

Re-thinking enforcement mechanisms in property rights to natural resources

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Abstract:

The importance of enforcement is so widely accepted as to be a truism in property rights analysis. While enforcement is critical to understanding property right structures, surprisingly little work looks at the specific mechanisms that make rights effective. Enforcement is typically understood to emerge naturally from effective legal structures and government enforcement. However the focus on formal enforcement often overlooks informal mechanisms that may be more important in understanding effective rights systems. Using comparative case studies, this paper examines situations where government enforcement agents may not be fully effective in enforcing rights. It provides a framework that allows the inclusion of multiple enforcement agents and interactions effects across enforcement activities to explain the emergence of effective and ineffective right systems. Particular attention is placed on right structures to natural resources and illustrations are taken from numerous environmental resource management situations and property right reform efforts.

- DRAFT. Comments welcome. -

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Introduction

Property rights are the institution that defines the right to claim the stream of benefits from a good and simultaneously assigns the duties and responsibilities for managing the good and respecting the rights of others (Bromley, 1991; North, 1990; E. Ostrom, 2001). As the fundamental social institution that allocates value from natural resources, the question of how property right institutions are made effective underlies the design of public policy to more effectively manage natural resources. This is especially true as policy moves toward market-based instruments and we struggle to understand the mixed success of various property right reforms around the world. Fundamentally, the question at hand is how are property right institutions produced and what is the source of effective enforcement. This paper attempts to reconcile a variety of empirical observations in the property rights literature by providing a theoretical synthesis.

Traditionally much of the property rights literature has focused on the importance of formal legal mechanisms in determining the security of rights arrangements. With North's work (1981; 1990) initiating the agenda, researches looked for the source of effective and efficient rights in the actions of various state actors. This lead to various policy prescriptions, many that continue today, that focus on formal title, the legalization of informal rights, increasing government enforcement capabilities and generally expanding the role of state agents (Bruce, et. al, 2006; World Bank, 2002).

Later work shifted the focus on the importance on non-state agents. For example, Libecap (1989) explained the emergence of property rights as a contracting process subject to the actions of three major actors. Private claimants, such as existing owners who seeks the use of police power from the state to enforce a claim, new claimants seeking the redistribution of property rights in their favor, and other third parties who have an indirect interest in seeing

particular property rights arrangements emerge, such as financial institutions and debt holders. Likewise, politicians are those who control the coercive power of the state to define and enforce particular property rules and whose position makes them the focus of lobbying efforts to maintain an existing system or change property arrangements. Additionally, bureaucrats, or those who have the authority to enforcement government policies are another agent of importance. Their incentives are often divergent from those of politicians, the delegating authority. For authors such as Libecap, it is the political bargaining among these different types of social actors that ultimately determines the effectiveness of rights.

In a similar approach, Firmin-Sellers (1996) understands rights as emerging from the interaction between the formal representatives of governing bodies, their actions on the ground, and social actors who are able to lobby for, accept, or reject government imposed rules. As she states,

“... property rights is a product of the interaction between state and society. State rulers create or manipulate political institutions to pursue their own goals. Individuals in society compete within the shadow of those institutions to secure a privileged share of society’s resources. Combined, the two groups’ actions determine both the structure of property rights and the degree to which those rights are enforced.”

(Firmin-Sellers 1996: 4)

Property rights emerged due to a combination of local informal governance arrangement, the formal administrative structure and incentive of bureaucrats, and the political considerations of those designing that structure.

Movement away from a state-centric approach and toward one that includes the multiple mechanisms that make rights effective requires examining a broad array of specific enforcement mechanisms and potential enforcement activities. These include both those of formal government; such as constitutional provisions, legal codes and regulatory frameworks, as well as

those based on individual incentives, local collective action and community structure. Rather than property right enforcement relying on a single institutional mechanism for enforcement, rights are better understood as the result of multiple individual decisions to support or ignore specific rules. Enforcement rules can include formal mechanisms such as legal penalties or community fines, as well as informal sanctions such as verbal warnings and reputation.

