

Conservation-Development Nexus in Local CPRs Governance: The Role of Social Capital

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Abstract

This paper examines attempts by local common-pool resource institutions to integrate resource conservation and socio-economic development, focusing particularly on the pivotal role of social capital. Among numerous factors influencing the conservation-development nexus--including natural, physical, human, financial and social capital--we emphasize the importance of social capital, since this capital directly impacts local collective actions that initiate and maintain conservation/development efforts. The aims of this paper are twofold. First, we develop an analytical framework addressing interactions among conservation, development, social capital, collective action and institutions. Second, we further investigate issues surrounding how social capital can be created or undermined and how it functions. In the specific context of this paper, the following question arises: will conservation/development efforts affect the formation of social capital? And, how will a given stock of social capital exert influence on subsequent collective action, internal institutional capacity building, and conservation as well as development performance? In other words, we study the dynamic, cyclical interrelation among conservation, development, social capital, collective action and institutions, in which we argue that social capital plays a pivotal, mediating role.

Conservation and development efforts typically face two kinds of, i.e. first- and second-order, social dilemma. Beyond these similarities, however, conservation and development efforts differ much in their nature and in how they affect the subsequent

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formation of social capital. Various effects triggered by conservation/development initiatives are then analyzed. These effects specifically include demand for collective action, elite capture, interest heterogeneity, and economic incentive. All these effects will positively or negatively affect the formation of bonding and bridging social capital. Again, combinations of these two types of social capital will influence collective action regarding subsequent internal institution capacity building, and resultant conservation and development performance in turn. Finally, internal institutions can feed-back to the conservation/development decision-making and implementation process, which again changes social capital combinations.

Aside from theoretical analysis, the dynamic evolution processes of three indigenous CPRs regimes in Taiwan are studied. Empirical findings then verify four proposed hypotheses regarding origins and influences of various forms of social capital. Furthermore, some conclusions concerning the role of social capital in the conservation-development nexus in local CPRs governance can be drawn. First, to reconcile conservation and development successfully, a critical level of bonding social capital is always needed to maintain continuous collective action and institutional capacity building, while bridging social capital, depending on contexts, may positively or adversely affect collective action. Optimal social capital combinations are accordingly dynamic, and depend on required tasks at different developmental stages. Second, participatory conservation efforts themselves, at least in an indigenous context, may constitute a key source of bonding capital that continually reinforces itself in process, while development efforts primarily contribute to building bridging social capital. Development initiatives themselves, in addition, can easily undermine bonding capital in situations when elite-capture and interest heterogeneity arises. Finally, empirical cases show that there is indeed a dynamic, cyclical interrelation among institutions, incentive and social relations.

Key words — conservation-development nexus, social capital, common-pool resources, collective action, institutions, indigenous community, Taiwan

1. Introduction

Several decades of research on commons governance has revealed that human societies can--albeit not in every situation--craft and maintain effective institutions to improve human well-being, while simultaneously conserving natural resources on which local livelihood depends (Ostrom, 1990; Dietz, Dolsak, Ostrom, & Stern, 2002). Traditionally self-evolving, long-enduring common property resources (CPRs) institutions, however, have increasingly eroded or collapsed in the face of rising state-centric interventions and private property. Conceptual paradigm shifts in the last two decades may yet overturn the current trend. Governments, donors and local communities worldwide have begun to emphasize the positive role local involvement plays regarding natural resource management. In most cases, these initiatives represent attempts by local communities to restore CPRs institutions which aim to integrate resource conservation and economic development.

Meanwhile, urgent calls for sustainability continue to drive scholars and practitioners to explore how and why communities successfully reconcile the dual objectives of conservation and development in the context of local resource management. Many have increasingly acknowledged the critical role played by institutional arrangements among the numerous factors that influence the conservation-development nexus (Barrett, Lee, & Mcpeak, 2005; Agrawal, 2001). The effort toward “getting institutions right” suggests the need for dynamic analyses that address how, when, and why such institutions originate, persist and change (Ostrom, 2005; Berkes, 2002). On one hand, such analyses weave inextricably with the question of “getting incentive right” (Barrett, Lee, & Mcpeak, 2005). On the other hand, these analyses also necessarily correlate to in-depth studies that examine all involved social relations. “Getting social relations right” proves to be as critical as getting institutions and incentive right, since they all directly feed into local collective action regarding conservation/development and institutional capacity building. Concerns of social relations or social capital, remain issues somewhat underexplored in CPR literature, despite how the concept of social capital has greatly influenced other academic fields.

This paper examines attempts by local CPRs regimes to integrate conservation and development,¹ focusing particularly on the role of social capital. The aims of this paper are twofold. First, we develop an analytical framework addressing interactions among conservation, development, social capital, collective action and institutions. Second, we further investigate issues surrounding how social capital can be created or undermined and how it functions. In the specific context of this paper, the following question arises: will conservation/development efforts intentionally and unintentionally influence the formation of social capital? And, how will a given stock of social capital exert influence on subsequent collective action, internal institutional capacity building, and conservation/development performance? In other words, we study the dynamic, cyclical interrelation among conservation, development, social capital, collective action and institutions. We further posit that social capital plays a pivotal, mediating role among all factors listed.

