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Article

Governance in Transboundary Conservation: How Institutional Structure and Path Dependence Matter

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Abstract

Transboundary protected areas (TBPAs) have gained currency over the past decade because of their perceived (and highly disputed) effectiveness at achieving a wide array of goals ranging from improved biodiversity conservation to regional economic development to the promotion of peace between countries. However, few studies have analysed how institutional structures influence cross-border coordination across a range of issues in a transboundary park. This study uses two TBPAs in southern Africa—the Kgalagadi Transfrontier Park and the Great Limpopo Transfrontier Park—to look at issues of international governance in transboundary conservation. The bottom-up institutional development in the Kgalagadi has allowed ground-level officials to learn how to work together to adapt and respond to the day-to-day challenges they confront. By contrast, local-level collaboration in the Great Limpopo has emerged slowly due to the top-down imposition of the park on local-level communities and officials. The central premise is that the institutional beginnings to the two TBPAs result in differing capacities for effective collaboration. Initial institutional design also creates path dependencies, which may be difficult to overcome later. These findings can help practitioners in designing more robust, long-enduring institutions to better achieve their goals in future transboundary conservation projects.

Keywords: transboundary conservation, institutions, governance, collaboration, path dependency, institutional development, Kgalagadi, Great Limpopo

INTRODUCTION

Research shows the environmental dilemmas of today to be increasingly challenging and complex. Problems previously viewed in isolation and at a single scale are now understood to link to both broader and narrower levels (Berkes 2002; Cash et al. 2006). With this new understanding about scaling up and down, a great deal of literature is now devoted to the increasingly global scale of many environmental issues (Young 1994; Speth and Haas 2006; Brosius and Campbell 2010) and the ramifications of aggregating localised actions worldwide (Millennium Ecosystem Assessment 2005). As a result of these insights, academics, practitioners, and policymakers alike have started taking a greater interest in institutional arrangements for environmental governance from local to international levels (Young 2002; Dietz et al. 2003; Ostrom 2005). In one stream of research on governance, scientists drawing on concepts of polycentricity attempt to match the level of governance to the scale of the environmental dilemma in an effort to internalise externalities (Ostrom 1999; Lebel et al. 2006). In this context, and throughout this article, governance refers to ordering relationships between people and groups of people through institutions (Ostrom 1994). Conservation biologists, likewise, continue to advocate for management to the scale of the ecosystem rather than political boundaries. Discussions arise, however, over how institutional designs can scale up and down and on the merits of bottom-up versus top-down governance approaches. Here, institutions refer not just to formal rules or organisational structures, but also to the informal norms and operating procedures used in practice (North 1990). Without detailing

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the extensively documented debate on fortress conservation versus community-based natural resource management (for perspectives from the two camps, see Oates 1999 as compared to Brockington 2002), this article will focus on the influences of the institutional structure on the successful response to challenges facing park officials. Some scholars note that top-down institutional structures have the benefits of a broader viewpoint, efficiencies inherent in economies of scale, increasing competency in redistribution, a broader tax base, and the resources and structural support of a centralised governing body (Hooghe and Marks 2003). Others argue instead that bottom-up approaches are better able to accommodate contextual nuance, work with local actors and place-based knowledge, allow for the diversity to experiment and learn, begin with more on-the-ground legitimacy, and provide better means for local and regional monitoring and enforcement (Ostrom 1990; NRC 2002). This article explores the strengths and weaknesses of top-down and bottom-up institutional arrangements on the response to environmental dilemmas, looking at how institutional arrangements cope with different challenges with varying degrees of effectiveness. It argues that as institutions are designed to respond to certain types of issues, institutional history and path dependency affect the robustness of the institutional arrangements. A critical understanding of the role of institutional history goes beyond the standard policy literature and can help academics and practitioners alike in two ways—in the ongoing governance of current conservation efforts and in the more appropriate design of new conservation plans as opposed to contextually free panaceas. As a result, conservation practitioners can draw on theoretical insights from the resilience and robustness literature to work towards crafting more robust, long-enduring institutional arrangements.

