# Managing protected areas for sustainable tourism: prospects for adaptive co-management

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This paper looks at the challenging enterprise of managing protected areas for sustainable tourism. It notes that during the past 25 years multistakeholder conflicts, complexity and uncertainty have emerged and persisted as important issues requiring managerial responses. These issues reflect substantial paradigmatic shifts in pursuing and understanding sustainability. Governance directs attention to broad participatory approaches, and complex systems theory emphasises transformative changes and an integrative perspective that couples human and natural systems (a social–ecological system). The paper envisions the prospects of adaptive co-management as an alternative approach to protected areas management for sustainable tourism. It also makes the case for an interdisciplinary approach by highlighting important and informative developments outside tourism studies. Adaptive co-management bridges governance and complex systems by bringing together cooperative and adaptive approaches to management. In appraising the potential for adaptive co-management attention is systematically directed to conceptual, technical, ethical and practical dimensions. While adaptive co-management is clearly not a universal answer, experiences and knowledge from natural resource management raise salient prospects for the approach to be insightfully applied to protected areas for sustainable tourism.

**Keywords:** adaptive co-management; protected areas and sustainable tourism; governance; complex system theory; ethics

## Introduction

Over the past two decades there has been evolving interest in the relationships that exist between local populations and protected areas (Zube & Busch, 1990). Resource rich regions – those which are most sought after as representative landscapes – are equally attractive to local people as traditional spaces that have defined community life for millennia. More recently, the relationship between people and parks has expanded to incorporate tourism, as domestic and international demand to experience protected areas, and the unique populations that share these places, continues to grow through a variety of specialized forms of travel (e.g. ecotourism). This creation of touristic space has enabled local people to diversify livelihoods by capitalizing on a number of different economies in sustaining community as well as the tourism industry more generally.

While the emergence of tourism has proven helpful in enabling local populations to coexist with protected area institutions, there have been numerous issues that challenge park management at many scales. Foremost, problems have surfaced in reference to the conventional institutional framework that has been used to manage protected areas. While

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the goals and objectives of managing protected areas are contextually specific and have changed over time, the approach to managing these areas has almost exclusively been guided by the rational–comprehensive model. This model focuses "principally on identifying goals, searching for alternatives, evaluating them and choosing the technically most preferred alternative" (McCool & Patterson, 2000, p. 111). The rational–comprehensive model is an extension of the Cartesian–Newtonian tradition and mechanistic view of the world in which the universe is considered to be understandable (through reductionism), controllable and predictable (Capra, 1982; Innes & Booher, 1999). As a caricature of nature, this perspective stresses "balance" or "near-equilibrium"; a viewpoint upon which foundational concepts (e.g. maximum sustained yield, carrying capacity), organizations associated with sustainability (e.g. Brundtland Commission, World Resources Institute), and resource policies are predicated (Folke et al., 2002; Holling, Gunderson, & Ludwig, 2002) in a hierarchical, technologically based, and linear fashion (see Holling & Meffe, 1996; Westley, Carpenter, Brock, Holling, & Gunderson 2002).

As an approach considered radically different than the rational–comprehensive model, this paper envisions the prospects of adaptive co-management as an alternative to managing protected areas for sustainable tourism. The intent is to provide a conceptual introduction to adaptive co-management from which practical applications in protected areas may develop and future lessons may be learned. Protected areas and sustainable tourism provide a purposefully broad scope through which a myriad of associated elements are considered (e.g. local populations, common property resources).

The paper begins with an exploration of emerging issues and evolving approaches to managing protected areas for sustainable tourism over the last quarter century. These changes reflect fundamental shifts in how society is governed and how social and ecological systems are understood. A conceptual overview of adaptive co-management is then provided as it offers a strategy that innovatively conceptually bridges collaborative and adaptive management. An appraisal of adaptive co-management is offered by drawing upon literature from natural resources management, protected areas and sustainable tourism. The appraisal systematically structures deliberation along conceptual, technical, ethical and practical dimensions. Closing reflections highlight anticipated challenges and revealed possibilities of applying adaptive co-management in this problem domain. A secondary purpose of this paper is to introduce a number of important contributions in the literature outside the tourism field in an effort to underscore the importance of adopting an interdisciplinary approach to protected areas and sustainable tourism.

## Tourism and protected areas: emerging issues and evolving management approaches

In the late 1970s, the issue of multistakeholder conflicts in protected areas emerged with prominence and the search for alternative approaches to management began. The development of Kakadu National Park in Australia in 1979 is one early example in which the importance of partnering national park managers with local Indigenous expertise was recognised (Kakadu is joined by Coburg and Uluru National Parks with co-management structures in place; see Hall, 2000). Although the Australian National Parks and Wildlife Service employed Aboriginal cultural advisors and park rangers from the outset in Kakadu, power sharing was said by Davey (1993) to be insufficient because of the failure to include Aboriginal landowners in joint policy and planning. Parallel work has highlighted that Kakadu has been difficult to manage because of many competing land uses (increasing tourist numbers, mining, the traditional resource practices of Aboriginal people, and

World Heritage status) that put resources and stakeholders at odds (Davis & Weiler, 1992). Despite these difficulties, Kakadu appears to be "one of the best examples of cooperative management of parks and protected areas" (Lane, 2001, p. 663).