Effective enforcement is likely to involve combinations of both formal and informal rules and is better understood as emerging from a system of co-production, with various actors actively engaged in the costs of producing enforcement. The idea of co-production dates to early work on local government that asks whether local or central governments were better at producing certain types of public goods. A number of researchers proposed that the specific contractual arrangements were more important than any particular unit of government, and that many of the disincentives local governments faced in providing some types of public goods could be overcome through specific contractual arrangements (E. Ostrom, 1996; V. Ostrom, Tiebout, & Warren, 1961). The debate was based on a misconception of the distinction between provision and production activities.

Provision includes determining the level of good distributed, assigning responsibilities for producing, maintaining, and managing a resource system, and the active maintenance of the stock of a resource, whereas production is the physical contribution to the construction, maintenance or other actions that contribute to the resource system itself that assists in generating a given level of output. Provision and production can be done by the same individuals, but not necessarily. A government agency may be responsible for providing for the financing and construction of an irrigation system, but then allows water users to maintain the system, or alternatively contract with a private firm in order to produce the necessary inputs. In

another case it may be farmers themselves that finance, construct and maintain the resource system thus becoming both the providers and producers of the system (Ostrom 1990: 31).

This same distinction exists in examining the source of effective enforcement of a property right. Provision activities go into generating effective property right institutions and can include determining that a definition of property rights is needed to an open access resource, the costs of negotiation to determine how rights are formally allocated, and determining rules of exclusion. Individuals may make a claim to a resource then lobby for the formal rights to the benefit. Various government agencies may be active in determining whose rights are to be respected and whose are considered illegitimate. Similarly, the production of a property right institution also requires activities by multiple agents. This includes any activity that makes rights meaningful on the ground and includes the full range of actors that contribute time and effort into the various enforcement activities that make a right meaningful. This may involve a range of different social actors, from formal government agencies to neighbors and other right-holders. Some may be responsible for merely providing information, such as when a neighbor reports trespassing, while others are active in monitoring resource use and sanctioning unauthorized use, such as the active presence of law enforcement or the existence of an effective court system. While the provision activity is often the realm of formal government and politics, the production activity underlying a property right typically involves a wide range of actors.

Property right institutions require a number of activities to make them effective. Foremost, there needs to be some type of monitoring of use by non-rights holders. These monitoring costs are never insignificant, although they are likely to be higher in some situations than others. For example monitoring the use of an easily divisible resource such as land is less costly than that of a more amorphous resource such as atmospheric commons and emissions

rights. Second, it requires sanctioning efforts against illegitimate use a resource. Sanctioning costs may include intervening in unauthorized use and administering a fine or other sanction. In some cases sanctioning may include little more than a verbal warning not to trespass; in others it may include very costly interventions and administration of large sanctions.

Property rights require a mix of inputs from both individual right-holders and formal government actors to be fully effective. At a minimum, an effective property right system requires respect by a community of other rights holders, and a common understanding of what constitutes a legitimate claim to the benefit from a good. It also requires a system of monitoring, and information sharing among right-holders when a right has not been respected and some form of sanctioning activity. In some cases, effective property rights system requires no intervention outside the community of users and property rights are enforced through a variety of collection action institutions. However, many property rights system involves input in monitoring and enforcement inputs from formal government actors as well.

In order to understand the effective enforcement it is necessary to examine all three levels of enforcement simultaneously and their interaction to determine the incentives right-holders face. The factors that determine the level of enforcement will be determined by the activities of third-party enforcers, the value of the resource to individual right-holders, and the ability to produce effective institutional solutions to property dilemmas at the community-level through collective action.

Co-producing Property Rights – Interactions among Enforcement Mechanisms

Since both formal and informal types of enforcement are involved in creating effective rights, it is necessary to discuss the potential interactions across levels. Helmke and Levitsky (2004) propose a useful typology of the potential interactions between formal and informal

institutions. They use a two by two grid that includes the level of effectiveness of formal institutions, and their relationship to informal arrangements as either convergent, where the two work toward similar purposes, or divergent, working at cross purposes.

