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When Rhinos Are Sacred: Why Some Countries Control Poaching

Abstract

Why are some countries more effective than others at controlling rhino poaching? Rhinos are being poached to extinction throughout much of the world, yet some weak and poor countries have successfully controlled rhino poaching. This dissertation presents a theory accounting for divergent patterns in the control of rhino poaching, explaining why rhino poaching has been controlled in some countries yet increases exponentially in others. It does so by examining the relational models predominant in each country with wild rhino populations, including institutional analysis of all rhino range states, detailed analysis of social constructions used by nearly two hundred conservationists in Nepal, Swaziland, and South Africa, and an analytic narrative exploring why Nepal effectively controlled poaching. This dissertation shows that when individuals relate to rhinos in a non-economic manner, rhino poaching can be controlled despite weak police capacity and huge profit incentives to participate in poaching. This dissertation thus demonstrates how constructing wildlife with non-economic social dimensions can enable even a weak and poor country to successfully conserve highly endangered species.

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WHEN RHINOS ARE SACRED: WHY SOME COUNTRIES CONTROL POACHING

A Dissertation

Presented to

the Faculty of the Josef Korbel School of International Studies

University of Denver

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

by

Paul F. Tanghe

June 2017

Advisor: Deborah D. Avant

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ABSTRACT

Why are some countries more effective than others at controlling rhino poaching? Rhinos are being poached to extinction throughout much of the world, yet some weak and poor countries have successfully controlled rhino poaching. This dissertation presents a theory accounting for divergent patterns in the control of rhino poaching, explaining why rhino poaching has been controlled in some countries yet increases exponentially in others. It does so by examining the relational models predominant in each country with wild rhino populations, including institutional analysis of all rhino range states, detailed analysis of social constructions used by nearly two hundred conservationists in Nepal, Swaziland, and South Africa, and an analytic narrative exploring why Nepal effectively controlled poaching. This dissertation shows that when individuals relate to rhinos in a non-economic manner, rhino poaching can be controlled despite weak police capacity and huge profit incentives to participate in poaching. This dissertation thus demonstrates how constructing wildlife with non-economic social dimensions can enable even a weak and poor country to successfully conserve highly endangered species.

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CHAPTER ONE: INTRODUCTION

When Rhino Are Sacred

In 2007, the future of wild rhinoceros in Nepal looked bleak. In the previous seven years, Nepal lost over 30 percent of its rhinos to poaching.¹ One of the world's leading experts on rhinos flatly stated, "Nepal probably had the worst rhino poaching of any country in the world."² In May 2006, the BBC reported that poaching "continues to sound alarm bells at the Royal Chitwan National Park," and in New Delhi, headlines announced, "Poaching pushing Asian rhino in Nepal towards extinction."³

Yet by 2015, Nepal had essentially halted rhino poaching. In 2007, the Nepalese government initiated Operation Unicornis to foster political commitment and strengthen counter-poaching across Nepal.⁴ In 2010, Nepal's Prime Minister elevated the issue by creating a ministerial-level inter-agency task force.⁵ These efforts succeeded. For three

¹ Esmond Martin, Chryssee Martin and Lucy Vigne, "Recent Political Disturbances in Nepal Threaten Rhinos: Lessons to be Learned," *Pachyderm* 45 (2008), p. 99.

² Esmond Bradley Martin and Chryssee Martin, "Insurgency and Poverty: Recipe for Rhino Poaching in Nepal," *Pachyderm*, no. 41 (2006), p. 61.

³ "Rhino Poaching Up in Nepal National Park." *BBC Monitoring International Reports*, May 7, 2006.; "Poaching Pushing Asian Rhino in Nepal Towards Extinction." *The Hindustan Times*, January 4, 2007.

⁴ Kachan Thapa et al., "Past, Present and Future Conservation of the Greater One-Horned Rhinoceros Rhinoceros Unicornis in Nepal," *Oryx* 47, no. 3 (2013), 345-351.

⁵ "Nepal Orders Investigation into Slaughter of Rhinos." *The Telegraph*, June 15, 2010.

separate 12-month periods since 2011, no rhinos were poached.⁶ Today, Nepal is the world's leader in successful rhino conservation and the control of rhino poaching.

Across the Indian Ocean, conservationists in Swaziland had reason to worry as a global crisis in rhino poaching erupted in 2007. Swaziland has historically struggled with rhino conservation. Rhinos were poached to extinction in Swaziland prior to their reintroduction in the 1965.⁷ A second wave of poaching decimated Swazi rhinos from November 1988 to December 1992. Swaziland's rhinos were nearly poached to extinction, at times losing one rhino every two weeks, including up to three per day.⁸

Beyond this troubled conservation record, Swaziland is geographically vulnerable to poaching. Nestled between South Africa and Mozambique, the entire country lies within 200 kilometers of the poaching crisis' epicenter in Kruger National Park, a protected area larger than Swaziland itself. The 2011 poaching of two Swazi rhinos demonstrates that poaching remains possible.⁹ Yet just outside Kruger's southern entrance and South Africa's Intensive Protection Zone, where two rhinos are killed every day, Swaziland has effectively controlled rhino poaching. Beyond the two rhinos lost in 2011, no rhinos have been poached in Swaziland since the crisis began.¹⁰

⁶ Ishwar Rauniyar, "Nepal's Rhino Numbers Rise Steadily Thanks to Anti-Poaching Measures," *The Guardian*, May 16, 2015.

⁷ Scott Ramsay, "Swaziland: Showing Africa how to Save Rhinos," *African Geographic*, April 30, 2014, .

⁸ Ted Reilly, "Rhinos in Swaziland," *Pachyderm*, no. 24 (1997), 65.

⁹ Tom Milliken, *Illegal Trade in Ivory and Rhino Horn: An Assessment Report to Improve Law Enforcement Under the Wildlife TRAPS Project* (Cambridge: TRAFFIC International, 2014).

¹⁰ Richard H. Emslie, *African Rhinoceros: Latest Trends in Rhino Numbers and Poaching* (Geneva, Switzerland: CITES Secretariat, 2013), 2.

Next to Swaziland geographically and comparatively, South Africa's failure to control rhino poaching provides a stark contrast. Less than an hour's drive from Swaziland is the Malelane Gate to South Africa's Kruger National Park. This protected area is the flagship site for South African National Parks, a world leader in wildlife conservation, including rhinos. Few species illustrated South Africa's strength in conservation like the white rhino prior to 2007. In the 1960s, white rhinos were poached to the brink of extinction; at their nadir, an estimated 20-50 white rhinos remained in the world.¹¹ In the four decades following, South African conservationists restored this population to over 20,000 animals, exporting rhinos to reestablish populations elsewhere and keeping nearly 90 percent of the world's rhinos within South African borders.¹² This success in introducing rhinos coincided with effectively controlling their poaching; from 1990 to 2006, South Africa managed an average of just 15 animals lost to poaching per year, with some years as few as five or six and only one year as high as 26.¹³ Until the current poaching crisis, South Africa led rhino conservation worldwide, and many considered it the paradigm of successful conservation.

Yet in the last decade, South Africa reversed its earlier success in controlling poaching. After 36 rhinos were poached in South Africa in 2006, the number of rhinos poached in South Africa has nearly doubled every year since 2008. By 2014, over 1,200

¹¹ Liana Sun Wyler and Pervaze A. Sheikh, *International Illegal Trade in Wildlife: Threats and U.S. Policy* (Congressional Research Service, 2013), 8.

¹² *Ibid.*

¹³ Tom Milliken and Jo Shaw, *The South Africa-Viet Nam Rhino Horn Trade Nexus* (London: TRAFFIC, 2012), 69.

rhinos were killed by poachers, with no ready solutions in sight.¹⁴ Inside the Malelane Gate lies Kruger National Park's Intensive Protection Zone, where despite South African Defense Force patrols, heliborne quick reaction forces with armed rangers and infrared detection, and fences resembling a maximum security prison, more than two rhinos per day continue to be lost to poachers. One of the world's leading experts on wildlife trafficking concisely summarized South Africa's present state of rhino poaching: "Africa's rhinos face an ongoing crisis."¹⁵

The Puzzle

Why do some poor, weak countries control poaching?

The success of Nepal and Swaziland in controlling rhino poaching is puzzling, especially given South Africa's failure to do so. Both Nepal and Swaziland are relatively weak and poor countries, where corruption and trafficking of other illicit products is commonplace. Comparatively, South Africa has significantly more government capacity and economic activity. Moreover, dominant theoretical paradigms that explain conservation outcomes stress both state capacity and economic incentives as drivers of successful conservation policies.

These divergent cases in the control of rhino poaching offer both specific and general empirical puzzles. Specifically, I ask why campaigns to counter rhino poaching have succeeded in countries with weak police capacity and poor socioeconomic

¹⁴ David McKenzie and Brent Swails, "Rhino Wars: Inside South Africa's Losing Battle to End Poaching," *CNN*, September 22, 2015.

¹⁵ Milliken, *Illegal Trade in Ivory and Rhino Horn: An Assessment Report to Improve Law Enforcement Under the Wildlife TRAPS Project*, 22.

development, including both Nepal and Swaziland. This specific question underlines a more general inquiry about conservation and environmental governance: why are some communities more effective than others at controlling poaching?

Wildlife policy is a neglected topic in social science. Aside from brief mentions by “most of the early anthropologists, wildlife and its use did not fit well the concepts of either the modernization theorists or their dependency critics.”¹⁶ Consequently, the study of wildlife policy “remained the purview of natural scientists” up until the environmental crises of the 1970s,¹⁷ and “surprisingly little social science research has been directed toward the topic of poaching.”¹⁸

Where social science has considered wildlife use and conservation, two theoretical strands dominate the literature: work emphasizing coercive structures of the state, and explorations of individual preferences and markets regarding uses of wildlife.

A common assumption for understanding poaching attributes the practice to insufficient government capacity and control. In research, this approach can focus on inadequacies in administrative capacity or scientific knowledge, and “generally claims that with greater political will, better information, better equipment, better staff, and more money, policymakers and their agents would create wildlife policy to improve conservation outcomes.”¹⁹ Ostrom (1990) traces this approach to a fundamental assumption of that a Leviathan or powerful coercive actor is needed to structure wildlife

¹⁶ Clark C. Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa* (Cambridge: Cambridge University Press, 1999), 5.

¹⁷ Ibid.

¹⁸ Stephen L. Eliason, "The Illegal Taking of Wildlife: Towards a Theoretical Understanding of Poaching," *Human Dimensions of Wildlife* 4, no. 2 (1999), 29.

¹⁹ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*, 6

interactions and prevent over-consumption.²⁰ The significance of this embedded assumption of conservation as a function of government capacity can be seen in *green militarization*, increasingly militarized state and non-state responses to conservation and especially poaching.²¹ This approach leads one to conclude that state coercive and police capacity are key to controlling poaching.

Parallel to this assumption that government capacity determines the control of poaching is a liberal assumption that poaching is a function of actors' preferences. In contrast to the Leviathan, Ostrom identified this paradigm as a fundamental preference for market solutions.²² Gibson (1999) described this approach as featuring "the 'human dimensions' of wildlife policy" while investigating "the incentives that policies generate for the individuals who experience the externalities of living with wildlife."²³ Gibson's own path-breaking work in explaining poaching extended this emphasis on actor preferences to a new institutional approach, exploring how individuals and groups use

²⁰ Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (1968), 1243-1248.; William Ophuls, *Ecology and the Politics of Scarcity* (San Francisco: Freeman, 1973).; Garrett Hardin, *Living within Limits : Ecology, Economics, and Population Taboos*, eBook ed. (New York: Oxford University Press, 1993).

²¹ Elizabeth Lunstrum, "Green Militarization: Anti-Poaching Efforts and the Spatial Contours of Kruger National Park," *Annals of the Association of American Geographers* 104, no. 4 (2014), 816-832.

²² Harold Demsetz, "Toward a Theory of Property Rights," *The American Economic Review* 57, no. 2 (1967), 347-359.; Omotunde E. G. Johnson, "Economic Analysis, the Legal Framework and Land Tenure Systems," *Journal of Law and Economics* 15, no. 1 (1972), 259-76.; Robert J. Smith, "Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife," *Cato Journal* 1, no. 2 (1981), 439-468.; W. P. Welch, "The Political Feasibility of Fuller Ownership Property Rights: The Cases of Pollution and Fisheries," *Policy Sciences* 16, no. 2 (1983), 165-180.

²³ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*, 5-6.

wildlife to gain private advantage.²⁴ In practice, this paradigm points toward economics to explain poaching, particularly through ecotourism.²⁵

In this context, the contemporary crisis in rhino poaching provides a striking puzzle. Countries with the strongest state capacity and economic sectors have experienced runaway poaching, demonstrated most strongly in South Africa. Yet some countries, particularly those with weak policy capacity and small economic sectors, have successfully controlled rhino poaching.

²⁴ Ibid.

²⁵ Michael 't Sas-Rolfes, *Saving African Rhinos: A Market Success Story* (Bozeman: 2011).; Gregory Warner, "Can Economics Save the African Rhino? : Planet Money : NPR," *Npr Planet Money* May 15, 2013.

Table 1.1 Control of Rhino Poaching, By Country, 2005-2015.

Controlled (n=5)	Not Controlled (n=9)
<ul style="list-style-type: none"> • Botswana • Nepal • Swaziland • Tanzania • Zambia 	<ul style="list-style-type: none"> • Democratic Republic of Congo • India • Kenya • Malaysia • Mozambique • Namibia • South Africa • Vietnam • Zimbabwe

Excluded from analysis: Indonesia, Malawi, and Uganda.

Table 1.2 State Capacity, Measured by Government Revenue in 2005.

	Poaching Controlled	Poaching Not Controlled
High State Capacity (revenue > US\$ 20 billion)	None	India South Africa Malaysia (extirpation) Vietnam (extirpation)
Low State Capacity (revenue < US US\$ 5 billion)	Botswana Tanzania Nepal Zambia Swaziland	Kenya Namibia Zimbabwe Mozambique (extirpation) DR Congo (extirpation)

Table 1.3: Economic Incentives, Measured by Tourism Visitors in 2005.

	Poaching Controlled	Poaching Not Controlled
High Economic Incentives (Tourism > 1,000,000 visitors)	Botswana	India South Africa Malaysia (extirpation) Vietnam (extirpation) Kenya
Low Economic Incentives (Tourism < 1,000,000 visitors)	Tanzania Nepal Zambia Swaziland	Namibia Zimbabwe Mozambique (extirpation) DR Congo (extirpation)

Table 1.4: Economic Incentives, Measured by Tourism Receipts in 2005.

	Poaching Controlled	Poaching Not Controlled
High Economic Incentives (Receipts > US\$ 400 million)	Botswana Tanzania Zambia	Malaysia (extirpation) South Africa India Vietnam (extirpation) Kenya
Low Economic Incentives (Receipts < US\$ 400 million)	Nepal Swaziland	Namibia Mozambique (extirpation) Zimbabwe DR Congo (extirpation)

Moreover, among the countries that have effectively controlled poaching, trafficking of other illicit products such as drugs, human persons, arms, and even rhino horn poached from outside the country remains high, as does corruption. State capacity and socioeconomic development are poor predictors of whether a country can effectively control poaching. But the success of cases like Nepal and Swaziland in stopping this particular type of crime, coupled with the co-existence of other criminal sectors, begs

systematic investigation. This dissertation investigates the reasons why, despite conventional wisdom to the contrary, anti-rhino poaching campaigns have been effective in poor, weak countries.

The Argument

Constructing rhinos in non-economic ways makes poaching a taboo trade-off, facilitating the control of poaching through moral outrage and moral cleansing.

At the risk of offering a simple explanation, I argue that understanding successful rhino conservation today comes down to money. Amid the fantastically lucrative profit potential that exists anywhere there is rhino horn, poaching occurs where people see rhinos as economic opportunities. However, social psychology suggests that economic perspectives are just one form of social relationship.²⁶ In contrast, when people see rhinos as part of their community or important to a common authority, effective control of rhino poaching becomes possible.

I argue that when people when people construct rhinos in reference to their community or an authority, poaching rhinos becomes a taboo-tradeoff and elicits the moral outrage and cleansing behaviors that facilitate its effective control.²⁷ Such moral

²⁶ Alan Fiske, *Structures of Social Life: The Four Elementary Forms of Human Relations* (New York: Free Press, 1991).; A. P. Fiske, "The Four Elementary Forms of Sociality: Framework for a Unified Theory of Social Relations," *Psychological Review* 99, no. 4 (October, 1992), 689-723.

²⁷ Alan Fiske and Philip Tetlock, "Taboo Trade-Offs: Reactions to Transactions that Transgress the Spheres of Justice," *Political Psychology* 18, no. 2 (1997), 255-297.; P. E. Tetlock et al., "The Psychology of the Unthinkable: Taboo Trade-Offs, Forbidden Base Rates, and Heretical Counterfactuals." *Journal of Personality and Social Psychology* 78, no. 5 (May, 2000), 853-70.; Craig MacMillan and Colin Wastell, "Taboo Trade-Offs, Moral Outrage and the Moral Limits of Markets," *Macquarie Economics Research Papers* 2 (2008).; A. Peter McGraw, Janet A. Schwartz and Philip E. Tetlock, "From the Commercial to the Communal: Reframing Taboo Trade-Offs in Religious and Pharmaceutical Marketing," *Journal of Consumer Research* 39, no. 1 (June, 2012), 157.

outrage and cleansing behaviors are absent in communities where people construct rhinos as economic resources, leaving the control of rhino poaching to the capacity of the police and/or market incentives.

Bridging literature on the governance of socio-ecological systems, psychological decision-making, and illicit markets, I explain the effectiveness of anti-rhino poaching in the following way: where non-market priced relational schemata predominate in a community's orientation towards rhinos, rhino poaching becomes a taboo-trade off. Poachers threaten the social relationships of individuals in that community, who respond by symbolically disassociating themselves with the poachers (expressing *moral outrage*) and seeking to punish both poachers (*norm violators*) and those who tolerate poaching (*metanorm violators*). These behaviors buttress police capacity and dampen profit incentives for poaching, thereby facilitating effective policy responses to poaching.

My approach follows the leading edge of understanding conservation outcomes by focusing on institutions within communities. By studying relational models and governance rules as institutions, I follow Ostrom (1990)'s path-breaking work showing community institutions as decisive for common pool resources (CPRs). Ostrom called for "theoretical development that can help identify variables that must be included in any effort to explain and predict when appropriates user smaller-scale CPRs are more likely to self-organize and govern their own CPRs, and when they are more likely to fail."²⁸ This dissertation identifies relational models as critical variables for such analysis.

My approach also recognizes that such institutions cut both ways, enabling and challenging successful conservation outcomes. Gibson (1999) demonstrates institutions

²⁸ Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge; New York: Cambridge University Press, 1990), 183.

“thwart or augment natural resource conservation,” interacting with “wildlife policies that [can] have little relevance or legitimacy in the eyes of those individuals who can make or break conservation initiatives.”²⁹ My research demonstrates how non-economic constructions of wildlife can enable the control of poaching, and conversely, how economic approaches can thwart such control and potentially lead to more poaching.

By focusing my analysis on norms within communities, my research joins other leading contemporary work critically exploring conservation outcomes. Agrawal and Gibson (2001) call exploring how community institutions influence outcomes of political processes in conservation, particularly in norms that “may not prevent over-exploitation of resources” and may even “be a significant part of the problem to a conservationist if a norm promotes exploitation.”³⁰ Relational models show why some norms mitigate against resource exploitation, while norms contribute to it. Investigating the varying modes of thought expressed in relational models, relational models theory can illuminate “the appropriate conjunction of theories of bounded rationality and full rationality,” identified by Ostrom, Gardiner and Walker as key to theoretically understanding common pool resource dilemmas.³¹ Lastly, this dissertation avoids Ostrom’s “panacea trap” of studying resource governance.³² By considering the full universe of cases for rhino range states, and particular outcomes of case studies in Nepal, Swaziland, and South Africa,

²⁹ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*, 164.

³⁰ Arun Agrawal and Clark Gibson, eds., *Communities and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation* (New Brunswick: Rutgers University Press, 2001), 20 and 11.

³¹ Elinor Ostrom, Roy Gardner and James Walker, *Rules, Games, and Common-Pool Resources* (Ann Arbor: University of Michigan Press, 1994), 327.

³² Elinor Ostrom and Michael Cox, "Moving Beyond Panaceas: A Multi-Tiered Diagnostic Approach for Social-Ecological Analysis," *Environmental Conservation* 37, no. 04 (2010), 451-463.

this research demonstrates that relational models are an important consideration in “a diagnostic approach in selecting appropriate starting points for governance and monitoring” and facilitating “learning from the outcomes of new policies and adapting in light of effective feedback.”³³ Each case is unique, yet the innate, fundamental, and universal role of relational models occurs across this variance.³⁴ This dissertation will demonstrate that relational models matter for explaining the effective control of poaching.

The Evidence

Analysis of institutional rules associated with rhino conservation suggests a relationship between non-economic relational models and successful control of poaching. Case studies of Nepal, South Africa, and Swaziland illustrate how non-economic approaches facilitate control of poaching through moral outrage and cleansing, even where state capacity is weak and profit incentives are high.