Controversy surrounding protected areas and collaborative management has been discussed by a number of authors. Lovelock, for example, observes that "with respect to the protected area–tourism-policy domain, not only has collaboration been lacking, but history has revealed that many contentious relationships have existed within this domain" (2002, p. 5; see also Dearden, 2004). Perhaps one of the most pressing challenges, especially in the lesser developed country (LDC) context, is that collaboration is hampered by the fact that "developing nations are ruled by a small group of well-organised powerful elites to a larger extent than developed countries are" (Tosun, 2000, p. 613). Community participation is thus constrained by the centralisation of decision making in tourism, lack of coordination, lack of information, elite domination, lack of expertise, lack of an appropriate legal system, lack of a trained work force, the high cost of community participation, lack of financial resources, the limited capacity of the poor and apathy in local communities (Tosun, 2000). Hough (1988) has suggested that legislative approaches to parks management have often been met with resistance, as local people react to being forced to live in harmony with their environment. The root cause of conflict between local people and government is thus power: government in possession of power, and local people with few opportunities, real or perceived, because of the power unbalance. Protected areas as representative entities of this disproportionate power equation are often the focal point of local unrest or unhappiness (see also Siurua, 2006), with evidence documented in many case studies throughout the world.

In Gili Indah, Indonesia, community-based coral reef management has been compromised because existing local rule has failed to effectively deal with the conflict between fishers and tourism entrepreneurs in resource appropriation (Satria, Matsuda, & Sano, 2006). Tourism entrepreneurs, who were originally fishers and who are of the same ethnic background, have attained vertical mobility by generating new tourism operations (e.g. scuba diving) in collaboration with foreign investors (see also Campbell, 1999, in the context of ecotourism). The self-organised governance system in place has changed to favor tourism entrepreneurs, reducing community cohesion as decision making no longer appears to adhere to traditional laws or norms. New power structures (tourism) have thus evolved to make changes that are in the industry's own best interests at the expense of the community. This appears to also be the case in the village of Kimana, southern Kenya, where resistance to community tourism initiatives has come from internal groups like a dominant industry or resident faction, which work against collaborative efforts (Southgate, 2006).

Work by Rocharungsat (2004) in Thailand, Indonesia and Malaysia, demonstrates that tourism entrepreneurs are in fact different than their visitor and policy counterparts when it comes to community-based tourism. While the operators supported economic and moral values in steps to develop community-based tourism, the latter two groups favoured aesthetic and moral values. In a case study involving three national parks in three different countries in Central America, respondents (community members) perceived that it was the government and those working in parks that were the direct beneficiaries of tourism dollars, not local people (Aguirre, 2006). Such has been the case on the periphery of the Amboseli Biosphere Reserve, Kenya, where young Maasai have achieved vertical mobility in the community as a result of their exposure to the outside world. This procurement of power has contributed to the erosion of traditional values that have been so important in binding the community together in the past (Hiwasaki, 2006; see also Ogutu, 2002, in the context of Japanese protected areas).

What the foregoing has highlighted is that park–people problems often demand less reliance on technical and scientific solutions, and more on dialogue and mutual learning (Eagles & McCool, 2002). In such cases, it is important to have local people help in assigning value to dilemmas because it is these individuals who are most heavily affected by policy development. Laws (no date) suggests that these "messy" situations are indicative of "soft" systems, which involve people-related problems which are much less structured and where outcomes are less predictable than hard or technical systems. In such situations there may not be one rigid solution for solving problems, but rather a series of best-fit or optimal solutions at any one point in time (Dredge, 2006; see also Fennell, 2004). Of relevance here is that procedural models of collaborative planning in tourism, according to Dredge (2006), fail because their unidimensional and staged processes are unable to capture the complex nature of the tourism industry. Accordingly, we flatten and narrow our options when we choose only to look downwards (e.g. the molecular approach) or upwards (e.g. the social science approach) at systems. Borrowing from Katz and Kahn (1978), Fennell (2004) argues that newer approaches to solving tourism dilemmas will entail looking laterally via different scales, methodologies and disciplines in our efforts to get closer to these best-fit solutions.

Nepal (2000) discusses the relationship between three prime stakeholders in parks management from a tourism context, as well as the institutions and scale required to facilitate cooperation. Input mechanisms for appropriate management include institutions, planning, human resources and skills, finance and technological intervention. These have an impact on the tourism industry (tourists, government, tourism entrepreneurs and external investors), national parks (international agencies, government agencies, national NGOs and advocacy groups), as well as local communities, which include local institutions, grassroots organizations and local entrepreneurs. Positive outcomes from these relationships include activities, benefits, involvement and stakes and interests at the aforementioned scales. Tourism scholars have begun to recognise, as outlined by Ramirez (2005) and Milne and Ateljevic (2001), that the management of tourism whether it be in the context of sustainability or not, is demanding of cooperation at all levels – international, regional, national and local (see the complexity of the global–local nexus, as discussed by Milne & Ateljevic, 2001). Relationships that exist in and between these various levels continue to be discussed, especially in the context of competing land uses and resource management in LDCs.