Figure 1: A Typology of Institutional Interactions

Outcomes	Effective formal institutions	Ineffective formal institutions
Convergent	Complementary	Substitutive
Divergent	Accommodating	Competing

(Helmke and Levisky 2004: 728)

Complementary relationships allow informal institutions to fill in the gaps left by formal arrangements. They allow informal institutions to deal with contingencies and permit individual action within formal rules. Accommodating informal institutions are those that permit individuals to alter the substantive effects of formal rules without needing to directly violate them. They "contradict the spirit, but not the letter, of formal rules" (Helmke and Levisky, 2004: 729). Substitutive relationships exist where formal rules are ineffective and informal institutions serve to fulfill the functions of formal institutions. Finally, where formal institutions are ineffective, and informal rules are incompatible they exist as completing. Following one rule requires violating the other and generally informal institutions trump formal.

The typology has a direct application to the case of property right enforcement. When third-party enforcement is ineffective, there exists the alternative informal enforcement mechanisms of individual or community enforcement. Depending on the structure of formal rules specifying property relations, these may either substitute for bureaucratic third-party enforcement, or directly compete. When formal enforcement is effective, then informal actions

may either complement third-party enforcement as a form of co-production across individuals, communities and government actors; or act in an accommodating way with local informal enforcement operating within the broader framework of formal activity.

Evidence of these types of interaction between formal and informal enforcement of property rights can be found scattered throughout the literature. Some authors understand local enforcement to be a direct substitute for third-party enforcement. For example, Fukuyama posits that social capital and community cooperation can act as an effective substitute for rule-of-law (Fukuyama, 2002). So long as social capital is strong, third-party enforcement becomes unnecessary. Alternatively, third-party enforcement has also been seen as the alternative to social capital. This is the implicit assumption of the literature that emphasizes state capacity and formal rule-of-law. Likewise, formal enforcement can occur in cooperation with informal enforcement, and social capital can boost, or even be the foundation of successful formal enforcement in a complementary relationship.

The relationship may also be substitutive. When third-party action is ineffective, then other societal groups will serve to provide a public good such as property right enforcement. Gambetta (1993) for example shows that the Sicilian Mafia originally operated as a private provider of property right protection where the state had historically failed to function. In a similar study, Bandiera (2003) illustrates that mafia activity was highest precisely in those areas where land rights were least protected by state enforcement.

Others authors suggest that rather than individual preferences being understood as exogenous to an individual action situation, that norms are induced by specific institutional arrangements (Bohnet, 2001; Frey, 1994; Frey & Jegen, 2001). Actions at one level can crowd-in and crowd-out incentives at a second, and that it is the type of action itself that leads to

whether the relationship is complementary or substitutive. For example, Cárdenas, Strandlund and Willis (2000: 231) finds that weakly enforced external sanctioning crowds-out group oriented strategies. Likewise, other authors suggest that social capital can be destroyed, or remains dominant when state enforcement is highly effective (Paldam, 2000). Informal institutions can be effectively crowded out by too much third-party enforcement.

Some researchers suggest that third-party enforcement can also crowd-in certain types of norms. Paldam (2000) suggests that certain types of binding sanctions within a legal system tend to induce characteristics of social capital. Common law will tend to reduce the most opportunistic behaviors, while allowing flexible relationships built on trust to foster. Civil law however, with its more costly legal structure will tend not to remove opportunistic behavior and fail to assist in inducing trust. Both Paldam (2000) and Fukuyama (1999) posits that the fundamental policy dilemma is how third-party action can be made to generate more trust.

Developing a co-production model of property right enforcement

Understanding property relationships can be approached by a model that looks at rights as existing within a system of nested institutions, where actions and rules at one level fundamentally influence decisions at another (Ostrom 1990: 50-51, Tsebelis 1990). Institutional rules include broad exercise of the powers of a government to control the use of resources that affect the decisions of individuals to make investment and production decisions, or community structures and the presence of self-governing resource right systems without the use of external enforcement. A nested institutional framework incorporates the multiple decision-making arenas that can influence the decisions of individual agents. The ultimate effectiveness of rights

depends on the full range of incentives and constraints rather than those occurring at any single level.

