resource management regimes helped to build these basic institutional design principles, but that many of the institutional systems studied were in reality multi-level and far from simple. These multi-level systems were linked horizontally (across geographic space) and vertically (across levels of organization) (Young 2002). Attention to vertical and horizontal linkages, it is hypothesized, should help social actors and institutions respond to change, adapt and cope with uncertainty by improving communication, coordination and collaboration.

Edward and Steins (1999) noted, however, that the institutional framework derived from the study of common pool resource management have not adequately accounted for the context within which they are embedded, including economic, political, social, cultural and resource dynamics. These well-tested principles, moreover, are increasingly being discussed in relation to the challenge of adaptation in dynamic conditions characteristic of most governance contexts. Application of institutional design principles clearly needs to address how actors at different scales reorganize or evolve in the context of social-ecological perturbation (see Stern and others 2002; Dietz and others 2003; Ostrom, 2005). Efforts to foster adaptive, multi-level governance will require a detailed understanding of the highly contextual exogenous and endogenous variables that influence how social actors respond proactively to changing social-ecological conditions, support social learning and social capital formation, and maintain collaboration (Adams et al., 2003; Armitage, 2005; Plummer, 2006). There is arguably, a tendency to overemphasize the design of governance arrangements, where greater emphasis on the less tangible processes that determine resilience, adaptation and learning may be warranted (Doubleday, forthcoming; Nadasdy, forthcoming).

Resilience
Resilience thinking provides a useful entrée into the challenges and implications of change in institutions (Gunderson and Holling, 2002; Anderies et al., 2004; Anderies et al., 2006). Three central features of resilience are identified: (1) the ability of a system to absorb or buffer disturbances and still maintain its core attributes; (2) the ability of the system to self-organize; and (3) the capacity for learning and adaptation in the context of change. Walker et al (2002) further describe resilience as the potential of a system to remain in a particular configuration, and maintain feedbacks, functions, and an ability to reorganize following disturbance-driven change. As a framework for analysis, resilience can provide a measure of the amount of disturbance that will cause a system to shift from one set of mutually reinforcing processes and structures to some alternative set of processes and structures (see Holling 1973). The concept of resilience, therefore, can be helpful when attempting to identify the likelihood of shifts or transitions among different system configurations (Peterson 2000).

The implications for management that arise from resilience thinking are significant. Specifically, the primary goal for managers centres on keeping linked social-ecological systems from moving towards or further into system states or conditions that meet neither ecological nor socio-economic sustainability criteria. In systems vernacular, this implies an effort to keep the system from 'flipping' into an alternative and possibly degraded state. To

achieve this goal, a number of system dynamics must be accounted for, such as the existence of multiple thresholds, non-linearities in system behaviour, feedbacks and scale mismatches, cascading effects, system collapse and reorganization (Anderies et al., 2006). A recent special feature of Ecology and Society has examined the various dimensions of resilience management. A key conclusion from this special feature is that resilience thinking can be useful as a way to guide management actions, not in a predictive sense, but as a way to highlight social-ecological system attributes that require novel forms of governance and new types of management interventions (see Anderies et al. 2006).

Managing for resilience, then, requires governance that is adaptive, multi-level and focused on learning. What governance attributes or features enable resilience management? A preliminary review of an emerging literature addressing resilience management and institutions highlights a number of these attributes (Table 1).

Table 1: Selected features of resilience management

Features, attributes	Sources (*to be completed*)
Participation and collaboration	Berkes et al., 2005; Lebel et al., 2006; Armitage et al., forthcoming
Multi-Layered	Young, 2002; Lebel et al., 2006; Ostrom, 2005
Accountability	Lebel et al., 2006
Leadership	Berkes et al., 2005; Olsson et al. 2004a,b
Building knowledge	Olsson et al., 2006; Folke et al., 2005
Learning	Walker et al. 2002; Folke et al., 2005; Armitage et al., forthcoming
Trust	Berkes et al., 2005; Brunner et al., 2005
Networks	Olsson et al., 2004

Such features, as previously noted, represent important prescriptive values and principles for adaptive, multi-level governance. Yet as Anderies et al. (2006) point out, "much variation in the association between governance arrangements and the capacity to manage resilience remains unexplained". Such variation may be rooted within individual and organizational capacities, the institutionalized (and informal) relationships among system actors with scale-dependent responsibilities, interests and needs, and the difficulty associated with inherent trade-offs, as well as identifying appropriate points of intervention. As Walker et al. (2002) highlight, for example, transformational learning is a key element of resilience management, and draws attention to the role of social memory and experience. Yet, social memory and transformational learning are an outcome of the social legacies (positive and negative) that exist in particular places and the vulnerabilities associated with such legacies. Understanding the social and political dynamics that shape memory, experience and wisdom, and the relationships of those processes to ecological form and function is necessary to learning.

