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Research, part of a Special Feature on Social Network Analysis in Natural Resource Governance

Strengthening Regional Cohesion: Collaborative Networks and Sustainable Development in Swiss Rural Areas

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ABSTRACT. This paper makes both a theoretical and empirical contribution to a better understanding of how specific forms of network governance play a crucial role in enhancing sustainable development in rural areas. Drawing on the literature on social capital and social networks, I argue that a region has to achieve a certain level of cohesion in the network structure among actors from different societal sectors and governmental levels to strengthen rural sustainable development. However, to sustain positive regional development in the longer term, network structures also need to guarantee fragmentation and flexibility by including actors with varying views and interests. Empirically, the paper looks at the new policy of regional nature parks in Switzerland. The policy provides a good test case for the theoretical argument, because it aims at taking a cooperative and network-oriented approach to enhance rural sustainable development. Two case studies demonstrate that regional park projects have in fact strengthened the vertical cohesion between government levels. Remaining fragmentation at the local level could be a hindering factor while further establishing a park project in the region. In the longer term, however, it could guarantee the necessary flexibility to adapt to new ecological and socioeconomic developments that cannot be directly influenced by a region itself.

Key Words: *cohesion; regional nature parks; social network analysis; sustainable regional development; Switzerland*

INTRODUCTION

When it comes to the translation of sustainable development into concrete actions, regional and local communities play a crucial role given their proximity to actual problems and the relevant governmental tasks typically assigned to local and regional administrative levels such as waste management, zoning, and social welfare. A wide range of literature has stressed that the local or community level becomes critical in addressing long term policy problems such as ecological degradation or emerging risks because of ecosystem dynamics and socioeconomic changes (Ostrom 1999, Adger 2003, Meadowcroft 2004). Whereas it has been widely acknowledged that top-down centralized policy making is not suitable to address such long term policy problems (Dietz et al. 2003, Durant et al. 2004), finding the appropriate institutional arrangement for cross-scale and cross-level interactions has remained challenging (Young 2002, Cash et al. 2006). To address the challenges related to cross-scale and cross-level interactions in policy making, the concept of network governance has gained importance (Torfing 2005, Sorensen and Torfing 2006). Originating mostly from organizational studies (Alter and Halter 1993) and state theories (Rhodes 1997), network governance focuses in its most general form on nonhierarchical patterns of interaction and political steering between actors representing different levels and sectors of society and their respective relationships. Particularly with regard to enhancing sustainable development (Lafferty 2004), the ways in which different actors with different concerns and interests are embedded in policy making can be seen as a critical factor (Pretty and Ward 2001, Pretty 2003).

Concepts such as ‘integrated management,’ ‘adaptive management,’ ‘collaborative management’

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or 'co-management' (see summary and references in Bodin et al. 2006, Crona and Bodin 2006) have also started to explicitly or implicitly embrace the network concept as a means to study and improve relevant political processes and management approaches. It has been widely agreed that the inclusion of different sets of actors having different stakes in the use and protection of natural resources is necessary to better cope with the complexity of ecological systems. However, the effects of such new forms of governance have only been minimally explored thus far (see also, Crona and Bodin 2006, Wettestad 2006, Newig and Fritsch 2009). Integrative and network-oriented approaches are relatively new or have only recently been introduced in practice. In addition, longitudinal data that would allow for the observation of changes in policy making or management styles and their outcomes are often lacking.

This article aims to make both a theoretical and empirical contribution to a better understanding of integrative and network-oriented forms of policy making and natural resource management as a potential contribution to enhancing sustainable development, particularly in rural areas of highly industrialized countries such as Switzerland. More specifically, the following questions will be addressed:

1. What network structures are prone to enhance sustainable development of rural areas in highly industrialized countries such as Switzerland, and how can they be fostered?

2. How do new forms of policy making based on the concept of network governance alter network structures among the relevant political actors in a particular region, and how can these structural changes be assessed with regard to a more sustainable development of that region?