2. Social capital

Social scientists were the first to fully recognize the concept of social capital, and its potential as a causal force capable of transforming human societies (Coleman, 1990; Putnam, 1993; Lin, 2001). Interest in social capital has grown recently among fields including development issues (Woolcock, 1998; Dasgupta & Serageldin, 1999; Woolcock & Narayan, 2000; Krishna, 2002), natural resource management (Pretty & Smith, 2004; Andersson, 2004; Pretty & Ward, 2001; Robbins, 2000), and specifically CPRs governance (Theesfeld, 2004; Anderson, Locker, & Nugent, 2002).

Under a highly abstract, conceptual umbrella, however, many scholars consider social capital to be something too loosely defined and imprecisely applied. Consequently, several points of confusion arise in social capital literature. First, concepts such as norms,

¹ In this paper, the term “conservation (effort)” refers to all measures in local CPRs governance aiming to protect, rather than utilize, natural resources and ecosystems. “Development (effort)” comprises all initiatives meant to improve human well-being, typically via use of natural resources and ecosystems, agricultural and business development, and/or improvement of infrastructure.

trust and institutions often are confused with social capital, making it difficult to formulate causal propositions (Lin, 2001; Fox & Gershman, 2000). Second, a lack of distinction between causes and effects of social capital gives rise to the problem of tautology, and makes the concept useless for empirical work (Lin, 2001; Portes & Landolt, 2000). Furthermore, when social capital is conceived as unquantifiable due to its abstraction, it is difficult, if not impossible, to falsify all the related causal propositions (Lin, 2001; Flora, 1998). As such, the capacity of social capital as an analytical tool suffers tremendously. To avoid the above confusion, we need a clear-cut, operational definition of social capital that underpins a disaggregated investigation into the origins and functioning of different forms of social capital.

In this paper, we follow the definition made by Lin (2001, p.29) which attempts to resolve the previous confusions. Social capital is defined as *resources embedded in a social structure that are accessed and/or mobilized in purposive actions*. There are accordingly different kinds of social capital which are issue-specific. In addition, we employ the concepts of bonding and bridging social capital, two notions characterized by different forms of personal network and function: (Woolcock, 1998; Woolcock & Narayan, 2000; Halpern, 2005). Bonding social capital represents intra-group ties, while bridging social capital refers to those ties that horizontally or vertically connect different groups.

Given the previous conceptual framework, we may define social capital as it relates to local CPRs governance in the following ways. Bonding social capital represents intra-community resources that a community can mobilize through pure social relations, i.e. without direct material payoff, for conservation and/or development purposes. Bridging social capital, on the other hand, refers to resources embedded in outside social relations that a community can mobilize for the same purposes. Both refer to social capital at the community level. Based on these definitions, some operational proxy variables measuring social capital can be chosen. This paper empirically addresses indigenous communities in Taiwan. The “amount of human power dedicated to voluntary community work” may serve adequately as a proxy variable for bonding social capital,

given the typical lack of physical and financial capital available in indigenous communities. For measuring bridging social capital, types of available resources are much more diverse, typically including material and non-material resources. Material resources can be easily measured in monetary units. However, we need to assess the value of non-material resources, such as administrative, political and technological supports, through qualitative aspects. In any case, precise definition and measurement highlights the relationships between, and possible tensions among, various forms of social capital.

3. Conservation, development, social capital, collective action and institutions

Local initiatives attempting to restore CPRs institutions usually involve a series of collective actions that initiate conservation and/or development efforts, combined with self-organization and institution building. Community members and leaders in particular exert subjective judgments around initial decisions that initiate conservation/development efforts. These decisions are influenced, and to a greater extent, shaped by given institutional, socio-economic and ecological, macro-settings. The types of initiatives and the means by which they are implemented, exert a great influence on the formation of social capital. Social capital, in turn, will affect collective action regarding internal organizational and institutional capacity building at a later time, and subsequent conservation and development performance.

Beyond all decisions concerning conservation/development, local CPRs regimes typically need to address two specific types of social dilemmas. The first-order CPR and/or public good dilemma presents one coordination problem that exists under a set of preexisting rules. The second coordination problem attempts to change the rules-in-use, known as the second-order public good dilemma (Ostrom *et al.*, 1994; Ostrom, 2003). Collective actions are set in motion to overcome social dilemmas. To offer a more deliberate investigation into the role of collective actions, such actions may be classified into the following two types: first-order and second-order collective actions, which aim to

resolve the first- and the second-order social dilemmas respectively. Such a distinction, as Ostrom, Gardner, and Walker (1994) proposed, is analytically necessary, because these two collective-action problems differ in nature. In the context of this essay, any conservation/development initiative may involve first-order, or both types of collective action. Conservation/development efforts themselves, if they do not directly involve activities that change rules-in-use, represent pure first-order collective actions. On the contrary, any effort in a conservation/development initiative should be classified into a second-order collective action, if it attempts to modify preexisting institutions, either by changing their scope, i.e. rule-making, or through changing their strength by way of rule enforcement.² Local communities typically initiate first-order collective actions at the outset of a program, and then, if necessary, start second-order collective actions at a later time.