A contextual understanding of any governance context is inimical to understand how efforts to foster collective action self-organizing, adaptive and multi-level governance (Edwards and Steins, 1999). Honadle (1999) has noted that "context matters". This recognition should encourage efforts to critically examine the underlying socio-cultural, political and ecological dynamics that determine the extent to which attributes of resilience management are

prescribed, or are in fact actualized as norms in a governance context. Political ecology can be helpful in this regard.

Political ecology
Political ecology has emerged as a scale-sensitive approach that integrates political economy perspectives and ecology to analyze the underlying contexts and processes of human-environment interaction (Blaikie and Brookfield, 1987). Over the past 15 years, political ecological research has provided valuable insights into the management of common pool resources, the challenges created by overlapping institutional arrangements, local access and distribution conflicts, and the narrative concerning "science" and "modernization" that have led to the marginalization of certain groups and the devaluation of local knowledge systems (Peet and Watts, 1996; Zimmerer and Bassett, 2003; Robbins, 2004).

As an analytical framework, therefore, political ecology incorporates broad themes in human ecology with critiques about power within social institutions, formal institutions of governance, and the mediating influence of class, gender, identity and knowledge. Critiques of economic globalization, neo-liberal development strategies, and inequitable power relationships have been linked to the loss of local culture and knowledge systems and increasing livelihood vulnerability (Zimmerer and Bassett 2003). Political ecology, however, is not without its critics. One common critique, for example, suggests that most political ecological analysis involves little if any ecology (see Vayda and Walters, 1999; Walker 2005), and may be more accurately labeled environmental politics. Such critics have argued that rigorous political economy explanations of human-environment interactions should first examine and articulate the ecological changes and events taking place (Vayda and Walters, 1999), while also recognizing the influence of ecological conditions on human responses and power relations (Zimmerer and Bassett, 2003).

A spate of recent volumes on political ecology have sought to synthesize the key features of this approach and consolidate theoretical insights (Forsyth, 2003; Zimmerer and Bassett, 2003, Robbins, 2004; Neumann, 2005; Paulson and Gezon, 2005). Nuemann's (2005) synthesis is particularly interesting because he argues that the defining feature of political ecology is the merging of non-equilibrium ecological concepts and critical social theory. Four overarching themes in this growing body of political ecological scholarship are identified by Nuemann (2005) to emphasis this position: (1) critical examinations of the scientific basis regarding claims about human-environment interactions resulting in the recognition that objective, science-driven claims about degradation and culpable parties have on a number of occasions not proven fully accurate; (2) recognition that ecological systems are not passive recipients of human action but that ecological agency can shape human-environment interactions; (3) examining the role of temporal scale to highlight the non-linear and non-cyclical character of environmental change and the social construction of nature; and (4) identifying the need for flexibility in institutional designs that seek to match dynamic ecological systems.

In terms of facilitating an understanding of institutions and governance for community-based conservation in a multi-level world, two conclusions can be drawn from the body of political ecological scholarship. The first conclusion is that key questions and lines of inquiry in political ecology can inform efforts to examine and build adaptive, multi-level governance for community-based conservation and natural resource management by highlighting the

social factors that actualize prescribed governance values. The second conclusion highlights the conceptual complementarity of political ecology and resilience for understanding social-ecological change and institutional response. Each of these conclusions is discussed below.

In terms of the initial conclusion, political ecology draws attention to the many links among power, marginality and vulnerability, ecological change, livelihoods, and the implications for governance. In particular, a political ecological perspective illuminates four main themes (Armitage and Tam, forthcoming) of particular utility in understanding multi-level governance. First, political ecology emphasizes attention to the role of power, control and scale in the multiple levels of organization and management (e.g., formal higher governance levels, intermediary organizational levels, inter- and intra-community socio-political dynamics). Second, political ecology draws attention to the positioning of stakeholders in the governance discourse. Specific groups (often vulnerable communities or groups within communities) are negatively perceived and presented in decision making processes and often marginalized. Studies using a political ecological framework, however, also document how marginal groups are capable of perceiving and presenting themselves to assert their identify and extract benefits for their communities (Li 2000).

Third, political ecology highlights how social actors construct understanding of nature, the environmental problems being faced, and therefore, the interventions and solutions considered appropriate. This does not suggest that it is not possible to "distinguish better from worse explanations (Sayer in Neumann, 200:47)" of change, but that certain types of discourse (e.g., around science and modernization) and representations of marginal groups influences how the prescribed values inherent in adaptive, multi-level governance. As Neumann (2005:48) summarizes, "models of nature can neither be naively accepted or objective reality divorced from social and power relations, nor as merely an illusion produced through discourse". However, "discursive relations and representational practices are constitutive of the very ways that nature is made available to forms of economic and political calculation and the ways in which our interventions in nature are socially organized (Castree and Braun in Neumann, 2005:47)".