This study examines the governance of transboundary parks, which are protected areas that span the international border of two or more countries and engage in some level of collaborative governance to better achieve ecological, economic, and political goals, as a means for exploring how parks created through a bottom-up process possess different capacities for response to challenges than parks that emerge from the top down. The project uses transboundary protected areas (TBPAs) because they cross both political borders and ecological scales and have aspects of local and international domains built into their structure. Increasingly, they play a major role in biodiversity conservation efforts, with 227 TBPAs around the globe in 2007, up from 169 in 2001 (UNEP-WCMC 2007). Southern Africa governments, in particular, have taken a leadership role in the formation of new transboundary parks, with 22 initiatives currently under way in the region. This study uses two of the TBPAs in southern Africa as case studies to compare the institutional structure of a social-ecological system that arose from a bottom-up genesis with one that emerged from top-down beginnings. In doing so, the article addresses the research question of how institutional design within a conservation project that crosses political borders affects cross-border collaboration and problem response. Collaboration, in this context, refers to sharing information, making decisions on when to coordinate actions and work together or choose to work independently—in effect, the creation of new, shared institutions (Gerlak and Heikkila 2011). In the following section, the article turns to a brief discussion of where and when theory suggests that collaboration will emerge in situations of cross-border governance. With this background, the third section will introduce the two cases studies, setting them up for a comparison along patterns suggested by theory. The fourth section introduces the methodology behind the study, and the fifth section describes the results before the concluding discussion.

THEORETICAL FOUNDATION

Theories of resilience often discuss how system variables interact in response to disturbance, creating non-linear system responses (Gunderson and Holling 2002). Robustness, by contrast, draws on engineering literature, taking concepts similar to resilience from an ecological setting and applies them to designed systems, such as institutional arrangements (Anderies et al. 2004). It is defined as the ability of a system to maintain itself in response to unpredictable perturbations (Janssen and Anderies 2007). In this study, the predominant focus is on the robustness in institutional arrangements. Robustness looks at the trade-offs implicit in systems design and how a system responds to perturbations. These trade-offs may emerge in the institutional design of transboundary parks in how well the cross-border institutional arrangements cope with various types of problems. While formal treaties and laws may be similar at a policy level, often the informal rules, norms, and operating procedures of implementing agencies will differ depending on who is involved in the institutional development. The hypothesis of this study is that the bottom-up origination of a TBPA will result in more collaboration at an operational level than that of a top-down origination. By operational level, I refer to on-the-ground norms and rules-in-use in contrast to decision-making about rules at a higher policy level (Ostrom 2005). In turn, this leads to a more institutionally robust arrangement for responding to operational level challenges. This leads to a form of adaptive governance where conservation officials experiment and modify their approaches to the problems they confront and in the process learn more effective ways of resolving these problems (Dietz et al. 2003). In part this occurs through building adaptive capacity in the response to these problems (Armitage 2005).

Top-down transboundary park efforts have collaborative successes as well, most often in achieving high degrees of coordination or working together on harmonising national level policy and working to develop the ministerial frameworks required for transboundary conservation, playing to the strengths of its own institutional design in contrast to the design in a bottom-up development. However, operational cooperation often lags in these cases, particularly when compared with transboundary efforts that emerge from grassroots efforts. This point is worth emphasising in that it

is often lost in debates between community conservation and top-down conservation efforts. Of the two cases presented next, one arose from operational (on-the-ground) officials working together, building relationships, and resolving the day-to-day challenges confronting them. This has resulted in high levels of operational collaboration. The second case, having been created via international treaty, exhibits less success at responding to operational issues because local-level officials have not developed the trust necessary for engendering partnership at that level. While both cases provide examples of the complex interplay between support from the top and collaboration from the grassroots, the difference between the two comes from how one case emerged out of local-level interaction within the local governmental agencies, just as the other's genesis began from the opposite extreme, through the negotiations of international treaties. My point is that both top-down and bottom-up cases have the potential to achieve governance objectives, but given different institutional starting points, the cases face different governance challenges in addition to the different contextual challenges.