In the following sub-sections we will analyze various effects triggered by conservation/development initiatives. These effects specifically include demand for collective action, elite capture, interest heterogeneity and economic incentive. All these effects positively or negatively influence the formation of both social capital and collective action, which in turn drive institutional capacity building and conservation/development outcomes.

(a) Various effects of conservation/development initiatives on social capital

(i) Demand for collective action

Conservation/development initiatives, depending on their nature, usually create a mixture of private, CPR and public goods. In general, the more an initiative provides private goods, the less it demands collective action. Conversely, the more an initiative provides CPR or public goods the more it demands collective action. Successful collective action, through intensive interaction and consensus-building processes, can contribute to formation of bonding social capital, or activate preexisting stock of bonding

² In this paper, we make use of the distinction between “rule-making” and “rule enforcement”, á la Gibson, Williams, and Ostrom (2005).

capital. Collective action may also foster development of bridging social capital, when local communities attempt to gain economic, technological, administrative and political support from the outside world that once proven beyond reach before initiatives had begun. An urgent predicament and/or a long-term vision, and preconditions like a minimum level of preexisting social capital, may provide an adequate “trigger” that successfully motivates collective action such that a critical mass of group members can be successfully mobilized. Otherwise an initiative is unlikely to overcome the classic collective action dilemma (Olson, 1965) even at the initiation stage, precisely because it greatly demands collective action.

Unlike autonomous projects, initiatives relying on external interventions do not require as much collective action that involves internal mobilization. Projects relying on external interventions tend to place more value on communicating and relating to their donors, and thus subordinate internal communication and consensus-building processes (Platteau & Gaspart, 2003). In this case, donor-dependent initiatives more likely promote the formation of bridging capital, rather than fostering bonding capital. Following previous discussions, we can pose one general hypothesis concerning the causal relationships between demand for collective action and formation of social capital.

Hypothesis 1: *Ceteris paribus*, demand for collective action involving internal mobilization contributes to formation of bonding social capital. Demand for collective action that mobilizes external supports develops bridging social capital.

(ii) *Interest heterogeneity*

One should consider the distributional aspect of various initiatives. Given the under-developed, relatively homogenous local communities, conservation/development projects usually exacerbate an intra-community divergence of economic and political interest. Community members with higher hierarchical positions, better business skills, more financial resources, and/or a better education tend to benefit more from development processes than ordinary villagers (Belesky, 1999). Given the prevailing equity norms in local communities, enlarged interest heterogeneity triggered by

conservation/development programs can easily hinder the formation of bonding capital, or destroy it in a short time, even though those beneficiaries are often those who initiate projects and pay the major cost. Bonding social capital suffers significantly when development programs create short-term benefits in favor of a group of beneficiaries at the expense of long-term, joint welfare of the community. Enlarged interest heterogeneity, on the contrary, may speed up accumulation of bridging social capital. By pushing conservation/development efforts, the beneficiary group garners exposure to non-locals. Meanwhile, through accumulated financial and political capital, they develop stronger social relationships with outsiders.

(iii) *Elite capture*

Elite capture poses an extreme form of interest heterogeneity, triggered by conservation/development projects. This happens when local elites, typically comprised of leaders, the wealthy and the educated, who harness the skewed power structure to their benefit, and capture both project processes and the majority of developmental benefits, therefore reinforcing intra-community heterogeneity (Platteau, 2004; Platteau & Gaspart, 2003; Platteau & Abraham, 2002; Bardhan, 2002). One may observe the elite capture effect in all kinds of community-based conservation and/or development initiatives. It occurs still more often in cases that involve complex local politics and rent-seeking activities which are primarily dominated by local elites. This especially holds true for initiatives that rely on external intervention significantly linked to lobby efforts; that bring in substantial economic benefits in a relatively short time (Platteau & Gaspart, 2003); and that possess weak pre-existing institutional foundations as is typical in developing countries (Bardhan, 2002).

As to the formation of social capital, elite capture exerts the same influence that interest heterogeneity does, but often to a much greater extent. In short, elite capture detrimentally impacts bonding social capital. Bridging social capital accumulates through the same mechanism observed in interest heterogeneity. It follows the hypothesis showing a causal relationship between interest heterogeneity/elite capture and formation of social capital.

Hypothesis 2: *Ceteris paribus*, elite capture and interest heterogeneity impede formation of, and jeopardizes existing stock of, bonding social capital. Conversely, elite capture and interest heterogeneity nurture bridging social capital.