Fourth, the interplay of power, the positioning of various governance actors, and the social construction of nature and environmental problems, also has a strong influence on the perceived validity and dissemination of different types of knowledge used to understand environmental degradation and change. Often, the effect is that formal science is identified as more objective and therefore relevant in decision making than traditional or local knowledge. Although an expected outcome of multi-level governance is the linking of formal science and local or traditional knowledge systems, this is not an a priori outcome. Caution is required, however, given the danger of essentializing local knowledge systems, privileging the local without identifying the productive role of Western science, or representing traditional knowledge as a self-contained body of knowledge disconnected from interplay with Western knowledge systems (Agrawal, 1995). Partly in the context of this debate, political ecologists have been critical of the simplifications and representations of the 'local' in community-based conservation and natural resource management (Kellert et al., 2002)

Fifth, political ecology is increasingly oriented around the notion that ecological systems are not only transformed by human action, but are themselves active agents shaping and influencing the decisions and choices individuals and institutions make, and the socio-

political relationships among them. As Peterson (2000:324) notes, "ecological change, whether independent of, influenced by, or controlled by human action, alters the types of conflict over ecological resources and services…."

With respect to the second conclusion, the combination of political ecology and resilience can lead to the identification of useful tools for thinking about cross-scale connections for community-based conservation and natural resource management in a multi-level world. Although each framework emerges from different disciplinary perspectives and set of intellectual traditions, they share a number of commonalities and key themes (Table 2). Specifically, four points of intersection can be highlighted that may be of particular value as a basis for thinking about the challenges of adaptive, multi-level governance: (1) the emphasis on nested hierarchies and scale. Scale is important to the analysis of social and ecological systems because the concept directs attention to the diversity of variables and processes involved in the articulation of change and responses to change (Armitage and Johnson, 2006); (2) a recognition of the possibilities and potential for multiple system trajectories and pathways. As Scoones and Wolmer (in de Hann and Zoomers, 2005:43) noted, "… pathways of change are non-linear and appear non-deterministic inasmuch as various actors starting from different positions of power and resource endowments may have arrived at similar configurations by very different intermediate steps"; (3) an awareness of the self-organization of complex socio-ecological systems; and (4) the importance of contextualizing the analysis of social-ecological systems, particularly where attention is directed at identifying interventions. For political ecology, then, the overarching theme is power, power relationships and how different interests mediate those relationships across scales. From a resilience perspective, the overarching theme is unpredictability, social-ecological change, and the dynamics of cross-scale interactions that can only be addressed with new forms of governance. Thus, the challenge that follows is to explore how such insights may support understandings of institutional arrangements designed to foster community-based conservation and natural resource management in a multi-level world.

Table 2: Selected points of intersection between political ecology and resilience

Multi-Level governance dynamics	Resilience directs attention to…	Political ecology directs attention to…
Nested hierarchies and scales	• Interactions of nested systems (holonarchy) • Limited utility of single scale perspectives (or one hierarchical level)	• Socio-political (institutional) and organizational levels and interactions, mediated through power relations • Inter- and intra-scale dynamics of decision making (community vs. state; within community, etc.)
Multiple pathways and trajectories	• Systems experience changes that are unknowable and discontinuous, and involve sudden and dramatic flips – thus the possibility of multiple steady states in a given system • Manner in which factors of multiple types and at multiple scales coalesce to shape system direction – often a function of chance and history	• How socio-political, institutional, economic and ecological factors coalesce in unpredictable and unintended ways • The significant role of historical conditions (human-ecological interactions and power relations) in current system trajectories

Self-organization	• Complexity of living systems and manner in which they reorganize and/or adapt in the face of change (internal or external disturbance)	• Understanding ways in which ecosystems and environmental systems shape and form self-organizing and perpetuating power relationships and resource control at different scales
Importance of contextualization	• Systems as integrated wholes whose properties are more than the sum of parts • Emergence as neither foreseeable nor expected – emergent properties of systems can only be understood within the broader context in which they are enmeshed	• Differentiated role of stakeholder groups and actors in the creation of knowledge, the legitimization of knowledge frameworks or 'ways of knowing', and representations of reality • Embedding current system conditions in an historical ecological framework and an understanding of power relationships
Key theme	• Unpredictability of nature-society interactions and the dynamics of scale that foster unpredictability	• Power, power relationships and the mediation of power relationships across scales

Preliminary Insights from the Field

According to Scoones (1999), the contingent and dynamic nature of environmental change is "intimately bound up with social and cultural processes". Efforts to foster socially just and culturally relevant governance models will require the benefit of multiple perspectives, as will efforts to understand why in many instances, resilient management is the inevitable outcome. Community-based conservation and natural resource management in a multi-level world must attend to nested hierarchies and scale, multiple pathways and trajectories, self-organizing processes. Prescribed values to help address these challenges include participation, trust, learning, networks and multi-layered institutions.

Yet, a context-specific accounting of the complex institutional, organizational and related socio-political dynamics is required to understand governance possibilities. Ascher (2001) encouraged analysts to look beyond simplistic (or 'thin') explanations for why ecosystem management goals have often fallen short (e.g., incompetence, lack of political will, outright hostility of government agencies). Rather, 'thick' analyses of resilience management efforts are required to examine the social, political and ecological conditions that actualize governance values.