Collaboration, and the broader shift towards governance, is a response to limited capabilities, reduced services and declining budgets of governments (Hall, 2000; Vernon, Pinder, & Curry, 2005) as well as for the potential benefits (strategic advantages) it offers, such as expanding the pool of resources available, enhancing the breadth of decision making, reducing adversarial conflicts among competing interests, and effectively pursuing shared goals by utilizing comparative advantages (Bramwell & Lane, 2000a; Bramwell & Sharman, 1999; Brinkerhoff, 2002; Jamal & Getz, 1995; Plummer, Telfer, & Hashimoto, 2006a; Vernon et al., 2005). This has led Hall to observe that the need for coordination "has become one of the great truisms of tourism planning and policy" (1999, p. 277). Consequently, collaboration is receiving considerable attention as a management strategy in sustainable tourism (e.g. Bramwell & Lane, 2000a; Bramwell & Sharman, 1999; Jamal & Getz, 1995; Lovelock, 2002; Plummer, Kulczycki, & Stacey, 2006b; Selin & Chavez, 1995; Vernon et al., 2005).

A quarter century of experiences with tourism and protected areas clearly demonstrates that multistakeholder conflicts, complexity and uncertainty are emerging and persistent issues. Collaborative management has come to represent a "substantial challenge to the

classical model of national parks" (Lane, 2001, p. 666). At the same time, studies of tourism, protected areas and co-management appear to mainly be descriptive in nature with a limited theoretical basis. Lane (2001) calls for caution concerning the optimistic rhetoric often associated with this literature, noting the dependence on effective implementation and relatively limited (i.e. temporal, number of cases) experience with co-management in parks.

## Adaptive co-management

The emerging issues and evolving management approaches in tourism and protected areas are a reflection of two far-reaching changes. The first is the transition from government to governance. This phenomenon has emerged with resonance for "global", national and corporate spaces (Fennell, 2008; Plumptre & Graham, 2000) and has been well documented in Western countries (e.g. Bramwell & Lane, 2000a; Glasbergen, 1998; Hall, 1999). Governance has also become central to the policy domain and in developing countries, largely through international donors such as the World Bank and the International Monetary Fund (Kooiman & Bavinck, 2005; Woods, 2000). Governance (as opposed to government) involves the full range of individuals and organizations involved with policy decisions and implementation (Dorcey, 2004; Glasbergen, 1998; Hall, 1999, 2000; Vernon et al., 2005). In a more formal sense governance can be understood as ". . . the whole of public as well as private interactions taken to solve societal problems and create societal opportunities. It includes the formulation and application of principles guiding those interactions and care for institutions that enable them" (Kooiman & Bavinck, 2005, p. 17). The cooperative management model (co-management) reflects this shift and involves "the sharing of power and responsibility between government and local resource users" (Berkes, George, & Preston, 1991, p. 12).

The second far-reaching change involves a "world-wide fundamental change in thinking, and in practice" (Folke et al., 2002, p. 3). Complex systems theory contrasts the mechanistic and linear view and is represented by the metaphor of an organism; a living system which can change and adapt based on feedback (Capra, 1982; Folke et al., 2002; Innes & Booher, 1999). This "nature evolving" perspective emphasises dynamism of systems, nonlinear relationships and transformative changes resulting in "surprises" and discontinuities, and emergence and self-organization in unstable environments (Berkes, Colding, & Folke, 2003; Holling et al., 2002; Innes & Booher, 1999; Levin, 1999). This perspective has been enriched by drawing upon understandings of ecosystem functioning (exploitation and conservation) and the dimensions of release and reorganization (the adaptive cycle metaphor); focusing on the property of ecosystem resilience which draws attention to the amount of disturbance a system can absorb while retaining functions and structure; and reconceptualizing hierarchical features as panarchies which are both nested and connected (see Holling & Gunderson, 2002; Holling et al., 2002; Walker et al., 2006).

Complex systems thinking advances how human and ecological systems are understood and reorientates the aim of sustainability. In regard to the former, the integrative spirit of complex systems thinking has served as a heuristic "bridge" in the natural and social sciences. The adaptive cycle metaphor and accompanying ideas of a panarchy are applied to ecological and human systems (Folke et al., 2002; Holling & Gunderson, 2002; Holling et al., 2002), with growing emphasis being placed on the interactions (linkages) between social and ecological systems and the need to consider their coupled nature, a social–ecological system (see Berkes et al., 2003; Berkes & Folke, 1998; Fennell & Butler 2003, in a tourism context; Westley et al., 2002). In regard to the latter, sustainability is reframed

in terms of characteristics associated with resilience (e.g. capacity for self-organization, learning and change) and viewed as an on-going process, as opposed to a rationally planned end-state (Berkes et al., 2003; Gunderson, Holling, & Peterson, 2002). Sustainability science (Berkes et al., 2003; Folke et al., 2002; Kates et al., 2001) or sustainability transition (Farrell & Twining-Ward, 2004) reflects this changing vantage point and highlights the need for continuous learning, implementation and adaptation by all actors. Attention has therefore been directed at adaptive management, "an approach to the management of complex systems based on incremental, experiential learning and decision making, buttressed by active monitoring or/and feedback from the effects and outcomes of decisions" (Jiggins & Röling, 2000, p. 3).