THE CASE STUDIES

The first case, the Kgalagadi Transfrontier Park (KTP) in Botswana and South Africa, provides an example of a transboundary protected area that emerged through the efforts of local officials, a bottom-up origination. When South Africa created a national park along the border of Botswana in 1931, park rangers began to work informally across the border and managed at the scale of the ecosystem, rather than managing to political boundaries (de Villiers 1999). At that time Botswana, then the Bechuana Protectorate, did not have the capacity to manage this land for conservation effectively, and the Botswanan authorities proclaimed South African officials as honorary rangers. As Botswana built capacity, their rangers reclaimed jurisdictional authority, but the two sides continued to work closely together. In 1999 the two national parks became officially recognised as a single entity, forming a transfrontier park.

The Kgalagadi Transfrontier Park, encompasses nearly 38,000 sq. km, an area roughly the size of the Netherlands. Biophysically, the park is an arid savanna. The fauna of the region are generally less water-dependent, with larger ungulate species such as eland (*Taurotragus oryx*), gemsbok (*Oryx gazelle*), and springbok (*Antidorcus marsupialis*) and their accompanying predators—lion (*Panthera leo*), leopard (*Panthera pardus*), and cheetah (*Acinonyx jubatus*)—forming the most noticeable part of the ecosystem and the main tourism attraction. Because the border between the countries was never fenced, wildlife in the park has continued to follow historic migration patterns from the South African portion of the park in the southwest through the Botswanan section of park in the northeast. From a human perspective, the park lies in a sparsely populated, remote area centred at the point where Botswana, Namibia, and South Africa all meet. The entire border of the park with Namibia is fenced as is the southern boundary of the park in South Africa, with cattle farms along the western boundaries. The Botswanan section of the park is only partially fenced. Historically, the region also housed Basarwa or San people, but the population has not lived near the park in Botswana in recent years (Wilmsen 1989). The same is not true in South Africa. The creation of the original national park in the 1930s intended to provide the resident San population with the opportunity to continue to live traditionally as hunter gatherers, with the park patronisingly seen as a refuge for flora, fauna, and indigenous populations (Holden 2007). This policy changed over time, and in the mid-1970s park management forcibly removed the last of the San from the park. With the governmental regime change in South Africa in 1994, the San and the local 'Coloured' or *Baster* community, known as the Mier, filed claims demanding the return of historical land holdings forcibly acquired by the government, resulting in the formation of a contractual park, a park owned by the local community and co-managed by park and community representatives, in the South African section of the transboundary park.

The second case, the Great Limpopo Transfrontier Park (GLTP) of Mozambique, South Africa, and Zimbabwe, has excited politicians and conservationists for decades. In 1926, the South African government created Kruger National Park in the northeast corner of the country by combining smaller, pre-existing game reserves. Today the Kruger Park hosts over one million visitors per year, many with the hopes of spotting Africa's Big Five wildlife—lion, leopard, Cape buffalo (*Syncerus caffer*), white rhinoceros (*Ceratotherium simum*), and the African elephant (*Loxodonta africana*). Across the border, Zimbabwe created the Gonarezhou National Park in 1975 along the southeastern border of the country out of game reserves and forestry land placed under conservation in the 1920s and 1930s. Known as the "Place of the Elephant" and blessed with beautiful cliffs and rock formations running along the Save and Runde rivers, the park soon became popular with sportsmen and tourists alike (Saunders 2006). At its peak in the mid-1970s, several thousand tourists visited each year. However, with the ongoing collapse of the government and lack of emphasis on conservation, the park slowly drifted into its present state of decline. Today fewer than 1,000 people visit each year, and the national park staff looks to the transfrontier park as the only way of rehabilitating itself back to its previous glory. Meanwhile, Mozambique took steps towards the creation of a national park to enter into partnership with Kruger and Gonarezhou, establishing the Limpopo National Park in 1999 (DNAC 2003).

As early as the 1930s, senior government officials expressed interest in a transboundary park in the Lowveld near Kruger Park. Through the 1960s and 1970s, the government of Mozambique also began to talk of partnerships in transboundary conservation (Mello 2007). In the early 1990s, the World Bank began exploring the viability of transboundary conservation here. Then in the late 1990s, aided by the guidance of several non-governmental organisations (NGOs), senior officials from the three national governments began

working towards the establishment of a transfrontier park. Finally, in 2002, the governments of Mozambique, South Africa, and Zimbabwe signed a treaty formally creating the Great Limpopo Transfrontier Park. The combined entity spans over 35,000 sq. km and is home to 146 mammal species, 114 types of reptiles, and over 550 bird species (DuToit et al. 2003).