A review of a broad range of natural resource management literature (Rondinelli, 1993; Lee, 1993, 1999; Gunderson et al., 1995; Micheal, 1995; Sanderson, 1995; McLain and Lee, 1996; Smith et al., 1998; Shindler and Cheek, 1999; Johnson, 1999; Gunderson, 1999) highlights numerous procedural and substantive constraints associated with the capacity of management institutions and organizations to adapt through change and foster collaborative learning (Table 3). Not surprisingly, the constraints are largely socio-institutional and political, rather than scientific, and are fundamentally influenced by: existing political and legal structures; the worldviews and attitudes of the range of stakeholders; the ability of a

particular society to make coordinated and implementable decisions; the short-term economics of the decision, and; the extent to which particular stakeholders "win" or gain from a decision-making process.

Table 3: Selected institutional and organizational constraints to management

Procedural constraints	Substantive constraints
• Conflict between ecological values and management goals	• Inability to develop predictive models
• Inflexible institutions (risks too high, costs too high)	• Over-emphasis on analytical models
• Inflexible stakeholders, entrenched interests	• Financial capacity and the high cost of information
• Lack of participation and collaboration with broad spectrum of stakeholders	• Technical capacity to conduct experimentation (i.e., strict protocols)
• Public distrust of agencies	• Long-term timeline for analysis and decision making
• Inadequate data sharing among stakeholders	• Situation of partially open resource access system (significantly raises complexity)
• Poor integration between regional institutions and local management efforts	• Inadequate enforcement of regulations
• Fear of error among stakeholders and inability to acknowledge vulnerability and uncertainty (e.g., taboo topics)	• Institutions and staff maintain perspective as source of solutions, not as facilitators
• Social, political and/or ecological risks outweigh potential benefits of alternative management approaches (e.g., adaptive management)	• Inadequate attention to traditional knowledge
• Lack of agreement on vision, system objectives and collaborative arrangements prior to start of process	• Few institutional champions or charismatic leaders (e.g., lack of shadow networks or epistemic community)
• Inadequate focus on open and continuous collaborative learning process (i.e., learning of all system stakeholders, not only institutions and staff)	• Lack of incentives, recognition and reinforcement
• Excessive and complex management and/or administrative protocols	• New worldview often required (e.g., systems, interdisciplinary, cross-scale, etc.)
• Focus on optimal system state, not optimal management capacity, flexible institutions and system resilience	• Lack of regular program staff in responsible institutions
• Overemphasis on synoptic process (i.e., top-down, formalized and institution driven)	• Lack of staff with multiple skills (scientific and diplomatic)
• Inadequate attention to political complexity of policy and decision-making	
• Too few facilitators and group process skills	
• Poor communication among stakeholders (need for shared metaphor and symbols)	

A number of related analyses make reference to or highlight key assumptions and institutional dynamics that influence adaptation and shape management outcomes (Buck et al., 2001; Ruitenbeek and Cartier, 2001; Walker et al., 2002; Marschke and Nong, 2003). As Ludwig (2001) has highlighted, for example, there are a number of socio-institutional conditions that may influence governance in particular instances. Such conditions include a

belief in the capacity of rational thought, science and analytical processes to understand and adequately address uncertainty, and the perceived wisdom that is possible to separate social values and political agendas from objective, science-based management. According to Ascher (2001), the key variables that generate management failure, or what he refers to as 'perverse learning', are the combined effects of complexity and institutional interests. In other words, the complexity of natural resource management threatens the institutional interests of agencies and/or provides opportunities for agencies to enhance their interests in ways that do not necessarily support collaboration or learning.

As Ascher (2001) notes, this institutional complexity is exacerbated by: (1) multiple goals, objectives and mandates; (2) diverse stakeholder interests and values; (3) organizational and inter-organizational procedures; and (4) the frameworks and processes used for decision making (e.g., collaborative vs. top-down). Scheffer et al. (2002) also point to a need to understand "problem domains", or understanding the groups of actors (e.g., people, organizations) engaged in a specific problem or problems in which a wide variety of stakeholders must collaborate to identify solutions. Building upon these models and critiques can facilitate analysis of the challenges inherent in adaptive, multi-level governance. Figure 2 outlines a conceptual framework for thinking about governance in a multi-level world.

To explore the ideas contained within this framework and illustrate how these perspectives play out in the context of multi-level governance, two case studies are examined (see Table 4). It should be noted that the literature available on these cases is not directed at addressing the concerns posed in this paper, although there is material to lend itself to this analysis. I am directly familiar, moreover, with the two cases covered in the current paper. As well, the intention in part is to provide a North and South comparison, but this is being done in a non-formal sense. In the two cases reviewed, there is a different level of management formality and attention to multi-level governance.