To explore the question of why some countries have effectively controlled rhino poaching while others have not, I compare the universe of cases of countries with wild rhino populations. I specifically consider institutions involved with protected area management, building on work such as Gibson (1999) and Ostrom (1991) highlighting the critical role of institutions in understanding wildlife policy and common pool resource

³³ Ibid.

³⁴ Alan P. Fiske, "Relational Models Theory 2.0," in *Relational Models Theory: A Contemporary Overview*, ed. Nick Haslam (London: Lawrence Erlbaum Associates, 2004), 3.

governance.³⁵ I also consider factors such as state capacity and economic preferences, while showing these are insufficient for explaining why some countries have effectively controlled rhino poaching while most have not.

I utilize several types of evidence to support my argument, including analysis of all states with wild rhinos (rhino range states) and qualitative data from three case studies: South Africa, Swaziland, and Nepal.

Before proceeding farther in my argument, I will briefly define terms I will refer to throughout this book. A *rhino* is any odd-toed ungulate from the animal family *Rhinocerotidae*.³⁶ There are five extant species of rhino, two in Africa (the white rhinoceros, *Ceratotherium simum*, and the black rhinoceros, *Diceros bicornis*), and three in Asia (the Indian rhinoceros, *Rhinoceros unicornis*, the Javan rhinoceros (*Rhinoceros sondaicus*, and the Sumatran rhinoceros (*Dicerorhinus sumatrensis*). In total, 29,000 rhinos remain in the world, a population decline of 94% in the last century and 60% in the last 45 years.³⁷

In 2008, rhinos existed in the wild in 12 African countries and 5 Asian countries; these are collectively known as *rhino range states*.³⁸ Of the African rhino range states, Botswana, Kenya, Namibia, South Africa, Swaziland, Tanzania and Zimbabwe each have

³⁵ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*; Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 280

³⁶ For an excellent history of the rhino as species, see Kelly Enright, *Rhinoceros* (London: Reaktion Books, Ltd., 2008).

³⁷ Lucy Olivia Smith and Lucas Porsch, *The Costs of Illegal Wildlife Trade: Elephant and Rhino*. (Berlin: Ecologic Institute, 2015), 16.

³⁸ Richard H. Emslie, Tom Milliken and Bibhab Talukdar, "African and Asian Rhinoceroses: Status, Conservation, and Trade" 2013.

populations greater than 100 rhinos. In Asia, India, Indonesia and Nepal have populations greater than 100 rhinos. Since the current crisis began, rhinos have become extinct in Vietnam in 2010,³⁹ in Mozambique in 2013,⁴⁰ and in probably in Malaysia by 2013.⁴¹

Poaching is “any act that intentionally contravenes the laws and regulations established to protect wild, renewable resources,” including rhinos.⁴² This includes illegal harvesting of wildlife, but also ancillary activities such as purchasing, transporting, possessing, using, and other activities associated with illegal wildlife trafficking. Poaching occurs in a variety of forms, including both sustenance hunters and trophy hunters.⁴³ However, this dissertation focuses on commercial or market poaching—poaching to gain economic benefits—as this is the primary driver of the current crisis in rhino poaching.⁴⁴ Poaching is controlled when rhinos are no longer poached in an area, aside from sporadic isolated incidents.

This dissertation will refer extensively to *relational models*, structures that guide social interactions. Fiske (1991) identified four fundamental, innate, and universal relational models that structure most, if not all, social action, thought, and motivation.

³⁹ Ibid.

⁴⁰ Aislinn Laing, "Last Rhinos in Mozambique Killed by Poachers," *The Telegraph* April 30, 2013.

⁴¹ Rasmus Gren Havmøller et al., "Will Current Conservation Responses Save the Critically Endangered Sumatran Rhinoceros *Dicerorhinus Sumatrensis*?" *Oryx* (November 27, 2015).

⁴² Robert M. Muth and Jr. John F., "Illegal Harvest of Renewable Natural Resources in North America: Toward a Typology of the Motivations for Poaching," *Society and Natural Resources* 11 (1998), 11.

⁴³ Richard A. Brymer, "The Emergence and Maintenance of a Deviant Sub-Culture: The Case of Hunting/Poaching Sub-Culture," *Anthropologica* 33, no. 1 (1991), 177-194.

⁴⁴ Milliken and Shaw, *The South Africa-Viet Nam Rhino Horn Trade Nexus*.

The four models structure interactions between individuals based on (1) what they have in common, or *communal* sharing; (2) ordered differences, or *authority ranking*; (3) additive imbalances, or *equality matching*; or (4) ratios, or *market pricing*. These models will be discussed in detail in Chapter 2.

Why Study Rhinos?

Conservation of the world's most financially valuable animal offers important insight for environmental politics, global governance, illicit market trafficking, and political economy.

There are compelling theoretical reasons to study varying outcomes in the control of rhino poaching. First, rhino poaching provides rich insight into environmental politics. Rhinos are simultaneously vulnerable and valuable; their very existence reflects the authoritative allocation of value. They are charismatic megafauna, popular animals that focus attention on conservation issues and priorities.⁴⁵ After being hunted to the brink of extinction in the 1950s, anywhere a rhino exists in the wild represents some form of successful wildlife conservation policy and practice. Yet rhinos demand much from ecosystems; conserving the world's second largest land mammal can entail costs approaching \$40,000 USD per animal per year. Moreover, rhino horn is presently the world's most valuable commodity by weight, exceeding both licit commodities like gold

⁴⁵ For a detailed exploration on the concept of *charismatic megafauna*, see Abigail Entwistle and Nigel Dunstone, *Priorities for the Conservation of Mammalian Diversity: Has the Panda had its Day?* (Cambridge: Cambridge University Press, 2000), 53-81.

and illicit items such as cocaine.⁴⁶ As such, policies and outcomes associated with rhinos are inherently political.

Second, rhinos also provide insight into understanding governance, including global governance. Rhino conservation involves diverse actors drawing from wide ranges of authority, including state conservation and security actors, international conservation and development organizations, celebrities, natural and social scientists, international and local non-governmental organizations, and transnational criminal networks. Intersecting relationships of authority and accountability complicate rhino conservation actions, and rhino poaching outcomes can illuminate these dynamics. In this sense, rhinos can be considered indicator species not only for their environments, but also for contemporary global governance.

Third, rhino poaching is an important case for understanding trafficking and illicit markets. Rhino poaching involves a complex network of trafficking in wildlife, weapons, drugs, and human beings.⁴⁷ These networks cross boundaries of licit and illicit behaviors, blurring national boundaries and reaching into everyday lives.⁴⁸ With ties crossing into transnational criminal syndicates and terrorism, wildlife trafficking has recently become an official national security concern of the leading powers, including the United States.⁴⁹ Yet in many respects, rhino poaching also presents a clearer subject than related cases

⁴⁶ Gwynn Guilford, "Why does a Rhino Horn Cost \$300,000? Because Vietnam Thinks it Cures Cancer and Hangovers," *The Atlantic*, May 15, 2013.

⁴⁷ Paul Kvinta, "The Madness of Modern-Day Poaching," *Outside*, April, 2014.

⁴⁸ Carolyn Nordstrom, *Global Outlaws: Crime, Money, and Power in the Contemporary World* (Berkeley: University of California Press, 2007).

⁴⁹ *Executive Order 13648 of July 1, 2013, Establishing an Presidential Task Force on Wildlife Trafficking*, 2013).

such as elephant poaching or big cat poaching. Rhino populations exist in relatively small, well-documented populations. Poached rhino create large signatures, and consequently nearly all rhino poaching events are discovered and documented, enabling clear identification of outcomes in the control of rhino poaching. As such, rhino poaching may offer visibility into the frequently opaque world of wildlife trafficking.

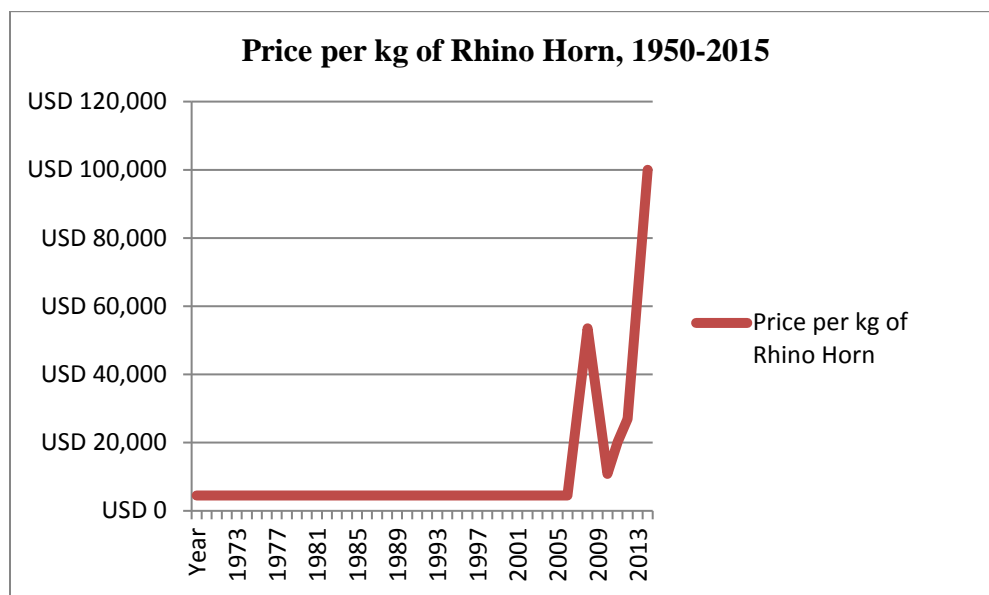
Moreover, the small universe of rhino range states feeding the single global market for rhino horn facilitates comparative analysis of varying national responses to a global price shock. Prior to 2006, rhino poaching rates had remained essentially stable for the previous twenty years. The price of rhino horn on global markets was also essentially stable, at approximately \$1,000 USD per kilogram.⁵⁰ However, by 2008, surging demand from Vietnam coincided with skyrocketing price in rhino horn.⁵¹ By 2015, the global price for rhino horn was estimated to exceed \$100,000 USD per kilogram, making rhino horn the most expensive commodity in the world by weight.⁵² This hundredfold increase in price triggered an explosion in rhino poaching around the world, as poaching rates grew exponentially each year since 2008. Understanding why some countries have controlled rhino poaching, while most have not, can help us understand divergent responses to changes in global markets.

⁵⁰ Tom Milliken and Jo Shaw, “The South Africa-Viet Nam Rhino Horn Trade Nexus: A Deadly Combination of Institutional Lapses, Corrupt Wildlife Industry Professionals and Asian Crime Syndicates” (TRAFFIC, 2012), 85; Lucy Vigne and Esmond Bradley Martin, “Price for Rhino Horn Increases in Yemen,” *Pachyderm* 28 (2000): 91–100.

⁵¹ Milliken and Shaw, *The South Africa-Viet Nam Rhino Horn Trade Nexus*.

⁵² Guilford, *Why does a Rhino Horn Cost \$300,000? Because Vietnam Thinks it Cures Cancer and Hangovers*.

Figure 1.1: Price per kilogram of Rhino Horn, 1950-2015



Policy Implications

Stop making rhino conservation about money.

The policy implications for understanding the control of rhino poaching are stark and immediate. Wild rhino populations are in crisis, and could face extinction within 10 years. Officials in South Africa are incrementally legalizing rhino horn exchanges; this policy could lead South Africa to restore the international trade in rhino horn or withdraw from the Convention on the International Trade of Endangered Species (CITES), one of the world's most successful international institutions. At the same time, efforts to counter rhino poaching increasingly resemble armed conflict. Each year, hundreds of poachers and rangers are killed in firefights contesting rhinos and elephants.⁵³ Drastic measures

⁵³ Laurel Neme, "For Rangers on the Front Lines of Anti-Poaching Wars, Daily Trauma," *National Geographic News*, June 27, 2014.

beyond combat include controversial dehorning of live rhinos and airlifting rhinos to potential sanctuary locations in Botswana.⁵⁴ Yet despite the assumption that rhinos will be safer in Botswana than elsewhere in Africa, little knowledge exists as to whether or why Botswana is more effective at controlling rhino poaching.

This dissertation will show that social constructions of rhino play a critical influence on whether or not their poaching can be effectively controlled. As such, conservation measures that reinforce market-priced social constructions may not only be ineffective, they may actually increase the likelihood of rhino poaching.

Plan of the Dissertation

This dissertation proceeds as follows. In the next chapter, I identify a social theory of the control of poaching, building on Fiske's relational model approach to develop testable hypotheses regarding relational models and the control of rhino poaching, plus alternative hypotheses considering state capacity and economic conditions. In chapter three, I survey the universe of rhino range states, using formal institutional rules as proxy measures for relational models to determinate relationships between such models and poaching outcomes. In chapter four, I consider in depth the cases of Nepal, Swaziland, and South Africa, to illustrate how individuals actually manifest these relational models. In chapter five, I use an analytic narrative to examine the role of moral mechanisms engendered by non-economic relational models in Nepal's

⁵⁴ Brian Clark Howard, "Largest Rhino Airlift Ever to Move 100 at-Risk Animals," *National Geographic News*, March 30, 2015.

effective control of poaching. In chapter six, I conclude by summarizing my findings, identifying their limitations, and addressing their theoretical and practical implications.

CHAPTER TWO: A SOCIAL THEORY OF CONTROLLING POACHING

RELATIONAL MODELS AND MORAL MECHANISMS

This chapter presents a social theory of the control of poaching. After a literature review tracing contours in conservation literature emphasizing state capacity, individual preference, and mediating communities, this chapter focuses on contemporary research into wildlife value orientations and individual decisions whether to poach or not poach. Relational models theory offers explanatory potential for this decision, particularly through the sacred value protection model and moral responses to taboo trade-off reasoning. The chapter synthesizes this literature into a social theory for the control of poaching, including alternative hypotheses for conventional explanations regarding state capacity and economic incentives, before concluding with a research design to investigate observable implications in conservation outcomes involving poaching.

Literature on environmental politics and conservation points to individual decision-making as critical to understanding poaching.⁵⁵ Yet why individuals choose to poach or not poach is not understood, nor how communities control poaching behavior. I begin this chapter by summarizing the three major themes in understanding wildlife

⁵⁵ I'm grateful to the following works for influencing the organization and composition of this chapter: Avant, *The Market for Force: The Consequences of Privatizing Security*; Chenoweth and Stephan, *Why Civil Resistance Works: The Strategic Logic of Nonviolent Conflict*; Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*.

policy and conservation outcomes, which collectively point to an individual decision in the context of structuring community. In the second section, I show how relational models can help explain this decision, namely whether individuals choose to poach. In the third section, I apply relational models theory to advance a social theory of the control of rhino poaching, including general and specific hypotheses for the impact of relational models on poaching outcomes. In the fourth section, I introduce my research design and justify claims I am making in this investigation.

Major Approaches to Understanding Wildlife Policy and Conservation Outcomes

Political science literature addressing environmental outcomes like poaching developed along three major themes: an original emphasis on structures of state coercive capacity, a later focus on the role of market incentives and individual preferences, and current work exploring the role of communities in shaping conservation. These themes emerged only recently, as political science largely neglected conservation and wildlife policy for much of the field's development.

In the field of political science, wildlife and conservation are nascent objects of interest, particularly in the developing world. Bryant and Bailey (1997) characterized the related study of political ecology as “an emerging research field” that before the 1980s, “could scarcely be said to have existed at all.”⁵⁶ This field's youth results from an artificial independence between social and natural sciences, and “the assumption that environmental politics can be separated from the principles and laws of environmental

⁵⁶ Bryant and Bailey, *Third World Political Ecology*, 10.

science.”⁵⁷ Gibson (1999) noted that “social scientists have generally ignored African wildlife as a topic of research,” leaving such studies to “the purview of natural scientists.”⁵⁸ Gibson attributed this neglect to the ill fit of conservation with dominant theoretical approaches within social sciences, particularly modernization.⁵⁹ As a result, Ostrom (1990) observed, “We do not yet have the necessary intellectual tools or models to understand the array of problems that are associated with governing and managing natural resource systems.”⁶⁰ As recently as 2003, an editorial in the journal *Conservation Biology* declared that “the social sciences must become central to conservation science and practice,” noting the question “is not *whether* to integrate the social sciences into conservation but *how* to do so.”⁶¹ To acquire such tools and integrate social science into understanding conservation, political scientists initially turned to the structuring capacity of the state.

This initial focus within conservation literature emphasized the coercive capacity of the state to solve the problem of resource use exceeding environmental limits. Hardin (1968) called attention to this so-called tragedy of the commons, plainly stating that “individuals locked into the logic of the commons are free only to bring on universal ruin; once they see the necessity of mutual coercion, they become free to pursue other

⁵⁷ Forsyth, *Critical Political Ecology*, 9.

⁵⁸ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*, 5.

⁵⁹ Ibid.

⁶⁰ Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 2.

⁶¹ Mascia et al., “Conservation and the Social Sciences,” 649.

goals.”⁶² Ophuls (1977) argued that for effective collective action regarding the environment, “the only solution is a sufficient measure of coercion,” and that “we shall necessarily move from liberty toward authority, for the community will have to be given sufficient means to enforce its demands on individuals.”⁶³ In his survey of conservation challenges of the early 1970s, Ehrenfeld (1972) concluded, “If private interests cannot be expected to protect the public domain, then external regulation by public agencies, governments, or international authorities is needed.”⁶⁴ This theoretical focus on structuring individual decisions through coercive state capacity appears in early environmental policy interventions such as the creation of the Environmental Protection Agency (1970), the Clean Water (1972) and Endanger Species Protection (1973) Acts, and the Convention on International Trade in Endangered Species of Wild Flora and Fauna (1973). However, this approach emphasizing state coercive structures paid insufficient detail to agential interactions and roles of individual preferences.

A second theme of explanations for environmental outcomes focuses on how individuals respond to structuring environments. Assuming that individuals seek to maximize benefits and minimize costs, Demsetz (1967) emphasized the function of property regimes in internalizing effects of resource allocation, both beneficial and harmful. Demsetz specifically argued for private property institutions as a solution to poaching, citing the emergence of such rights in some indigenous American communities engaged in the fur trade. Based largely on his analysis of Frank G. Speck’s anthropologic

⁶² Hardin, “The Tragedy of the Commons,” 1248.

⁶³ Ophuls, *Ecology and the Politics of Scarcity*, 151 and 226.

⁶⁴ Ehrenfeld, *Conserving Life on Earth*, 322.

research on Montagnais Indians in Quebec and Labrador, Demsetz noted “the fur trade made it economic to encourage the husbanding of fur-bearing animals. Husbanding requires the ability to prevent poaching and this, in turn, suggests that socioeconomic changes in property in hunting land will take place.”⁶⁵ Demsetz’s conclusion was purely functional, failing to consider colonial influences nor any motivation beyond individual wealth maximization. Similarly, O. Johnson (1972) argued that a lack of private property rights inhibits “rapid growth” in land-using activities, assuming that rapid growth equates to increasing value.⁶⁶ These works explored individual responses to structures, but privileged the assumption that individuals seek first to maximize private ends.

Later scholars extended this focus on privatization to normative dimensions. Smith (1981) argues that “the problem of overexploitation or overharvesting is a result of the resource’s being under public rather than private ownership.”⁶⁷ After revisiting Speck’s analysis of the Montagnais Indians, Smith goes on to cite “game ranches, hunting preserves, safari parks, and animal and bird farms” as “examples of how private ownership can successfully preserve wildlife.”⁶⁸ This leads Smith to flatly conclude:

the single most important element in wildlife survival was their removal from common property ownership. . . . The problems of environmental degradation, overexploitation of natural resources, and depletion of wildlife all derive from their existence as common property resources. Wherever we find an approach to the extension of private property rights in these areas, we find superior results.⁶⁹

⁶⁵ Demsetz, “Toward a Theory of Property Rights,” 352.

⁶⁶ Johnson, “Economic Analysis, the Legal Framework and Land Tenure Systems,” 260.

⁶⁷ Smith, “Resolving the Tragedy of the Commons by Creating Private Property Regimes,” 444.

⁶⁸ *Ibid.*, 453.

⁶⁹ *Ibid.*, 455–56.

According to this approach, if one wishes to prevent the overharvesting of wildlife, privatization is the only solution. Other major works that explore environmental outcomes from a liberal perspective include Sinn (1984), who studied the effect of ownership structures on oil markets, and Welch (1983), who examined the feasibility of privatizing ownership structures.⁷⁰ In exploring consequences of who owns natural resources, this literature shifted focus from earlier capacity based explanations to the *human dimensions* of wildlife policy.

The human dimension of wildlife policy locates conservation outcomes at the individual level of analysis. Bell (1987) called for “conservation with a human facing,” declaring “any programme that emphasizes long-term communal benefits at the expense of short-term individual benefits will be met with resistance.”⁷¹ Despite judging “utilitarian justification of conservation to be opportunistic, unrealistic, and counterproductive,” Bell identifies that “public discussion of costs and benefits is couched almost exclusively in terms of . . . the utilitarian and monetary consequences of conservation or the lack of it.”⁷² Bell attributed this to prevailing consensus that non-monetary conceptions of value are “frivolous and will carry insufficient weight with

⁷⁰ Sinn, “Common Property Resources, Storage Facilities, and Ownership Structures: A Cournot Model of the Oil Market”; Welch, “The Political Feasibility of Full Ownership Property Rights: The Cases of Pollution and Fisheries.”