Drawing on the literature on social capital and social networks (in particular the social theory of Coleman 1988, 1990), I will argue that a region mainly has to achieve a certain level of cohesion between different societal sectors and governmental levels to successfully launch a policy or project that aims at strengthening the sustainable development of a region. However, to sustain positive development of the region in the longer term, it will be argued based on the work of network theorist Ronald Burt (1982, 1992) that network structures need also to guarantee fragmentation and flexibility by including different sets of actors with rather heterogeneous views and interests. This will allow a region to keep the flexibility to adapt to new socioeconomic and ecological developments mainly originating externally to the region's sphere of influence.

Empirically, the study looks at the new policy of regional nature parks (RNP) in Switzerland that aims at integrating rural economic development objectives and environmental and landscape protection goals. The policy's main goal is to enhance sustainable development of rural regions that are confronted today both with ecological and socioeconomic challenges by strengthening horizontal and vertical network structures. The policy therefore provides a good test case to assess the effects of a policy instrument that includes a cooperative and network-based approach of political steering. Two case studies from the Swiss regions of Binntal (Canton of Valais) and Thal (Canton of Solothurn) demonstrate that the new park policy has in fact strengthened the vertical cohesion between governmental agencies from different administrative levels. Local structures, on the other hand, have remained less cohesive, and this horizontal fragmentation between different sectors needs further improvement to meet the integrative imperative of the concept of sustainable development as defined by the Swiss federal government (Swiss Federal Council 2002, 2008).

First, the article discusses the specific characteristics of the new Swiss park policy and the underlying concept of sustainable development by taking a network approach. It then discusses what network characteristics are expected to be supportive for enhanced sustainable development of rural areas in a country like Switzerland. The following section introduces the case study approach taken and discusses the survey and analysis techniques applied in this study. The subsequent analysis will investigate the effects of the two selected park projects on the network structures in the two regions, particularly their cohesiveness and fragmentation. The study concludes with an assessment of the theoretical assumptions outlined earlier in the article

based on the results from the empirical analysis and outlines theoretical implications from the perspective of sustainable development.

THE NEW SWISS PARK POLICY FROM A NETWORK PERSPECTIVE

Rural areas in Switzerland today are confronted with several challenges. More and more jobs are at risk or have already been eliminated over the last decades because of socioeconomic changes. Traditional sectors such as agriculture, construction, and the timber and textile industries are either under economic pressure or had already disappeared decades ago. The expanding service industry concentrates mostly on population centers in urban areas. For rural areas, tourism often remains the only economic sector with potential for growth (Federal Office for Spatial Development 2005). Ecologically, landscapes in many areas are at risk because of intensified land use as a result of expanding infrastructures, tourism, and other human activities with negative impacts on the natural environment. The dramatic decline in agricultural activities is a key factor in both ecologically and economically negative developments (FOEN and FSO 2007, 2009). In keeping with recently introduced cooperative and decentralized forms of political steering, in 2007 the Swiss government launched a new policy for regional parks in rural areas to better address the specific challenges confronting those areas today. The policy complements and expands the previous nature and landscape protection policy with two new types of regional parks, so-called 'regional nature parks' and 'nature discovery parks' (Art. 23e, Federal Law on the Protection of Nature and Landscape; Official Compilation of the Swiss Federal Law 2008). Based on positive experiences with similar parks in neighboring countries, the new regional nature parks (RNP) in particular should strengthen the local economy and help to decouple socioeconomic development from resource use by promoting soft tourism, ecological production processes, and the sales of local products (Swiss Federal Council 2005:2155, Gerber and Knoepfel 2008). In sum, RNPs should give impetus to all three dimensions of sustainable development as outlined in the strategy of the Swiss federal government in 2002 (Swiss Federal Council 2002:25).

Simultaneously, the park policy faces challenges very similar to the ones that emerge from the overall concept of sustainable development. It is obvious that such a comprehensive and integrative approach creates coordination problems and trade-offs between different policy objectives. Even though the concept of sustainable development has expanded as a guiding principle for policy making in Switzerland into several policy domains (ISDC 2007), implementation is still widely lacking (FSO 2008). The park policy tries to overcome this shortcoming by combining bottom-up and top-down approaches of policy making. At the local and regional level, local actors representing both local economic and environment protection circles have to formulate a park project and submit it to their cantons, i.e., the Swiss states, which then propose the project to the federal government. The federal government evaluates the proposals according to the criteria given by federal law and the national sustainability strategy and, if successful, financially and logistically supports the establishment and operation of the park.