In order for a property right to be meaningful, it requires active monitoring of resource use and sanctioning of those who use the resource without a recognized right. This research looks at three types of enforcement activities, those provided by formal government (termed bureaucratic third-party enforcement), peer-enforcement at the community level, and individual enforcement by a right-holder. The enforcement necessary to make a property right meaningful can occur from any combination of these three types of social agents. Effective enforcement of a property right always involves some activity by individual right holders, who at a minimum report violations, provide monitoring, build fences, or lock goods. All of which involve some minimal cost. At the maximum extent the right-holder may be responsible for all monitoring and sanctioning activity such as the situation described by Umbeck (1981) where miners on the frontier in the American West were willing to camp and live at their claim and present armed defense against unauthorized access. More often, individual enforcement is in combination with community and government action.

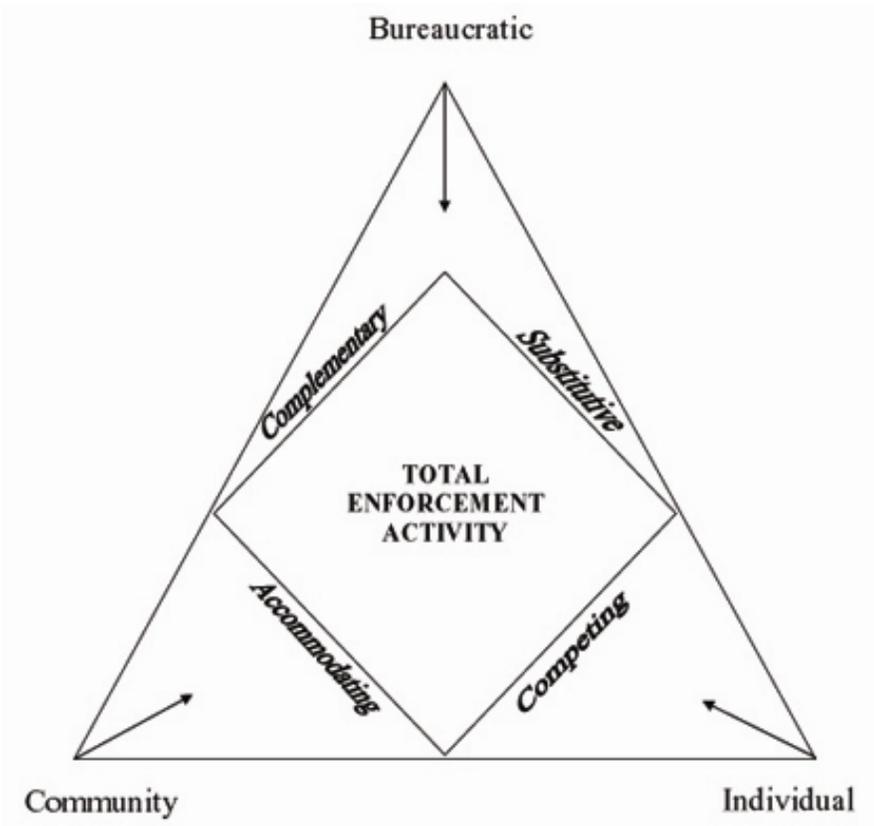
Common property systems, such as the Mexican ejido, rely heavily on the community of ejido right-holders for enforcing rights both within the community and against outside trespass. This involves a combination of enforcement by individual ejido members as well as peer-enforcement by the ejido community. Private rights also typically rely heavily on the system of peer-enforcement by neighbors and other citizens.

Finally there is the role of bureaucratic third-party enforcement from representatives of government. Sened's (1997) example of Russia's privatization vouchers and the allocation of rights to air slots are cases of a heavy reliance on bureaucratic third-party enforcement.

Government activity can also occur in combination with individual and community enforcement activities. In cases of legally designated rights that are unrecognized locally, it may be the only type of enforcement. However, in most cases in order to make rights effective enforcement activity occurs in combination with either community peer-enforced systems or by individual right-holders.