As the short descriptions above note, the two transboundary protected areas have several common characteristics with a few noticeable differences, making them good cases for comparison by selecting on the key explanatory variable for this analysis (King et al. 1994). One of the ecological strengths of many transboundary conservation efforts comes from the large scale of the projects. In this case both transboundary parks are quite large and nearly identical in size. Also important, the two parks share some ecological traits, with both being types of savanna ecosystems. Both have similar land use and land tenure structures, being composed overwhelmingly by national parks and with both having contractual parks within them, with the San-Mier community in the Kgalagadi and the Makuleke community in the Great Limpopo. This is not the case in many TBPAs, such as the Maloti-Drakensberg Transfrontier Conservation Area, which is comprised of national parks, provincial parks, communal land, private land, and multiple use areas (Büscher 2008). From a bureaucratic perspective, the two transboundary parks have similar management structures in place with joint management boards and national park representation for each TBPA, and are moving towards more and more common organisational structures. Likewise, they share similar levels of international recognition with formal treaties between the partnering countries and with each also falling under the Southern African Development Community's framework for transfrontier conservation. Importantly for this study, both protected area complexes involve South Africa, are coordinated by the Department of Environmental Affairs and Tourism, are implemented by South African National Parks, and fall under the supervision of a single department and coordinator responsible for all the TBPAs within the implementing agency.

Some of the key differences between the two TBPAs include South Africa working with different partners in each instance—Mozambique and Zimbabwe in the case of the Great Limpopo and Botswana in the Kgalagadi. This difference brings with it unique styles of governance and government and different levels of capacity in terms of financial capabilities, human resources, and bureaucratic support. It also means that the relationship between countries, bureaucracies, and implementing agencies differs. In part, these differences are normal between any two countries, but in southern Africa they also deal with the legacy of colonial administration. South Africa shares a British background with Botswana and Zimbabwe, but Mozambique's Portuguese colonialism leaves behind a different administration style, a different language, and a different relationship with indigenous populations. At the park level, the Great Limpopo deals with high tourism levels relative to the Kgalagadi, with 1.3 million visitors annually compared with 200,000 in the Kgalagadi. The areas bordering the two parks also differ, with the Great Limpopo having high population densities surrounding it and the Kgalagadi having very few neighbours. From a geographic perspective, the greatest difference between the two TBPAs is that the Kgalagadi has a long, continuous border between the two national parks. By contrast, the Zimbabwean section of the Great Limpopo is spatially connected only via the Sengwe Corridor, a communal area, which is not a protected area. This tenuous connection is further weakened by the security fencing along the Zimbabwean border, remnants of past political dynamics. The political and economic difficulties in Zimbabwe have further resulted in a transboundary park where the partnership between Mozambique and South Africa has progressed at a different pace from that with Zimbabwe. These differences all highlight how the two transboundary parks are not fully analogous to each other, but the larger study that forms the base for this research suggests that these differences lead to superficial differences only in how the governance structures respond to a wide variety of challenges (Schoon 2008). The commonalities between the two parks have tended to direct the joint management boards of the parks into common alignment. However until this point, one difference has been left unmentioned and unaccounted. Many of the differences in institutional responses to challenges stem from the genesis of the two transboundary parks and their resultant path dependencies. In the case of the Kgalagadi, the park emerged from the bottom-up planning of rangers on the ground working together across a 'borderless' landscape. By contrast, the Great Limpopo arose from the top-down decree of senior government officials pushing the implementation of a transboundary park onto local park officials. The ramifications of these creation stories influence how the two TBPAs respond to a wide variety of challenges confronting park management on a regular basis and differing levels of institutional robustness. In what follows, the article explores the implications of the two institutional beginnings with respect to response to operational level issues.