Adaptive co-management responds to these transitions and builds upon them by bringing together the well established collaborative (co-management) and adaptive management narratives (Armitage et al., 2008; Berkes, 2004; Berkes, Armitage, & Doubleday, 2007; Plummer & Armitage, 2007a). As a recent advent, several definitions have been offered of adaptive co-management. Folke et al. (2002, p. 20) employ the term "adaptive co-management" in reference to a "process by which institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing, self-organized process of trial and error". Olsson, Folke, and Berkes (2004, p. 75) explain that "adaptive co-management systems are flexible community-based systems of resource management tailored to specific places and situations and supported by, and working with, various organizations at different levels". From her experiences in forestry, Colfer (2005, p. 4) suggests that "ACM is characterized by conscious efforts among such groups to communicate, collaborate, negotiate and seek out opportunities to learn collectively about the impacts of their actions".

It is strongly against the spirit of adaptive co-management to pursue a single definition through reductionism, and therefore it is important to consider its attributes (Ruitenbeek & Cartier, 2001). At the broadest level, adaptive co-management brings together the linking characteristic associated with collaboration and the dynamic learning characteristic of adaptive management (Armitage et al., 2007; Carlsson & Berkes, 2005; Folke, Hahn, Olsson, & Norberg, 2005). Recent efforts have concentrated on determining the attributes or features of adaptive co-management (Armitage et al., 2007; Armitage et al., in press; Fennell, Plummer, & Marschke, 2008; Folke et al., 2005; Plummer & Armitage, 2007a). In synthesizing these attributes below, we specifically draw upon the recent Delphi study that "took stock" of how this burgeoning concept is being understood (see Plummer & Armitage, 2007a) and the synthetic outcomes of workshops in Canada that aimed to move beyond the critique of co-management by exploring the theory and practice of adaptive co-management (see Armitage et al., 2007; Armitage et al., 2008). Adaptive co-management exhibits attributes of:

- Pluralism and communication. Actors from diverse spheres of society (and at multiple levels) and who have varying principal interests enter into a process to generate shared understanding of an issue or problem. This process is grounded in communication and negotiation. Conflict is viewed as an opportunity.
- Shared decision making and authority. Transactive decision making is employed as a basis for achieving decisions. Multiple sources of knowledge are acknowledged. Authority (power) is shared in some configuration among the actors involved.
- Linkages, levels and autonomy. Actors are connected or linked both within levels (i.e. a community) and across scales (i.e. community, provincial, national). Despite shared interests and commitments, actor autonomy is appropriate at multiple levels.

Institutional arrangements therefore encompass multiple levels as well as retain flexibility.
- Learning and adaptation. Actions and policies are considered experiments. Feedback provides opportunities for social learning in which outcomes are collectively reflected upon and modifications to future initiatives are based. Learning may concern routines, values and policies, and/or critical questions of the underlying governance systems; referred to as multiple-loop learning. Capacity to change and adapt develops as trust and knowledge accumulates in the collective social memory.

Adaptive co-management is different than co-management or adaptive management. It uniquely establishes both vertical and horizontal linkages to foster social learning; requires multiple iterations over considerable periods of time; takes a multiscale spatial scope which encompasses all partners; and focuses on capacity-building for all those involved (Berkes et al., 2007). Adaptive co-management can be visualised as "a governance system involving networks of multiple heterogeneous actors across various scales which solve problems, make decisions and initiate actions" (Fennell et al., 2008, p. 20; Berkes, 2007; Carlsson & Berkes, 2005).

Case studies of experiences with adaptive co-management in practice are just starting to emerge (e.g. Ayles, Bell, & Hoyt, 2007; Colfer, 2005; Marschke & Nong, 2003; Olsson et al., 2004; Pinkerton, 2007). The emphasis on description in many of these works is a reflection of the early stage of this research and the importance of place-based solutions. Longitudinal work in Sweden and Canada demonstrates that these networks are flexible and form in a "pulsating" manner as problem-solving is required (Berkes, 2007; Folke et al., 2005; Olsson et al., 2004). Berkes (2007) argues that in practice attention should emphasize functionality and be task oriented. In this respect he offers an iterative problem-solving schema that consists of six stages – defining the social–ecological systems, identifying and describing the tasks required, clarifying the participants in the related activities and problem solving, analyzing horizontal and vertical linkages, assessing capacity-building needs and recommending solutions. This schema is intended to assist managers implementing adaptive co-management and analysts reviewing policy.

## Appraising adaptive co-management in the domain of protected areas for sustainable tourism

In considering the potential for adaptive co-management as an alternative approach to protected areas management for sustainable tourism we adopt Brewer's (1973) policy appraisal framework (also used by Lee, 1999). This framework directs attention to conceptual, technical, ethical and pragmatic dimensions. Deliberation thus examines four corresponding questions, posed by Lee (1999). Is the idea sensible? Is the idea translated into practice well? Who loses and who wins? Does it work? In responding to these questions, reflections are made upon the evidence and experience with adaptive co-management. Forethought is also given to its application to protected areas for sustainable tourism. As Lee (1999) suggests, the "appraisal examines questions that are obvious – through not so obvious that they are considered automatically or even often".

### *Conceptual soundness: is the idea sensible?*

The conceptual basis for natural resource management has fundamentally changed. The transition from government to governance broadens the basis for addressing societal

challenges and directs attention to the interactive (public–private) and enabling nature of institutions. Complex systems thinking challenges conventional wisdom of how the world functions and encourages the conceptual coupling of social and ecological systems. Adaptive co-management is very reasonable because it combines the collaborative and adaptive narratives and "orientate[s] social–ecological systems towards sustainable trajectories" (Armitage et al., 2007, p. 5; Fennell et al., 2008; Folke et al., 2002; Folke et al., 2005; Olsson et al., 2004).