Figure 2 illustrates the three levels of enforcement activity with enforcement activity interacting any of four manners. Positively reinforcing relationships include complementary and accommodating activities, while counter-productive activities are substitutive or competing. The types of activities that can occur within in level of enforcement are discussed below.

Figure 2: Types of Interaction Effects across Enforcement Agents



Individual Enforcement

Even in the absence of third-party enforcement individual right-holders will act to secure property. Enforcement of a property right occurs through building fences, posting watchmen, monitoring and locking resources away from unauthorized use. All of which comes at some cost to the right-holder. The factors driving the individual incentive to enforcement a right can involve the full range of motives discussed in the broad literature on cooperation. These include anything that makes the protection of a resource salient to a right holder. Individual right-holders will act to enforce a property right so long as the marginal benefit of doing so exceeds the marginal cost, although individual effort will depend on expectations about the actions of others.

Community Enforcement

There are common gains from establishing a system where individual right-holders share information and monitor each others resources. Establishing a mutually agreed upon system of rights and responsibilities regarding resource use has public good characteristics and the ability to enforce property right institutions at a community-level is a type of collective action problem. The same types of variables that influence whether a community will be able to overcome collective action problems in other areas apply to if a community is able to produce and maintain an effective peer-monitoring system. A complex set of variables determines whether collective action is likely within any community setting (Ahn & Ostrom, 2002; Gibson, McKean, & Ostrom, 2000; Poteete & Ostrom, 2004) and generally include such factors as community heterogeneity, group size and the structure of social networks.

The distribution of the value of a resource is critical to understanding both the incentive of individual right-holders to produce costly enforcement, as well as how much community effort we expect to see toward overcoming collective action problems. Just as an individual right-holder will only produce enforcement activities up to the point where the marginal costs

equal the benefits, so a community will only attempt to overcome high coordination costs or distributive conflict to the point where the cost of designing and maintaining governance institutions do not exceed the benefits received. The impact of the cost of collective action is then relative to the benefits of producing property rights institutions. When the benefit from protecting a resource is low, institutional supply tends to be low or non-existent (Campbell et al., 2001; Gibson & Becker, 1999). If the value of a resource is high, there will tend to be more elaborate institutional mechanisms for protecting and managing rights to the benefit from the resource. The level of investment in institutional solutions will fundamentally be determined by the value of the resource to which rights have been assigned.

The important point to highlight is that both product and enforcement can occur due to multiple factors. In one case the resource value may simply be too low to warrant any investment in monitoring, sanctioning or other inputs. In a second case, it may be that the size of the group is too large and coordination costs are too high to justify action. In a third, it may be that group heterogeneity is too great and the costs of negotiating and resolving conflicts offset the potential benefits. While the observed outcome is identical, collective action failure and no property right enforcement at the community level, the underlying cause of institutional underproduction is very different.

Third-party Bureaucratic Enforcement

Up to this point I have only addressed why individual right-holders and a community of right-holders would produce costly enforcement action toward protecting property rights. Decisions by third-party enforcers and political actors also can fundamentally alter the costs of enforcement as well as the from holding a property right. Government actions, such as creating legislation that restricts some forms of resource use or re-allocates a property right, are not

meaningful unless implemented by bureaucratic actors on the ground. This requires focusing on the specific action of bureaucratic agents when enforcing rights.

Property rights of any kind are always less than fully enforced. Enforcement is imperfect even when conducted by individual right-holders, since it is impossible to completely monitor a resource and its use. However, the costs of monitoring and enforcing a right are particularly high for bureaucratic enforcers who are likely to be far removed from the resource. These costs include monitoring access and use of a resource, determining the identity of a trespasser, enforcing a sanction, and determining the correct level of sanction to dissuade future trespass. These information costs are present with all third-party monitors and enforcers, whether government or privately hired third-party enforcers, and even with the best of intentions, no third-party enforcer can fully protect a right.