Several studies have recently linked such a concept of network governance more closely to the literature on social networks. The quintessence of these studies is that the structure in which actors are embedded is important and can entail different characteristics that may be preferable for different purposes. How actors are connected with each other may create social capital from which individual actors or whole communities may benefit in pursuing certain goals (Pretty and Ward 2001, Pretty 2003, Lauber et al. 2008). Tompkins and Adger (2004) claimed that networks between resource stakeholders strengthen the resilience of the relevant social system, which, in turn, enhances their capacity to respond to environmental changes. Newman and Dale (2005) further distinguished between types of network ties with different effects based on the concept of 'bonding' and 'bridging' ties (Woolcock 1998, Putnam 2000), also known as 'strong' and 'weak' ties (Granovetter 1973). Networks composed of 'bridging ties', connecting various types of actors with different resources, are argued to strengthen a community's ability to adapt to change. 'Bonding ties', on the other hand, create dense networks that may increase trust between the network members but also encourage strict social norms and conformity that are believed to reduce a

community's resilience in times of change (Newman and Dale 2005). Bodin et al. (2006) gave more specification to the network variable and discussed the role of specific network characteristics such as density and centrality for learning, leadership, and trust in natural resource management.

From a sustainable development perspective, the composition and structure of networks between different sets of actors is critical for the current and future development of a region (Dedeurwaerdere 2005). Instruments that aim at enhancing sustainable development are particularly dependent on enabling structures between actors from both vertical and horizontal layers of government and society because of the concept's multilevel, multisectoral, and multitemporal approach. Network studies have discussed actor inclusion across different institutional and societal scales in networks and their effects on social processes by looking predominantly at the interconnectivity of the relevant actors (Wasserman and Faust 1994: Chapter 7). The concept of interconnectivity within and between parts of a network has been formalized as cohesion (Wasserman and Faust 1994:251, Moody and White 2003). Studies on structural cohesion have found, for instance, that often a relatively frequent direct contact between the different actors is necessary if greater homogeneity among those actors should be achieved (Friedkin 1984).

Subgroups in a network with high interconnectivity among their members are of particular interest from the perspective of sustainable development. It can be assumed that a network with a high degree of closure, that is, a network in which most of the actors are connected to each other, builds up trust and social control between the network members (Wasserman and Faust 1994:Chapter 6). Based on a main argument of Coleman (1988, 1990), such a high level of interconnectedness within a network facilitates change within the network because of enhanced communication, the creation of common norms, and the possibility to restrain opportunistic behavior. Accordingly, to be able to develop and pursue a common strategy and achieve a joint implementation of the project, a region needs to acquire a certain level of cohesion among the relevant actors representing different administrative levels and societal sectors. Or, in network terms, the more tightly actors from the different levels and sectors are tied into the RNP project, the more likely the project will be successful in making a contribution to a more sustainable regional development.

However, there are also significant risks associated with increasing homogeneity in networks because of network closure, as works of network theorists Granovetter (1973) and Burt (1992, 2000, 2001) have shown. A heterogeneous network that consists of a diversified set of actors involved in many cross-boundary interactions could in fact provide a better network structure for dealing with complex and long term developments than a system of similarly minded, closely interconnected actors. Moreover, network heterogeneity may secure 'the source of added value' (Burt 2000:398) that is necessary to adapt to new developments within and outside a particular region. It is therefore a key characteristic of adaptive governance to be embedded in a collaborative, flexible, and learning-based structure that includes different vertical and horizontal levels of society (Brunner et al. 2005). Hence, the concepts of Coleman (1988, 1990) and Burt (1982, 1992) can be seen as opposite predictions on how network structures may affect a network's ability to adapt to significant changes in its environment.