However, it is unlikely that sustainable tourism will initially be receptive. Discourse within tourism has not appreciably advanced around the meaning of sustainability and assumptions associated with the mechanistic and linear worldview. Hunter observes that "despite owing its origins to the general concept of sustainable development, the subject of sustainable tourism appears to have evolved largely in isolation from the continuing debate on the meaning of the former" and argues that "such isolation has resulted in the emergence of an overly simplistic and inflexible paradigm of sustainable tourism which fails to account for specific circumstances" (Hunter, 1997, p. 850). Although this acute shortcoming is receiving some attention (e.g. Butler, 1999; Hardy, Beeton, & Pearson, 2002; Sharpley, 2000), there is a pressing need to move beyond "simple linear frameworks" or the potential for long term solutions will be truncated (Farrell & Twining-Ward, 2004, 2005). Farrell and Twining-Ward (2004, p. 274) observe that knowledge from complex adaptive systems "is of great interest and relevance to contemporary tourism study".

Interest in applying complex adaptive system concepts to sustainable tourism is beginning (e.g. Farrell & Twining-Ward, 2004, 2005; Faulkner & Russell, 1997; Fennell, 2004; Lemelin, 2005; McKercher, 1999; Reed, 2000). Farrell and Twining-Ward (2004) most poignantly draw parallels from complexity theory to argue that tourism researchers need to go beyond the "core system" of tourism and embrace a more comprehensive and interconnected view. In crafting this argument, they advance a model of tourism that consists of nested and interconnected systems (a tourism panarchy); involves coupled and interacting social systems and ecological systems (a social–ecological system); and exhibits characteristics of nonlinearity and episodic change indicative of the adaptive cycle or "reclining figure eight" illustration of Holling and Gunderson (2002). Farrell and Twining-Ward (2004, 2005) draw three significant implications from their work: (1) complex adaptive tourism systems (CATS) function like other complex systems; (2) the conventional concept of sustainable development in tourism requires rethinking; and (3) adaptive management is an effective approach to the "comprehensive tourism system" because resilience is developed to cope with uncertainty via experimentation, feedback and social learning.

Adaptive co-management is a well-reasoned advance because it builds upon two established concepts (collaboration and adaptation) and offers a distinct approach that captures the combined spirit of governance and complex systems (Armitage et al., 2007; Berkes et al., 2007). Following this logic, the approach is in line with some of the conceptual and practical developments in the domain of sustainable tourism and protected areas. The review of emerging issues and management approaches in tourism and protected areas above reveals that collaboration is receiving an increasing amount of attention. Adaptive management is recognised as an important research need in sustainable tourism (Bramwell & Lane, 2000b). Application of adaptive management in sustainable tourism is also emerging (e.g. Reed, 2000; Stewart & Draper, 2006; Tremblay, 2000). Moreover, adaptive co-management resonates strongly with the spirit of pursuing novel solutions to "messy" and complex situations indicative of tourism and protected areas that involve vertical and horizontal linkages, multiple scales and flexibility (e.g. Dredge, 2006; Fennell, 2004; Jamal, 2004; Ormsby & Mannle, 2006).

Jamal's work (see Jamal, 2004; Jamal, Stein, & Harper, 2002) in the context of Banff National Park, Canada, illustrates the reasonableness of adaptive co-management in the sustainable tourism domain. In addition to explicitly characterizing these as complex and turbulent domains, she observes that "protected area managers and policymakers have consequently been turning towards more participatory and inclusive forms of management to replace traditional top-down forms of governance" (Jamal, 2004, p. 164). In pursuing this direction in the context of Banff, where multistakeholder processes and conflicts are present, she brings together insights from collaborative literature associated with sustainable tourism, environmental planning and management and interorganisational development. As an outcome of these investigations, Jamal draws attention to the dynamism of such processes and the accompanying need for planning approaches that are interactive and flexible.

### Technical: is the idea translated into practice well?

As "good governance" continues to gain currency as a policy directive, strategies such as adaptive co-management face increasing expectations. Berkes et al. (2007, p. 18) recognize that adaptive co-management should be actionable, but that "these theories and insights are not always easily translatable into the language of policymakers or the process of policy development". One of the most blatant reasons for this is the multilevel governance orientation of problem domains, such as tourism. Tourism as a system or sector is confronted with challenges of coordinating policy at multiple scales and often with competing interests (Dredge, 2006; Fennell, 2004; Sandersen & Koester, 2000). Milne and Ateljevic (2001) recognize that cooperation in tourism is needed at all levels of the system. In translating adaptive co-management into practice both horizontal and vertical linkages are required to connect actors in social learning, establish regularised interactions (i.e. information sharing, problem articulation, etc.) and move beyond simple networks (Armitage et al., 2008; Young, 2002).