(iv) *Economic incentive*

One of the most critical intentions proposed by integrated conservation/development initiatives is to provide the necessary economic incentives that will influence human behavior (Ferraro, 2000). More precisely, development efforts, if successful, can offer vital economic incentives that may help resolve the social-dilemma problems that challenge resource conservation tasks. On a theoretical level, as Knoke (1988) argued, organizations typically employ a variety of inducements to tackle the collective action dilemma, including utilitarian, social and normative incentives. Social incentives refer to those inducements that motivate members through enhancing emotional attachments among people. As such, social incentives highly correlate to social capital. By definition in this paper, economic incentives are equivalent to the utilitarian incentives used by Knoke (1988, p.315), namely, “private goods in the form of direct services to members that are consumed individually”.

There appear to be no direct causal relationships between the use of economic incentive and formation of social capital. However, indirect relationships do exist. Economic incentives motivate people to participate in collective action, both first- and second-order, particularly in low-income, local communities. Again, successful collective action, as previously discussed, constitute one key source of new-formed social capital. We can accordingly construct one hypothesis concerning the causalities between economic incentives and accumulation of social capital.

Hypothesis 3: All other things being equal, economic incentive motivates collective action, and thus stimulates the formation of both bonding and bridging social capital.

(b) Social capital and collective action

Conservation/development efforts affect the formation of social capital. Preexisting social capital, combined with the newly-formed stock of social capital further influences subsequent collective action. The effects on collective action depend indeed on the types of social capital. Bonding social capital, through directly mobilizing intra-community interpersonal relations, generally strengthens both first- and second-order collective action. Bridging social capital, on the other hand, indirectly exerts influence on collective action by introducing external resources. External resources, depending on their nature, further trigger various effects, such as demand for collective action, elite capture, interest heterogeneity and economic incentive. Hence, ambiguous causal relationships between bridging social capital and collective action arise. These relationships depend not only on the nature of external resources, but on the internal institutional capacity of the community dealing with problems like elite capture or interest heterogeneity. A rapidly increased stock of bridging capital, for example, may bring in a great amount of external resources in a hurry, exacerbating intra-community heterogeneity in cases of weak institutions, and accordingly jeopardize, rather than foster, collective action. Positive effects certainly can occur, when, for example, increased bridging capital creates adequate economic incentives or technological supports that sustain collective action. In light of discussions above, we develop the following hypothesis concerning the influence of bonding social capital on collective action.

Hypothesis 4: All other things being equal, bonding social capital promotes collective action.

(c) Collective action, internal institutions and performance

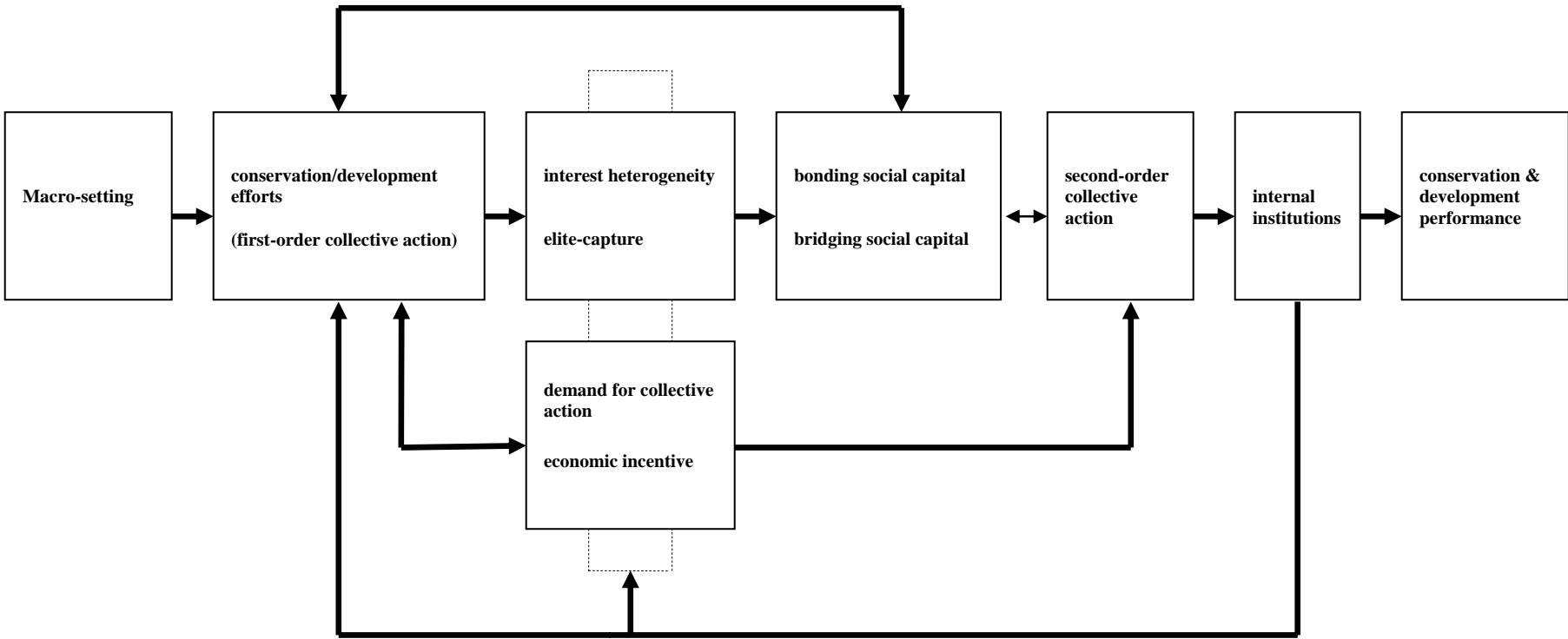
Internal institutions represent one of the major issues addressed by the local CPRs governance literature, since these institutions determine whether resources can be managed sustainably, i.e., whether the dual objectives of conservation and development can be reconciled in the long run (Ostrom, 1990; Agrawal, 2001; Gibson, McKean, &