⁷¹ Bell, “Conservation with a Human Face: Conflict and Reconciliation in African Land Use Planning,” 79.

⁷² *Ibid.*, 81.

governments and rural interface populations.”⁷³ This privileging of monetary conceptions of value permeates a related concept, *community-based conservation*.

Community-based conservation is the idea that delivering benefits to individual users of wildlife is a necessary component of successful conservation outcomes. Deeply embedded in this concept is the construction of benefits in economic terms. For instance, Little (1994) stated the “critical role that economic incentives play in motivating community-based conservation is now widely accepted,” even while noting that “[e]conomic benefits from community-based conservation are rarely documented systematically.”⁷⁴ Bromley (1994) flatly declared that the “answer, in brief, is to be found in the structure of entitlements (often called property rights) and in the constellation of incentives and sanctions that emanate from them.”⁷⁵ Bromley argued incentives ultimately reduce to prices, as the “ability of market institutions to resolve conflicting human demands on the environment relies [on actors] guided by market prices *Prices signal to human actors what actions are right*” (emphasis added).⁷⁶ Bromley caveats his argument by referencing a *safe minimal standard*, acknowledging that when “irreversibilities are present, it may be prudent to take steps to avoid the small probability that our actions may set in train events leading to the disappearance of certain

⁷³ Ibid.

⁷⁴ Little, “The Link Between Local Participation and Improved Conservation: A Review of Issues and Experiences,” 365-366.

⁷⁵ Bromley, “Economic Dimensions of Community-Based Conservation,” 429.

⁷⁶ Anderson and Leal, *Free Market Environmentalism for the Next Generation*, 25.

presumptively valuable biological resources.”⁷⁷ Notwithstanding this potential for *small probabilities* of potential extinctions, the market approach assumes that conservation will not occur unless prices make it profitable.

This market-based approach developed against objections that wildlife cannot or should not be thought of in monetary terms. Stoddard (1951) was an early proponent of such economic valuations. In an important essay, Stoddard argued that although until “now wildlife crops [were] considered to have an intangible economic value, . . . the mere fact that society is willing to pay for [conservation] is indicative of the presence of tangible, though not marketable, values.”⁷⁸ Therefore, Stoddard concluded the “time has come when our society must make a choice- either to permit the continued depletion of wildlife environment in favor of commodity agriculture, or to determine ways and means whereby landowners will be provided with incentives, economic and otherwise, for producing wildlife crops.”⁷⁹ Crutchfield (1962) sparked a prominent research program aimed at determining these tangible values, arguing that the varied uses of wildlife can be captured and modeled in a “logical framework within which these essential comparisons can be made and the greatest possible economic product realized from given resource” levels.⁸⁰ This search for ways to quantify the value of wildlife predicated on an assumed priority towards maximizing economic growth.

⁷⁷ Bromley, “Economic Dimensions of Community-Based Conservation,” 443.

⁷⁸ Stoddard, “Wildlife Economics: A Neglected Tool of Management,” 248.

⁷⁹ Ibid.

⁸⁰ Crutchfield, “Valuation of Fishery Resources,” 145.

Translating wildlife into money was at the center of this economic approach. Langford and Cocheba (1978) argued that money can serve as a “cardinal index of satisfaction” based on the consumer’s surplus concept.⁸¹ While acknowledging “money is certainly not a perfect unit of measure,” they argue “some of the persistent arguments against using it for this purpose are indefensible” as the “fact remains that money *is* the medium of exchange in our society” and “only the naïve believe that using money to measure value implies a materialistic ethic.”⁸² Cocheba and Langford (1978) explored several ways to determine this economic value of wildlife, arguing “it is possible to incorporate both a collective and a private good dimension of value into a single model.”⁸³ These collective and private goods dimensions hinged on an economic measurement expressed in money, sometimes expressed as use and non-use values of wildlife.

The monetization of wildlife was advanced as the best path to conservation. Gray’s (1993) “Picasso and Pachyderm” analogy compared elephant conservation to a Picasso painting. Noting that the price commanded by art such as a Picasso painting does not detract from the art’s intrinsic aesthetic qualities, Gray argued that “the greatest value of elephants is as a tourist attraction.”⁸⁴ Noting a 1990 study that determined a living elephant as generating \$14,375 USD per year compared to the \$1,880 USD yielded from

⁸¹ Langford, William A. and Cocheba, “The Wildlife Valuation Problem: A Critical Review of Economic Approaches,” 5.

⁸² *Ibid.*, 6.

⁸³ Cocheba and Langford, William A., “Wildlife Valuation: The Collective Good Aspect of Hunting,” 503.

⁸⁴ Gray, *Wildlife and People: The Human Dimensions of Wildlife Ecology*, 149–150.

harvesting that elephant's ivory, Gray advised this "comparison should be widely publicized in Africa."⁸⁵ Lewis, Kaweche and Mwenya (1990) studied an ecotourism project in Zambia, and concluded that when profits from conservation were made available to locals through ecotourism, "poaching dropped dramatically, local economies were improved, and village attitudes towards wildlife management and conservation became more positive."⁸⁶ This study shows the heart of the economic approach: find ways to make conservation pay.

To make conservation profitable for individuals, the market approach focused on the functional aspects of institutions. Ostrom (1990) described this as shifting from the tragedy of the common's game of user against user to a individual's game against nature in a smaller, privately held property.⁸⁷ Gibson summarized this emphasis on markets as conservation solutions as:

the process in which policymakers realize the importance of a new conservation policy . . . and then construct and implement it. That is, because there is a realization that humans living in wildlife should participate in gain and participate in conservation activities, wildlife policies will follow.⁸⁸

In addition to its ontological focus on institutions, this approach embedded an assumption of utility maximization into conservation, most significantly in the concept of *sustainable development*.

⁸⁵ Ibid., 150.

⁸⁶ Lewis, Kaweche, and Mwenya, "Wildlife Conservation Outside Protected Areas-Lessons from an Experiment in Zambia," 171.

⁸⁷ Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 12.

⁸⁸ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*, 6.

Sustainable development assumes that conservation and wildlife policy decisions should maximize utility for those who live with wildlife. First proposed in the Brundtland Commission's report *Our Common Future*, this concept sees suboptimal environmental outcomes as consequences of poverty and underdevelopment, which must therefore be addressed through poverty reduction and development. This report "brought political respectability to the marriage of ecology and economics."⁸⁹ The idea that environmental outcomes are fundamentally economic has dominated international institutional actions towards the environment since the Brundtland report, most notably at the 1992 Earth Summit in Rio de Janeiro and at the 2002 World Summit on Sustainable Development.⁹⁰ In fact, the first principle declared outright at the 1992 Earth Summit's Convention on Biodiversity was that all states have "a sovereign right to exploit their own resources."⁹¹ Yet despite the dominance of economic assumptions in understanding conservation, more recent work has moved beyond state capacity and rational choice analysis to focus on local explanations of conservation.

Reflecting a broader theoretical turn towards new institutionalism, this third theme in conservation literature focuses on communities as a level of analysis that integrates both structural factors and individual decisionmaking. Ostrom (1990) heralded this turn towards community as she rejected early prescriptions of the coercive state or the free market as single solutions to conservation challenges. Rather, Ostrom pointed to

⁸⁹ Western, David and Wright, "The Background to Community-Based Conservation," 6.

⁹⁰ Soroos, "Global Institutions and the Environment: An Evolutionary Perspective," 26–27.

⁹¹ Convention on Biological Diversity, "Convention on Biological Diversity", Article 3.

a variety of institutional arrangements that can succeed, observing that successful conservation outcomes result from “rich mixtures of ‘private-like’ and ‘public-like’ institutions defying classification in a sterile dichotomy.”⁹² Even strong advocates for conservation through privatization acknowledge that “[o]ften omitted from policy prescriptions is the possibility that a nongovernmental community of users can manage common areas and prevent overexploitation.”⁹³ Ostrom would later summarize this research as a “diagnostic approach” moving “beyond panaceas,” focusing on *social-ecological systems* (SESs) as a means to explain successful conservation and environmental governance outcomes.⁹⁴ SES are “social systems in which some of the interdependent relationships among humans are mediated through interactions with biophysical and non-human biological units.”⁹⁵ Principle components of an SES are a *resource system* where *actors* extract *resource units* in an *action situation*, according to rules of an overarching *governance system*.⁹⁶

⁹² Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, 14.

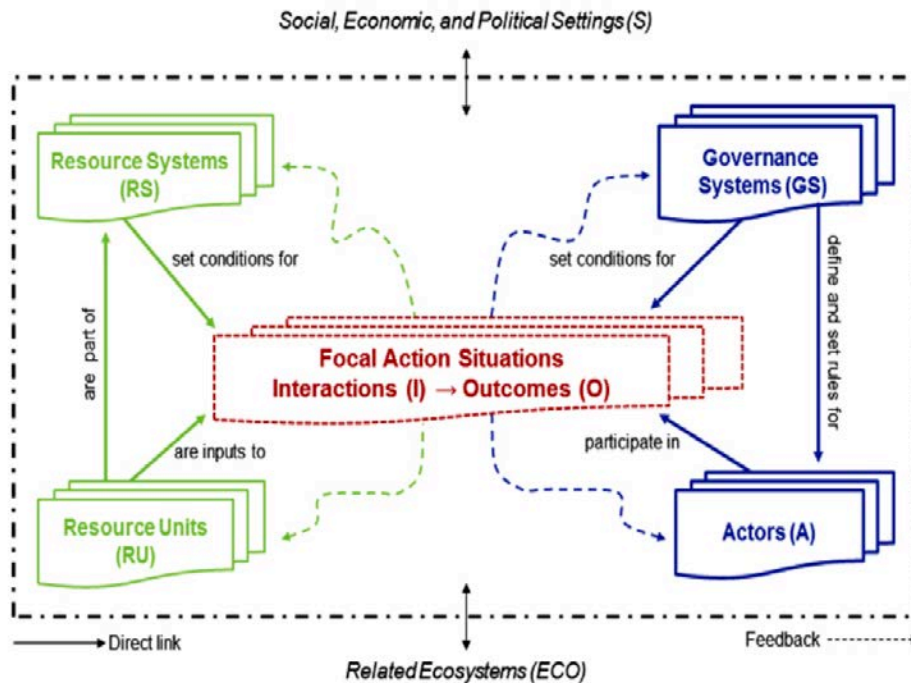
⁹³ Anderson and Leal, *Free Market Environmentalism for the Next Generation*, 126.

⁹⁴ Ostrom and Cox, “Moving beyond Panaceas: A Multi-Tiered Diagnostic Approach for Social-Ecological Analysis.”

⁹⁵ Anderies, Janssen, and Ostrom, “A Framework to Analyze the Robustness of Social-Ecological Systems from an Institutional Perspective.”

⁹⁶ McGinnis and Ostrom, “Social-Ecological System Framework: Initial Changes and Continuing Challenges.”

Figure 2.1: Social-Ecological Systems Model



Source: McGinnis and Ostrom 2014

Moving beyond state- or market-prescriptions explains conservation successes and failures as outcomes of political institutions within communities.

This community focus appears in key contemporary works within conservation literature. Chute (1999) revisited the case behind Demsetz’s seminal argument for private property regimes, concluding this is more accurately explained as resilient community practices rather than profit-driven private ownership.⁹⁷ Gibson (1999) examined wildlife policy in Africa, and demonstrated that political institutions significantly influence conservation outcomes, and are not well explained by typical conservation policy

⁹⁷ Chute, “Frank G. Speck’s Contributions to the Understanding of Mi’kmaq Land Use, Leadership, and Land Management.”

analyses or rational approaches to environmental politics.⁹⁸ Gibson concluded his study by calling for more understanding of the relevance and legitimacy of “those individuals who can make or break conservation initiatives [who] possess different sets of preferences about what they consider to be the ‘appropriate’ rules governing wildlife resources.”⁹⁹ From this approach, conservation research looked to where individuals interact with wildlife and each other in local communities.

As scholars have focused on political institutions within communities, important critical questions regarding conservation have come to the fore. Agrawal and Gibson (2001) note a disconnect between the concept of communities as territorially fixed, small and homogeneous groups with the reality of diverse interests and actors, local-level processes, and institutional arrangements.¹⁰⁰ This underexplored linkage between the concept of community and reality is particularly pronounced regarding norms, which can both promote and hinder conservation. Agrawal and Gibson observe that norms “in fact, may be a significant part of the problem to a conservationist if a norm promotes exploitation (posing an enormous obstacle for those interested in community-based conservation).”¹⁰¹ To better explain when community accomplish successful collective action towards conservation, they call for increased study of social variables within community.

⁹⁸ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*.

⁹⁹ *Ibid.*, 164.

¹⁰⁰ Agrawal and Gibson, Clark, *Community and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation*.

¹⁰¹ *Ibid.*, 11.

A particularly promising category of social variables are individual orientations towards wildlife. This approach synthesizes insights from both state-centric and private market approaches, considering the human dimension of individuals within governing structures, and variance in how individuals value wildlife. Manfredo and Dayer (2004) surveyed a range of literature pertaining to social aspects of conservation, proposing that *wildlife value orientations* are key to understanding human wildlife conflict.¹⁰² Manfredo, Teel and Henry (2009) identified contrasting ideologies of *domination* versus *mutualism* in wildlife value orientations in North America, suggesting this variance may explain broader social-ecological outcomes. As Teel et al (2010) argued:

Our theory contends that individual behavior toward wildlife is driven by specific attitudes (i.e., the association of an evaluation and an object in memory), and these attitudes are directed by wildlife value orientations. The latter are beliefs reflective of broad cultural ideologies that give personal meaning of right and wrong and an ideal life to one's more basic values in relation to wildlife. They play an important role in explaining variation in individuals' wildlife-related actions and their attitudes toward topics related to wildlife treatment. As a result, differences in wildlife value orientations can form the foundation for conflict among diverse publics on wildlife issues and management strategies.¹⁰³

This focus on social values towards wildlife as a key explanatory variable has been replicated in wolf management studies by Sponarski et al (2014).¹⁰⁴ Moreover, the concept of wildlife value orientations has been generalized and documented in countries outside North America, as shown by Vaske, Jacobs, and Sijtsma's (2011) study of the

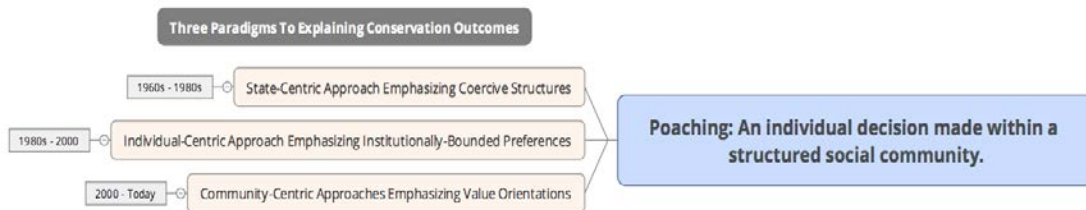
¹⁰² Manfredo and Dayer, "Concepts for Exploring the Social Aspects of Human–Wildlife Conflict in a Global Context."

¹⁰³ Teel et al., "Understanding the Cognitive Basis for Human–Wildlife Relationships as a Key to Successful Protected-Area Management," 104–105.

¹⁰⁴ Sponarski et al., "Salient Values, Social Trust, and Attitudes toward Wolf Management in South-Western Alberta, Canada."

Netherlands.¹⁰⁵ These studies suggest that a key influence at the communal level of analysis lies in how individuals within that community construct wildlife.

Figure 2.2: Major Approaches to Explaining Poaching



Summarizing this review, social science neglected conservation as a research topic for much of its history. Early efforts to explore conservation outcomes initially focused on the structuring capacity of the state, and later turned to an emphasis on ownership structures and individual incentives regarding wildlife. More recently, scholars have focused on the role of communities, particularly in how social factors influence individual decision-making amid structured interactions with wildlife.

In the next section, I identify how social factors identified by Relational Models theory can affect conservation outcomes and a community's control of poaching.

How Relational Models Can Explain the Control of Poaching

Extant literature explaining conservation outcomes points to individual social factors as a key explanatory variable, particularly regarding wildlife value orientations.

¹⁰⁵ Vaske, Jerry J., Jacobs, Maarten H., and Sijtsma, "Wildlife Orientations and Demographics in the Netherlands."

However, it is not clear what social factors matter, and what dimensions of wildlife value orientations matter. This dissertation argues that relational models offer a powerful explanation of not only how social factors can vary, but even more so, why such variance matters.

Relational models is a social psychological theory that argues all human relationships are structured in one of four ways. Fiske (1991) first proposed that humans organize relationships according to what people have in common, ordered differences, additive imbalances, or ratios.¹⁰⁶ Labeling these respective approaches as Communal Sharing (CS), Authority Ranking (AR), Equality Matching (EM), and Market-Pricing (MP), Fiske argued that individuals use these models to generate social relationships. Therefore, "[t]hese implicit models are the psychological foundations of social relations and society."¹⁰⁷ Each model varies in distinct and recognizable ways.

Communal Sharing is the model built on what people have in common. In this model, individual identities blur in contrast to group membership and a common identity, marked by boundaries with outsiders. Fiske described the essence of Communal Sharing as "a relationship based on duties and sentiments generating kindness and generosity among people conceived to be of the same kind."¹⁰⁸ An example of a Communal Sharing relationship is the ideal of a parent and child and other forms of kinship. People are motivated by what they believe they share with others.

¹⁰⁶ I am grateful to Prof. Fiske's generous sharing of his perspective in person and via correspondence in adapting relational models theory to conservation.

¹⁰⁷ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 3.

¹⁰⁸ *Ibid.*, 14.

The Authority Ranking model structures interaction by reference to a common authority. As such, this model generates inequality: higher ranked people "control more people things, or land than others, and may be thought to possess more knowledge and mastery over events."¹⁰⁹ While higher ranked individuals have more control and prerogative, this model is nevertheless inclusive as the hierarchy encompasses its members. Fiske clarifies that this model is distinct from coercive power, as individuals accept their subordination as legitimate, rather than something imposed from outside. An example of an Authority Ranking relationship is that between a military commander and a subordinate. The key aspect of this model is inequality referenced by a common authority.

Equality Matching focuses on additive imbalances. As with Authority Ranking, individuals are separate, but in this model they are also equal. As such, this model features one-to-one balances of social activities such as shares, contributions and influence. The range of this matching includes turn taking, in-kind reciprocity, compensating in equal measure, even distribution into equal parts, and matched contributions of the same kind and quality. Individuals using the Equality Matching model "conceive of each other- or the rights, duties or actions involved in the relationship as distinct, but as balancing each other, aligning or matching, so they are interchangeable."¹¹⁰ An example of this model is the ideal relationship between spouses in a contemporary Western marriage. As with Communal Sharing and Authority

¹⁰⁹ Ibid.

¹¹⁰ Ibid., 15.

Ranking, Equality Matching sees a community as the basis for the relationship and individual behavior.

Market Pricing is unlike the other three models in that individuals exist as bounded discrete actors mediated through a market system and market determined values. In this model, individuals measure value through a universal metric, usually price or utility, enabling the comparison of "any two persons or associated commodities, qualitatively alike or unlike."¹¹¹ This leads to ratios and proportionality, often with explicit references to "potential substitutes, complements, and temporal conditions."¹¹² In contrast to the previous three model's emphasis on equal membership in the community, this model precisely enables unequal relationships among individuals without community. An example of Market Pricing is a commercial transaction between a vendor and a purchaser. However, Market Pricing models also occur in non-monetized decisions such as insurance actuarial tables and military decision-making calculations like fighter plane losses to air defenses, infantry kill ratios, and civilian causality acceptability rates.¹¹³ The essence of this model is the comparison of unlike things mediated by a universal metric, typically money.

Though simple in form, these models are fundamental, general, elementary, and universal.¹¹⁴ Individuals employ all four models across a range of contexts, including cultures, and the same individual may use multiple models simultaneously to relate to

¹¹¹ Ibid.

¹¹² Ibid.

¹¹³ Fiske, Alan P., "Relational Models Theory 2.0," 6. I am grateful to Jeffrey Bonheim for suggesting the examples of actuarial tables and civilian casualty rates.

¹¹⁴ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 25.

different things, as well as changing what model that individual uses over time. Building from this basic approach, relational models theory makes a bold claim: "the social universe may also be based on just four basic relational bonds. The diversity and complexity of human societies, institutions, and relationships results from diverse manifestations and combinations of the four models."¹¹⁵ ¹¹⁶

¹¹⁵ Fiske, Alan P., "Relational Models Theory 2.0," 8.

¹¹⁶ Fiske has evolved from describing these as *models* to the term *mod*, a "cognitively modular but modifiable mode of interaction" (Fiske 2004, p. 3). He then argues that people join *mods* with *preos*, a paradigm, prescript, prescription, proposition, or proscription, that conjoins with a mode to generate a specific cultural coordination device. This refinement of *models* into *mods* and *preos* explains both how similar things can mean different things in different societies and cultures. For this research, I retain the earlier term *model* for clarity at the cost of ontological precision.