Experiences thus far with adaptive co-management suggest that the approach can be fostered or enabled by creating specific conditions. These include: creating rewards for broad-based participation; providing supports for multilevel learning; fostering institutions that are flexible and adaptable; permitting experimentation and failure from which learning may occur; and encouraging interactive social processes (Armitage et al., 2008; Berkes et al., 2007). Experiments with parks like Kakadu have demonstrated the relevance of incorporating cooperative frameworks for management in protected areas. The IUCN 4th World Congress on Parks and Protected Areas, Caracas in 1992 (IUCN, 1993), articulated a number of initiatives for the world parks community through an integration of protected areas into larger institutional frameworks, strengthening the capacity to manage protected areas, as well as through initiatives designed to expand cooperation for protected areas. Partnership was again a main theme at the Rio Earth Summit in 1992, with Agenda 21 specifying the importance of partnerships in efforts to achieve sustainable development. In many cases, co-management approaches have been easily incorporated into protected area planning because of practices already in place. For example, in detailing the historical evolution of co-management practices in the protected areas of six south Asian countries, Sharma, DeCosse, Roy, Khan, & Mazumder (n.d.) suggest that co-management has been implemented as a result of a traditional system of management that was inclusive of the needs of neighboring communities. For example, in Pakistan:

> The national Conservation Strategy for Pakistan, ratified by the federal government in 1994, emphasised collaborative management. Similarly, the Provincial Conservation Strategies,

Pakistan Biodiversity Action Plan, Wildlife Policy and Model provincial Wildlife Laws all focus on empowering local communities in co-management of PAs. . . In Khunjerab National Park nearly two-third [sic] of the new employment opportunities are earmarked for local people. Seventy percent of the proceeds from game hunting outside the park are given to local people. (Sharma et al., n.d. p. 10)

How can adaptive co-management be applied to sustainable tourism and protected areas? The following adaptation of Berkes' (2007) schema is offered to support the practical application and research of adaptive co-management in sustainable tourism and protected areas. Figure 1 identifies the steps involved in the co-management process. The arrows illustrate feedback and the iterative nature of the process through which learning and adaption occurs.

Step one of the figure involves defining the sustainable tourism unit of analysis, including the resource system, people and its structure. Essentially, a picture of the "action arena" is
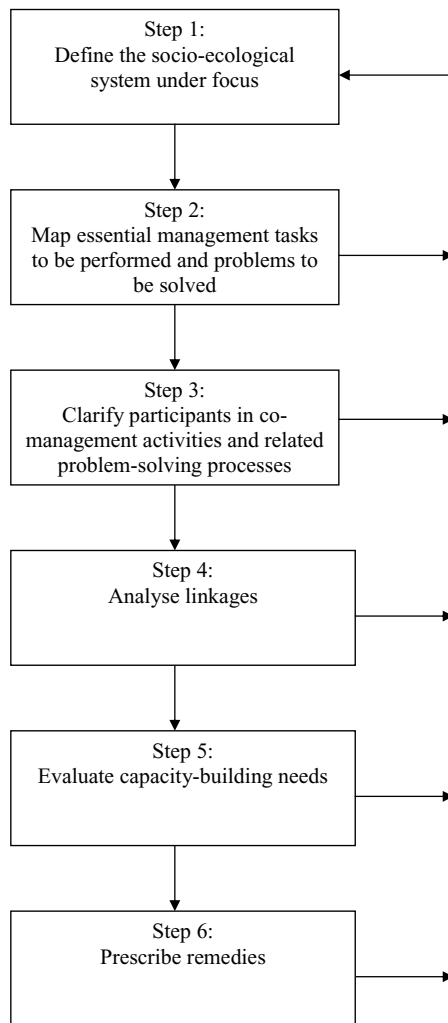


Figure 1.   The sustainable tourism co-management process (adapted from Carlsson & Berkes, 2005; Berkes, 2007).

required. Step two, mapping tasks, takes into consideration short, medium and long term management decisions, and who is entitled to make these decisions. Step three, clarification of participants, includes questions related to who participates in the activities and how is management organised, as well as the web of relationships, and how is power shared. Step four includes a process of analysing linkages, including how to connect central levels of decision making to the local level, as well as an analysis of the historical and political context of the system. Step five involves identifying what efforts are needed to nurture, enhance and utilize skills of people and institutions at all levels; while the final stage, six, involves a process of communication of results of research to relevant groups in order to contribute knowledge for policymaking and problem-solving. In employing these steps researchers and practitioners are able to engage in a reflective problem-solving process, in which power sharing is a result (Berkes, 2007; Carlsson & Berkes, 2005).

### Ethical: does the idea have integrity?

Connections have been made between adaptive co-management and "good governance" (see Berkes, 2007; Carlsson & Berkes, 2005; Fennell et al., 2008); governance that is understood to exhibit characteristics of "participation, representation, deliberation, accountability, empowerment, social justice, and organisational features such as being multilayered and polycentric" (Folke et al., 2005; Lebel et al., 2006). Good governance has been exalted through declarations of its importance by Kofi Annan and has received a widespread audience due to it offers "*noble ethical claims*" (Graham, Amos, & Plumptre, 2003; Saner & Wilson, 2003). However, Fennell et al. (2008, p. 2) observe that "embedded in the discourse of environmental governance and the approach of adaptive co-management is an important question for environmental policymakers and resource managers: is adaptive co-management ethical?"

Although adaptive co-management is being put forward as governance strategy in response to uncertainty, it is not exempt from tensions surrounding policy/management and individuals. Experiences from almost two decades of co-management research reveal that efficiencies or equity are not always promoted, conflicts and compliance may worsen, and social and economic marginalization may be furthered (see Fennell et al., 2008). Gunderson (2003) documents how inflexible resource management institutions use uncertainty and ambiguity to keep the status quo. Thought-provoking issues related to the political and cultural framing of adaptive co-management have been investigated by Nadasdy (2003, 2007) and Doubleday (2007). Nadasdy (2003, 2007) specifically draws attention to biases inherent in how co-management processes are cast and recognises the need to critically question the sociopolitical context and the interests of those involved.