Ostrom, 2000). The tasks involving internal institution building, including rule-making and rule enforcement, further rely on whether local communities can undertake continuous, second-order collective actions. In general, regular and intensive second-order collective actions nurture internal institutional capacity. Internal institutions, in turn, will feed-back to previous causal relationships: modifying conservation/development decision-making as well as subsequent first-order collective action, and keeping those initiative-triggered effects under control. All these again touch off a new cycle of changes in social capital combinations, collective action and internal institutions. Ultimately, internal institutions greatly impact long-term conservation/development performance of local CPR regimes.

(d) An analytical framework

The causalities listed above rest on a foundation of relevant CPRs literature and our own field experiences in Taiwan. In light of these findings, this subsection submits an analytical framework that models the dynamic, cyclical interrelation among conservation/development, social capital, collective action and internal institutions (see Figure 1. Arrows symbolize the hypothesized nature of causal relationships among variables). By treating all important components as endogenous and deliberately exploring causal relationships among them, this framework affords some insight into the complex, and sometimes counter-intuitive nature of the conservation-development nexus. Concerning this nexus, we argue that social capital plays a pivotal, mediating role. In the next section, the dynamic, evolutionary processes of three indigenous CPRs-governance initiatives in Taiwan will be studied to test the framework, specifically focusing on hypotheses surrounding how social capital can be created or undermined and how it affects the conservation-development nexus.

Figure 1. The analytical framework



Source: Author

4. Case studies

(a) *The initiative in Shan-Mei*

The initiative in Shan-Mei is the best known, and represents the stereotype for indigenous CPRs-governance initiatives in Taiwan over the last two decades. As an indigenous village located in the Alishan Township of Chia-Yi County, a remote mountainous area in southwest Taiwan, Shan-Mei once had traditional CPRs institutions which were replaced by the rise of modern state regulation that took over nearly all wilderness and natural resources in this indigenous area. Traditional CPRs regimes further collapsed utterly as a result of outside intrusion. In the mid-1980s, due to serious poverty and unemployment partly caused by the fall of CPRs institutions, some village leaders attempted to restore these institutions to cope with external environmental changes and escape the confines of the status quo (Tang & Tang, 2001; Yadawuyungana, 2005).

Eagerness to resolve underdevelopment drove community members to consider development, rather than conservation efforts, as the utmost priority. However, the macro-setting in the 1980s shaped initial decision-making in Shan-Mei. Under strict environmental regulation in the protected national forest surrounding Shan-Mei, any forest-based development initiative was forbidden by state authorities. Community members accordingly chose to initiate a pure conservation effort in 1989. The conservation project itself highly demanded collective action and thus the mobilization of voluntary community members. This fact, in turn, unintentionally created bonding social capital through intensive day-to-day interactions among members, and through participatory communications and decision-making processes. It also stimulated a few community elites, through building personal ties to outside political figures and government officers, to work together and solicit external assistance. This greatly accumulated bridging social capital, something that first brought in small-, and later, large-scale development aid from the government. In 1992, the successful conservation effort won Shan-Mei the needed legitimacy and external support, and increasingly

changed attitudes and policies of the government authorities. Development projects, first as to infrastructure improvement and then ecotourism-related business development, were initiated after 1992.