There are two types of enforcement activity from third-party bureaucratic enforcers. The first is imperfect enforcement due to high information costs. This is the type of imperfect enforcement typically discussed in the economic literature. A third-party agent offers some level of enforcement to each individual equally and right-holders do not have the ability to influence whether such enforcement occurs. A third-party enforcers generally recognizes locally enforced rights, and the effect is to lower the cost of property rights production that communities and individual right-holders face. Correspondingly right-holders act in accordance with the expectation that third-party enforcement is present. For the purpose of this study, this type is referred to as external enforcement with certainty ("certain").

A second type of imperfect enforcement is that created by the incentives of the bureaucratic third-party enforcer. Since the incentives of a third-party enforcer are removed from the value of a resource, there is no guarantee that third-party enforcement will necessarily

occur, or if it will necessarily complement enforcement by right-holders. Since bureaucratic enforcers are responding to organizational norms and political incentives, rather than the value derived from the good, the type of enforcement activity they offer can take different forms and have very different impacts on the costs of local enforcement. Enforcement activity sometimes occurs only when bureaucratic enforcers are offered additional inducements to act. Bribes, gifts and other types of payments can be used to convince an officially-designated enforcer to favor one claim over another, or ignore enforcement activity altogether. This is the rent-seeking official referred to by the political economy literature. The ability of a rights holder and a claimant to influence enforcement activity through the use of side-payments fundamentally changes the costs of using third-party enforcement. I refer to this as “uncertain” enforcement in the remaining discussion.

The presence of uncertain third-party enforcement has a number of effects. Foremost, it increases the overall costs of enforcement to rights-holders since side-payments are now necessary to ensure third-party activity. When faced with the necessity of using side payments a right-holder may simply avoid using any third-party enforcement and choose to self-produce enforcement. If external enforcement is necessary because the use of a resource is regulated, or the right is important in dealing with outsiders in a broader market setting, then it will increase the overall cost of enforcement since additional inducements are necessary. Uncertain third-party enforcement increases the uncertainty a right-holder faces in receiving the benefits from a property right since a competing claim to property may be able to secure third-party enforcement rather than the original right-holder as long as they can provide a larger side-payment

The last type of imperfect enforcement occurs when the third-party enforcer has no incentive to enforce at all, is absent, or actively avoids enforcement duties. Formally designated

guards or police avoid enforcement activity altogether. For example, numerous environmental regulations have been passed in Mexico, but few are ever implemented nor intended to be implemented. Both local officials and resource users realize that many would have serious impacts on local resource use, and officials prefer to maintain relationship with locals rather than implement a costly regulation. In other cases where the resource is distant from the formal organizations of government, the state bureaucracy may simply not be present. When this occurs, third-party enforcement is absent and any enforcement of various property claims only occurs within the community of right-holders or by individuals. This is the case of “no enforcement” by a third-party discussed below.

The framework presented here does not attempt to endogenize the incentives of a third-party enforcer. Other authors have developed models that directly address the incentive to enforce and institutional mechanisms for addressing principle-agent problems between a resource right user and a third-party enforcer (Tsebelis, 1993; Weissing & Ostrom, 1991, 1993). Rather this work assumes that the majority of incentives for enforcement are exogenous and determined by the specific administrative structure, professional norms and other institutional constraints on behavior that vary from organization to organization. For the purpose of the model there is no distinction between the various types of bureaucratic enforcement agent.

By presenting a framework that understands property right institutions as an output of co-production by individual right-holders, the community of right-holders and bureaucratic enforcement agents, it allows examining how these different levels may interact to produce specific property arrangements. The importance is not only in the level of institutional production, but specifying the precise mechanisms that links the different enforcement agents.

Similar institutional forms can result from different combinations of actions by very different social agents. Private rights can rely solely on enforcement activity from effective third-party or individual enforcement. Common property always relies on some level of community enforcement, but can be strengthened or weakened by bureaucratic third-party actions. The type of policy intervention to induce a specific property arrangement; whether community or private, will then depend on the existing levels and types of enforcement activity. The solutions to making any particular property right effective may involve counter-intuitive interventions. In some situations, strengthening community rights systems may mean reform at level of formal government. In others, private property rights may best be supported by focusing on the system of peer-enforcement at the community level, rather than on the individual right-holder.