METHODS

The fieldwork for the study took place between 2005 and 2008. During this time, I conducted 152 interviews with key informants. I made initial contacts with key officials in the two transboundary parks. From there, a snowball sampling approach expanded the scope of interviewing. In all, interviews were held with governmental employees, NGO officials, academics, and community representatives involved in transboundary conservation in the area. Through these interviews, I began to explore the key challenges being faced by officials in the TBPAs. Each interviewee was asked about the key challenges, crises, stresses, and problems facing the transboundary park that they worked in, researched, or were knowledgeable about. The interviews were semi-structured to talk in detail about the issues mentioned by the respondent as well as any issues of general information or concern and how they responded to these challenges. After discussing each of the problems/issues and responses mentioned in an interview in

more detail, the interview turned to the subject of collaboration across the border—where, when, and in what manner the transboundary partners worked together. The interviews focused on when they worked together, coordinated actions, shared information, or responded independently.

Next, I coded the notes from each of the interviews, identifying all references to how they responded—collaboratively or not. From these interviews I observed over 700 problems confronting the parks that I then aggregated into roughly a dozen broad categories. The resulting database allowed these issues to be cross-referenced based on the role of the interviewee, which country they represented, whether it was at an operational level or policy level, and what type of response it provoked, if any. I then began to track which challenges engendered collaboration. I could also roughly gauge the importance or salience of an issue based on the frequency of its mention. Given the goals of transboundary conservation to eliminate or minimise political boundaries, pursuit of these goals could be thought to result in higher levels of collaboration. Therefore, I hypothesise that issues of higher levels of importance to both sides of a border would facilitate greater levels of collaboration. In reality, where collaboration seems to emerge depends quite importantly on the institutional design and to what type of challenges the institutional structures prove robust. In this manner, I could begin to test the hypothesis of whether the bottom-up institutional development of a transboundary park results in more collaboration in response to operational issues than in transboundary parks emerging from the top down. This capacity for collaboration is important in cross-border activities because it enables each to learn from each other, share information, minimise independent and contradictory responses, improve efficiencies by eliminating duplication of effort, and build social capital. In short, it leads to the adaptive governance necessary for the increasingly complex governance issues faced in cross-border situations. This maps to the literature on institutional robustness and building in the adaptive capacity to respond to surprise and new challenges (Anderies et al. 2004).

RESULTS

Table 1 lists the most frequently mentioned challenges in both transboundary parks. The two parks clearly face an overlapping set of issues, but the prioritisation of the problems differs. The interesting findings here emerge in looking at the details. The results will focus on three leading challenges in both parks—local community relations, human-wildlife conflict, and ecotourism—which equate with the top three in the Kgalagadi and the first two and the ninth leading challenge in the GLTP. Each of these challenges has important cross-border aspects. A more in-depth view of these specific challenges, shown in Table 2, provides insight into where different levels of collaboration emerge and the impacts on outcomes. Both parks agree on the importance of these three challenges, but the operational responses differ substantially. This disjuncture shows the robustness trade-offs inherent in institutional design. Stepping through these challenges individually provides a view into cross-border collaboration in response to each issue.

Far beyond all other transfrontier conservation challenges, relations with local communities are the most 'prickly' of issues (Spierenburg et al. 2008). In every country and in each transboundary park, the challenges of park relations with local communities surface as the preeminent problem for park managers [Mavhunga and Dressler 2007; see also the complete special issue of *Conservation and Society* 5(1)]. However, universally, the managers indicated that relations with local communities are a sovereign issue with no relation to the transboundary parks. The predicament is that the issue does have a direct and important relationship with transboundary conservation in at least three ways. First, land tenure and land management issues are complicated through the co-management of contractual parks in both TBPAs in the South African section. In effect, communities are managing a portion of a larger entity that is also collaboratively managed, meaning that decisions at one level may directly impact the other. By management, I refer to the actions of putting the institutional structure created through governance (collaborative or otherwise) into practice (Ostrom 1994). Land tenure concerns also impact the perceptions of neighbouring communities and donor organisations through the resettlement efforts underway in Mozambique. Finally, community-park relations form an integral part of conservation-development discussions in all protected area projects. In compliance with national policy, neither TBPA exhibits high levels of cooperation on community relationships involving land tenure. The one place where some cross-border coordination exists lies in the Kgalagadi where South African community outreach programmes are now being expanded to San communities in both countries. The programmes teach community conservation education and work with the local population on both scientific knowledge of the area as well as on local indigenous knowledge that has been disappearing in recent generations. This is slowly leading to increasing levels of collaboration on local engagement between the transboundary partners. Until a cooperative project between the Italian NGO, CESVI (Cooperazione e Sviluppo or Cooperation and Development), and the World Conservation Union (IUCN) began in late 2008, no such cross-border projects existed in the Great Limpopo in spite of the larger outreach programmes in Kruger National Park.