DESIGN AND METHODS

The effect of the new park policy on the cohesiveness of regional network structures will be tested in two case studies of regions that have recently established such a park project. The goal will not be a systematic comparison of the two cases because of too many intervening variables related to geographical, ecological, and socioeconomic differences between the two regions under study. However, the two cases should allow for a testing of the theoretical considerations at two different research sites to provide replication. The case studies include the park projects in the regions of Binntal, in the Canton of Valais, and Thal, in the Canton of Solothurn. The Binntal is a valley located in the Alps close to the Swiss-Italian border in the periphery of the country. The Thal region, on the other hand, is embedded in the Jura Mountains in the northwest of Switzerland and located between the urban centers of Basel, Bern, and Zurich. The Binn valley is economically highly dependent on

tourism, agriculture, and small trade, whereas in the Thal region agriculture is still important, even though the manufacturing and service industries are growing. Furthermore, the landscape in the Binn valley is considered of particular ecological and scenic value under federal law and receives corresponding federal subsidies. The Thal region, on the other hand, was a pilot region in a federal program to promote synergies between the environment and public health concerns. It can be expected that these differences will also be reflected in different types of actors and relationships within the two park projects.

To investigate the two park projects and their impacts on the network structure between actors in the two case study regions, we conducted a standardized survey among all the actors that have been involved in the two RNP projects. The survey was carried out by regular mail and took place in the first half of 2008, after the two regions had submitted their park project to the federal government. The boundaries of the investigated network in each region were defined taking a positional approach (Scott 2000:55) by including all actors into the survey that have been, to different degrees, involved in the park projects based on written documentation and exploratory interviews with representatives of selected key actors in the two regions. Except for one actor, a representative of the national parliament who lives in one of the two regions and has personally committed herself very strongly to the park project, the actors in this study are corporate actors (Coleman 1974) representing organizations and public agencies rather than individuals (see Appendix 1, 2).

We used a standardized questionnaire to measure actor reputation, close collaboration, and information exchange between the relevant actors in each region. For close collaborative ties, we also asked the actors to indicate whether the collaboration was new, that is, established with the park project, or had already existed before, and whether this collaboration was overall cooperative or conflictive (Table 1). To measure cohesion based on structural characteristics that emerge from collaborative relations between the relevant actors, different measurements at the overall level of the network, as well as at the level of triplets (triads) and pairs (dyads) of actors, were used. At the level of the whole network, first the cohesion between the different actor groups, both along governmental levels and societal sectors, was analyzed by calculating the strength of the relationships (ties) both between and within the relevant actor groups for every park project. Comparing the strength of ties between actors from different levels and sectors before and after the initiation of a park project allowed for an assessment of changes in the relationships between the different levels and sectors as a result of the new park project. At the level of the whole network of a particular region, network density and centralization were used as indicators for a potential overall process of network closure, that is, a process of increased interconnectivity between the relevant actors (density) that could depend to various degrees on a single or a few actors (centralization). At the level of actor dyads and triads, the degrees of reciprocity and transitivity were used to assess potential processes of network closure at the more microlevel of individual actors and their immediate relational environment. Based on these different measurements, a region was regarded to be more cohesive when processes of stronger interconnectivity and network closure can be observed at all the different levels of the relevant network, that is, both at the overall and group level as well as at the lower structural level of triadic and dyadic relationships between the relevant actors. All the calculations were done using UCINET 6.224 (Borgatti et al. 2002).

RESULTS

Overall, 32 out of 36 contacted actors in the Thal region and 25 out of 38 contacted actors in the Binntal region answered the questionnaire. In spite of this good response rate of 89% and 66%, respectively, nonresponses showed some systematic patterns. In the Binntal case, only 16 out of 27 local actors took part in the survey, whereas all six of the regional/cantonal actors responded. From the federal level, three of the five contacted actors responded. In the case of Thal, 17 of 21 local actors responded, whereas all actors from higher governmental levels took part in the survey. The lower response rates at the local level could have several explanations. First, the share of private actors is considerably higher at the local than at cantonal or federal levels. Private local actors such as business owners or representatives of trade organizations are usually less willing to devote their

Table 1. Relational types and operationalization.