Examining the relationship of different enforcement activity has a number of advantages. It allows for important interaction effects among different potential sources of enforcement. The combination of each type of enforcement (individual, community, third-party) toward the total enforcement activity. In some cases, community enforcement may be the primary source; in others it may involve a mix of individual, community and third-party. By viewing all three sources simultaneously it allows for crowding-in and crowding-out effects as the individual right-holder acts in anticipation of the actions of other.

The key issue is not the specific organizational unit responsible for enforcement activities, but rather the multiple mechanisms that produce enforcement, and the underlying incentives of those providing it. At the individual level the use of trust, norms and reputation can be enough for an effective local property rights system to function. However this is only sufficient in cases of small, stable communities without many external interactions and such

explanations are not adequate for modern market setting or complex mixed-right systems. Community-level organizations can also provide enforcement activities, but they face collective action problems in maintaining institutions that define and protect the benefits of individual rights holders. Where individual or community enforcement is difficult, then understanding how third-party bureaucratic enforcement influences a property right structure becomes more important. This is especially true when looking at property rights systems to environmental resources that involve public goods that extend beyond the community and immediate region.

Conclusions

Property rights rely on a mix of social actors for effective enforcement. Rarely does the individual have the power to exclude all potential intruders, nor can individual right-holders rely solely on third-party enforcement to protect their rights. With the rise of modern political economy the legalistic interpretation of government as the source of property rights institutions has generally been abandoned in favor of an understanding of rights as resulting from negotiations among individual economic actors. However, recently research on the role of government actors in property rights formation and maintenance has re-emerged. Part of this has been due to a renewed interest among political economists in re-examining the assumptions of classical political philosophers (Sened, 1997). Some of this renewed interest is due to the empirical challenges posed to current theories in explaining the differential success in reforms in Eastern European economies. This work, rather than vesting the production of effective enforcement in the hands of representatives of government, examines the subtle interactions between individual, community and bureaucratic-enforced systems and mixed interaction effects.

The approach developed here attempts to provide a more rigorous framework for understanding why reforms and policy experiments are likely to succeed or fail. This is

particularly important in the use of market-based instruments in environmental policy. The creation of new types of property rights; such as pollution permits, payment for ecological services, and the allocation of private rights to public lands, requires a very explicit understanding of the impact of government action in securing and insecuring, allocating and appropriating, and delineating and obscuring property rights. A number of scholars have made explicit calls for a more focused examination of the role of government in making property rights effective and facilitating markets (Shleifer, 1994; Wank, 1999; Williamson, 1994).

This renewed interest in the political economy of property has created a division between research focusing on the role of formal government against those concerned with how communities and individual right-holders can design, manage and enforce effective property rights systems without the need of external intervention. However rather than understanding these as competing explanations, the real challenge is to integrate how the actions by state actors may influence the incentive individuals and communities face in designing and governing effective property right systems. These include the broad exercise of powers of a state to control the use of resources and the ability of individual right holders to make investment and production decisions. Incentives are nested within the broader framework of community and government rather than isolated from the social and political environment.