Human-wildlife conflict came up repeatedly in discussions as the second most frequently mentioned challenge in both protected areas. The collaborative response in the Kgalagadi in contrast to the individual responses in the GLTP provides the clearest differentiation between the two transboundary parks' responses to operational concerns. From the very beginning in the KTP, South African rangers have played an integral role in responding to damage-causing animals in either country. Because of the great difficulty and expense of tracking and capturing marauding lion and leopard, officials from Botswana rely on the skill and expertise of South African rangers. Together, the collaborative team tracks and tranquilises rogue animals and returns them to an area of

the park outside the range of similar predators. By contrast, responses to human-wildlife conflict in the Great Limpopo vary by country with each conducting its own response. South Africa takes two completely different approaches depending on the location, timing, and specifics of the escape. If possible, park officials try to bring the animal back into the park. If this is too difficult, provincial officials or safari outfitters may kill the animal. Mozambican officials, like the Botswanan rangers, lack the experience and capacity to respond to damage-causing animals, particularly given the communities that still reside within the national park. As a result, responses are limited to investigating attacks and trying to educate residents on how to minimise future attacks. In Zimbabwe, the policy is similar to South Africa's, with the exception that there is no longer the capacity to capture and relocate damage-causing animals other than rhinoceros. Again, there is no cross-border collaboration of any kind. Responses to human-wildlife conflict in the Great Limpopo countries take place independently with policies often in conflict with those of their transboundary partners. In contrast to the Kgalagadi, park staff in the Great Limpopo collaborate very little with their cross-border partners on one of the most frequently mentioned challenges in the transboundary parks.

A third major challenge facing both TBPAs arises from tourism. One of the biggest issues in tourism planning comes from how to share transboundary park revenue. In the Kgalagadi, the two partners elected to split gate revenues equally, regardless of differences in infrastructure, tourism levels, or running expenses. The joint management committee felt that this approach was most equitable, provided a means to even out capacity imbalances, and allowed the transboundary park to grow as a single entity. In many ways the challenges in the GLTP are far greater with much higher tourism levels and with an even greater imbalance in tourism infrastructure, with most tourists only visiting the South African park. Debate about how to divide tourism revenue has spanned from before the creation of the transboundary park until the present. The current resolution has each country keeping what it collects with roughly 90% of the revenue going to South Africa. However, Zimbabwe and Mozambique both feel that the park fees should provide more equitable returns between the partners to balance capacity rather than based on equitable returns based on current tourism patterns. This policy, in part because of the low levels of communication, has led to great consternation between the three 'partners'. Similar to the responses to human-wildlife conflict and community relations, joint tourism planning has progressed further in the Kgalagadi than in the GLTP.

I do not want to overstate the claims of a limited data set; however, the data consistently support the hypothesis that the bottom-up genesis of a transboundary park results in more collaborative responses at an operational level than a top-down origination. I argue in the concluding section that this improves the institutional robustness of a transboundary park. Likewise, this article discusses only three of the most prominent operational issues. Other work addresses additional responses to other park challenges which overwhelmingly support the hypothesis, such as local-level border crossing, joint tourism planning, and animal population control, as well as examining the countervailing hypothesis that top-down institutional beginnings, as in the GLTP, result in more cooperation at a policy level than bottom-up originations (Schoon 2008).