Relational type	Question in survey
Actor reputation	Which of the following actors was in your view particularly influential during the development of the park project in your region?
Close collaboration	With which of the following actors have you closely collaborated during the development of the park project in your region?
	If you have collaborated closely with an actor during the development of the park project:
New vs. established collaboration	Has this close collaboration been established for the first time during the development of the park project or has it existed already before?
Cooperative vs. conflictive collaboration	Has this close collaboration been overall cooperative or overall conflictive?
Information exchange	From which of the following actors have you received important information during the development of the park project?
	Which of the following actors have you provided with important information during the development of the park project?

costly time to participating in a survey than representatives of public administrations and nonprofit organizations. Second, nonresponses at the local level could be an indication of some actors' skepticism toward the park project in their region. Such skepticism is more likely to manifest at the local level where the project will eventually affect local actors' behavior. The lower response rate at the local level could therefore be seen as a first indicator for the degree of local cohesion with regard to the park project, with the Binntal region seeming to be slightly less cohesive than the Thal region.

The two networks of close collaboration between the different actors in the two park projects are very similar in their vertical and horizontal involvement of actors representing different governmental levels and societal sectors (see Appendix 3). In both cases, around three quarters of all the actors in the network are local actors. Regarding the different sectors, actors that can be categorized as having both user and protection interests when it comes to natural resources, or are indifferent about it, as is the case for the municipalities and most cultural organizations, dominate. Around half of the actors in both park networks are from this category. User interests, mostly from the tourist and agricultural sectors as well as local businesses, are also well represented in both networks. Ecologically oriented actors, i.e., environmental agencies and organizations, are clearly outnumbered in both networks. In particular, the project in the Thal region is strongly dominated by the local municipalities and the park organization (Verein Region Thal, VRTh). The Binntal project has a broader base and managed to better incorporate the local tourism and cultural organizations. At the cantonal level, the Thal project was mainly coordinated by one public agency, the cantonal office for spatial planning (SO-ARP). In the case of the Binntal project, the cantonal offices for economic development (VS-DWE), agriculture (VS-DLW) and forest and landscape (VS-DWuL) were closely involved.

To assess the effect of the park project on the cohesion between the different levels and sectors, I now examine relationships between the different levels and sectors, respectively, before and after the initiation of the park project. Looking at the strengths of collaborative ties between the different actor groups reveals that the Binntal project has increased significantly the cohesion among local actors. The number of ties between these actors

Table 2. Tie strengths between administrative levels, Binntal (close collaboration).

	Ties established before project				Ties established with project		
	Local	Regional	Federal		Local	Regional	Federal
Local	20	3	1	Local	62	3	3
Regional	3	0	1	Regional	3	2	1
Federal	1	1	0	Federal	3	1	0

increased from 20 to 62 collaborative connections (Table 2). Only two new collaborative ties from the local to the federal level could be established with the project, with the federal offices for the environment and economic affairs. With regard to collaborative ties across different sectors, the park project mostly strengthened the ties between the park organization, the municipalities, and local tourism and cultural organizations (Table 3).

In the RNP project of Thal, all the actors with close collaborative ties to each other indicated in the survey that these ties had already existed before the start of the park project. As a consequence, no effect of the project on the cohesion between the different administrative levels and sectors, respectively, can be observed in this particular case. Instead, Table 4 pinpoints again the strong local anchoring of the RNP project in this region and the dominance of the local municipalities pursuing both economic and ecological objectives with the regional park project.

To further assess the quality of observed changes in network cohesion, a look at processes of network closure is revealing (Table 5). The first measurement for closure is the change in the density of collaborative ties between the actors in the two park projects. The data shows that both networks have become slightly denser with the start of the project. In the case of the Binntal project, the network density increased while the number of actors included in the overall network remained stable. Network centralization for outgoing ties decreased from a very high level of 70% to 63%, indicating a tendency toward less extreme dependency of the network on its most central actors. In the Thal project, the network density remained nearly the same with a slight increase in the number of actors involved in the overall network. However, the increased network centralization from 46% to 50% for outgoing ties shows that the most central actors could further strengthen their dominant position in the network.

Reciprocity and transitivity represent the other two indicators for network closure. They are both often seen as indicators for stability and institutionalization of actor positions in a network. When these two indicators are compared between the two RNP projects, two different processes of network closure can be observed. In the Binntal region, both reciprocity and transitivity between the different actors in the network increased with the establishment of the park projects. The park project thus not only intensified the interactions between the actors but also stabilized these relations. In the Thal project, on the other hand, the share of reciprocated ties remained quite stable while the degree of transitivity increased. A closer investigation of the data reveals that this increase in transitive ties occurred in the wider collaboration network of the project but not in the network core of closely collaborating actors.