Table 2.1: Relational Models

Relational Model	Structured According To	Characteristics	Examples
Communal Sharing	What people have in common	<ul style="list-style-type: none"> - Defined items held in common (e.g. blood, religion, employer, leader) - Dyad, group, or community - Boundaries - Undifferentiated individuals within group - Duties and responsibilities - Varying intensity 	<ul style="list-style-type: none"> - Parents and children - Kinship - Blood rituals - Alumni - Crop shares - Secret societies - Misfortune (e.g. AA) - Nationality
Authority Ranking	Transitive asymmetrical differences	<ul style="list-style-type: none"> - Linear ranking - Varied statuses, prerogatives, attention, and entitlements - Rank associated with extensions of self - Hierarchical inclusion - Tendency to assimilate - Legitimate rather than coercive 	<ul style="list-style-type: none"> - Bosses and workers - Age - Caste - Seniority - Achievement based on tests or contests - Possession of symbolic authority - Election or delegation
Equality Matching	Additive differences referencing an even balance	<ul style="list-style-type: none"> - Egalitarian peers - Distinct but co-equal - Differences as additive and subtractive - Culturally coordinated 	<ul style="list-style-type: none"> - Modern Western marriages - Turn taking - Coin-flip - Eye for eye - Baby-sitting coops - Matching contributions - Dinner invitations
Market Pricing	Ratios	<ul style="list-style-type: none"> - Markets determine value - Numbers - Cost-benefits - Proportionality - Relational equity - Utilitarian moral reasoning - Explicit substitution 	<ul style="list-style-type: none"> - Prices - Wages - Rents - Interests - Dividends - Efficiency Calculations

Source: Fiske 1991, Fiske 2004.

In the two decades since Fiske proposed relational models theory, research has validated this approach both theoretically and empirically. Haslam (2004) surveyed existing literature applying Fiske's model, finding extensive support for "the structural

postulates of the theory," in addition to broad resonance in larger literature. Among other topics, relational models theory has been applied to families in China (Chuang 2005), personal values (Biber, Hupfeld and Meier 2008) and gender dominance (Garcia, Posthuma, and Roehling 2009) in cross-national studies, individualism and collectivism across cultures (Vodosek 2009), secondary schools in Australia (Bagley 2010), knowledge sharing (Boer, Berends, and Baalen 2011), and business to business exchanges (Blois and Ryan 2012).¹¹⁷ Such studies lead Haslam to conclude "evidence for the structural adequacy of RMs theory is probably stronger than the evidence for any other relational taxonomy."¹¹⁸ Moreover, the models "have yet to be clearly outperformed in an empirical test and has predicted a variety of phenomena" both across psychological categories and across cultures.¹¹⁹ While continuing research in psychology now explores the causes of rational models, the significance of relational models to politics lies in their role in constructing value.

How people value an object depends on the relationship(s) one uses the object in. This is particularly relevant for relationships involving the transfer of valued objects. Individuals "use each of the four fundamental models to organize transfers of material or nonmaterial goods and services and to provide obligatory or ideal standards for such

¹¹⁷ Chuang, "Effects of Interaction Pattern on Family Harmony and Well-Being: Test of Interpersonal Theory, Relational-Models Theory, and Confucian Ethics"; Biber, Hupfeld, and Meier, "Personal Values and Relational Models"; García, Posthuma, and Roehling, "Comparing Preferences for Employing Males and Nationals across Countries"; Vodosek, "The Relationship between Relational Models and Individualism and Collectivism"; Bagley, "Students, Teachers and Alternative Assessment in Secondary School: Relational Models Theory (RMT) in the Field of Education."; Boer, Berends, and van Baalen, "Relational Models for Knowledge Sharing Behavior"; Blois and Ryan, "Interpreting the Nature of Business to Business Exchanges Through the Use of Fiske's Relational Models Theory."

¹¹⁸ Haslam, Nick, "Research on the Relational Models: An Overview," 51.

¹¹⁹ Ibid., 52.

transitions."¹²⁰ With Communal Sharing, objects cannot be transferred since they are common property to all. In Authority Ranking, higher persons have first rights and prerogative to take first actions towards objects, with less ranked individuals acting according to what is left to them. In Equality Matching, objects taken must be balanced with objects given to maintain an evenness of exchange, and thus objects taken are valued against other like or unlike objects. Finally, in Market Pricing, the value of objects is fungible, and socially constructed.¹²¹ Value derived from relational models is critical for trade-off reasoning.

Table 2.2: Relational Models and Associated Values

Relational Model	Value of Associated Object
Communal Sharing	Incomparable / Sacred
Authority Ranking	Incomparable / Sacred
Equality Matching	Incomparable / Sacred
Market Pricing	Fungible / Secular

Source: Fiske and Tetlock 1997

Tradeoff reasoning occurs when an individual compares one object to a different object. Fiske and Tetlock (1997) identified three types of tradeoffs.¹²² Two types of trade-offs involve relational model from a single domain. Comparing two objects using the Market Price model is a routine trade-off, involving some ratio of two fungible

¹²⁰ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 51.

¹²¹ Prus, "Price-Setting as Social Activity."

¹²² Fiske, Alan P. and Tetlock, Philip E., "Taboo Trade-Offs: Reactions to Transactions That Transgress the Spheres of Justice."

values. These routine trade-offs are central to many economic models and rational choice theories. However, comparisons involving non-Market Priced models are qualitatively distinct from routine trade-offs.

When individuals construct objects using non-Market Priced relational models, such objects attain incomparable value. In the context of relationships with a community, a hierarchy, or an equal partner, "people reject certain comparisons because they feel that seriously considering the relevant trade-offs would undercut their self-images and social identities as moral beings."¹²³ To explain this, Fiske and Tetlock draw on the psychological concept of constitutive incommensurability: "two values are constitutively incommensurable whenever people believe that entering one value into a trade-off calculus with the other subverts or undermines that value."¹²⁴ Simply put, monetizing aspects of some relationships such as one's friends, children, or country "disqualifies oneself from certain social roles to compare is to destroy. Merely making explicit the possibility of certain trade-offs weakens, corrupts, and degrades one's moral standing."¹²⁵ This deeply seated psychological aversion to comparing objects constructed with non-Market Priced models (Communal Sharing, Authority Ranking, and Equality Matching) endows objects in some settings with incomparable value. Echoing Durkheim's sacred-profane dialectic, Fiske and Tetlock refer to this incomparable value as sacred value, in contrast to fungible values as secular.¹²⁶

¹²³ Ibid., 256.

¹²⁴ Ibid.

¹²⁵ Ibid.

¹²⁶ Durkheim, *The Elementary Forms of Religious Life*, 56.

When an object attains sacred or incomparable value, two forms of trade-offs are possible. First, a tragic trade-off compares two objects, both constructed with a non-Market Priced model and therefore possessing sacred or incomparable value. Under such circumstances, the trade-off is "comprehensible and potentially resolvable, however painful the consequences Ambivalence may remain, and people may experience great regret about the relationship they have given up, but the bonds are comparable."¹²⁷ An example of a tragic trade-off is a difficult pregnancy where the parents must choose between the life of the mother and the life of the child, or a malnourished person exchanging a family heirloom for food. The incomparable value of these objects makes decision-making associated with them tragic. But when someone proposes comparing an incomparable or sacred object to a fungible or secular object, the trade-off becomes taboo.

A taboo trade-off involves the comparison of an object of incomparable, or sacred, value to an object of fungible, or secular, value. Tetlock et al (2000) identify such comparisons as being qualitatively distinct from other forms of trade-off reasoning.¹²⁸ According to Tetlock's Sacred Value Protection Model, an individual who constructs an object's value as sacred using a non-Market Priced relational model will respond to a

¹²⁷ Fiske, Alan P. and Tetlock, Philip E., "Taboo Trade-Offs: Reactions to Transactions That Transgress the Spheres of Justice," 266.

¹²⁸ Tetlock et al., "The Psychology of the Unthinkable."

proposed fungible comparison in two distinctive ways. First, that individual will express moral outrage:

a composite psychological state that subsumes cognitive reactions (harsh character attributes to those who endorse the proscribed thoughts and even to those who do not endorse, but do tolerate this way of thinking in others), affective reactions (anger and contempt for those who endorse the proscribed thoughts), and behavioral reactions (support for ostracizing and punishing deviant thinkers).¹²⁹

Second, an individual encountering a taboo tradeoff will engage in moral cleansing "that reaffirms core values and loyalties by acting in ways that shore up those aspects of the moral order that have been undercut by the transgression."¹³⁰ These two responses are the key psychological coping mechanisms of the Sacred Value Protection Model (SVPM).

Relational models theory and the SVPM can potentially explain a range of puzzling political behavior. As Goldgeier and Tetlock (2001) argue, the "relational model followed by a given institution or community will lead to different kinds of norm-following logics and thus different implementation rules."¹³¹ Noting that variance in trade-off reasoning is "psychologically and politically consequential," they conclude that if:

constructivism is to explain how actor's identities are mutually constituted with structures, then we need to know which relational scheme structures interaction at any given moment in time and how normative logics differ depending on which of the three is dominant.¹³²

¹²⁹ Ibid., 853–854.

¹³⁰ Ibid., 854.

¹³¹ Goldgeier and Tetlock, "Psychology and International Relations," 87.

¹³² Goldgeier and Tetlock, "Psychology and International Relations," 84 and 87.

Since its introduction, the SVPM has been used to explain variance in negotiations (Robbennolt, Darley and MacCoun 2004, Harinck and de Dreu 2004), responses to the 9/11 terrorist attacks (Skitka, Bauman and Mullen 2004) and more general acts of violence (van Zomeren and Lodewijkx 2005), protest participation (Lodewijkx, Kertsen and van Zomeren 2008), democratic rhetoric (Marietta 2008), motivations for collective action such as the Tiananmen Square protest (van Zomeren and Spears 2008) and marginalization (van Zomeren, Postmes, and Spears 2011), trade in cadavers (Anteby 2010), intergroup identity (Sachdeva and Medin 2009) and relationships (Tauber and Zomeren 2012), religious and pharmaceutical marketing (McGraw, Schwartz and Tetlock 2012), blame for financial crises (Inbar, Pizarro, and Cushman 2012), and attitudes to video games (Rothmund et al 2015).¹³³ The SVPM has even been linked to physical cleansing actions in a so-called *Lady MacBeth effect*.¹³⁴ Although it has not yet been specifically applied to conservation topics or wildlife policy outcomes, Daw et al (2015)

¹³³ Robbennolt, Darley, and MacCoun, "Symbolism and Incommensurability in Civil Sanctioning: Decision Makers as Goal Managers"; Harinck and De Dreu, "Negotiating Interests or Values and Reaching Integrative Agreements"; Skitka, Bauman, and Mullen, "Political Tolerance and Coming to Psychological Closure Following the September 11, 2001, Terrorist Attacks"; van Zomeren and Lodewijkx, "Motivated Responses to 'senseless' Violence"; Lodewijkx, Kersten, and van Zomeren, "Dual Pathways to Engage in 'Silent Marches' against Violence"; Marietta, "From My Cold, Dead Hands"; van Zomeren and Spears, "Metaphors of Protest"; van Zomeren, Postmes, and Spears, "The Return of Moral Motivation in Predicting Collective Action Against Collective Disadvantage"; Anteby, "Markets, Morals, and Practices of Trade: Jurisdictional Disputes in the U.S. Commerce in Cadavers"; Sachdeva and Medin, "Group Identity Salience in Sacred Value Based Cultural Conflict: An Examination of the Hindu-Muslim Identities in the Kashmir and Babri Mosque Issues"; Täuber and van Zomeren, "Refusing Intergroup Help from the Morally Superior"; Peter McGraw, Schwartz, and Tetlock, "From the Commercial to the Communal"; Inbar, Pizarro, and Cushman, "Benefiting From Misfortune"; Rothmund et al., "Public Concerns about Violent Video Games Are Moral Concerns-How Moral Threat Can Make Pacifists Susceptible to Scientific and Political Claims against Violent Video Games."

¹³⁴ Zhong and Liljenquist, "Washing Away Your Sins: Threatened Morality and Physical Cleansing"; Shakespeare, *MacBeth*, V.1.25.

identify taboo-tradeoffs as an overlooked challenge to environmental management.¹³⁵

Elsewhere, McCalla, Short and Brantingham (2013) argue that *sacred value networks* can explain variance in criminal behavior.¹³⁶ These works demonstrate relational models theory’s potential in explaining conservation outcomes.

Table 2.3: Forms of Trade-Off Reasoning

Relational Model	<i>Communal Sharing, Authority Ranking, or Equality Matching</i>	<i>Market Pricing</i>
<i>Communal Sharing, Authority Ranking, or Equality Matching</i>	Tragic Trade-Off	Taboo Trade-Off
<i>Market Pricing</i>	Taboo Trade-Off	Routine Trade-Off

A Social Theory of Poaching

This social theory of poaching explains the control of poaching by focusing on individuals and how they construct wildlife. This approach bridges literature from social psychology and political economy, utilizing relational insights from the former to explain divergent patterns of behavior in the latter. This theory begins by assuming that individual preferences are socially constructed and not innate. As social constructions, agents and structures mutually constitute such preferences through discursive practices.

The outcome of interest for this theory is the effective control of poaching in a social-ecological system. Poaching is the harvesting of a natural resource that violates a

¹³⁵ Daw et al., “Evaluating Taboo Trade-Offs in Ecosystems Services and Human Well-Being.”

¹³⁶ McCalla, Short, and Brantingham, “The Effects of Sacred Value Networks Within an Evolutionary, Adversarial Game.”

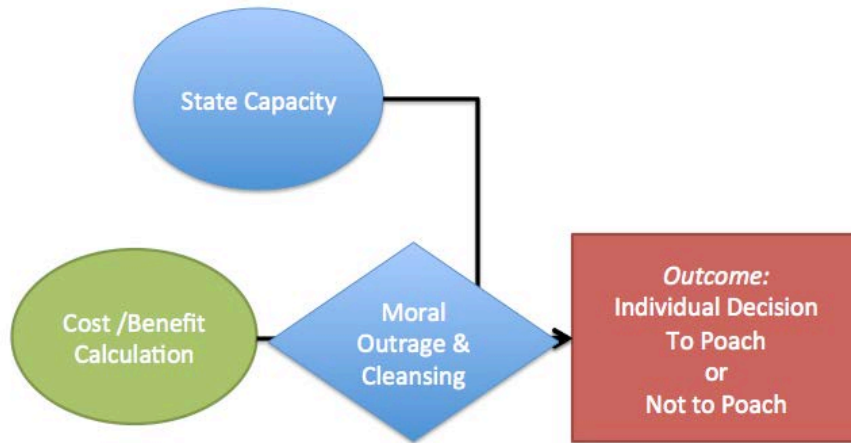
law, and it is effectively controlled when poaching incidents are sporadic and result in the punishment of poachers.

The explanatory variable for this theory is the relational model (mode of interaction) pertaining to a resource that predominates among actors in the social-ecological system. Possible values for this variable are Communal Sharing (CS), Authority Ranking (AR), Equality Matching (EM), or Market Pricing (MP).

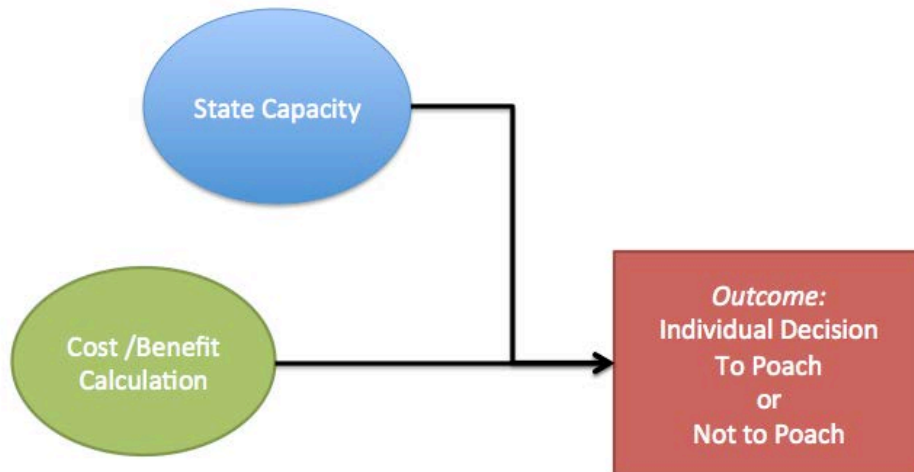
The causal mechanism of this theory varies with the predominant relational model. If a Communal Sharing, Authority Ranking, or Equality Matching relational model predominates among actors, then poaching is a taboo trade-off, causing moral outrage and moral cleansing behaviors that facilitate effective control of the poaching. However, if a Market Pricing relational model predominates among actors, then poaching is a routine trade trade-off. Actors will conduct cost-benefit calculations, and if the pay-off for poaching is sufficiently high, then poaching will not be controlled.

Figure 2.3: Causal Relationships

When Communal Sharing, Authority Ranking, or Equality Matching Predominates



When Market Pricing Predominates



Hypotheses

General Hypotheses

Given a social-ecological system with actors, resources, and lucrative price for the resource:

H1. If the dominant relational model is CS, AR, or EM, then poaching will be controlled.

H2. If the dominant relational model is MP, then poaching will not be controlled.

To control for alternative explanations involving state capacity and economic incentives, we can add two further hypotheses.

H3. If there is high coercive capacity, then poaching will be controlled.

H4. If there are strong economic incentives to not poach, then poaching will be controlled.

Specific Hypotheses

This theory can be applied to the puzzle of rhino poaching. The outcome variable, control of poaching, can be operationalized by whether rhino poaching within a country is sporadic or recurrent. When rhinos are poached, if the poaching is controlled, poachers are caught and punished. If the poaching is not controlled, poachers are either not caught or caught and not punished.

The explanatory variable, the relational model pertaining to rhinos, is operationalized in the discursive practices of individuals who live and work with and near rhino populations. If individuals living near rhinos construct rhinos in reference to a community, towards a shared authority, or in equality, then rhino poaching will elicit moral outrage and moral cleansing behaviors in the populations. Individuals will symbolically disassociate themselves from the poaching, and will seek to punish both poachers and persons who approve of the poaching. In contrast, if individuals living near rhinos construct rhinos according to a fungible ratio such as money, then poaching will be a routine trade-off. Individuals will see the poaching in economic terms, and moral outrage and cleansing will not be present. Moreover, under such circumstances, the lucrative payoffs of rhino poaching in the absence of moral outrage and moral cleansing may cause poaching practices to diffuse into the community as a learned behavior, contributing to an expansion of poaching activities.

Research Design

This study investigates the control of rhino poaching through the lens of new institutionalism, without privileging this lens' rational choice, sociological, or historical variants. My core hypothesis is when actors living near rhinos construct rhinos use a relational model other than Market Pricing, then rhino poaching will be effectively controlled due to moral outrage and moral cleansing mechanisms. Conversely, where actors construct rhinos using the Market Pricing relational models, then rhino poaching may not be controlled due to the absence of moral outrage and moral cleansing.

To test this general hypothesis, in the next chapter I survey the universe of all countries that had wild rhino populations prior to the start of the current crisis in rhino poaching, 2007. In order to assess what relational model predominates in each country, I first examine formal institutions pertaining to rhinos, specifically rules, as proxy variables for relational models. In doing so, I assume a congruence between rules-in-form and rules-in-use.¹³⁷ Based on this, I identify dominant relational models for each rhino range state, coupled with analysis of whether each state has effectively controlled or failed to control rhino poaching since 2007. This survey establishes a general pattern of relationship between institution configurations and the effective control of rhino poaching, enabling deeper analysis of key cases in Nepal, Swaziland, and South Africa.

In Chapter 4, I examine in detail the cases of Nepal, Swaziland and South Africa to investigate whether individuals in these countries actually use the relational models suggested by their formal institutional rules. Such formal rules suggest these three cases offer ideal type variances, with the Communal Sharing relational model in Nepal, the Authority Ranking relational model in Swaziland, and Market Pricing in South Africa.

In Chapter 5, I construct an analytic narrative of how Nepal effectively controlled rhino poaching. In the process, I investigate whether moral outrage and cleansing mechanisms offer superior explanatory ability for Nepal's outcome than state capacity or economic incentive based explanations.

In the end, I make no claim about the sufficiency or necessity of any particular relational model for effectively controlling poaching. It is theoretically possible that in a

¹³⁷ Mindful of Ostrom (2005)'s imperative to "dig under surface behavior to obtain a good understanding of what rules participants in a situation are following," this assumption is initially justified by the universal scale of this analysis. See Ostrom, Elinor, *Understanding Institutional Diversity*, 19.

system where the Market Price model dominates, some level of poaching control is possible if the resource population matches state capacity and economic incentives.¹³⁸ My claim is narrower: that in a country with weak police capacity and an immense economic incentive to poach, the control of poaching is nevertheless possible under certain social conditions. If true, dominant focuses on strengthening state capacity or economically incentivizing non-poaching may at best be ineffective. At worst, these may actually worsen the problem of poaching, particularly economic approaches.