DISCUSSION AND CONCLUSION

This research draws upon previous work on institutional change and path dependency (Alchian 1950; Ostrom 1990). Unlike evolutionary phenomena in the biophysical world, institutional change has two aspects, one of conscientious choices and another of unintentional consequences. The search for robust institutional arrangements occurs in a complex system filled with high levels of uncertainty and often has mixed goals, as in many conservation/development debates (Terborgh 1999; Wilshusen et al. 2002; Child 2004). Due to system complexity and uncertainty all institutional changes produce outcomes with this mix of both intended and unintended effects. As a result, system designers cannot optimise outcomes. Instead, the best that institutional designers can do is work to improve robustness. In attempting to improve system robustness through institutional change, however, designers continue to face trade-offs—between capabilities in response to different types of challenges/disturbance and between expanding institutional capacity and social, political, and economic constraints. In addition, institutional design builds from pre-existing institutional structures. While the literature debates when and where institutions change in an incremental fashion (Lindblom 1979) or in leaps of punctuated equilibrium (Jones et al. 2003), path dependency constrains the institutional trajectory to some extent (Mahoney 2000). Because of this legacy effect, institutional starting points may have a dramatic and long-lasting impact on institutional outcomes.

What this research intends to achieve is a greater understanding of how institutional beginnings influence future institutional response capabilities and ultimately the very robustness of these institutional arrangements. The two case studies examined responses to challenges common to both transboundary parks. In both instances, when the transboundary parks were established few cross-border institutional arrangements existed. Practitioners on the ground crafted the current collaborative institutions in response to issues they identified in their interactions. The build-up of cross-border governance in the Kgalagadi through the interactions of local officials has created a base which allowed local-level institutional designers to learn how to adapt and respond to transformations in the social-ecological system, resulting in more collaboration and success in meeting transfrontier goal attainment, at least at an operational level. By contrast, grassroots institutional development in the Great Limpopo has never emerged due, in part, to the top-down imposition of the park on local-level park officials. While the focus here has emphasised the strengths of the Kgalagadi in response

Table 1
Key challenges in the Great Limpopo and the Kgalagadi Transfrontier Parks

Great Limpopo Transfrontier Park	Count	Kgalagadi Transfrontier Park	Count
Local community issues	94	Local community issues	57
Human-wildlife conflict	37	Human-wildlife conflict	22
River health	33	Tourism	19
Border security	26	Contractual park co-management	16
Veterinary disease	25	Financial sustainability	14
Community resettlement	24	Cross-sectoral bureaucracy	11
Financial sustainability	22	Conservation vs. development	10
Capacity inequality	19	Capacity inequality	10
Tourism	15	Poaching	10
Total interviews for GLTP	***137***	***Total interviews for KTP***	***88***
Total count of challenges mentioned	***476***	***Total count of challenges mentioned***	***266***

Table 2
Comparison of responses to operational challenges across protected areas

Challenge	Location	Level of collaboration*	Outcome assessment
Local community issues	Kgalagadi	Coordination	Levels of collaboration increasing over time, no major problems
	Great Limpopo	No cooperation	Current policies in conflict, leading to problems, potential for larger challenges in future
Human-wildlife conflict	Kgalagadi	Collaboration	Partnership functioning smoothly
	Great Limpopo	No cooperation	Current policies in conflict, leading to problems
Tourism	Kgalagadi	Collaboration	Partnership functioning smoothly
	Great Limpopo	Communication	Current policies in conflict, leading to problems, potential for larger challenges in future

*Level of collaboration based on a modified version from Zbicz (2003), where five levels of cooperation were spelled out from 'no cooperation' to 'full cooperation', as described: No cooperation = no cross-border partnership considered; Communication = some information sharing and discourse between cross-border partners; Consultation = notification of actions; Coordination = regular meetings and some coordinated actions; Collaboration = frequent meetings and regularly working together; and Full cooperation = fully integrated, joint decision-making, working as one unit (not present in current cases).

to operational challenges relative to the Great Limpopo, it is critical to stress that the institutional development of the Great Limpopo also brings strengths in response to different types of challenges not discussed in this analysis. In the GLTP, the top-down emergence of the transboundary park has resulted in a high degree of success in the achievement of goals requiring senior government officials and crossing a breadth of governmental ministries, such as creating a new border entry at Giriyondo between Mozambique and South Africa or in the speed of creating the transfrontier park, situations with which the governing body of the Kgalagadi, by contrast, struggles. The current article primarily addresses the strengths inherent to the bottom-up creation of a transboundary park relative to a top-down creation in response to operational problems, but it is not meant to privilege one at the expense of the other.