This observation demonstrates again how the Thal project was widely shaped by a core group of closely collaborating actors consisting of the park project organization and the municipalities of the region. This core group of actors already showed a high degree of cohesion before the initiation of the RNP project and remained very stable throughout. Network closure could primarily be observed in the

Table 3. Tie strengths between sectors, Binntal (close collaboration).

	Ties established before project				Ties established with project		
	Use	Mixed	Protect.		Use	Mixed	Protect.
Use	0	7	0	Use	6	19	0
Mixed	7	12	2	Mixed	19	28	3
Protect.	0	2	0	Protect.	0	3	0

form of higher transitivity, indicating that collaboration structures had become denser, particularly among the core actors of the park project. The Binntal project, on the other hand, included a wider circle of actors in the core of the network with closely collaborative ties among them, resulting in a higher degree of cohesion and more diverse patterns of network closure within the whole park project.

DISCUSSION

The network analysis of the two RNP projects in the regions of Binntal and Thal reveals that the projects showed different effects on the collaboration structure between the different actors in the two regions. In the Binntal region, the park project led to a higher cohesion of a formerly quite heterogeneous and rather loosely connected network of actors at the local level. The density of closely collaborative ties among local actors increased significantly. And the collaboration between these actors also became more stable as the reciprocity and transitivity of these ties increased. Although densities are difficult to compare (Scott 2000:74), the Binntal project shows a higher density than the Thal project even though more actors have been involved in the former project. This is a clear indication that collaborative ties between the actors have intensified more in the Binntal project than in the Thal project. With regard to collaboration across different sectors, the park project in the Binntal region mostly strengthened the ties between the park organization, the municipalities, and local tourism and cultural organizations.

In the Thal region, the picture is quite different. All the actors that have collaborated closely with each other during the set up of the park project already had close ties before the project was initiated. As a consequence, the RNP project in the Thal region contributed little to the cohesion of the local actor network; it had already been highly cohesive. The Thal project was initiated and carried out by a core of closely collaborating actors consisting of the park project organization and the municipalities of the region. The different societal sectors were less closely involved in the project than in the Binntal region. Whereas the Thal project was based on a high cohesion between the municipalities that initiated the project, it was less successful than the Binntal project in strengthening the cohesion between different local sectors. In both regions, however, the RNP strengthened the connections between the local, cantonal, and federal governmental levels. Mostly the local municipalities, expecting additional financial support for the region from the federal government, and local tourist organizations, hoping for positive effects of the project on the local and regional tourism sector, have shaped the projects in the two regions and connected to actors at higher governmental levels. The comparatively weak involvement of local business organizations and environmental organizations in both regions can be partly explained with the lower response rate of these actors in our survey. However, it also seems that achieving more cohesion between

Table 4. Tie strengths between levels and sectors, Thal (close collaboration).

	Ties established before/with project				Ties established before/with project		
	Local	Regional	Federal		Use	Mixed	Protect.
Local	26	1	2	Use	0	1	0
Regional	1	0	0	Mixed	1	30	0
Federal	2	0	0	Protect.	0	0	0

actors representing different societal sectors with varying concerns and interests in the region remains challenging for both park projects.

Obviously it is too early to fully assess the effects of these changing network structures on the further development of the regions. Both park projects have a different history that partly explains the development of the project in the region. From a perspective of network theory, strengthened cohesion among the relevant actors in a region should contribute to an enhanced sustainable development of the region by fostering a normative environment that facilitates cooperation across different societal sectors with diverging interests and objectives. Following Coleman's (1988, 1990) arguments on the positive effect of cohesive network structures, both park projects seem to have at least partly improved the prospects for regional sustainable development in the two regions. Whereas the Thal project has already reached a high cohesion between the municipalities in the region, the Binntal project has managed to more closely involve a wider set of different societal actors. Although processes to further strengthen the cohesion within the regions are crucial, it is also important that the park projects further include wider sets of actors from different sectors to ensure the flexibility of their network structures. Network studies (based on the work of Burt 1982, 1992) have shown that flexible network structures allow for better adaptation to new socioeconomic and ecological developments that might occur in the future than highly cohesive and therefore more rigid networks.