Table 4: Overview of case studies

Case Study	Catalyst	Resource focus	Level of formality or intentionality in linkages	Strength, redundancy of linkages (horizontal and vertical)
Nunavut, Canada	Formal Land claim agreement (Nunavut Final Agreement, 1993)	Wildlife (narwhal)	High degree of intentionality because of land claim	Strength of linkages moderately high; number of vertical connections with some two-way flow of information; few strong horizontal linkages
Sulawesi, Indonesia	Indigenous rights, resource degradation	Coastal resources (mangroves) and upland forests	Low degree of intentionality; largely informal	Moderate to low strength of linkages; mostly informal and ad-hoc linkages among local and extra-local actors; limited flow of information

*Other potential cases to be explored (e.g., Cambodia, Yukon, Southern Ontario)

<u>Nunavut, Canada</u>
In Nunavut, Canada, a comprehensive land claim agreement formalized a co-management process to address the planning, management and assessment of environments and resources. For instance, Inuit harvesters represented through local resource management bodies (Hunters and Trappers Organizations) collaborate with regional co-management

bodies (e.g., the Nunavut Wildlife Management Board) and the territorial and federal government in wildlife management. As one example, narwhal management represents a particular effort to formalize efforts to address community-based conservation and wildlife management in a multi-level world in which cross-scale collaboration and learning are emphasized. Details on this case are provided elsewhere (Armitage, 2005; Berkes et al., 2005). Table 5 outlines the main actors and their interests at the different levels in the process.

Table 5: Multi-level actors and interests in narwhal management

Actor or Group	Primary mandate	Key interests / concerns
Hunters' and Trappers' Organizations	• HTOs represent principally the resource access interests and rights of hunters in each community	• Main concern has been the perceived inadequacy of narwhal quotas available to Inuit harvesters • Concerns compounded by the lack of integration of local knowledge of narwhal stocks into the formal management process • Key interests also centre on the regulation of harvesting practices and management of harvesting among members
Regional Wildlife Organizations	• Sub-regional organizations (three in Nunavut) representing local and regional harvest interests and concerns	• Focus on coordination and creation of horizontal linkages among individual HTOs in each region • Responsible for harvesting at regional level
Nunavut Wildlife Management Board	• NWMB has key responsibility for marine mammal management in the Nunavut Settlement Area	• Primary concern is balancing Inuit harvest and wildlife co-management rights established under the Nunavut Final Agreement (1993) with the principles of stock conservation and sustainability
Fisheries and Oceans Canada (DFO)	• The Fisheries Minister has ultimate authority over management of narwhal	• Within the new narwhal co-management framework, stock conservation is a key priority • Concerns about commercialization of the narwhal harvest • Interests centre as well on reducing scientific uncertainty about narwhal with further research (surveys and stock assessments)

(Source: Armitage, forthcoming)

Key changes associated with the community-based narwhal management regime include a shift from a rigid community quota system to a more flexible 'limits' approach, greater local management control exercised through locally-developed harvest by-laws, and the intention to incorporate local knowledge of resource stocks into the management process. In creating opportunities for local decision making, the community-based narwhal management framework is also intended to create a more collaborative, partnership-based and multi-level governance system.

On the surface, this evolving governance approach for narwhal illustrates a number of attributes of resilience management in that it is an effort to try and overcome the previous

command and control, top-down regime rooted in the maximum sustainable yield model. This experimental community-based narwhal management process is guided by a focus on improving participation and collaboration by shifting certain decision making responsibilities down to the community scale, enhancing the connections among the actors involved in narwhal management (local, regional, national), building knowledge of narwhal ecology by linking science and Inuit knowledge, and fostering greater trust among the participants in the process. In this regard, the narwhal management model provides a positive model around which to explore an intentional effort to foster multi-level governance and support community-based conservation and natural resource management.

The case also reveals, however, that despite the attention paid to values associated with adaptive, multi-level governance, efforts to actualize these values has been constrained in some respects – elements of the conventional, top-down management model have themselves proven resilient to change. The reasons for that may be rooted in the underlying challenges related to power, scale and marginality. A few examples to illustrate these challenges are provided:

- Control and decision-making processes around narwhal have until recently been securely located within Canada's Department of Fisheries and Oceans (DFO), and this has played an important role in undermining local resource control and associated patterns of narwhal use. Inuit hunters have been embedded in mainstream, conventional resource management systems. Although this is changing, the power differences remain tangible and the ability to make meaningful change remains in many respects centralized at higher management levels.

- The relatively recent move to formalize the community-based co-management process and build multi-level governance is unlikely to overcome the historical legacy of centralized decision making. Indeed, the various actors involved in narwhal management may appear to exert different claims to power; local level actors make most harvest decisions while the DFO has the primary role of over-site. However, in this context, the local resource management bodies rely quite heavily on the regional management authority (the NWMB) and the DFO for guidance on rule-making, knowledge dissemination and other types of technical and financial support. There remains then a fairly clear positioning of actors in the governance process despite the move away from the conventional management regime. The historical legacy of power differential influences how groups interact today.

- The role of knowledge provides a further example of this challenging context. Knowledge about narwhal management has been a point of contention between the federal government and Inuit stakeholders for some time. Inuit harvesters have argued that quotas have historically been too low, and that their observations of narwhal indicate the aerial surveys undertaken in the late 1970s (upon which quotas have been based) were inaccurate. More recent survey data suggests, in fact, that certain narwhal stocks are larger than originally believed, and are also more wide-ranging (see Armitage, 2005). Whether the rise in numbers is because of more accurate surveys or an outcome of stricter controls on narwhal harvesting is not clear. Importantly, however, the contention around narwhal populations frames the position of different groups.