Finally, I make no claims about what causes one relational model to dominate over another. In the past century, nearly every rhino range state has poached its rhino populations to the brink of extinction, including countries like Nepal and Swaziland where contemporary rhino poaching has been effectively controlled. This empirically suggests that relational models can change, and I welcome further research into this aspect of relational models theory. In this vein, I make no claim about the long-term resiliency of a system characterized by a non-Market Priced relational model in the current environment of fantastic prices for rhino horn. Psychological research suggests that moral outrage and cleansing mechanisms mute over time.¹³⁹ Similarly, governance studies suggest that instability, change, and problematic control become more likely when economic and sociological domains conflict.¹⁴⁰ The success of any one country is unlikely to resolve a global crisis driven by fantastically lucrative prices for rhino horn.

¹³⁸ In the case of Kenya's northern white rhino population, this level seems to be three rhinos permanently accompanied by armed guards. See Gitau, "Northern White Rhino: How Scientists Hope to Save Rare Breed from Extinction."

¹³⁹ McGraw and Tetlock, "Taboo Trade-Offs, Relational Framing, and the Acceptability of Exchanges."

¹⁴⁰ Avant, *The Market for Force: The Consequences of Privatizing Security*.

CHAPTER THREE: RELATIONAL MODELS AND THE CONTROL OF POACHING

This chapter investigates relationships between relational models and the control of poaching, and alternative explanations of state capacity and economic incentives. Using the Institutional Analysis and Design approach to explore formal institutional rules as proxy measures shows that where Communal Sharing and Authority Ranking models predominate, rhino poaching is controlled. Conversely, where Market Pricing relational models predominate, rhino poaching is not controlled. Furthermore, state capacity and economic incentives show no relationship with the control of poaching or its absence.

What is the relationship between relational models and the control of rhino poaching? In this chapter, I survey the universe of states with wild rhino populations to identify how relational models relate to the control of rhino poaching. Using institutional rules as proxy variables for relational models, I show that states where non-market price relational models predominate have successfully controlled rhino poaching. Conversely, states where a market-priced model predominates have not controlled poaching. I also demonstrate that alternative arguments regarding state capacity and economic incentives are insufficient for explaining this variance. I conclude by identifying cases for further investigation in order to identify causal mechanisms.

Relational models theory holds that individuals construct environments in one of four ways: using a market price model based on a ratio between things, or using one of three non-market priced models that reference a community, an authority, and an equality. From these models, objects attain fungible values in the market-priced model, or incomparable values in a non-market priced model. These models therefore lead to two distinct patterns of behavior when individuals engage in trade-off reasoning. When an individual uses a market priced model, he or she experiences a routine trade-off comparing two fungible values. However, when an individual uses a non-market priced model, he or she experiences a taboo trade-off, activating the sacred value protection model (SVPM) that leads to moral outrage and moral cleansing.

To assess what relational model most individuals use in a community with rhino, this research considers formal institutions as proxy variables. I operationalize these institutional measures by considering whether rhino exist on public or privately-held land, property rights associated with rhino, and formal penalties for mis-use of rhino as wildlife resources. Assuming that these formal rules reflect the rules in use within a country with wild rhino, this enables a classification of institutional arrangements within countries, and by extension, the predominant relational model.

Assumptions

This analysis makes four assumptions regarding the control of rhino poaching. First, I assume that publically reported data regarding incidents of rhino poaching is valid. This assumption is justified because of a rhino's size and significance. As endangered megafauna, rhino populations are routinely monitored at the level of individual animals. Moreover, a poached rhino results in a carcass weighing between 4,000 and 8,000 pounds, generating an easily detectable signature. Finally, while it is likely that some poaching incidents go unreported or undiscovered, such incidents are random and not systematic, unlikely to significantly alter broad assessment and inferences.

Second, I assume that formal rules represent the rules-in-use individuals use to make decisions.¹⁴¹ The macro-level analysis of this chapter justifies this simplifying assumption, as does my initial purpose of exploring correlation between relational models and the control of poaching. However, any causal claims will require closer analysis and confirmation of this assumption.

Third, I assume institutions guiding individual decision-making are static and distinguishable from the individuals from actors. I justify this assumption by limiting the time frame of this institutional analysis to 2006, just before the outbreak of the current rhino crisis. In reality, these institutions are dynamically responding to individual decisions, and thus co-constituted and changing over time. However, the short time frame of interest to this research justifies treating them as exogenous.

¹⁴¹ Ostrom, Elinor, *Understanding Institutional Diversity*, 19 and 138.

Similarly, I make a fourth assumption that an exogenous shock occurred in the global market for rhino horn sometime around 2007, and was responsible for the subsequent 100-fold increase in the price of rhino horn. After an initial period of intense poaching beginning in the 1960s, rhino “poaching essentially came to a halt in the early 1990s when concerted international action . . . resulted in decisive political moves to end national rhino horn consumption” that left “all major markets dormant.”¹⁴² For the next two decades, the price of rhino horn remained stable at approximately \$800 to 1,500 USD per kilogram.¹⁴³ By 2008, this price rapidly increased to approximately \$100,000 USD per kilogram.¹⁴⁴ Extant research attributes this increase to an economic bubble manipulated by criminal syndicates who control the illicit global market, but the cause of that lies beyond the scope of this research.¹⁴⁵

These assumptions regarding the validity of public records regarding rhino poaching, the similarity of rules-in-form and rules-in-use, the distinguishability of structures from agents, and the exogenous shock to the global rhino horn market enable an examination of the relationship between the control of poaching and predominate relational models in rhino range states.

¹⁴² Milliken, “Illegal Trade in Ivory and Rhino Horn: An Assessment to Improve Law Enforcement Under the Wildlife Traps Project,” 14.

¹⁴³ Milliken and Shaw, “The South Africa-Viet Nam Rhino Horn Trade Nexus: A Deadly Combination of Institutional Lapses, Corrupt Wildlife Industry Professionals and Asian Crime Syndicates,” 85; Vigne and Martin, “Price for Rhino Horn Increases in Yemen.”

¹⁴⁴ Guilford, “Why Does a Rhino Horn Cost \$300,000? Because Vietnam Thinks It Cures Cancer and Hangovers.” Researchers and authorities are reluctant to publicize data on the price of rhino horn (see Milliken and Shaw 2012, p. 85). However, in my 2015 fieldwork, I repeatedly heard experts identify the price at \$100,000 USD per kilogram.

¹⁴⁵ Milliken and Shaw, “The South Africa-Viet Nam Rhino Horn Trade Nexus: A Deadly Combination of Institutional Lapses, Corrupt Wildlife Industry Professionals and Asian Crime Syndicates,” 85.

Outcome Variable: The Control of Rhino Poaching

The outcome variable for this analysis is the control of rhino poaching. This analysis utilizes Muth and Bowe (1998)'s definition of poaching as "any act that intentionally contravenes the laws and regulations established to protect wild, renewable resources."¹⁴⁶ This includes both illegal harvesting of resources and actions like selling, purchasing, transporting, possessing, and using resources that contravenes a law. Thus poaching requires intentionality, excluding unintended violations of resource laws like a "hunter who mistakenly shoots a hen pheasant in a rooster only area."¹⁴⁷ From this, rhino poaching is the illegal harvesting of resources from a rhino, particularly rhino horn, and deliberate actions associated with that harvesting such as purchases and sales, transportation, possession, and use of rhino horn.

Poaching is controlled when incidents of poaching are sporadic, punished, and do not threaten the survival of a population. The control of poaching is a form of social control, an organized response to deviant acts.¹⁴⁸ This approach follows the classical conceptualization of control, including both external influences and individual norm internalization.¹⁴⁹

This conceptual definition of social control guides operationalizing the control of poaching. As a form of criminal activity, some level of poaching will always be possible.

¹⁴⁶ Muth and Bowe, "Illegal Harvest of Renewable Natural Resources in North America: Toward a Typology of the Motivations for Poaching," 11.

¹⁴⁷ Ibid., 11–12.

¹⁴⁸ Cohen, *Visions of Social Control*; Innes, *Understanding Social Control*.

¹⁴⁹ Janowitz, "Sociological Theory and Social Control"; Moore, *Order and Change*, 171–219.

However, if poaching is controlled, it must only occur in isolated, irregular incidents. If poaching occurs routinely, it cannot be considered deviant, and therefore falls outside the concept of social control. When poaching does occur, poachers should face some form of accountability. Otherwise, the element of social control pertaining to an organized response is not present. Finally, such sporadic acts should not threaten the survival of the resource population. If any of these elements are missing, the poaching is not controlled.

The control of poaching is a categorical dichotomous variable, either *controlled* or *not controlled*. The unit of analysis is a country during a calendar year. Poaching is controlled when during that year, incidents of poaching are sporadic, punished, and do not threaten the survival of a population. As a threshold for measurement, this analysis additionally requires that some poaching occur in order for it to be controlled. In order to determine when individuals choose not to poach, it is necessary to rule out the possibility that poaching simply did not occur, and that individuals never confronted a decision of whether to poach or not poach. Put another way, the response aspect of social control requires that some action occur necessitating a response. Therefore, the complete absence of poaching in a case is not necessarily evidence that poaching has been controlled, and cases where no poaching occurred whatsoever will not be considered in this research.

Explanatory Variable: Relational Models

The explanatory variable for this analysis is the predominate relational model used by individuals in resource system with rhino. A relational model is a mode of

relationship that structures social action, thought, and motivation.¹⁵⁰ From relational models theory, there are four potential modes: Communal Sharing (CS), Authority Ranking (AR), Equality Matching (EM), and Market Pricing (MP). The absence of a relationship can further be considered as a fifth possible *null* mode. These relational models are fundamental, innate, and universal.¹⁵¹

A relational model predominates when a preponderance of individuals within a group utilize the same relational model in a given context. In this research, a relational model predominates when a greater number of people living in a community with rhino share one relational model than do those who do not.¹⁵²

Predominant relational model is a categorical nominal variable with five potential values: Communal Sharing (CS), Authority Ranking (AR), Equality Matching (EM), Market Pricing (MP), and Null (NR).¹⁵³¹⁵⁴ The unit of analysis is a human population living in a state with wild rhino.

A predominate Communal Sharing model occurs when a preponderance of individuals living in a community with wild rhino relate to rhino according to what they have in common. This means that individuals treat rhino as common to the community,

¹⁵⁰ Fiske, Alan P., "Relational Models Theory 2.0," 3.

¹⁵¹ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*; Fiske, Alan P., "Relational Models Theory 2.0."

¹⁵² This research will not identify how much individuals within a group constitutes preponderance.

¹⁵³ For discussion of the *Null* or *Asocial* relationship, see Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 19.

¹⁵⁴ Both Fiske (2004) and Haslam (2004) identify a need for further research into the origins and interconnections of relational models, suggesting a theoretical potential for this variable to be ordinal and not nominal. However, I assume it to be nominal based on current ontology.

and identify other community members in part by a shared collective responsibility towards rhino.

A predominate Authority Ranking model occurs when a preponderance of individuals living in a community with wild rhino relate to rhino according to a transitive asymmetrical differences. This means that individuals associate rhino with a common hierarchical authority, where one's position within the hierarchy determines one's responsibilities, privileges, and choices associated with rhino conservation.

A predominate Equality Matching model occurs when a preponderance of individuals living in a community with wild rhino relate to rhino according to an additive imbalance. This means that individuals associate rhino with some relationship of balanced equality, involving concepts such as in-kind reciprocity for interacting with rhino, or matched contributions of the same kind and quantity. This relational model is commonly seen in relationships such as a modern Western marriage or voters in a pluralistic democracy. However, it is difficult to operationalize in the context of conservation, so this discussion will omit further reference to it.

A predominate Market Pricing model occurs when a preponderance of individuals living in a community with wild rhino relate to rhino according to a ratio. In this situation, individuals associate rhino with a single universal utility metric, typically money. In essence, rhino become commodities, and people evaluate rhino through ratios of comparison to other commodities, including money, time, utility, or substitutes.

Finally, a predominate Null model occurs when a preponderance of individuals living in a community with wild rhino have no relationship to rhino. In these situations,

individuals act without regard to any social relationship, and take no account of rhino in their lives whatsoever.

General Hypotheses

- If prior to 2006, most people within a country construct rhino using a Communal Sharing or Authority Ranking relational model, then poaching will be controlled following the shock to global rhino horn markets.
- If prior to 2006, most people within a country construct rhino using a Market Priced relational model, then poaching will not be controlled following the shock to global rhino horn markets.

Institutional Rules as Proxy Measures

To gauge the predominant relational model, this research considers institutional rules as proxy variables. Ostrom's Institutional Analysis and Development (IAD) framework established the critical role of institutions in understanding collective action regarding resources.¹⁵⁵ This use of institutional rules as proxy variables follows Ostrom's approach for classifying institutions that structure individual decision-making.¹⁵⁶

In the context of rhino conservation, variance in relational models appears in three forms of institutional rules. First, boundary rules determine the type of land where rhino

¹⁵⁵ Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*; Ostrom, Elinor, *Understanding Institutional Diversity*.

¹⁵⁶ Ostrom, Elinor and Crawford, "Classifying Rules." Ostrom and Crawford identify seven institutional rules that structure an individual decision in an action situation like poaching: rules regarding boundaries, positions, choices, information, aggregation, pay-off, and scope. For a detailed summary of Ostrom and Crawford's grammar of institutions, see Appendix A.

exist. Rhino can exist on land publically owned land or land held by an authority figure, suggesting a Communal Sharing or Authority Ranking relational model respectively.

Alternatively, rhino can exist on privately held land, suggesting a Market Pricing relational model. This variable is operationalized by whether rhino live on public or private lands. If rules allow rhino to exist on private lands, then the entire system allows for private possession of rhino, even if some rhino continue to live on public land.

Second, choice rules determine property rights regarding rhino, ranging from exclusive public ownership to complete private ownership. Property rights held exclusively by a public actor indicate a Communal Sharing relational model, while property rights that vary with one's position in a hierarchy suggest an Authority Ranking relational model. Private property rights, such as the right of an individual to buy or sell a rhino, indicate a Market Pricing relational model. This variable is operationalized by whether private ownership of rhino and rhino parts is legally prohibited or authorized. Conservatorship rights or landowner privilege, where the state retains theoretical legal ownership but private parties are permitted to purchase rights to economically profit from rhino (to include hunting them), are a form of private property rights and indicate a Market Priced relational model.

Third, pay-off rules determine the penalties for misconduct involving rhino. Severe penalties, such as shoot-to-kill authority conferred on rangers, mandatory imprisonment, or asset forfeiture, ostracize offenders in sweeping responses to transgressions. These are consistent with Communal Sharing or Authority Ranking

relational models.¹⁵⁷ Penalties that vary with price, such as fines-in-lieu of imprisonment or minor fines, indicate Market Pricing relational models. This variable is operationalized by the legal penalty for rhino poaching.

Table 3.1: Proxy Variables for Relational Models

Proxy Variable	Communal Sharing or Authority Ranking Relational Model	Market Pricing Relational Model
Boundary Rules: Where do rhino live?	Rhino live on public lands.	Rhino live on private lands.
Choice Rules: What property rights exist regarding rhino?	Private ownership of rhino prohibited.	<ul style="list-style-type: none"> • Private ownership of rhino permitted • Rhino and/or hunting rights can be bought and sold • Includes conservatorship and landowners privilege
Payoff Rules: What is the penalty for misuse of a rhino?	<ul style="list-style-type: none"> • Severe penalties • No jail in lieu of prison • Asset forfeiture • Shoot to kill 	<ul style="list-style-type: none"> • Light penalties • Fines in lieu of prison • Minor fines

¹⁵⁷ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 130–32.

Causal Mechanisms

This research argues that moral outrage and moral cleansing mechanisms explain the hypothesized relationship between relational models and the control of rhino poaching. Moral outrage:

has cognitive, affective, and behavioral components: lower thresholds for making harsh dispositional attributions to norm violators; anger, contempt, and even disgust toward violators; and enthusiastic support for both norm enforcement (punishing violators) and metanorm enforcement (punishing those who shirk the burdensome chore of punishing deviants).¹⁵⁸

Moral cleansing holds that every individual deciding whether to poach or not poach “will engage in symbolic acts of moral cleansing designed to reaffirm their solidarity with the moral community,” even if they merely contemplate the decision of poaching.¹⁵⁹

Applied to rhino poaching decisions, this theory predicts that when individuals living with rhino construct the rhino using a non-Market Pricing relational model, they will respond to rhino poaching with harsh dispositional attributions to rhino poachers, anger and disgust toward rhino poachers, and support for both punishing rhino poachers and punishing those who do not punish rhino poachers. Moreover, such individuals will engage in symbolic acts to reaffirm their solidarity with the community or authority associated with rhino. These moral outrage and cleansing mechanisms will be absent in cases where individuals construct rhino using the Market Pricing relational model.

This chapter’s focus on formal institutional rules will not identify whether such mechanisms are present in the universe of rhino range states. Rather, detailed case studies

¹⁵⁸ Tetlock et al., “The Psychology of the Unthinkable,” 855.

¹⁵⁹ Ibid.

in subsequent chapters will investigate this application of the sacred value protection model.

Alternative Arguments: Coercive State Capacity and Economic Incentives

This chapter also considers the two primary alternative arguments for the control of poaching through coercive state capacity and economic incentives. The state capacity argument explains that poaching is controlled when a coercive actor, typically the police, has sufficient capacity to deter criminal activity such as poaching. Skocpol (1985) argued that a state's deployment of financial resources is the best single measure of state capacity.¹⁶⁰ While there are many ways to measure state capacity, the state's total financial resources best capture the full potential of the state to act. For instance, a state may decide to lower taxes, and thereby diminishing its actual revenue. However, such a state could equally decide to raise taxes and increase that revenue. Thus by considering the amount of financial resources a state possesses, one gets a fuller measure of what the state is capable of.

I operationalize this state capacity with a continuous variable: the revenue of a state in a given year. This value of this variable will expressed in US dollars in 2005. This variable will enable the consideration of state capacity as an alternative argument to a social theory of the control of poaching.

The economic incentive argument explains that poaching is controlled when individuals have sufficient economic incentives not to poach. Given that rhino horn

¹⁶⁰ Skocpol, "Bringing the State Back In: Strategies of Analysis in Current Research," 17.

currently sells for approximately \$100,000 USD per kilogram on illicit markets, it is difficult to conceive of a non-poaching use of the rhino that would yield similar profits.¹⁶¹ However, one could argue that if non-poaching uses of rhino generates sufficient economic income to meet some level of need, then this could explain why individuals choose not to poach. To consider this alternative argument, I will consider the economic impact of tourism, measured by the number of international tourists per year and the amount of money generated by tourism per year. This will enable me to consider the alternative argument of economic incentives to control poaching.

Data

This analysis predominately utilizes archival data from the Rhino Resource Center, a non-governmental knowledge center that works with the International Union for the Conservation of Nature (IUCN) to collect, preserve, and catalogue data on all species of rhinoceros.¹⁶² I obtained data regarding the control of poaching from reports submitted to the Conferences of Parties to the Convention on the International Trade in Endangered Species, as well as news articles for more recent poaching events. To analyze institutional rules, I utilized archived reports from both governmental, intergovernmental and nongovernmental organizations describing rhino conservation programs. To analyze state capacity and ecotourism, I utilize data from the World Bank's World Development

¹⁶¹ Messer (2010)'s economic analysis of poaching makes a similar conclusion that given current opportunity costs, most poachers have little to lose relatively to the profit opportunities of commercial poaching. Messer, "Protecting Endangered Species."

¹⁶² Rookmaaker, "Rhino Resource Center."

Indicators for 2005.¹⁶³ In order to gauge conditions prior to the 2007 shock in rhino horn price, I utilize data on institutional rules, state capacity, and tourism from 2005.

Results and Discussion

Institutional structures indicative of non-market priced relational models strongly correlate with the successful control of poaching. All five states that controlled rhino poaching had institutional structures consistent with a communal sharing or authority ranking relational model. Conversely, all nine states that failed to control rhino poaching had institutional structures consistent with market pricing. No pattern was observed between levels of state capacity and the control of poaching, while states with the strongest tourism sectors were the least successful at controlling poaching.

Control of Poaching

In 2005, seventeen states had confirmed populations of wild rhino.¹⁶⁴ In the decade since, poaching occurred but has been effectively controlled in five countries: Botswana, Nepal, Swaziland, Tanzania, and Zambia. At the same time, rhino have been poached to extirpation in four countries (the Democratic Republic of Congo, Malaysia, Mozambique, and Vietnam), with uncontrolled poaching in five remaining countries: India, Kenya, Namibia, South Africa, and Zimbabwe. Three countries are excluded from this analysis either because no poaching occurred there since the 2007 crisis (Indonesia

¹⁶³ The World Bank, “World Development Indicators.”

¹⁶⁴ Burma, Pakistan, and Rwanda may have individual rhino in the wild, but these are not reliably documented and are at best the last survivors of extirpated populations.

and Uganda) or because rhino were killed through snares, thus precluding an assessment of intentionality (Malawi).¹⁶⁵ While it is possible that individuals in these countries choose not to poach in this time period, it is also possible that individuals never entertained the decision to poach, and therefore these cases are excluded from my exploration of why individuals choose not to poach rhino.