Bibliography

- Ahn, T. K., & Ostrom, E. (2002). Social Capital and the Second-generation Theories of Collective Action: An analytic Approach to the Forms of Social Capital. Paper prepared for the Annual Meeting of the American Political Science Association, Boston, MA, 2002.
- Bohnet, I., Bruno Frey, Steffen Huck. (2001). More Order with Less Law: Contract Enforcement, Trust, and Crowding. *American Political Science Review*, 95(1), 131-144.
- Bromley, D. W. (1991). *Environment and Economy: Property Rights and Public Policy*. Cambridge MA: Basil Blackwell
- Bruce, J. W., Giovarelli, R., Rolfes Jr., L., Bledsoe, D., & Mitchell, R. (2006). *Land Law Reform: Achieving Development Policy Objectives* Washington D.C.: World Bank Publications.
- Campbell, B., Mandondo, A., Nemarundwe, N., Sithole, B., Jong, W. d., & Matose, F. (2001). Challenges to Proponents of Common Property Resource Systems: Disparing Voices form the Social Forests of Zimbabwe. *World Development*, 29(4), 589-600.
- Firmin-Sellers, K. (1996). *The Transformation of Property Rights in the Gold Coast: An Empirical Analysis Applying Rational Choice Theory*. Cambridge, UK: Cambridge University Press.
- Frey, B. (1994). How Intrinsic Motivation is Crowded Out and In. *Rationality and Society*, 6(3), 334-352.
- Frey, B., & Jegen, R. (2001). Motivation Crowding Theory: A Survey of Empirical Evidence. *Journal of Economic Surveys*, 15(5), 589-611.
- Fukuyama, F. (2002). Social Capital and Development: The Coming Agenda. *SAIS Review*, XXII(1), 23-37.
- Gibson, C., & Becker, D. (1999). The Lack of Institutional Demand. In C. Gibson, M. McKean, & E. Ostrom (Eds.), *People and Forests: Communities, Institutions, and Governance* (pp. 135-162). Cambridge: MIT Press.
- Gibson, C., McKean, M., & Ostrom, E. (2000). *People and Forests: Communities, Institutions, and Governance*. Cambridge, MA: MIT Press.
- Helmke, G. a. S. L. (2004). *Informal Institutions and Comparative Politics: A Research Agenda*. *Perspectives on Politics*, 2(4), 725-740.
- Libecap, G. D. (1989). *Contracting for Property Rights*. Cambridge, Mass.: Cambridge University Press.
- North, D. (1981). *Structure and Change in Economic History*. New York: Norton.
- North, D. (1990). *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.
- Ostrom, E. (1996). Crossing the Great Divide: Coproduction, Synergy, and Development. *World Development*, 24(6), 1073-1087.
- Ostrom, E. (2001). The Puzzle of Counterproductive Property Rights Reforms: A Conceptual Analysis. In A. de Janvry, G. Gordillo, J.-P. Platteau, & E. Sadoulet (Eds.), *Access to Land, Rural Poverty, and Public Action* (pp. 129-150). New York: World Institute for Development Economics Research of the United Nations University (UNU/WIDER).
- Ostrom, V., Tiebout, C., & Warren, R. (1961). The Organization of Government in Metropolitan Areas. *American Political Science Review*, 55, 831-842.
- Paldam, M. (2000). Social Capital: One or Many? Definition and Measurement. *Journal of Economic Surveys*, 14(5), 629-653.

- Poteete, A., & Ostrom, E. (2004). Heterogeneity, Group Size and Collective Action: The Role Of Institutions in Forest Management. *Development and Change*, 53(3), 435-461.
- Sened, I. (1997). *The Political Institution of Private Property*. Cambridge, U.K, New York, NY, USA: Cambridge University Press.
- Shleifer, A. (1994). Establishing Property Rights. *Proceedings of the World Bank Annual Conference on Development Economics*.
- Tsebelis, G. (1993). Monitoring in Networks and Hierarchies: Congress and Organizations. In F. Scharpf (Ed.), *Games in Hierarchies and Networks: Analytical and Empirical Approaches to the Study of Governance Institutions*. Boulder, CO: Westview Press.
- Wank, D. L. (1999). Producing Property Rights. In J. C. Oi & A. G. Walder (Eds.), *Property Rights and Economic Reform in China*. Stanford, CA: Stanford University Press.
- Weissing, F., & Ostrom, E. (1991). Crime and Punishment: Further Reflections on the Counterintuitive Results of Mixed Equilibria Games. *Journal of Theoretical Politics*, 3(3), 343-350.
- Weissing, F., & Ostrom, E. (1993). Irrigation Institutions and the Games Irrigators Play: Rule Enforcement on Government and Farmer-Managed Systems. In F. Scharpf (Ed.), *Games in Hierarchies and Networks: Analytical and Empirical Approaches to the Study of Governance Institutions*.
- Williamson, O. E. (1994). The Institutions and Governance of Economic Development and Reform. *Proceedings of the World Bank Annual Conference on Development Economics*.
- World Bank. (2002). *Building Institutions for Markets*. Oxford: Oxford University Press.