The solid bonding capital, together with the economic incentive created by development projects, further underpinned continuous first-order collective action. Bonding capital also underpinned second-order collective action around internal institution building. Collective action introduced sophisticated institutions vis-à-vis environmental protection, community organization, benefit distribution, social welfare and an accounting-audit system. These institutions were created--and then functioned--smoothly, without serious controversy between 1989 and 1999. Nevertheless, development benefits created something of a double-edged sword. These benefits certainly offered vital economic incentive to support institutionalized conservation and development efforts. However, the substantial tourism revenues that poured in after 1999 exacerbated interest heterogeneity and elite-capture problems to the point of almost splitting the once harmonious community. Bonding capital, measured in the number of voluntary workers for conservation/development and active participants in regular community meetings, significantly decreased. Meanwhile, local elites, both political and economic, rapidly expanded their outward relationships, bringing in more development aid and business revenue, further entrenching interest heterogeneity. Conservation/development programs themselves, as first-order collective action, were still underway thanks to abundant financial revenues and the strong, established institutions. Interest heterogeneity and elite capture undermined the needed second-order collective action for institutional change, such that no significant institutional reform could be made to overcome post-1999 challenges, particularly the rapid growth of tourism and its concomitant environmental degradation.

The previously founded institutions did function according to their original mandate despite all the problems that have occurred after 1999. Forests continue to be well managed, and although benefits are not equally distributed, most of the community members still enjoy an improved standard of living. From beginning to end, internal

institutions have restrained behaviors of community members, such that interest heterogeneity and elite-capture have been, at least to a certain extent, taken under control. While these problems had significant detrimental effects on bonding capital of the community, institutionalized benefit-distribution measures like rotation of paid work and social welfare have maintained base-level bonding capital. This contributed, in turn, to an uninterrupted, second-collective action that maintained effective enforcement of institutions. This action continued, even through the most chaotic period between 1999 and 2004, and later also put pressure on the community for needed institutional changes. Since 2004, a new round of institutional reform agenda has been initiated, pursuing more transparent decision making processes and more stringent environmental regulation. Whether Shan-Mei can successfully overcome these challenges in the future remains to be seen, but internal institutional capacity and change, mainly backed by bonding social capital and economic incentive, have proved to act as the defender of last resort.

(b) *The initiative in Li-Chia*

The evolution process of the Li-Chia case is in many aspects similar to that of Shan-Mei. As an indigenous village near Shan-Mei, a common socio-economic background strongly motivated people in Li-Chia to restore CPRs institution to change the status quo during the 1980s. Once again, strict environmental regulation in the national forests surrounding Li-Chia blocked any possibility of initiating development projects--the first priority pursued by villagers. Under these constraints, the community autonomously initiated a pure conservation project in 1987.

As in Shan-Mei, the initial period of conservation effort was characterized by a high demand for collective action and subsequent mobilization of voluntary community members, which resulted in a more solid bonding social capital than ever before. The successful mobilization in the early stage, however, did not increase bridging social capital, mainly owing to geographical isolation and lack of experienced political leaders possessing the skills necessary to relate to non-locals. This explains why Li-Chia, also a pioneer in successful conservation action like Shan-Mei, could not elicit governmental

aid for self-governing regimes until 2000. Without the direct economic incentives offered by development programs, however, both first- and second-order collective action still continued thanks to the solid bonding social capital. A weak formal institution, as well as strong informal norms accordingly emerged out of collective action spanning more than ten years. On the other hand, lack of development projects also had its drawbacks. Evolution in formal institutions, compared to Shan-Mei, proved relatively sluggish, due lack of demand to tackle complex development issues collectively on one hand, and also lack of financial support via development.

The second stage of the Li-Chia initiative has been underway since 2000. Around the millennium turn, governmental agencies generally began to alter their policies toward community-driven conservation/development initiatives. The Taiwanese government specifically financed a series of development projects toward improving the Li-Chia infrastructure to develop tourism. These projects further motivated community members to work together, leading to more solid bonding capital. Grounded on the well-protected natural environment, tourism began to grow at a moderate pace in 2002. The previously founded formal and informal institutions simultaneously regulated behaviors and attitudes of community members, and particularly those of elites. This, at least in part, explains why Li-Chia is not beleaguered with serious interest heterogeneity and elite-capture problems. This is true even as substantial amounts of governmental development aid—the likeliest trigger for intra-community interest conflicts--has poured in since 2000.

Nowadays, uninterrupted collective action based on solid bonding social capital maintains good performance in conservation. Bonding capital also facilitates cooperation among community members that helps them strive for government-sponsored development. Bridging capital, however, is still developing and so does not play a significant role at this point. Bonding capital, furthermore, maintains effective second-order collective action that has contributed to recent strengthening of internal institutions. This is apparent when considering income redistribution and how collective action controls the impact of tourism. Internal institutions have carefully

regulated tourism impact and intentionally decentralized tourism benefits, such that many villagers, if not most, are benefiting from the development process. This is true, even though Li-Chia is still in the early stages of tourism development; enjoying only a slightly improved infrastructure and standard of living. All these factors indicate a potential model for building CPRs regimes that, at least until now, prove to be largely equitable and environmentally sustainable.