Lane (2001, p. 666) explains that co-management in national parks "has been regarded as a means of mitigating the social impacts of conservation and catering for the rights and concerns of local peoples". Although an admirable intent, experiences with parks and sustainable tourism reveals mixed results. This is because the impetus for participatory involvement in LDCs comes largely from the developed world (Mowforth & Munt, 1998), even though collaboration in developing nations is plagued by a climate of control by powerful local elites (Tosun, 2000). Uneven relationships of power in Japan, Botswana and other case studies identified in section 2, serve to reinforce this point.

While there has been a critical absence of ethical discourse pertaining to adaptive co-management, we argue that "if adaptive co-management is to successfully embrace uncertainty it must move beyond understanding its root dilemmas to accept and examine their inherent ambiguities" (Fennell et al., 2008, p. 3). Malloy, Ross, and Zakus (2000)

argue that it is important to use multiple theories in examining if a decision-making process is ethical. Drawing upon this idea, Fennell et al. (2008) employ the mechanism of ethical triangulation to the case of Cambodia. They use the ethical domains of deontology, teleology and existentialism to explore this (post) conflict society where policy reforms pertaining to resources are underway that can be understood as adaptive co-management. Insights gained suggest that adaptive co-management may be an agent of good governance and an arena to embrace uncertainty if multiple ethical perspectives are considered by the actors involved through meditative or reflective thinking. At the same time, several challenges were revealed (e.g. utilitarianism may lead to reliance on regulatory mechanisms, a lack of commitment to the means, and incongruence with individual free will), which leads to the conclusion that without a balanced approach to ethics, adaptive co-management "may simply be window dressing for well-established dilemmas of power and ultimately livelihoods" (Fennell et al., 2008, p. 12). This means that in the absence of an interactive process through which multiple ethical perspectives can be discussed by actors, tensions will persist between authorities and resource users as well as between harvesting and conservation.

Consistent with the governance perspective involving networks of action taken above, Balint (2006) recognises that commons issues in general are not the same as commons issues in or adjacent to protected areas. Resource users in the more general sense, as one of many stakeholders, have the opportunity to bargain as a governance tactic in affecting change. Conversely, commons issues in the protected area realm are different on the basis of the fact that governments own and run such areas, with their own sets of rules and regulations. Local people, therefore, have more limited scope to bargain and change policy. If partnerships are able to better define rights, capacity, governance and revenue potential, Balint (2006) argues, these changes would promote the devolution of authority in supporting a climate of inclusiveness.

### *Pragmatic: does it work?*

While the advent of adaptive co-management is relatively recent, experiences gained across social–ecological systems (e.g. forestry, fisheries, wetlands, rivers, wildlife) and critical conceptual inquiries offer heuristic insights as to what can be expected in practice of these arrangements, the circumstances that constrain or facilitate their operation, and what actually constitutes "success".

As a starting point, an adaptive co-management arrangement is recognizable in practice when networks of heterogeneous actors share power by engaging in processes which are interactive and communicative. These flexible networks are connected within and across scales and engage in the process of solving problems, from which changes (adaptations) occur via social learning. Dredge (2006) has shown that network theory may be effective for understanding the interrelationships and structures between various actors in the tourism arena, including government, tourism service providers and civil society.

Enthusiasm for this new management approach comes from the wealth of experiences in which successes have been realised with co-management. Positive outcomes associated with co-management relate to more efficient and effective decision making, incorporation of multiple basis of knowledge, enhanced credibility and legitimisation and empowerment of local users (Plummer & FitzGibbon, 2004). Carlsson and Berkes (2005) note that it is also useful for allocating tasks, connecting various organizations, reducing transaction costs and distributing risks. Adaptive co-management additionally emphasises the potential to increase the robustness (or resilience) of the socioecological system (Folke et al., 2002; Olsson et al., 2004). Experiences thus far suggest that transaction costs may initially

be considerable; but over the long term these costs may be reduced, effectiveness and efficiency of decision making may be enhanced, and risk-sharing may occur (Armitage et al., 2008; Berkes et al., 2007). Specific conditions identified to facilitate "success" include: a clearly defined resource system, small scale contexts, identifiable social actors with shared interests, clear property rights, ability to experiment and adapt management measures, enduring commitment to institution-building, provision of capacity-building for all actors, key individuals or energy centers, openness and willingness to draw upon multiple knowledge systems and sources, and an explicitly supportive policy environment (Armitage et al., 2007). Kakadu National Park is a benchmark in this regard as cooperative management strategies have resulted in effectively addressing local concerns, increasing tourism, and meeting conservation objectives (Lane, 2001). Case studies of adaptive co-management in the domain of sustainable tourism and protected areas are clearly required and will contribute to understanding application in this specific context.

At the same time, "some resource management dilemmas (whether in rural or urban settings) will overwhelm novel institutional arrangements such as adaptive co-management" (Armitage et al., 2008). "Roving banditry" in marine resources is one such example as place-based entities concerned with a resource stock do not exist or there is little incentive for learning in the direction of a goal such as sustainability (Berkes et al., 2006). Although not necessarily overwhelming, several other barriers to adaptive co-management have also been identified. Those emerging the strongest from Plummer and Armitage's (2007a) Delphi study include: the unwillingness to share power and/or asymmetries of power, insufficient commitments of resources (technical, human, financial) to the process, entrenched group dynamics (e.g. mistrust, interest domination) and lack of capacity.