- There remains a fairly significant disconnect between the stated commitment to integrate knowledge sources for narwhal management and the practice of doing so. Thus, the valuation of local knowledge and practices, and the declining status accorded to Inuit knowledge until fairly recently continues to create barriers to collaborative learning among different actors. According to Inuit participants of a Joint Commission on the Conservation and Management of Narwhal and Beluga and North Atlantic Marine Mammal Commission consultation, biologists simply do not use hunters' understanding of the stocks. While partner groups participating in the multi-level narwhal management process are supposed to be equals, the lack of trust associated with traditional knowledge and the privileging of formal science can compromise governance efforts.

- The issue of knowledge valuation also highlights the differences among social actors in the way the main challenge of narwhal management is constructed. For local hunters and harvesters, the main concern revolves around the perceived inadequacy of narwhal quotas – a problem that stems from the flawed formal stock surveys and lack of recognition of Inuit knowledge of stock health. The main problem then is decidedly one of access. For the DFO, legitimacy of the formal stock assessments suggested (at least for several decades leading up to the new narwhal governance initiative) that stock conservation was (and remains) a key priority. Key values around knowledge and interaction with the resource shape these rather distinct constructions of the problem, and further reveal themselves in expectations regarding governance outcomes. This includes, for example, the levels of decision making authority and control, and the purpose of participation in the process (greater access to resources vs. participation in the monitoring of how and when more flexible quotas are used).

Central Sulawesi, Indonesia

In Indonesia, community-based conservation and natural resource management has entered a new era of sorts. The decentralization agenda initially catalyzed by Laws 22/1999 on Regional Autonomy and Law 25/1999 on Fiscal Decentralization created space for new forms of governance. Although implementation of the decentralization agenda continues to create socio-political, institutional and ecological turbulence, engagement with new governance values has been on-going, such as those associated with resilience management (see Table 1). Thus, the opportunity to develop innovative and flexible institutional and organizational arrangements capable of integrating locally-evolved resource strategies, practices and institutions is increasingly a possibility. Institutional and organizational change may be possible, for example, with new opportunities for the development of autonomous village organization and the legitimization of customary institutions.

Key governance challenges in Central Sulawesi include coastal transformation (mangrove loss) and upland forest conservation. However, there is no formal catalyst encouraging multi-level governance efforts to address these challenges, although the possibility exists to do so among the various groups and actors engaged in community-based conservation and natural resource management in the region (Table 6). Rather, symbiotic concerns about environmental degradation and indigenous rights has encouraged some attention to the importance an explicit focus on learning and collaboration in a cross-scale manner. There are, however, historical and present day social and political dynamics that frame efforts to

improve opportunities for community-based conservation and natural resource management. A few examples of these are outlined below.

Table 6: Multi-level actors and interests in Central Sulawesi

Actor or Group	Primary mandate	Key interests / concerns
Village Level • LKMD (Elected by community) • LMD (appointed by Village Head) • Adat leaders (often informal)	• Local development (e.g., social, infrastructure); community mobilization	• Often the membership on the LKMD and LMD are indistinguishable; fail to provide appropriate checks and balances
Intermediary non-governmental organizations • Kamalise • Other local NGOs	• Kamalise is an indigenous rights group representing primarily the upland communities of Banawa and Marawola Districts	• Land claims, greater participation for marginal communities in the process of development; concerns with forestry concessions.
District (Kabupaten) and Sub-District (Kecamatan) government	• District legislative responsibilities and agencies (e.g., forestry, fisheries, planning and economic development)	• Since regional autonomy process enacted (1999), primary responsibility for providing government services • Capacity issues in meeting responsibilities
Provincial government (Propinsi)	• Historically, direct link to national level government	• Under regional autonomy process, the role of provincial bodies and legislative responsibilities more uncertain.

• In Central Sulawesi and other regions of Indonesia, there are culturally-embedded issues of power, scale and control. These issues include: (i) the emphasis on paternal authority, hierarchy and status; (ii) the importance of patron-client relationships in ensuring loyalty among the bureaucratic, political and private sector elite; and (iii) a desire to avoid conflict (Boyle, 1998). Such issues suggest the mainstream governance structures and processes can be fairly resilient to change and new approaches. More generally, diverse cultural groups interacting around a particular issue, each with their own set of norms, practices and interests, must also be accounted for in complex management contexts.