(c) *The initiative in Cha-Shan*

Cha-Shan is another indigenous village near Shan-Mei, with similar socio-economic characteristics. As with the previous two cases, the underdevelopment status quo also strongly motivated community members of Cha-Shan to pursue alternative development approaches. At the beginning of the 1990s, inspired by the successful experience of Shan-Mei, leaders of Cha-Shan embraced the concept of restoring CPRs institution to promote human well-being while conserving natural resources simultaneously. As with above-mentioned cases, strict governmental regulation of national wilderness land, which occupies the majority of Cha-Shan land, shaped the community's initial decision-making. In 1992, the community initiated the first formal conservation action. A patrolling team, organized by voluntary villagers comprised of almost all community adults, began working to safeguard the natural environment surrounding Cha-Shan.

The initiative achieved excellent performance in environmental conservation over four years. More importantly, high demand for collective action and subsequent mobilization of voluntary villagers galvanized the community. This movement created a far more solid bonding social capital, in contrast to preexisting bonds largely based on close-knit social relationships. Bonding capital then underpinned continuous, regular second-order collective action, including ordinary meetings and a yearly general assembly. This in turn built up preliminary institutional capacity. Two sets of rules about environmental conservation and individual behavior, as well as a formal organization that took charge of conservation/development issues, gradually emerged during these years. Meanwhile, bridging social capital did not play a significant role. Based on the lack of

preexisting, outward social ties, the community failed to obtain external financial or political supports that it eagerly sought. At the same time, two active community leaders developed friendly relationships with authorities and academics involved. This profoundly influenced the evolutionary process of the initiative in subsequent years.

The first stage of the initiative, the conservation effort, had been interrupted by devastating Typhoon Herb in July, 1996, which destroyed most of the tourist attractions that had been conserved for future tourism development. Discouraged community members decided to suspend the initiative, at least temporarily, awaiting changes in the external environment that would allow them to consider new plans. Nevertheless, the accrued social capital and internal institutions established in the early stage, remain a critical heritage that later facilitated the re-emergence of collective action. At the end of the 1990s, the central government actively began to promote the concept of community-based conservation/development, and therefore invested great amounts of financial resources in indigenous communities throughout the Alishan area. The community successfully received subsidies totaling more than 200 million NT\$ to be used for integrated environment and tourism development projects. These grants relied directly on the community's established bridging social capital that connected them to the government and academia. Infrastructure improvement, a major project component completed in part by volunteers, proceeded smoothly thanks to the solid bonding capital and the strong economic incentive of development. The development effort itself, in turn, further strengthened social capital, both bonding and bridging. Sophisticated internal institutions concerning tourism impact-control also emerged, grounded in the consensus of community members. With one of the most outstanding tourism infrastructures, the community soon became a well-known tourist destination beginning roughly in 2000, a fact that triggered later intra-community conflicts.

As tourism rapidly boomed, interest heterogeneity dramatically rose. Those who significantly benefited from tourism and thus caused environmental degradation were fairly reluctant to compensate the community for the loss of its joint welfare. This deeply harmed communality and the sense of fairness of ordinary members who reap little to no

benefits from tourism. Huge economic and political benefits associated with government aid and tourism induced heated competition among most elites as well. This openly split the community elites into two competing camps, which accused one another of political and economic motives when addressing community issues. Due to all these internal conflicts, more and more mistrust and disillusion ensued. The existing bonding social capital accordingly dissipated in these complex socio-political processes. Nowadays almost no one cares to devote him/herself voluntarily to public affairs; a stark contrast to the 1990s when the whole community could be easily mobilized. The attendance rate for second-order collective action dramatically decreased. The attendance rate for regular meetings, for example, decreased to such a low level that enforcement of existing rules virtually ceased. In addition, needed institutional changes, including a proposal for introducing benefit-sharing mechanism, continues to be blocked to date. In other words, the community's institutional capacity is on the edge of collapse.

Contrary to bonding capital, bridging social capital has increased over the past several years, as economic elites continue to accumulate their financial capital and thus propagate outward relationships through economic activities. This also holds true for political elites in political arenas. Economic and political elites thereby continue to introduce private business activities and government-sponsored development projects, respectively. The former will probably further exacerbate interest heterogeneity, provided internal institutions remain weak. The latter certainly supports continuous first-order collective action, and offers economic incentives for maintaining a minimum level of second-order collective action. It seems, however, that the detrimental effects of interest heterogeneity and elite-capture on collective action outweigh those positive influences exerted by economic incentive. As such, the community is to a great extent, trapped in a typical social-dilemma. The result is, after bonding capital is destroyed and subsequent collective action is undermined, only those projects with strong economic incentive may escape from social-dilemma, in the sense that they can mobilize a critical mass of members who in turn keep projects moving. With vision gone and such a low level of bonding capital, the feeling "I don't want to be cheated again" prevails among community members. Conservation efforts, which typically highly demand collective

action without promising direct financial payoff, are extraordinarily vulnerable to such a worst case scenario. Consequently, conservation efforts collapse, or at least are subordinated to development projects. This explains why Cha-Shan nowadays has a development pattern with a booming economy but no autonomous conservation.