Loss of rights and access to land were at the heart of the discussion on protected areas and indigenous people by Hill (2006), who argues that the marginalization of groups should be a thing of the past. Coexistence between Indigenous people and those who manage protected areas should be developed through adaptive models that are based on shared involvement and more inclusive objectives. Hiwasaki (2006) has found that efforts to implement sustainable development of tourism in protected areas in Japan have been overly restrictive because of the diversity of stakeholders and uneven power relationships. Partnerships, strengthened institutions and education are cited by Hiwasaki as mechanisms required to secure local participation in decision making. In the case of the Okavango Delta, Botswana, Mbaiwa (2003) observes that much of the resource base is owned by government and private tourism operators, with little meaningful participation by local people. In the absence of control or incentives for participation on the part of the community in general, conflict between operators, government and local people is widespread, with subsequent effects most notable on wildlife. Despite more recent efforts to establish trusts, concessions and tourism licences for local people, the system is constrained by a lack of entrepreneurship and managerial skills such that local people have resorted to subleasing their concessions and selling their wildlife quotas to foreign safari companies, engendering passive participation and disincentives to work (Mbaiwa, 2005).

The question posed at the outset of this section presupposes that adaptive co-management can be easily measured and that agreement exists on what constitutes "successes". These are critical issues confronting policymakers, practitioners and resource users. Evaluation of collaborative endeavours in environmental management is being called for (see Conley & Moote, 2003) due to their limited occurrence in practice (Bellamy, Walker, McDonald, & Syme, 2001; Chess, 2000; Frame, Gunton, & Day, 2004) and the inappropriateness of existing mechanisms which are predicated upon the mechanistic paradigm (Connick & Innes, 2003). Specific methods, tools and criteria to gauge success in adap-

tive co-management are largely wanting (Berkes et al., 2007; Carlsson & Berkes, 2005). Bramwell and Lane (2000b) make a similar plea concerning partnership for sustainable development in the tourism context.

In response to the need for evidence of outcomes through consistent and appropriate evaluation, Plummer and Armitage (2007b) have developed a resilience-based approach to evaluate adaptive co-management. Their method recasts evaluation in terms of complex adaptive systems and their framework provides a broad tool which focuses attention on an ecological component, a livelihoods component, and a process component. Practitioners and those concerned with assessing adaptive co-management in protected areas for sustainable tourism can tailor these generic parameters advanced within each component by forming context-specific indicators. As evaluation plays an important role in the adaptive co-management process, the purview for assessment extends beyond resource management professionals to encompass all actors involved. Plummer and Armitage (2007b, p. 72) stress that "an emerging imperative for funding organizations, government agencies, and the participants themselves is to acknowledge all outcomes (both tangible and intangible) from such undertakings which may ultimately contribute to social–ecological resilience and sustainability".

## Conclusion

The rational–comprehensive model and mechanistic paradigm figure substantially in the planning and management of protected areas. As issues of multistakeholder conflicts, complexity and uncertainty have surfaced throughout the past quarter century, experiences with different approaches to managing protected areas for sustainable tourism have been gained. These issues are symptomatic of fundamental shifts in how societal issues should be addressed and how the world (social and biophysical) is understood. Governance directs attention to cooperative management approaches that are participatory, interactive and oriented towards "sharing power". Adaptive management is the corollary to the uncertainty of complex systems as it focuses on experimentation and learning from feedback. In bringing these two approaches together, adaptive co-management capitalises on both their strengths as well as realises novel synergies. Appraising adaptive co-management from experiences in natural resource management provides several insights for protected areas and sustainable tourism. In this closing section we envision the prospects of adaptive co-management as an alternative approach to managing protected areas for sustainable tourism.

At a foundational level, adaptive co-management holds considerable value because it necessitates the need to reconceptualise tourism as a complex adaptive system. Substantial evidence in other fields supports this view, and some researchers in tourism are beginning to move in this direction. Making this shift will be no small feat as this will require novel functional assumptions (e.g. thresholds, cascading effects, emergence), reorientation of goals, and a commitment to different approaches to management (see Farrell & Twining-Ward, 2004, 2005). In following the "nature evolving" perspective, the management of sustainable tourism relating to protected areas should anticipate system dynamism and transformative changes. Fostering resilience of social–ecological systems, therefore, emerges as an aspiration or goal, which shifts focus considerably from traditional notions of sustainable development.

Adaptive co-management is a strategy that corresponds to the aforementioned assumptions about the world and combines collaborative and adaptive management. Prospects for adaptive co-management in protected areas and sustainable tourism are strong, as evidenced

by the related examples in this problem domain discussed throughout the paper. Sustainable tourism will benefit greatly by drawing upon knowledge from natural resource management that is immediately applicable to sustainable tourism in protected areas, as discussed in reference to each of the appraisal questions. Perhaps most importantly, adaptive co-management provides a theoretically anchored approach, which is consistent with the paradigmatic shifts in governance and complex systems, to address the intractable challenges facing protected areas and sustainable tourism such as conflict, complexity and uncertainty.

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