¹⁶⁵ Interestingly, both Indonesia and Uganda may exhibit Null relational models. In Indonesia, rhino only exist in remote uninhabited areas and rarely observed even by conservationists, suggesting a geographic cause for the complete absence of poaching. Uganda only began reintroducing wild rhino in 2005, precluding any assessment of its institutions prior to 2005.

Table 3.2: Rhino Poached Per Country, 2006- 2015

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Botswana										
DR Congo										
India		0	1	7		5	6	1	5	0
Kenya				1	2	5	0	9	5	1
Malaysia			0	0	0					
Mozambique				5	6	0	2			
Namibia									4	0
Nepal	0	4		2	1					
South Africa		3	3	22	30	48	68	004	215	175
Swaziland										
Tanzania										
Vietnam										
Zambia										
Zimbabwe	1	8	64	9	2	5	3		2	0

Legend: E= White indicates poaching controlled; Red indicates not controlled, E indicates Extirpation.

Table 1.1: Control of Poaching 2006-2015

Poaching Controlled (n=5)	Poaching Not Controlled (n=9)
<ul style="list-style-type: none"> • Botswana • Nepal • Swaziland • Tanzania • Zambia 	<ul style="list-style-type: none"> • Democratic Republic of Congo (extirpated 2010) • India • Kenya • Malaysia (extirpated 2011) • Mozambique (extirpated 2013) • Namibia • South Africa • Vietnam (extirpated 2010) • Zimbabwe

Excluded from analysis: Indonesia, Malawi, and Uganda.

Relational Model

Relational model is highly correlated with the control of poaching. All five states that controlled rhino poaching had institutional structures indicative of a non-market priced relational model, either communal sharing (Nepal, Tanzania and Zambia) or authority ranking (Botswana and Swaziland). Institutions within these states show marked similarities in some respects. Each kept rhino populations in publically protected areas, often guarded by a strong public actor such as the army. Choice rules regarding restricted private property rights, use and consumption, including bans on rhino hunting. Payoff rules carried severe penalties for misuse, including mandatory imprisonment for poaching. When fines were specified, they often included both forfeiture of resources plus sliding penalties such as a fine worth ten times the exchanged value of the poached animal. In Botswana and Zimbabwe, a single charismatic actor dominated the

conservation program and the broader societal context, indicative of an authority ranking structure.

The nine states that did not control rhino poaching all had institutional structures indicative of a market pricing relational model. Boundary and position rules allowed significant involvement of private actors, either through outright ownership of rhino (as in South Africa) or through conservatorship granted to private landowners (Kenya, Namibia, Zimbabwe). In most cases, the majority of the country's rhino populations existed on privately held protected areas. Choice rules afforded significant private property rights, either through ownership or through landholder privileges. Pay-off rules had light penalties for misuse, often allowing bail and fines in lieu of imprisonment.

Table 3.3: Relational Models and the Control of Poaching

	Poaching Controlled	Poaching Not Controlled
Communal Sharing Relational Model	<ul style="list-style-type: none"> • Nepal • Tanzania • Zambia 	None
Authority Ranking Relational Model	<ul style="list-style-type: none"> • Botswana • Swaziland 	None
Market Pricing Relational Model	None	<ul style="list-style-type: none"> • DR Congo (extirpation) • India • Kenya • Malaysia (extirpation) • Mozambique (extirpation) • Namibia • South Africa • Vietnam (extirpation) • Zimbabwe

State Capacity and Tourism

State capacity and ecotourism shows little to no correlation with the control of poaching. Some states with low state capacity controlled poaching (Nepal, Swaziland, and Zambia), while others did not (DRC, Mozambique, and Namibia). Interestingly, states with high coercive capacity such as India, South Africa, Malaysia, and Kenya did not control poaching, although Botswana did. Similarly, states with the highest tourism rates were the least successful in controlling poaching: of the four states with the highest numbers of tourists and highest revenues from tourism, two had the highest numbers of rhino poached anywhere and two experienced extirpation. Some states with lower amounts of tourists and tourist revenues controlled poaching (Nepal and Swaziland), while others did not (DRC and Mozambique).

Table 1.2: State Capacity, Measured by Government Revenue and GDP in 2005

	Poaching Controlled	Poaching Not Controlled
High State Capacity (revenue > US\$ 20 billion)	None	<ul style="list-style-type: none"> • India • South Africa • Malaysia (extirpation) <ul style="list-style-type: none"> • Vietnam (extirpation)
Low State Capacity (revenue < US\$ 5 billion)	<ul style="list-style-type: none"> • Botswana • Tanzania • Nepal • Zambia • Swaziland 	<ul style="list-style-type: none"> • Kenya • Namibia • Zimbabwe • Mozambique (extirpation) <ul style="list-style-type: none"> • DR Congo (extirpation)

Table 1.3: Economic Incentives, Measured by Tourism Visitors in 2005

	Poaching Controlled	Poaching Not Controlled
High Economic Incentives (Tourism > 1,000,000 visitors)	<ul style="list-style-type: none"> • Botswana 	<ul style="list-style-type: none"> • India • South Africa • Malaysia (extirpation) <ul style="list-style-type: none"> • Vietnam (extirpation) <ul style="list-style-type: none"> • Kenya
Low Economic Incentives (Tourism < 1,000,000 visitors)	<ul style="list-style-type: none"> • Tanzania • Nepal • Zambia • Swaziland 	<ul style="list-style-type: none"> • Namibia • Zimbabwe • Mozambique (extirpation) <ul style="list-style-type: none"> • DR Congo (extirpation)

Chart 1.4: Economic Incentives, Measured by Tourism Receipts in 2005

	Poaching Controlled	Poaching Not Controlled
High Economic Incentives (Receipts > US\$ 400 mil.)	<ul style="list-style-type: none"> • Botswana • Tanzania • Zambia 	<ul style="list-style-type: none"> • Malaysia (extirpation) • South Africa • India • Vietnam (extirpation) • Kenya
Low Economic Incentives (Receipts < US\$ 400 mil.)	<ul style="list-style-type: none"> • Nepal • Swaziland 	<ul style="list-style-type: none"> • Namibia (extirpation) • Mozambique • Zimbabwe • DR Congo (extirpation)

Conclusion

This chapter has surveyed the universe of states with wild rhino populations prior to the current crisis in rhino poaching. Of these, five states successfully controlled poaching. All five states that successfully controlled poached featured institutional rules indicating Communal Sharing or Authority Ranking relational models, including strong public sector conservation, bans on private property rights associated with rhino, and severe penalties for rhino poaching.

During the same time period, nine states failed to control rhino poaching, including four states whose populations were extirpated. All nine of these states featured institutional rules indicative of Market Pricing relational models, operationalized by the privatization of rhino conservation and light and/or fungible penalties for rhino poaching.

Admittedly, this analysis makes a significant assumption that may not be valid: formal institutional rules reflect the rules in use by individuals living near rhino. Many of the states in question possess weak institutions, which may have questionable influence

on actors within them. At the same time, potential confirmation bias during my qualitative assessment could affect the reliability of my analysis of relational models at the national level. I mitigated this potential bias by operationalizing the models through formal rules regarding legal boundaries, choices, and penalties, consistent with Ostrom's well-established methodology for institutional analysis and development.

I also employed well-established and objective measures to evaluate alternative hypotheses. State capacity and tourism provided no clear correlation with the control of poaching, except that states with the highest capacity and levels of tourism were the least effective in controlling poaching.

These results provide tentative support for relational models theory and the sacred value protection model to explain the control of poaching. They further suggest that state- or market-centric theories of conservation are insufficient for explaining the control of poaching, and may actually work against achieving such control.

To look beyond these correlations and investigate causal mechanisms, I next turn to detailed case studies of Nepal, Swaziland, and South Africa. These cases represent ideal types of all three relational models, while also exemplifying variance in state capacity and ecotourism. Nepal and Swaziland have institutional structures indicative of predominately Communal Sharing and Authority Ranking relational models respectively; they also have comparatively weak state capacity and levels of tourism. In contrast, South African rhino conservation exemplifies a predominately Market Priced relational model. It is also one of the strongest and wealthiest of all rhino range states. These cases will

enable a closer look at why poor, weak countries have successfully controlled rhino poaching.

CHAPTER FOUR: MANIFESTATIONS OF RELATIONAL MODELS

This chapter explores whether individuals in countries with rhinos actually manifest different relational models relative to rhino conservation, as suggested by analysis of institutional rules in Chapter Three. After reviewing literature that describes how relational models manifest in individual behavior, I present and justify a research design to appraise relational models among actors in rhino conservation in three countries: Nepal, Swaziland, and South Africa. I find that in each case, a majority of respondents manifested a similar relational model: Communal Sharing in Nepal, Authority Ranking in Swaziland, and Market Pricing in South Africa. I detail observations of these manifestations, then conclude by addressing this research's limitations and implications.

In countries with wild rhinos, do individuals actually think about rhinos in different ways? More technically, do individuals use distinct psychological schemata when thinking about rhinos, as relational models theory would predict? Does the social construction of rhinos vary?

In Chapter Two, I used relational models theory and the sacred value protection model to show how this variance might occur, and how such variance could explain a country's ability to control rhino poaching. In Chapter Three, I used institutional rules as proxy measures to show that non-Market Pricing relational models correlate with the effective control of rhino poaching, and Market Pricing with a lack of control of

poaching. This analysis hinged on an assumption that rules-in-form reflect rules-in-use, and that formal rules correspond to the actual behavior in a rhino conservation setting. In this chapter, I delve deeper into three cases in order to test these assumptions and investigate actual manifestations of relational models.¹⁶⁶ Exploring the cases of Nepal, Swaziland, and South Africa, I demonstrate that Communal Sharing, Authority Ranking, and Market Pricing relational models do manifest empirically in each case. Moreover, within each case, a vast majority of conservationists employ the same relational model, thus validating assumptions made in Chapter Three's institutional analysis and strengthening the argument for a social theory of conservation.

This chapter proceeds as follows. First, I review literature on manifestations of relational models to establish observable implications of each model. Next, I present and justify my research design, including assumptions, methods, and case selection. I then present my findings, demonstrating that each in case, a majority of conservationists manifest the same relational model. In Nepal, most actors utilize a Communal Sharing model, whereas in Swaziland, most actors utilize an Authority Ranking model and in South Africa, a Market Pricing model. I conclude by discussing my findings, their limitations, and implications.

¹⁶⁶ In seeking to test assumptions, I follow Robert H. Bates et al., *Analytic Narratives* (Princeton: Princeton University Press, 1998), 14. This is contrary to the position argued by Milton Friedman, *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953).

Manifestations of Relational Models

Relational models theory posits that people use four fundamental and innate relational structures to coordinate social activity.¹⁶⁷ The four models are Communal Sharing, Authority Ranking, Equality Matching, and Market Pricing. These models are psychological schemata that manifest across social domains, appearing in things, choices, orientations, and judgments. In the following section, I summarize Fiske (1991)'s catalog of key distinguishing features of Communal Sharing, Authority Ranking, and Market Pricing.¹⁶⁸ I first discuss the general manifestation of the relational model, then specify observable implications of that model in the specific context of rhino conservation. As in Chapter Three, I omit discussion of Equality Matching as this model rarely appears in the empirical context of rhino conservation.¹⁶⁹

Communal Sharing: Relations Based on What People Share

The Communal Sharing model occurs when individuals structure interactions by what they share. Resources are held in common without individual shares or portions. Individuals contribute what they have in fulfillment of collective responsibility. Objects hold metonymic significance to other people of shared identity, including natal

¹⁶⁷ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations* (New York: The Free Press, 1991); Fiske, Alan P., "Relational Models Theory 2.0," in *Relational Models Theory: A Contemporary Overview*, ed. Haslam, Nick (Mahwah, NJ: Lawrence Erlbaum Associates, 2004), 3–26.

¹⁶⁸ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 41–230.

¹⁶⁹ This empirically derived focus on Communal Sharing, Authority Ranking, and Market Pricing roughly corresponds to Wicks' three spheres of markets, governments, and communities. See Rick Wicks, "A Model of Dynamic Balance Among the Three Spheres of Society – Markets, Governments, and Communities: Applied to Understanding the Relative Importance of Social Capital and Social Goods," *International Journal of Social Economics* 36, no. 5 (April 10, 2009): 535–65, doi:10.1108/03068290910954022.

orientations towards land. Time is understood in long form, emphasizing tradition, eternity, and perpetuity. Decision making features unity and consensus, and social influences prize conformity and mutuality. Groups express kinship and common identity, privileging close relationships and intimacy. Moral judgments accent altruism and protection, including traditional legitimation. Misfortune is interpreted as either stigmatizing or as solidarity, and conflict orients against out groups and equivalent others. These various manifestations all emphasize the commonality central to the Communal Sharing relational model.

In the context of rhino conservation, a Communal Sharing relational model should construct rhinos in reference to a community. Rhinos will be a common resource and a collective responsibility of all members of the community. Rhinos will hold metonymic significance to community members, with sacred status linking individuals to others in the community. Rhino habitat will have natal associations, perpetuating traditions rooted in history. Individuals will signal social conformity by outward modeling of support for rhino conservation, linked to a common sense of kinship. Individuals will likewise motivate action in rhino conservation by associations with close and enduring relationships, such as children and parents. Rhinos will have traditional legitimation, and conservation actions will feature altruism and generosity. Misfortune associated with rhinos will be linked either to outsiders and outgroups, or connected to solidarity with fellow community members.

Authority Ranking: Relationships Based on Authoritative Hierarchy

The Authority Ranking relational model manifests in similar ways to Communal Sharing, only instead of referencing relationships to a commonality, it is to a shared hierarchy. As with Communal Sharing, objects associated with this model have incomparable or sacred value.

In the domain of reciprocal exchange, superiors take first and inferiors second, while superiors retain a pastoral responsibility to provide for inferiors and their protection. In distributional aspects, those with higher rank get more, and lesser ranks get less. Superiors likewise contribute more, often in noblesse oblige. Work allocations privilege superiors, who control and direct more demanding work by subordinates. Superiors endow objects with prestige and emblems of rank, limiting the ability of inferiors to associate with objects. Superiors dominate land orientation. Time is likewise structured according to rank, with temporal priority given to superiors. Decision making reflects authoritative choices, transmitted through the hierarchy. Social obedience to authority is expected and signaled. Groups organize around charismatic leaders, and social identity is defined by rank and relationship to the hierarchy. Motivation rests on power, but goes beyond mere coercion.¹⁷⁰ The moral judgments of superiors are deemed legitimate and the source of heteronomy. Misfortune is construed as a result of breaks with a hierarchy, and such breaks elicit aggression and conflict. The Authority Ranking

¹⁷⁰ Fiske differentiates between purely coercive power in response to force or the threat of harm, and power exercised through Authority Ranking. Subordinates accept the latter as legitimate. See Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 14. Gramsci (1971) reconciles this distinction through the metaphor of power as a minotaur, see Antonio Gramsci, *Selections from Prison Notebooks*, ed. Quintin Hoare and Geoffrey Nowell Smith (New York: International Publishers, 1971).

model features criteria denoting rank, dimensions marking precedence and demarcated domains of authority.

In the context of rhino conservation, an Authority Ranking relational model would manifest by referencing some common hierarchy. Hierarchical superiors within a community determine conservation policy, including access to rhinos and utilization of resources associated with rhinos. Superiors would bear a responsibility to provide for rhino conservation, and make symbolic demonstrations of their fulfillment of that responsibility while doing less of the arduous or menial labor associated therein. Prestigious associations with rhinos would be reserved for superiors, with restrictions on inferior members' choices regarding rhinos. Land associated with rhinos would be dominated by superiors in the hierarchy, potentially through personal dominions, fiefs, or special reserves. Rhinos may be temporally associated with superiors, such as marking changes in the hierarchy itself like the establishment of a new leader. Decisions regarding rhino conservation would be made by fiat or decreed, transmitted through the hierarchy, and obeyed by subordinates. Subordinates would socially signal deference and loyalty to such decisions, and organize conservation activities hierarchically. Social identities identify superiors with prerogative regarding rhino conservation, and inferiors with servitude toward such prerogatives. Individuals would be motivated towards rhino conservation by power and not merely coercion, morally associating superior's decisions with legitimacy. Challenges to these decisions will be viewed morally, and met with aggression and conflict. In short, rhino conservation will be marked by reference to a socially legitimate hierarchy.

Market Pricing: Relationships Based on Ratios

A Market Pricing relational model organizes interaction by referencing ratios or rates, usually through a utility measurement such as money. This model manifests in reciprocal exchange and distribution in the form of proportional payments for commodities, often through use of market prices. Contributions are made on the bases of fixed ratios like a sales tax, or percentages such as tithing. Work is done for wages that vary with time or output. Things have meaning as commodities, produced or purchased for profit or maintained as capital or inventory. Products are developed and presented as market considerations, and a property's value is derived from its cost. Land is considered as investments or capital, purchased for monetary appreciation, lease, rent, or means of production. Time is viewed in terms of productivity and efficiency. Decisions are made through markets, featuring considerations of supply, demand, expected utilities, and cost/benefit analysis. Social influence is likewise through cost and benefit incentives, with focuses on payments, bonuses, penalties, market manipulations, and references to scarcity and time limitations. Groups are constituted as corporations, markets, commodity associations, and firms. Social identity flows from one's occupation or economic role, and motivation is ascribed to achievement. Moral judgment is based on utilitarian criteria, and misfortune explained as unacceptable costs relative to benefits. Aggression and conflict are characterized by mercantilism, killing to protect markets or profits, and rational strategies such as kill ratios. Key features of the Market Pricing model are what entities may be bought and sold, what ratios of exchange are, and what counts as a cost or benefit. Relationships are symbolically represented in economic terms, with emphasis on

specialization and commodity exchange. These features share the Market Pricing relational model's common reference to ratios or rates.

In the context of rhino poaching, the Market Pricing relational model chiefly manifests in economic terms. Rhinos would be treated as commodities, with conservation framed as a function of market prices or utility. Individual participation and contributions towards conservation would vary with what one had paid or received, and conservation activity would be treated as wage work varying with time or output. The significance of rhinos would lie in their ability to produce or be purchased for profit, capital, or inventory. Messaging regarding rhinos would be presented in market considerations, and the value of rhinos would be associated with their costs. Land for rhino habitats would be treated as capital, either for expected appreciation, lease, rent, or as means of production. Time associated with rhinos would be framed through efficiency and productivity. Decisions regarding rhinos would be made by markets, referencing supply, demand, utility, and cost/benefits. Social influence would be through cost/benefit incentives associated with rhinos, particularly payments, bonuses, and fines; these will emphasize scarcity and time limitations to encourage social action. Groups will constitute as corporations, markets, commodity associations, and firms. Individuals will define their roles in conservation in terms of occupation or economic role, drawing motivation from achievement rhinos. Moral judgements associated with rhino conservation will emphasize utilitarian criteria, attributing misfortune to mismatches between costs and benefits. Aggression and conflict involving rhino conservation will be characterized by mercantilism, killing to protect markets and profit, and devising strategies based on kill

ratios. In total, the Market Pricing relational model will manifest in rhino conservation in economic behavior.

Research Design

To investigate what relational model an individual uses, researchers look at individual actions in order to identify manifestations described in the preceding section. In the initial presentation of relational models theory, Fiske identified the exploration of “who uses which model in what domains, and when” as one of three major directions for future research.¹⁷¹ In the following section, I explore this direction.

I employ a methodological technique common to relational model research: analysis of individual statements and behaviors, obtained through interviews and observation. In essence, this technique consists of identifying respondents in structured settings, either through experimental or field settings, and surveying respondents’ cognitive, affective, and behavioral responses to situations. Variants of this technique are used to assess relational models as described by Haslam (2004).¹⁷²¹⁷³ Whitehead’s (2000)

¹⁷¹ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*, 137.

¹⁷² Haslam, Nick, “Research on the Relational Models: An Overview.”

¹⁷³ For examples of this method, see Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations*; Nick Haslam and Alan Page Fiske, “Implicit Relationship Prototypes: Investigating Five Theories of the Cognitive Organization of Social Relationships,” *Journal of Experimental Social Psychology* 28, no. 5 (September 1992): 441–74, doi:10.1016/0022-1031(92)90041-H; Nick Haslam, “Factor Structure of Social Relationships: An Examination of Relational Models and Resource Exchange Theories,” *Journal of Social and Personal Relationships* 12, no. 2 (May 1, 1995): 217–27, doi:10.1177/0265407595122004; Nick Haslam and Alan Page Fiske, “Relational Models Theory: A Confirmatory Factor Analysis,” *Personal Relationships* 6, no. 2 (June 1999): 241–50, doi:10.1111/j.1475-6811.1999.tb00190.x; Nick Haslam, “Taxometric and Related Methods in Relationships Research,” *Personal Relationships* 6, no. 4 (December 1999): 519–34, doi:10.1111/j.1475-6811.1999.tb00207.x; Markus Vodosek, “The Relationship Between Relational Models and Individualism and Collectivism:

ethnography of the Seltamen of New Guinea features similar methods, as did Goodnow's (1998) study of the organizational of housework work.¹⁷⁴ Tetlock, McGraw and Kristel (2003) utilized both this method and relational models theory to explore the valuation of objects, while Poulson (2000) did likewise to investigation interpersonal conflicts.¹⁷⁵ Haslam, Reichert and Fiske (2002) studied aberrant use of relational models among persons with self-identified interpersonal problems.¹⁷⁶ This literature establishes the credibility and validity of assessing relational models through observation and analysis of individual statements and behavior.¹⁷⁷

Applying this method to identify what relational model manifests among users of social-ecological systems featuring rhinoceros, I conduct a structured, focus comparison of three cases. This approach involves applying standardized general questions to multiple cases in order to make systematic comparisons and evaluation of findings. George and Bennett (2005) identify three requirements and two characteristics of a

Evidence from Culturally Diverse Work Groups," *International Journal of Psychology* 44, no. 2 (April 2009): 120–28, doi:10.1080/00207590701545684.