CONCLUSION

The results of this study indicate that the Swiss park policy shows first positive effects on the cohesion within two regions and has contributed to closer collaborative structures between the different governmental levels. A network approach proved to provide useful concepts and techniques to analyze these processes. However, to what extent the RNP projects will effectively contribute to an enhanced sustainable development of the two regions remains to be seen. The park policy is only one element of regional and environmental policies that have the objective to work toward sustainable regional development. Furthermore, there are many factors that local communities cannot influence because they are mostly dependent on larger socioeconomic and ecological developments. However, within their specific scope, RNP projects can provide a needed and therefore highly welcome additional opportunity for rural areas to obtain new resources for both ecological and socioeconomic improvements of their regions. In addition, as this study has shown, RNP projects have the potential to strengthen the cohesion of peripheral regions. The two case studies have demonstrated that policy approaches based on the idea of network governance can actually alter local and regional network structures between the relevant actors in a positive way.

On the other hand, cohesive network structures can also be a source of rigidity that may hinder the coordination of complex organizational tasks. Strengthened cohesion during the establishment of a park project clearly seems beneficial during early stages when coordinated action between heterogeneous

Table 5. Network closure.

Project	Actors		Density		Centralization		Reciprocity		Transitivity	
	Est.	Proj.	Est.	Proj.	Est.	Proj	Est.	Proj	Est.	Proj.
Binntal	38	38	0.11	0.17	0.70	0.63	0.10	0.18	0.11	0.18
Thal	34	37	0.10	0.11	0.46	0.50	0.17	0.15	0.17	0.26

actors representing different interests is crucial. However, on a longer term, it seems important that local network structures become more diverse again to ensure the flexibility that will be needed to react to ecological and socioeconomic changes mostly external to the sphere of direct influence of rural regions. This way, the concepts of Coleman (1988, 1990) and Burt (1982, 1992) do not lead to opposite predictions on how network structures may affect a network's ability to adapt to significant changes in its environment. Rather, they seem to complement each other when applied to different stages of a project on the way to enhance sustainable regional development.

Responses to this article can be read online at:
http://www.ecologyandsociety.org/vol15/iss4/art16/responses/

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APPENDIX 1. Actor list Binntal case study.

Acronym	Actor	Level	Sector
AG-GEW	Arbeitsgruppe (Holz-)Gewerbe	1	1
AG-KUL	Arbeitsgruppe Kultur	1	2
AG-LAN†	Arbeitsgruppe Landwirtschaft	1	1
AG-NAT†	Arbeitsgruppe Natur	1	3
AG-TOU	Arbeitsgruppe Tourismus	1	1
AG-VER†	Arbeitsgruppe Verkehr	1	1
AlpBiA†	Alpgenossenschaft Binner Alpen	1	1
BAFU	Bundesamt für Umwelt BAFU	3	3
BiKu	Binn Kultur	1	2
BTTou	Binntal Tourismus	1	1
EG-BIN	Einwohnergemeinde Binn	1	2
EG-ERN	Einwohnergemeinde Ernen	1	2
EG-GRE†	Einwohnergemeinde Grengiols	1	2
ErMD	Ernen Musikdorf	1	1
ErTou	Ernen Tourismus	1	1
FLS†	Fond Landschaft Schweiz	3	3
ForAU	Forstrevier Aletsch Untergoms	1	2
ForS†	Forstrevier Schattenseite	1	2
GoTou	Goms Tourismus	2	1
GpBT	Genossenschaft pro Binntal	1	2

(con'd)