• The social positioning of actors in Central Sulawesi plays an important role in governance efforts in terms of efforts to actualize the values associated with resilience management. For example, generalization and representations of the "other" (i.e., marginalized, rural or traditional communities are often encapsulated in pejorative terminology connected to broader worldviews among the bureaucratic and management elite (Dove, 1999). Such generalizations and representations form a language of power. In Central Sulawesi, pejorative terms used in colonial times to describe peasant, agrarian-based societies are still utilized today. For example, upland groups are often referred to as Tolare (literally people of the slopes), while throughout Indonesia, forest-based communities and groups not tied to the mainstream formal political and economic system are referred to as masyarakat terasing (isolated or backward communities). Both are considered pejorative by

the communities they seek to represent, and the meanings ascribed to economically and politically marginal groups, constrains the ability to actualize values of resilience management. As Dove (1999: 215) noted, "…the persistence of these views [backward, irrational] of the peasantry, in spite of changes in time, place and culture…suggests that they are not sociological but ideological in origin. It suggests that they are based less on social reality, the local variation in which they would otherwise reflect, than on an ideological reality, consisting of a… political and economic agenda".

- The positioning of social and institutional actors is not only an issue with "state" and "non-state" groups. In Central Sulawesi, for example, the imbalance of power between mainline bureaucracies across and within administrative levels (provincial and district) complicates opportunities for multi-level governance. Two agencies at the provincial level – the planning agency (Bappeda) and the forestry department – embody significant power and authority. Supported with relatively greater resources and staff, these agencies possess an influence greater than other natural resource management departments. As the mandates of both agencies are driven by economic development priorities, however, this may complicate efforts to engender a balanced approach. Those entities that might otherwise serve as a countervailing force to the planning and forestry departments, however, are ill-equipped to do so. The Natural Resource Conservation Unit (Balai Konservasi Sumber Daya Alam) is situated in an agency (the Forestry Department) with the mandate to produce timber, not protect forested ecosystems. Similarly, the primary agency in Central Sulawesi responsible for environmental management and impact assessment (Bapedal), has little authority – real or perceived – to promote sustainable natural resource management. Bapedal has few technical or fiscal resources to review development plans, develop mitigation strategies or ensure their enforcement. Juxtaposed against the planning and forestry agencies, other departments with resource management responsibilities have limited ability to influence decision making. The accountability mechanisms that depend on a balance of power between economic development-oriented agencies and those with a protection mandate indicate a degree of fragility. Finally, the administrative bodies at the provincial and district levels are strongly influenced by the Provincial Governor and District Head (Bupati), respectively. Thus, independent civil service functions that provide an institutional and organizational precondition for multi-level governance in Central Sulawesi are not well established. Attention to the prescribed values associated with resilience management may confront an imbalance of resources and political agendas among government agencies and organizations.

- Participation is an often-quoted objective and fundamental to resilience management. Yet, different groups ascribe very different meanings to participation and collaboration. In a review of environmental planning and assessment processes in Southeast Asia, Boyle (1998) found that public consultation was usually limited to information gathering surveys – if it was undertaken at all. In Central Sulawesi, a visible example of variable perceptions of participation among formal government agencies and bureaucrats is provided by a government-initiated village development process (Gerakan Mandiri Membangun Desa Masugi (GEMABANGDESA), or the Self-Reliance Movement to Develop Village Welfare). Proposed by the Governor of Central Sulawesi in 1998 (Governors Decree No. 21), the objective of the GEMABANGDESA movement was to empower villages in Central Sulawesi by improving coordination among programs and improving

participation within local government administrations. Despite the presence of a "GEMABANGDESA MASUGI" slogan painted on virtually every entrance to every home in the region, few individuals have an understanding of the movement's intent. Developed in the regional capital, GEMABANGDESA is a bureaucratic, top-down and centralized attempt to fashion participation and empowerment from above. The result is a movement that is little more than sloganeering and which has little if any relevance to local communities. Moreover, the presence of officially uniformed civil servant GEMABANGDESA facilitators has provided little opportunity for connection with local communities. An alternative concept for GEMABANGDESA, first developed by a consortium of NGOs, proposed a more grassroots approach to local empowerment and participation involving the rebuilding and strengthening of traditional institutions (Hakim, pers. comm., 2000). This concept, however, was never adopted by the regional government. The lesson of the GEMABANGDESA initiative is unequivocal. Local communities need the freedom to fashion arrangements that best suit their own development needs and aspirations. Freedom of this sort will facilitate the development of social organizations with the power and the legitimacy to negotiate natural resource claims, property rights and socio-cultural agendas with higher government levels. Recognition of power relationships between local communities and the government bureaucracy is a prerequisite to designing more effective participation strategies, and therefore, enhance opportunities for resilience management.

- Trust building is a key part of resilience management and efforts to foster adaptive, multi-level governance. As with the narwhal case, however, recognition of the role of trust building is enhanced when linked to an understanding of the historical legacies that frame trust building efforts. In Central Sulawesi, decades of colonial and centralized, authoritarian post-colonial rule have disconnected people from decision-making processes. Individuals and communities may perceive the formal governing apparatus with a mixture of suspicion, resignation and occasional hostility. Overcoming this legacy to encourage novel governance is a long-term process.