¹⁷⁴ Harriet Whitehead, *Food Rules: Hunting, Sharing, and Tabooing Game in Papua New Guinea* (Ann Arbor: University of Michigan Press, 2000); Jacqueline Goodnow, "Beyond the Overall Balance: The Significance of Particular Tasks and Procedures for Perceptions of Fairness in Distributions of Household Work," *Social Justice Research* 11, no. 3 (September 1998): 359–76.

¹⁷⁵ A. Peter McGraw, Philip E. Tetlock, and Ori V. Kristel, "The Limits of Fungibility: Relational Schemata and the Value of Things," *Journal of Consumer Research* 30, no. 2 (September 2003): 219–29; Barton Lynn Poulson, "Discord in Relational Models as a Source of Interpersonal Conflict" (City University of New York, 1999).

¹⁷⁶ Nick Haslam, Therese Reichert, and Alan P. Fiske, "Aberrant Social Relations in the Personality Disorders," *Psychology and Psychotherapy: Theory, Research and Practice* 75, no. 1 (March 2002): 19–31, doi:10.1348/147608302169526.

¹⁷⁷ Such research explores validity by comparing relational model analysis with other ontologies and methods within social psychology. Haslam (2004) reviews this; see Haslam, "Research on the Relational Models: An Overview."

structured, focused comparison.¹⁷⁸ First, the universe of cases to be studied must be clearly delineated. In this dissertation, the universe is the control of rhino poaching since 2006, encompassing all 17 rhino range states. Of these states, I focus on three states whose formal institutions suggest ideal type variance of relational models. The prominence of community actors in Nepal suggests the Communal Sharing relational model, while the prominence of the king in Swaziland's formal rules suggests the Authority Ranking model. Lastly, South Africa's formal rules suggest a Market Pricing relational model.

Second, there should be a well-defined research objective and appropriate research strategy. In this chapter, the research objective is to identify if and how relational models vary across the universe of cases, utilizing a research strategy common to relational model research. Third, case studies should employ variables with explanatory potential and policy implications. Relational models meet such criteria. George and Bennett additionally note that research should be structured, as in carefully developed to reflect the research objective and theoretical focus of the inquiry, and focused with a specific research objective in mind and appropriate to that objective. By utilizing Fiske's identified manifestations of relational models in individual behavior, this chapter thus meets accepted standards for structure and focus.

I collected data for this chapter primarily through interviews, complemented by observation. I employed semi-structured interviews (also known as non-scheduled structured or focused interviews) as this technique's median positioning on the spectrum

¹⁷⁸ This technique is described in Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge, MA: MIT Press, 2005), 67–72.

of interview control facilitates deeper exploration and understanding of the interview's topic.¹⁷⁹

I conducted interviews according to a single protocol, located in an appendix to this chapter. This protocol aimed to understand the social construction of a rhino in a given locale, the dominant relational model used to construct rhino in a locale, the institutional characteristics of communities regarding rhino poaching, how conservation organizations manage poaching threats, and what lessons learned conservations have discovered in their work with rhino.

I designed the protocol as an inverted funnel, beginning with an introduction and context assessment, before moving into questions gauging the social construction and relational model the participant used for rhino, institutions regarding rhino, the participant's experiences with rhino, and finally their assessment of rhino conservation. All participants were asked the same questions in the same order, although I followed individual answers in a conversational manner to thoroughly understand answers provided while using probes to ensure I covered the correct material.

I utilized cluster sampling to select participants, focusing on the individuals with some active role in rhino conservation. Such roles including professional conservationists such as wardens, guards, veterinarians, and scientists, but also tangential roles such as

¹⁷⁹ Robert K. Merton and Patricia L. Kendall, "The Focused Interview," *American Journal of Sociology* 51, no. 6 (May 1946): 541–57, doi:10.1086/219886; Margaret C. Harrell and Melissa A. Bradley, "Data Collection Methods: Semi-Structured Interviews and Focus Groups" (RAND Corporation, 2009), 27.

concessionaires and volunteers. Each of these meets the categorical requirements of *actor* in a social-ecological system.¹⁸⁰

Cluster sampling from actors within the rhino social-ecological system has two additional advantages. First, it leverages the benefits of judgement sampling, where the opinions of selected participants are important to the research itself. The actors in this sample are precisely those identified by extant theory as the critical actors in poaching outcomes. Second, cluster sampling actors in rhino conservations mitigates the risk of selection bias in deviating from random selection. King, Keohane, and Verba (1994) highlight the risk of bias towards high status individuals who are generally supportive of government policy.¹⁸¹ However, in this case, actors in rhino conservation could likewise be assumed to be generally supportive of rhino conservation, viewing rhinos as intrinsically worthy of conversation. Actors in rhino conservation all live and work near dangerous animals, under pressure from equally dangerous poachers, and most of these actors derive their income and living from such work. Given such vested interests in rhino conservation, if even this cluster population shows significant relational model variance regarding rhinos, then so should broader populations within countries with rhinos.

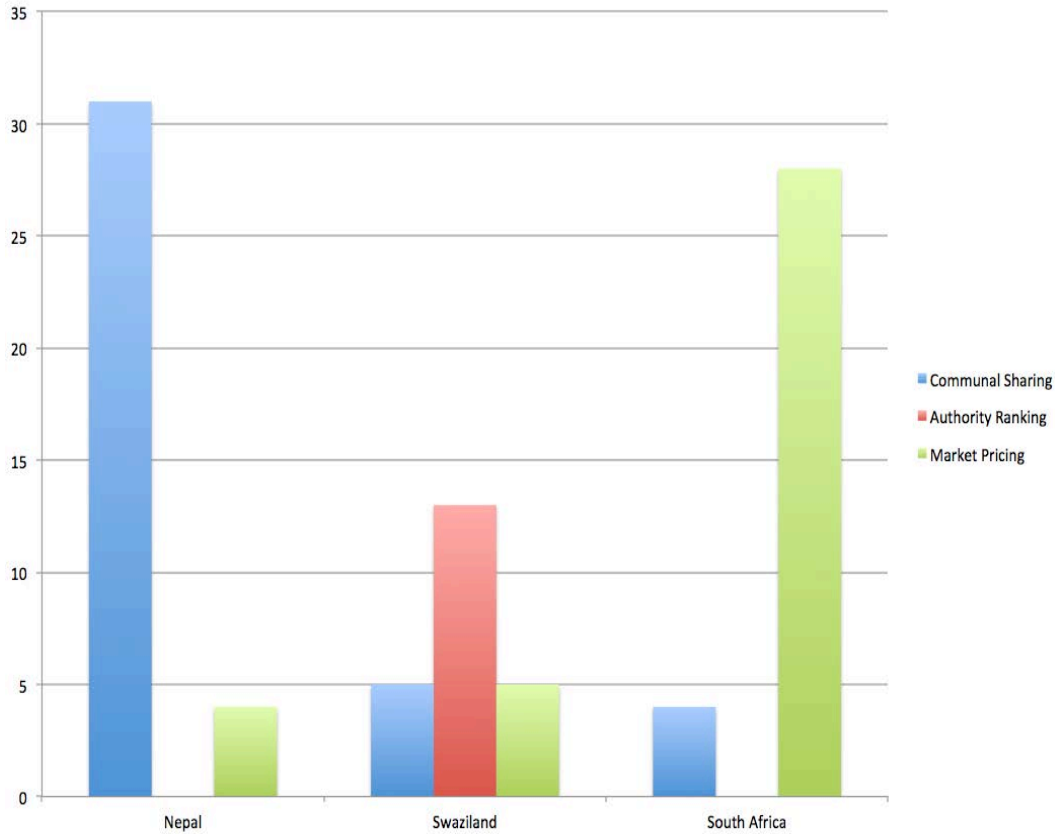
¹⁸⁰ Pieter W.G. Bots, Maja Schlüter, and Jan Sendzimir, “A Framework for Analyzing, Comparing, and Diagnosing Social-Ecological Systems,” *Ecology and Society* 20, no. 4 (2015): 6.

¹⁸¹ Gary King, Robert O. Keohane, and Sidney Verba, *Designing Social Inquiry: Scientific Inquiry in Qualitative Research* (Princeton: Princeton University Press, 1994), 125.

Results

In each of the three cases, a clear majority of respondents manifested a single relational model. In Nepal and Swaziland, most respondents manifested a non-Market Pricing relational model (Nepal, $n = 31/35$; Swaziland, $n = 18/24$), primarily Communal Sharing in Nepal and Authority Ranking in Swaziland. In South Africa, most respondents manifested a Market Pricing model ($n = 28/32$). This suggests that a single relational model does predominate within each social-ecological system, that this predominate relational model corresponds to the model suggested by the formal institutional rules, and that this variance in relational models may explain why some countries have effectively controlled poaching. In the follow section, I will detail participant responses to illustrate how each relational model manifests in individual orientations towards rhino conservation.

Figure 4.1: Manifestations of Relational Models in Rhino Conservationists, by Country



Y axis: Number of Respondents Who Manifest a Particular Relational Model

Nepal: Manifestations of Communal Sharing

In Nepal, a vast majority of respondents described rhino conservation in terms of their community. Most respondents metonymically linked rhinos to their national identity, their community, and their family. In response to the question “Why are rhinos important to you,” one participant characteristically exclaimed, “Because I’m Nepali!”

before describing rhino conservation as a function of the community's "self-esteem" and "how we see ourselves."

Most Nepali respondents (n=31 of 35) manifested the Communal Sharing relational model when describing rhino conservation. Four respondents (n= 4 of 35) manifested a Market Pricing relational model.

Nepali respondents frequently linked rhino conservation to their children, thus manifesting elements of kinship and unity in group constitution and long-term orientations towards time. One participant, after explicitly stating that "rhinos are more sacred to me than a cow, and I am a Hindu," then explained, "rhinos were important to my grandfather, and I want them to be important to my son." Other respondents expressed a sense of obligation to children, who are exposed to conservation themes in school, and a desire to be seen by their children as fulfilling communal obligations to contribute and work rhino conservation. One participant said that if he failed to contribute to rhino conservation, he feared what his children would think of him. Other Nepali respondents associated work in rhino conservation as a sign of education. One leader of a volunteer anti-poaching unit said that after his children learned about rhinos in school, "I came to know the importance of the rhino, [and] I joined" the anti-poaching patrol. These responses indicate the social influence of conformity, mutual modeling, and imitation, as well as intimacy motivation.

Most Nepali respondents described rhinos as inseparable from a common forest landscape, indicating a communal orientation towards land associated with rhinos. One participant said that even if tourism stopped, rhino conservation would remain important

because he believed rhinos occupied a keystone role in the forest. He also noted that rhino bring a sense of safety to the forest, which was striking because his father was killed by a rhino in the forest. The participant described that death in language similar to a tragic trade-off, indicating that both the lives of his father and the rhino were of incomparable or sacred value. He stated that his father had inadvertently trespassed in the rhino's space, and that the rhino had a right to exist in the forest. Several respondents described active participation in volunteer anti-poaching patrols, further indicating communal orientations to contribution, work, and distribution. One participant described his work in rhino conservation as "working for my nation, and for the pride of my nation." This association of rhinos with community also appeared in moral manifestations.

Most Nepali respondents described transgressions against rhino conservation in distinctly moral language. Many respondents expressed a deep sense of altruism and selfless generosity towards rhinos, reporting a "duty to protect wildlife" from poachers. In the domain of aggression and conflict, poachers were seen as outsiders who threatened the community. One participant said that against poachers, conservationists "can't win with guns, [but] only with community. They are our eyes." When discussing poaching, several respondents displayed moral outrage, stating that "poachers should hang, even beyond the law" that prohibits capital punishment. Others expressed a desire for mandatory life imprisonment for rhino poachers, or in the words of respondent, the punishment should be "as much as more." Such moral language is consistent with manifestations of the Communal Sharing relational model.

Nepali respondents often explicitly disavowed the influence of state capacity or economic incentives. Rather, both government officials and non-governmental officials emphasized the critical role of communities. Several government officials stated that only when the government turned to the community did anti-poaching become successful. Likewise, a member of a volunteer anti-poaching unit proudly described catching a government official who was poaching, and how his community group pressured the government to deal with this official. Similarly, many respondents specifically said that the value of the rhino lay beyond its impact on tourism. One respondent who worked in ecotourism displayed moral outrage when asked to assess the economic value of a rhino, flatly stating that “it cannot have a price. It is the source of the community’s wealth.” The respondent continued that if ecotourism stopped, his business would likely fail, but he believed the rhino would still be important to Nepal, as “this animal has a right to exist.” He concluded his interview by emphasizing that “the world in the future must have rhinos in it.” Similarly, a community leader expressed disgust for both economic assessments of rhinos and efforts to incentivize conservation through tourism revenue. The leader distinguished between conservationists “who work for money” versus those “who work for the heart,” stating that while money was necessary for community development, “if you pay money for conservation, you are forcing people to do what they should already do.” This leader emphasized that “ten volunteers are better than 100 workers” when it came to protecting the rhino.

In total, only four Nepali respondents manifested the Market Pricing relational model; of these, one was a senior government official, one worked for an Western NGO,

one worked in finance for a community NGO, and one led a community that was disproportionately affluent compared to neighboring communities. Such responses provide exceptions suggestive of a rule, indicating that rather than state capacity or economic incentives, a significant majority of Nepali conservationists manifest a Communal Sharing relational model in reference to rhino conservation.

Swaziland: Manifestations of Authority Ranking

In Swaziland, most respondents described rhino in terms of a common hierarchical authority. The King of Swaziland, Mswati III, appeared prominently in every participant's response. In answer to the question, "Are rhino important to you," one employee of a Swazi national park replied, "Thumbs up for the King! Because of him, we have rhinos in Swaziland." King Mswati provides the transitive hierarchical authority that anchors social constructions of rhino in Swaziland, indicating the Authority Ranking relational model.

A clear majority of Swazi respondents (n=18 of 24) manifested non-Market Pricing relational models when describing rhinos. Most respondents manifested the Authority Ranking relational model (n=13), while some also manifested the Communal Sharing model (n=5). However, even the respondents who manifested Communal Sharing still prominently featured discussions of King Mswati.

Most Swazi respondents described rhino conservation in deference to the King. For instance, after stating that it was important to conserve rhino, one government official explained, "the monarch has said we must preserve the animals." Another participant

flatly ascribed the importance of rhino conservation to the King's "decision that we must preserve the rhino." Likewise, another respondent explained that "our king has a lot of pride" in rhino, as did a participant who explained that rhinos are important "because we are Swazi, and we live in a kingdom." One participant described rhinos as "the King's children." These responses indicate the central role of King Mswati as a hierarchical authority figure who pastorally directs and controls how Swazis understand rhino conservation, a hallmark of Authority Ranking manifestations.

As most Swazis consider rhinos part of the sovereign realm of their King, obedience to and compliance with rhino conservation relies heavily on social influence. Respondents often described the importance of setting a good example regarding rhino conservation. One participant said "if we do not protect the rhino, our children will see us differently," while another stated that "if you poach, people see you differently" and "look on the poacher's community differently." Many respondents expressed gratitude to the king for Swaziland's success in rhino conservation. In each of these responses, the central concern was maintaining one's standing in the eyes of the king. This focus on social conformity with the hierarchy exemplifies the Authority Ranking relational model.

Consistent with both Authority Ranking and Communal Sharing relational models, many Swazi respondents manifested moral outrage and moral cleansing when describing transgressions against rhino conservation. Respondents favored heavily punishing both poachers as norm violators and accessories to poaching as metanorm violators. One respondent said that "if someone poaches, take away their rights. Even someone who offers a helping hand" to poachers." Another flatly declared that poachers

should “rot in jail,” and that maximum punishments should be considered minimums. One respondent approvingly noted the legal equivalence between killing a person and killing a rhino. Beyond such expressions of moral outrage, respondents also displayed moral cleansing in discussion reactions to rhino poaching. One respondent said that in order to be released from jail, poachers “must show that you’ve changed” to the Swazi community. Another participant said that punishment for poaching should include re-education, similar to a different respondent’s belief that poachers should be punished by being forced to work with rhino conservation in order to better appreciate the animals. These responses are characteristic manifestations of non-Market Pricing relational models.

A minority of Swazi respondents (n= 6 of 24) manifested Market Pricing relational models while describing rhino conservation. Of these, four respondents were elites with significant ties to international actors. This suggests a higher incidence of Market Pricing relational models among respondents closer to the international level of conservation. Interestingly, several respondents displayed moral outrage while discussing Swaziland’s institutionalized outsourcing of rhino conservation and national parks administration to a private corporation. One decried turning conservation into “a family business” and obtaining private gains from a national resource. Another noted that the corporation was straining its relationship with the Swazi people by abusing the conservation authority of the King. The respondent attributed this to the killing of alleged poachers by rangers employed by the private corporation. The respondent was not outraged by the death of the poachers, but rather that they were killed by private

employees and not by officers of the king. These reactions are consistent with taboo trade-offs described by non-Market Pricing relational models. In total, Authority Ranking appeared as the predominant relational model among Swazi rhino conservationists.

South Africa: Manifestations of Market Pricing

In South Africa, most respondents described rhinos in reference to a market system. The universal metric of money dominated South Africa discussions of rhinos, particularly its fantastically lucrative illicit price. When asked to explain why he believed rhinos were important, one respondent answered, “I’ll be honest, when I see a white rhino, I see a [expletive] cow with a million dollars on its forehead.” A clear majority of South Africa respondents (n=28 of 32) manifested the Market Pricing relational model when discussing rhino conservation.

South Africa respondents overwhelming related rhino conservation to the price of rhino horn. Many respondents explained that rhino were valuable because of their horns, stating that “people say its worth a lot of money.” Others attempted to relate the value of the horn to income generated by ecotourism, saying “we have to get people to recognize the rhino will bring them more money if it is alive than if it is dead.” Another explained his calculated cost per year of protecting a rhino from poaching, noting that it was economically cheaper for him to minimize anti-poaching outlays, accept a sustainable rate of poaching, and replenish his rhino stock through public auctions. Similarly, one participant compared the cost of maintaining rhino to that alternative species like kudu, and said that other species brought in more tourist revenue. Still another wondered about

the effect that a rhino poaching incident would have on bed rates in local tourist facilities, or on the ability of community members to tithe from disposable income derived from tourism. In one telling incident, a police officer at a checkpoint near a protected area stated that “rhino horn is very valuable” while he illegally confiscated sundry items I had in my luggage.¹⁸² These varied responses all share a common employment of calculations involving fungible values, efficiencies, costs and benefit incentives, economic decision-making, and treating rhino conservation as a means to increasing economic ends.

Consistent with this fundamentally economic outlook, few respondents manifested moral outrage or moral cleansing in discussions of rhinos. Some respondents rationally legitimized abandonment of rhino conservation by comparing its costs relative to that of alternative species. Many called for policy changes to legalize the trade in rhino horn on the basis of its lucrative profit potential, stating that it was wrong that only criminals could derive financial benefits from conservation given the illicit price for horn. Several noted that the price of rhino conservation was simply too high, and that “extinction is overrated.” Multiple respondents asked what the actual effect was of losing the dodo and quagga, and suggested that if rhinos went extinct, “tourists will still come.” Several respondents flatly denied that rhino conservation was important, stating, “I’ll be honest, rhinos do not matter to me,” “I do not care about rhinos,” and expressing belief that conserving rhinos was more trouble than it was worth. When respondents did state

¹⁸² While this incident underscores the challenge of corruption for controlling poaching, this challenge is common to all rhino range states, including those that effectively controlled poaching. For instance, in Nepal, corruption is comparatively worse than in South Africa, and yet poaching is far worse in South Africa.

preferences for violent responses to rhino poaching, it was expressed in the language of protecting property against thieves.

A minority of respondents (n=4 of 32) manifested the Communal Sharing relational model in contrast to Market Pricing. Of these, all four emphasized obligations to their children as driving their participation in conservation, and each displayed moral outrage and cleansing that was absent in responses from other participants. One described several intensely violent encounters with poaching, and openly discussed psychological stresses created by participating in South African rhino conservation. These responses provide exceptions that confirm the overwhelming predominance of the Market Pricing relational model among South African rhino conservationists.

Discussion

These findings demonstrate that the social construction of rhinos does vary among rhino range states, that how individuals think about rhinos varies in observable ways. More significantly, individuals in different countries manifest different relational models when discussing rhino conservation within their countries.