Jagd†	Jagdverein Mässersee	1	1
KGErBi	Konsumgenossenschaft Ernen – Binn	1	1
KuVB†	Kulturverein Bergland	1	2
KVGr†	Konsumverein Grengiols	1	1
LPBW	Landschaftspark Binntal Geschäftsführer Stv.	1	2
LPBZ	Landschaftspark Binntal Geschäftsführer	1	2
PNVD	Parco Naturale Veglia - Devero	3	2
ProNat	Pro Natura Wallis	2	3
RegGo	Region Goms	2	2
SECO	Staatssekretariat für Wirtschaft SECO	3	1
SGGr†	Sennereigenossenschaft Grengiols	1	1
TVGr	Theaterverein Grengiola	1	2
TZGr	Tulpenzunft Grengiols	1	2
UniRa†	Universität Rapperswil: Landschaftsarchitektur	3	2
VS-DLW	Dienststelle für Landwirtschaft (Kt. VS)	2	1
VS-DWE	Dienststelle der Wirtschaftsentwicklung (Kt. VS)	2	1
VS-DWuL	Dienststelle für Wald und Landschaft (Kt. VS)	2	2
VVGr†	Verkehrsverein Grengiols	1	1

† = non-response

APPENDIX 2. Actor list Thal case study.

Acronym	Actor	Level	Sector
AKVRTh	Arbeitsgruppe Kultur Verein Region Thal	1	2
BAFU	Bundesamt für Umwelt	3	3
BAG	Bundesamt für Gesundheit	3	2
BGWald	Bürgergemeinden- und Waldeigentümerverband Thal	1	1
EG-AED	Einwohnergemeinde Aedermannsdorf	1	2
EG-BAL	Einwohnergemeinde Balsthal	1	2
EG-GÄN	Einwohnergemeinde Gänsbrunnen	1	2
EG-HER	Einwohnergemeinde Herbetswil	1	2
EG-HOL	Einwohnergemeinde Holderbank	1	2
EG-LAU	Einwohnergemeinde Laupersdorf	1	2
EG-MAT	Einwohnergemeinde Matzendorf	1	2
EG-MÜM†	Einwohnergemeinde Mümliswil-Ramiswil	1	2
EG-WEL†	Einwohnergemeinde Welschenrohr	1	2
Forst Kant	Kreisforstamt Thal	2	2
GV-BaKl	Gewerbeverein Balsthal-Klus	1	1
GV-Gul†	Gewerbeverein Guldental	1	1
GV-Thal	Gewerbeverein Thal	1	1
HAAR	Museum HAARUNDKAMM	1	2
IHVTh†	Industrie- und Handelsverein Thal-Gäu-Bipperamt	1	1
INT	Interessengemeinschaft Naturschutz Thal	1	3

(con'd)

Jagd	Vereinigung Thaler Jagdgesellschaften	1	1
LWBez	Landwirtschaftlicher Bezirksverein	1	1
NetPark	Netzwerk der Schweizer Pärke	3	2
NRBad	Nationalrätin Elvira Bader	3	2
ProNat	Pro Natura Solothurn	2	3
SECO	Staatssekretariat für Wirtschaft	3	1
SO-AFU	Amt für Umwelt Kanton SO	2	3
SO-ALW	Amt für Landwirtschaft Kanton SO	2	1
SO-ARP	Amt für Raumplanung Kanton SO	2	2
SO-AVT	Amt für Verkehr und Tiefbau Kanton SO	2	1
SO-AWA	Amt für Wirtschaft und Arbeit Kanton SO	2	1
SO-AWJF	Amt für Wald, Jagd und Fischerei Kanton SO	2	2
SoBV	Solothurner Bauernverband	2	1
SOTou	Kanton Solothurn Tourismus	2	1
VRTh	Verein Region Thal	1	1
VVBK	Verkehrs- und Verschönerungsverein Balsthal-Klus	1	2

† = non-response

APPENDIX 3. Vertical and horizontal actor involvement.

Actor Involvement		Binntal		Thal	
		Overall	Core	Overall	Core
Level	Federal	5 (13%)	1 (5%)	5 (14%)	2 (18%)
	Regional/Cantonal	6 (16%)	4 (21%)	10 (28%)	1 (9%)
	Local	27 (71%)	14 (74%)	21 (58%)	8 (72%)
Sector	Mainly Use (Econ.)	17 (45%)	7 (37%)	14 (39%)	1 (9%)
	Use and Protection	17 (45%)	11 (58%)	18 (50%)	10 (91%)
	Mainly Protection (Ecolog.)	4 (10%)	1 (5%)	4 (11%)	0 (0%)
Total	Absolute	38	19	36	11
	Percentage	(100%)	(100%)	(100%)	(100%)