5. Conclusions

Social relations prove critical when examining the long-term conservation/development nexus in local CPRs governance. To examine this proposition, we have developed a dynamic analytical framework in which some hypotheses about causal relationships among conservation/development, social capital, collective action and internal institutions are posed. We have also demonstrated the dynamic evolution processes of three indigenous cases in Taiwan. Based on these empirical findings, conclusions as to the role of social capital, including how it may be created or undermined and how it functions, can be drawn as follows.

First, all three cases verify hypothesis 1, especially if we observe initial conservation efforts when only the demand-for-collective-action effect exists. *Ceteris paribus*, demand for collective action involving internal mobilization contributes to formation of bonding social capital, so long as collective action can be successfully initiated. It holds also true for the hypothesis that demand for collective action involving mobilizing external supports contributes to formation of bridging social capital. A strong effect regarding bridging capital has been observed in the cases of Shan-Mei and Cha-Shan, while only the weak effect can be documented in the case Li-Chia.

As to hypothesis 2, obvious evidence can be found in Shan-Mei and Cha-Shan which encounter serious elite-capture and interest heterogeneity. These two effects indeed hinder formation, and even jeopardize existing stock of bonding social capital. Conversely, they help foster bridging social capital.

Regarding hypothesis 3, experiences from Shan-Mei and Cha-Shan show that

economic incentive can significantly motivate collective action, and thereby indirectly stimulates the formation of both bonding and bridging social capital. Such effects are particularly evident, if we observe these two villages' early introductory stage of development projects before the elite-capture and interest-heterogeneity effects arises. As to the Li-Chia case, economic incentives indeed promote collective action and thereby bonding capital, with only a slight effect on bridging capital observed.

Fourth, evidence from all three cases confirms hypothesis 4. Bonding social capital indeed directly promotes collective action. On the other hand, bridging capital, as the cases of Shan-Mei and Cha-Shan suggest, exerts ambiguous influences on collective action.

Aside from the preceding detailed causal relationships, some general lessons concerning the role of social capital in the conservation-development nexus can be reaped from empirical findings. First, while relevant literature generally tends to regard social capital as an unquestionably positive factor for CPRs governance, our study demonstrates both its positive and its potentially dark side, as many social scientists in other academic fields have long discovered (Rodriguez & Pascual, 2004; Robbins, 2000; Portes & Landolt, 2000; Cleaver, 2005; Schulman & Anderson, 1999). In other words, types of social capital and the context in which this capital functions, are as important as the amount of social capital itself. Cases in this paper depict how bonding capital plays a basically positive role for the formation of collective action, while bridging capital can, depending on the context, have positive or detrimental effects. Furthermore, for the sake of successfully reconciling conservation and development, a critical level of bonding capital at the community level seems always to be needed to maintain continuous collective action and institutional capacity building. This continuous collective action and institutional capacity building represent necessary prerequisites to sound conservation in turn. Bridging capital, though also important to long-run durability of conservation/development initiatives, usually helps integrate conservation and development objectives but only when adequate internal institutions already exist, and/or when formation of bridging capital does not negatively affect bonding capital stock.

Therefore, we confirm the general conclusion of Woolcock (1998) and Woolcock & Narayan (2000) that optimal social capital combinations are dynamic, and depend on required tasks at different developmental stages. When concerning local CPRs governance, maintaining community-level bonding social capital should by all means be considered as a first priority.

Second, we find that participatory conservation efforts themselves, at least in an indigenous context, may constitute a key source of bonding capital that continually reinforces itself in process. At the same time, development efforts are relatively more adept at building bridging social capital which may positively or adversely affect collective action. Moreover, development initiatives themselves can easily undermine bonding capital that is difficult, at least in the short-run, to be restored again. Indigenous communities, given their deep-rooted communality, are extremely vulnerable to distribution issues which always accompany development.

Finally, the three core tasks that sustain local CPRs governance, i.e. getting institutions, incentive and social relations right, are ultimately inextricable from each other. As our empirical cases demonstrate, macro-settings, especially external institutions, typically shape the external incentive structure that influences decisions of local communities toward conservation and development. Conservation and development initiatives, depending on their nature, then trigger various effects shaping the internal incentive structure that changes human behaviors. Accordingly, formation of both bonding and bridging social capital will be positively or negatively affected. Again, combinations of these two types of social capital will influence collective action regarding subsequent internal institution capacity building, and resultant conservation and development performance in turn. Finally, internal institutions can feed-back to conservation/development decision-making and the implementation process, which again changes social capital combinations. There are, in sum, dynamic, cyclical interrelations among institutions, incentive and social relations. All these conclusions have profound policy implications that still remain to be studied and understood. In any case, a sophisticated understanding toward social capital dynamics in the

conservation-development nexus prefigures the formulation of adequate policy suggestions.

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