Although this article posits a two-part hypothesis of bottom-up institutional arrangements generating more operational collaboration with this in turn leading to more institutional robustness, it is equally important to differentiate between response effectiveness and collaboration. The concept of polycentricity, introduced earlier, emphasises that decisions should be made at a level matching the scale of the problem (Cumming et al. 2006). This implies that some issues should be governed jointly at an international level, others at a national level, and still others at a local level. Transaction costs—here the costs of collaboration beyond making an individual choice—provide a mechanism for decision-making. In response to some challenges, the benefits of increased scale outweigh the costs implicit in cross-border collaboration, for instance, in removing fences to facilitate large-scale movement of animals. In other cases, the costs of crossing borders encourage decision-making at a narrower level of governance, possibly in infrastructure maintenance or tourism accommodation. In either situation, improved cooperation at some level along the continuum of Table 2 can assist in the decision-making process. The point of this article is that building cooperation between operational officials has created an environment conducive to problem-solving at this operational level in the Kgalagadi but not in the Great Limpopo. As a result, the institutional structure has been designed for robustness to the types of concerns commonly encountered by its designers. This does not imply that the one design is more robust to all types of current and future challenges, only that it is more robust to the operational issues witnessed by practitioners. Additionally, the institutional differences between the two cases are most evident in the norms and operating procedures of transboundary park staff, not in the formal rules, regulations, and organisational structures.

These findings support several points alluded to in the introduction. The challenge in many studies discussing polycentricity is in its operationalisation and how to make the decisions of where and when to scale up or down. Likewise, bottom-up and top-down institutional arrangements both have their advocates. What this study attempts to show is that both

have advantages and disadvantages, depending on the specific context confronted, with the strengths of the bottom-up case in response to operational issues examined in more detail here. However, in advising policy, decision makers want straightforward answers, not complex contextual ones. In addressing this complexity, lessons from adaptive governance literature can help to provide clear steps on how to strengthen institutional arrangements in ways that build robustness and promote long enduring institutions. As highlighted in the introduction, adaptive governance refers to the need for governance institutions to adapt and respond to a rapidly changing world (Dietz et al. 2003). Literature on adaptive governance often returns to five key themes which feature prominently throughout this study—adopting polycentric forms of governance that promote institutional diversity and the exchange of ideas and knowledge, building trust and social capital through repeated interaction, learning through experimentation, promoting strong leadership, and taking advantage of multi-scalar institutional approaches (Brunner et al. 2005; Folke et al. 2005; Lebel et al. 2006; Olsson et al. 2006). While not advocating a blueprint model for success, these cornerstones of adaptive governance provide concrete insight for policymakers and institutional designers in working to improve institutional arrangements in spite of path dependencies.

In studies of Peace Parks in southern Africa the literature frequently questions the often top-down approach of TBPA formation (Büscher 2008; Spierenburg et al. 2008). Top-down development can provide early successes in treaty enactment and the harmonisation of policy, but this may be at the expense of operational development. How future TBPAs proceed depends on the goals of their backers. If the goal is to engage senior officials on a common project, the current approach may be most effective. However, if the goal is to develop community-level economies, help park officials in their day-to-day work, and achieve conservation goals, perhaps a different approach under the leadership of local-level officials may be more effective. This bottom-up approach can often be developed and nurtured without resorting to top-down impositions as in the Great Limpopo through facilitating more cross-border engagement, empowering local officials to expand their mandate, and generally working towards the five tenets of adaptive governance mentioned above. Oftentimes, as is still the case in the Great Limpopo on community involvement, local officials do not have the wherewithal or opportunity to work in an adaptive fashion. The field still needs further research to explore the ramifications of path dependence and institutional structure on the governance of transboundary protected areas and protected areas in general.

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