- Trust and legitimacy do not only (or primarily) affect formal government entities and the relationship with 'non-state' actors. In Central Sulawesi, because of the historical and more recent reasons for the diversity of ethnic groups living in the region, communities are not homogenous units with shared norms or values. Rather, communities reflect diverse interests and individuals with different levels of political and economic power (Brosius et al. 1998; Kellert et al., 2000). Recognition of community heterogeneity and the implications for power sharing, participation and collaboration, learning and trust is central to the development of governance alternatives.

- The social construction of environmental problems, guided in large part by modernization and mainstream 'population growth-environmental degradation' narratives, have played a key role in conventional management interventions in Central Sulawesi and other parts of Indonesia (Li, 1999; Armitage, 2004). Unless these narratives are openly critiqued, the likelihood of their transference into 'novel' governance approaches and resilience management is high. In Central Sulawesi, for example, policy narratives linking agro-ecological practices of subsistence groups, processes of deforestation and biodiversity loss (Armitage, 2004) create a barrier to learning from

traditional groups and their customary practices, and minimize opportunities to test novel institutional strategies (such as forging co-management alliances with local community groups).

- Accountability is an important feature of resilience management (Lebel et al., 2006) and good governance more generally. Yet, attention to accountability should move beyond accountability mechanisms (monitoring, reporting, etc.). Power inequities are exposed in the operationalization of governance (e.g., monitoring, regulation, enforcement and other management activities) and create avenues and opportunities for exploitation by officials with the powers of sanction over local communities and resource users (see Lowe, 2000). A legacy of inconsistent application of laws and regulations and the existence of an entrepreneurial bureaucracy will undermine innovative governance efforts because local groups will feel powerless in the face of entrenched corruption.

- Knowledge building plays a central role in resilience management, as efforts to understand feedbacks and change requires an array of knowledge types and sources. Yet, there are several constraints to the actualization of this value. As Ascher (2001) noted, for example, there is an emphasis placed on technical information which biases opportunities towards those who control such information (creating a power different as well). This has the potential to constrain knowledge pluralism. Where inter-departmental conflicts occur (e.g., between forestry and environmental protection agencies in Central Sulawesi), there may also be a tendency to limit the availability of information, thus creating disadvantages for those with less information and further undermining efforts to facilitate governance.

Conclusions (*to be completed*)

Efforts to foster community-based conservation and natural resource management through adaptive, multi-level institutions represents an external governance model. This model embodies a number of prescribed values: participation and collaboration, accountability, learning, trust, and so on. However, in most social-ecological systems, pre-existing or entrenched political and economic interests both driving and reacting to change suggest that calls for adaptive, multi-level governance may be overly optimistic. Issues of power and control, the social construction of problems, knowledge valuation and the positioning of different groups suggest that our understanding of what makes multi-level governance a possibility in specific places and at specific times may need to be carefully deconstructed. The interests of certain groups may not be met by engaging productively in novel forms of governance where collaboration and accountability are valued. Theoretically informed and detailed empirical research is required to examine how and why multi-level governance approaches may or may not perform well and contribute to community-based conservation, the underlying dynamics of existing governance arrangements that determine if and how they may adapt to social-ecological change and promote resilience management, or prove instead to be resilient in face of change.

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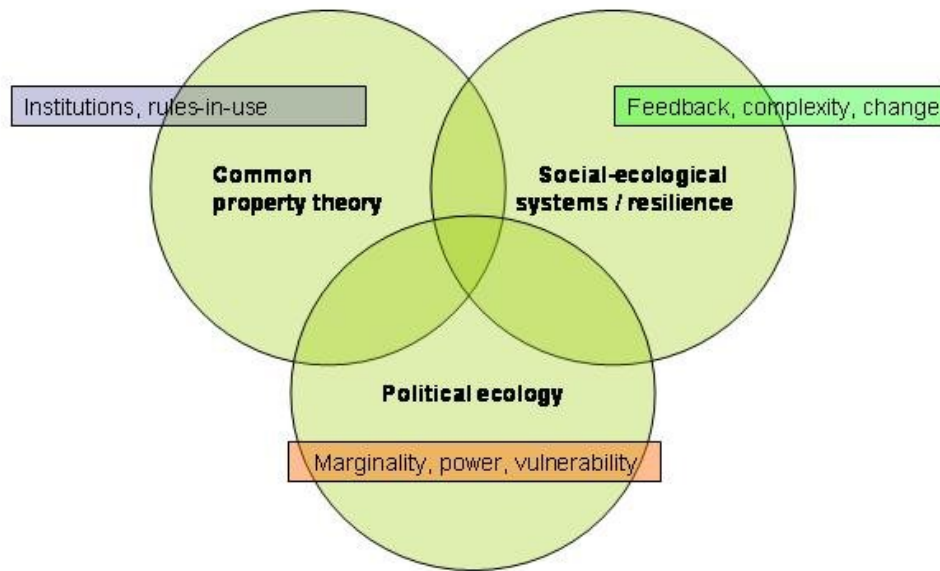
Figure 1: Analytical frameworks contributing to analysis

Figure 2: Conceptual framework to examine adaptive, multi-level governance