Among conservationists in Nepal, Swaziland, and South Africa, a majority of respondents in each case manifested a similar relational model. In Nepal, most conservationists manifested a Communal Sharing relational model, whereas in Swaziland, most conservationists manifested an Authority Ranking model. In South Africa, most conservationists manifested a Market Pricing model.

This analysis is somewhat limited by the non-random sampling of participants. However, the use of cluster-sampling to focus on actively participants in rhino conservation mitigates this limitation, as such respondents should logically have a greater interest in successful rhino conservation. That this population itself shows variance in the social construction of rhinos suggests that such variance continues in broader populations beyond the conservationists themselves.

A more significant limitation lies in the time lag between these observations in 2015 and the global shock in rhino horn price in 2006. As such, it is possible that the identified relational models have endogenously responded to circumstances within each case since the global shock, and may not correspond to relational models manifesting within these cases prior to the crisis. However, the correlation between relational models inferred from formal institutional rules as of 2005 and those identified in respondents in 2015 suggests that such models have remained stable within each case.

The respective predominance of Communal Sharing, Authority Ranking, and Equality Matching within Nepal, Swaziland, and South Africa suggests that institutional rules are valid proxy measures for relational models in Chapter 3. Moreover, it lends support to the hypothesized relationship between relational models and the effective control of poaching, suggesting that moral outrage and cleansing mechanisms have facilitated comparatively weak and poor countries like Nepal and Swaziland to succeed where stronger, more developed countries like South Africa have failed. To further investigate the causal influence of relational models on the control of poaching, I next

explore the specific responses of Nepal, Swaziland and South Africa to rhino poaching since 2006.

CHAPTER FIVE: ANALYTIC NARRATIVE OF NEPAL'S CONTROL OF POACHING

Why do Communal Sharing and Authority Ranking relational models facilitate the control of rhino poaching? According to the Sacred Value Protection Model, when individuals relate to rhino using non-Market Priced relational models, poaching will elicit moral outrage and cleansing behaviors. In this chapter, I employ analytic narratives to demonstrate that such moral outrage and cleansing provide mechanisms for controlling rhino poaching. At critical junctures in Nepal's responses to rhino poaching, moral outrage and cleansing facilitated effective responses to rhino poaching. I also demonstrate that at such junctions, state capacity and economic incentives were at best irrelevant, and may even encourage further poaching. I conclude by summarizing my findings and addressing their limitations and implications.

When individuals think about rhino in different ways, how does it affect the control of poaching? Does thinking about rhino in terms of one's community or a common authority help communities control rhino poaching? Does predominant usage of Communal Sharing or Authority Ranking relational models facilitate the effective control of rhino poaching? According to relational models theory and the sacred value protection model, when individuals use non-Market Pricing relational models to relate to rhino, then poaching rhino becomes a taboo trade-off and elicits moral outrage and cleansing. These

moral reactions to poaching provide critical mechanisms that weak and poor communities can leverage to control poaching of fantastically lucrative wildlife.

To understand these mechanisms connecting structural factors like relational models and outcomes like the control of poaching, I employ analytic narratives to understand how Nepal has effectively controlled rhino poaching. In tracing Nepal's response to rhino poaching since 2006, I demonstrate that moral outrage and moral cleansing existed at critical junctures in this country's effective control of rhino poaching. I also establish that at such critical junctures, the role of state capacity and economic incentives were at best irrelevant and at worst, worked against the control of poaching.

This chapter proceeds as follows.¹⁸³ First, I present and justify the methodology of analytic narratives to evaluate the sacred value protection model, and the case selection of Nepal for evaluating this model. Second, I identify a model of the control rhino poaching based on sacred value protection, including general observable implications. Third, I examine an analytic narrative of Nepal's response to rhino poaching since 2006, moving from the country's history of rhino conservation to their attempts to control the current epidemic, followed by analysis of the model's explanatory ability for the case. I conclude by discussing my findings, their limitations, and implications.

¹⁸³ I organized this chapter along the argument presented by Margaret Levi's "Conscription: The Price of Citizenship" in *Analytic Narratives*, eds. Robert Bates et al (Princeton: Princeton University Press, 1998), 109-147. Levi explores social explanations for failures in a rational choice model through three cases; this was similar to my own analysis, especially in its tangential connection to relational models theory through the concept of blocked exchanges. Levi references Philip E. Tetlock, Randall Peterson and Jennifer Lerner's "Revising the Pluralism Model: Incorporating Social Content and Context Postulates," in *The Psychology of Values*, ed. Clive Seligman, James D. Olson, and Mark P. Zanna (Hillsdale, N.J.: Lawrence Erlbaum Associates, 1996), 25-51.

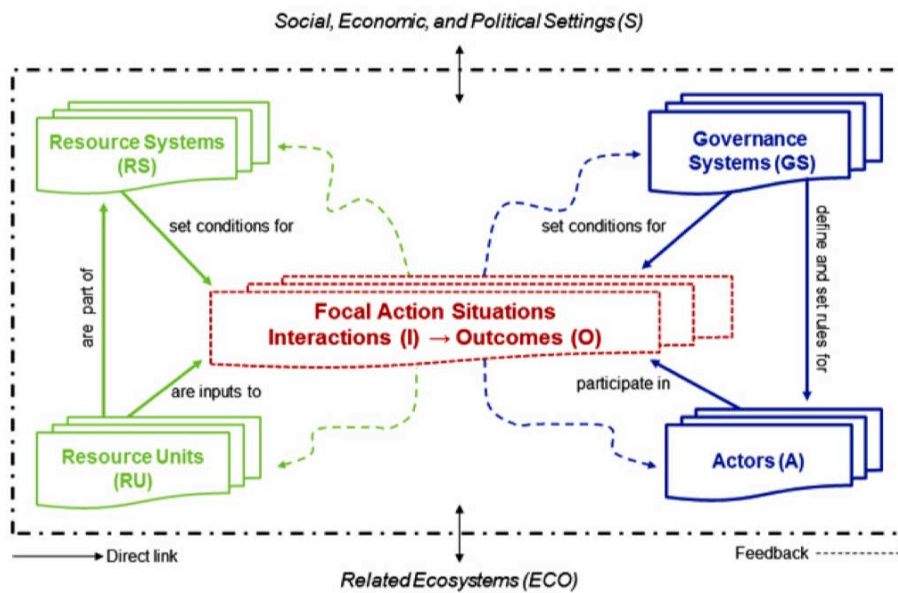
Modeling Rhino Poaching

Rhino conservation programs chiefly vary on a dimension of public versus private authority. In public programs, rhino conservation is oriented to and anchored in a public interest, either a communal identity or a common hierarchy. In contrast, private interests motivate private conservation programs, and conservation is seen as good business.

Conceptually, these programs can be modeled as social-ecological systems (SES).¹⁸⁴ SES analysis seeks to explain institutional interactions and outcomes in resource systems. Interactions are activities and processes such as harvesting, poaching (illegal harvesting), information sharing, conflicts, and monitoring and evaluation activities. Outcomes occur in three forms: social performance measures such as efficiency, equity, and accountability, ecological performance measures such as overharvesting, resiliency, biodiversity, and sustainability, and externalities to other SES.

¹⁸⁴ John M. Anderies, Marco A. Janssen, and Elinor Ostrom, "A Framework to Analyze the Robustness of Social-Ecological Systems from an Institutional Perspective," *Ecology and Society* 9, no. 1 (2004): 18.

Figure 2.1: A Social-Ecological System



Source: McGinnis and Ostrom 2014¹⁸⁵

The SES framework explains these interactions and outcomes as functions of the interaction of four subsystems of variables: Resource Systems, Resource Units, Governance Systems, and Actors. *Resource Systems* variables describe ecological attributes relevant to rhino conservation, such as physical boundaries around rhino populations, human constructed facilities associated with rhino conservation, and forage available to rhinos. *Resource Units* variables describe the rhino themselves, including both their number of units (population), replacement rate (births and natural deaths), and economic value (both licit and illicit). *Governance Systems* variables comprise the social institutions associated with rhino conservation, from government organizations to property-rights systems to monitoring and sanctioning rules. *Actors* variables describe the

¹⁸⁵ Michael McGinnis and Elinor Ostrom, "Social-Ecological System Framework: Initial Changes and Continuing Challenges," *Ecology and Society* 19, no. 2 (2014): 30.

agents who live in rhino conservation settings, including socioeconomic attributes, location, norms and social capital, and technology available.

The SES approach was developed to enable systematic analysis of complex and diverse resource management situations. While this framework enables detailed examination of individual situations, its explanatory power derives from leveraging generalization about such diversity, thereby enabling cross-case comparison, analysis, and the typological theorizing advocated by George and Bennett (2005) and identified by Ostrom and Cox (2010) as “consonant with the paradigm of adaptive natural resource management.”¹⁸⁶ As Ostrom said in her 2009 Nobel laureate lecture, “We need to ask how diverse polycentric institutions help or hinder the innovativeness, learning, adapting, trustworthiness, levels of cooperation of participants, and the achievement of more effective, equitable, and sustainable outcomes at multiple scales.”¹⁸⁷ The SES framework enables exploration of such outcomes through generalization amid complex diversity.

To model rhino poaching using the SES framework, the focal action situation (outcome of interest) is the control of poaching, an ecological performance measure. Rhino poaching is controlled when it is rare, punished when it does occur, and does not threaten the survival of a given rhino population.

Dominant literature examining conservation outcomes offers two explanations for why the control of poaching should occur. First, the economic value of rhino harvesting

¹⁸⁶ Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge, MA: MIT Press, 2005), 235; Elinor Ostrom and Michael Cox, “Moving beyond Panaceas: A Multi-Tiered Diagnostic Approach for Social-Ecological Analysis,” *Environmental Conservation* 37, no. 4 (December 2010): 10.

¹⁸⁷ Ostrom, Elinor, “Beyond Markets and States: Polycentric Governance of Complex Economic Systems” (Stockholm, Sweden, December 8, 2009), 436.

can fall, reducing the benefits available to actors from illegal harvesting.¹⁸⁸ The reduction could occur in two ways. First, the market price for poached rhino horn could diminish, thereby reducing the incentive to poach. Alternatively, the economic value of not harvesting could increase, such as through ecotourism revenue sharing. This latter approach anchors many contemporary prescriptions for conservation through ecotourism.

The second explanation for the control of poaching is increasing the capacity of guards and monitors, either through alteration to governance systems like government organizations or through increasing technologies available to guards.¹⁸⁹ According to this explanation, individuals choose not to poach when the costs of poaching become sufficiently high. This approach is at the heart of green militarization, and accompanies calls for shoot to kill policies to combat rhino poaching.

Both of these approaches are theoretically and empirically problematic. Theoretically, it is difficult to resolve collective action problems associated with distributing costs and benefits inherent in both explanations. At an individual level, an individual always stands to exclusively gain the benefits from poaching, while poaching's costs will likely be distributed amongst the individual's community. Moreover, the empirical reality of today's fantastically lucrative price for rhino horn makes it difficult for any cost benefit calculation to yield a situation in which it is profitable not to poach.

¹⁸⁸ See David W. Bromley, "Economic Dimensions of Community-Based Conservation," in *Natural Connections: Perspectives in Community Based Conservation*, ed. Western, David and R. Michael Wright (Washington, D.C.: Island Press, 1994), 428–47.

¹⁸⁹ While fewer scholars argued for this approach today, this outlook was classically argued in William Ophuls, *Ecology and the Politics of Scarcity* (San Francisco: W.H. Freeman, 1977); and David W. Ehrenfeld, *Conserving Life on Earth* (New York: Oxford University Press, 1972).

A social explanation leverages psychology to encompass these explanations while moving beyond them to more accurately explain micro-foundations found in reality. The control of poaching is an interaction of three key actors: poachers, community members who live near rhino populations, and authorities who sanction activities associated with rhino conservation. Whether poaching is controlled— that is, whether it is rare, punished, and does not threaten the survival of a given rhino population— is a function these interactions. Poachers seek to illegally harvest rhino horn. To do so, poachers must travel from and through a community to access rhino habitat, and return to populated areas afterwards in order to traffick the poached horn. To control this, authorities must either closely guard the rhinos themselves, or intercept poachers moving through communities to rhinos. Continuous guarding is difficult with wild rhinos, although this is precisely what Kenyan authorities have done with the world's last three northern white rhinos. Otherwise, authorities must intercept poachers moving within, from, and to populated areas. Their ability to do so hinges on the residents of those populated areas.

This chapter's analysis considers the critical juncture for determining whether poaching occurs as individual decisions to participate in poaching, to acquiesce to such poaching, or to stop it. This focus employs the concept of a critical juncture of a brief phase of "institutional flux," when individual choices have lasting impacts that close off alternative options and generate self-reinforcing path-dependent processes that are difficult to alter.¹⁹⁰ Moreover, this focus grounds an analysis of poaching in the micro-foundations of the individual level.¹⁹¹

¹⁹⁰ Giovanni Capoccia and R. Daniel Kelemen, "The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism," *World Politics* 59 (April 2007): 341–42; Paul Pierson,

At this critical juncture is the decision to poach rhinos. In its narrowest sense, this is the decision to wound or kill a rhino in order to harvest its horn. However, in reality, to poach is to engage in the illegal harvesting of a natural resource.¹⁹² As such, this critical juncture is actually the decision to participate in the illegal harvesting of rhinos.

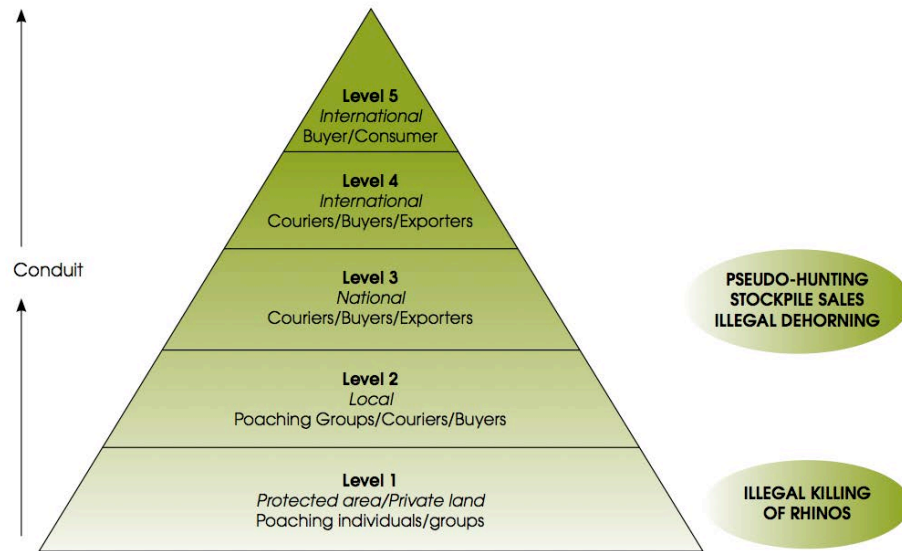
The term poacher encompasses any actor engaged in the illegal harvesting of rhino horn. Milliken and Shaw (2012) typologize poachers into five levels, based on analysis by South Africa's National Wildlife Crime Reaction Unit. Level 5 poachers are international buyers and consumers of rhino horn, typically in China and Vietnam. Level 4 poachers are the international couriers, buyers, and exporters who acquire rhino horn from countries with rhinos, then traffick and sell it in demand markets. Level 3 poachers are the national couriers, buyers and exporters who transport rhino horn from local sources to international poachers. Level 2 poachers at the local level organize the illegal harvesting of rhino horn, which is actually collected by Level 1 poachers who physically hunt and harvest the horn.

Politics in Time: History, Institutions, and Social Analysis (Princeton: Princeton University Press, 2004), 135.

¹⁹¹ Robert H. Bates et al., *Analytic Narratives* (Princeton: Princeton University Press, 1998), 13–15.

¹⁹² Robert M. Muth and John F. Bowe, "Illegal Harvest of Renewable Natural Resources in North America: Toward a Typology of the Motivations for Poaching," *Society & Natural Resources* 11, no. 1 (January 1998): 11–12., doi:10.1080/08941929809381058.

Figure 5.1. Levels of Organized Crime in Rhino Poaching



Source: Milliken and Shaw 2012, p. 78.¹⁹³

Benefits accrued from poaching vary with each level of the poaching syndicate, ranging from approximately USD 10,000 per rhino for a level 1 poacher to nearly USD 1 million per rhino at its final sale. These actors' interests are primarily commercial: maximize profits while minimizing costs.¹⁹⁴ They also seek to avoid legal authorities to avoid sanction, and if caught, will seek first to pay bribes, then fines to evade punishment. While Level 1 poachers gain the least from poaching, they are paradoxically the critical actor in determining whether a rhino is poached.

¹⁹³ Tom Milliken and Jo Shaw, "The South Africa-Viet Nam Rhino Horn Trade Nexus: A Deadly Combination of Institutional Lapses, Corrupt Wildlife Industry Professionals and Asian Crime Syndicates" (TRAFFIC, 2012), 78.

¹⁹⁴ Muth and Bowe (1998) identify other potential motivations for poaching, which could also be accounted for by this model. However, an absence of commercial motivations may not trigger the moral mechanisms of the saved value protection model activated by taboo trade-off reasoning. In any case, contemporary rhino poaching empirically appears to be commercially motivated. Muth and Bowe, "Illegal Harvest of Renewable Natural Resources in North America: Toward a Typology of the Motivations for Poaching."

The strategy employed by a Level 1 poacher is to travel to a location with rhinos, whose small ranges make them relatively easy to find.¹⁹⁵ Once there, the poacher can approach a rhino, whose notoriously poor vision enables poachers to approach closely. The poacher shoots the rhino to disable it, and then utilizes tools as crude as a hacksaw to remove the rhino's horn. This process takes approximately 10 minutes, after which the poacher returns to a populated area with easily concealable rhino horn weighing approximately 4 kilograms per horn.¹⁹⁶ During the poacher's movements, he must evade guards monitoring the protected area. Once returned to the protected area, the Level 1 poacher must now meet with a Level 2 poacher to exchange the poached horn for money. The Level 1 poacher now returns home flush with cash he or she must launder into licit income.

Meanwhile, the Level 2 poacher consolidates horn locally and arranges to transfer it to a Level 3 poacher, typically located near air or sea ports. The Level 2 poacher must evade monitoring by police near the protected area, and the Level 3 poacher must evade monitoring by customs and border control personnel. The Level 3 poacher trafficks the horn to a Level 4 poacher, who exports the horn across national boundaries to finally connect with the Level 5 poacher, who purchases the horn in its demand market. While

¹⁹⁵ This account of rhino poaching is based on the author's observation of anti-poaching activities, interviews with rhino conservationists, and published accounts of rhino poaching including Kamal Jung Kunwar, *Four Years for the Rhino: An Experience of Anti-Poaching Operations* (Kathmandu: Save the Rhino Foundation Nepal, 2009); Ronald Orenstein, *Ivory, Horn and Blood: Behind the Elephant and Rhinoceros Poaching Crisis* (Richmond Hill, Ontario: Firefly Books Ltd., 2013); Lawrence Anthony and Graham Spence, *The Last Rhinos: The Powerful Story of One Man's Battle to Save a Species* (London: Sidgwick & Jackson, 2012); and Clive Walker and Anton Walker, *The Rhino Keepers: Struggle for Survival* (Auckland Park, South Africa: Jacana Media, 2012). See also Esmond Bradley Martin and Lucy Vigne, "Nepal's Rhinos: One of the Greatest Conservation Success Stories," *Pachyderm* 21 (1996): 10–26.

¹⁹⁶ Esmond Bradley Martin, "Rhino Horn Weights," *Traffic Bulletin* 5, no. 2 (1983): 23. Martin catalogues average weights for the five rhino species. While Asian rhino have smaller horns than African rhino, historically, Asian horns command higher prices, and their smaller size makes them more trafficable.

individuals vary in their specific illegal activity within the transnational criminal syndicate, each individual chooses to intentionally contravene laws regarding rhino.

Poachers' preferences are straightforwardly economic: they prefer to maximize their profit and minimize costs.¹⁹⁷ At most basic level, these individuals choose to poach. In reality, these decisions are made in an institutional context in the presence of other actors. As such, to understand the critical juncture of whether an individual chooses to poach a rhino, two other key actors are relevant: authorities who guard and monitor rhino populations and activities associated with them, and community members who live near both rhino populations and poachers. One could simplistically argue the final decision to poach a rhino is simple a matter of the poacher faced with a rhino. In reality, poachers depart from and return to communities after engaging in poaching. During that time period, poachers may encounter authorities, and almost certainly will encounter community members who are aware of the poaching. The poacher seeks to illegally harvest rhino, authorities guard and monitor rhino populations and associated activities, and community members watch. The interaction of these three groups determines whether poaching will be controlled or uncontrolled.

Authorities who monitor activities associated with rhinos consist of security forces at the protected areas where rhinos live, police forces in surrounding areas and in areas where individuals live, including poachers, customs and border security personnel

¹⁹⁷ If a potential poacher's utility function includes social variables such as community reputation, this would further diminish the likelihood that the poacher would choose to poach if the community's predominant relational model is Communal Sharing or Authority Ranking. Assuming that the poacher's motivations are purely economic makes for a harder test for a social explanation, adding to this model's robustness.

at ports of embarkation in and out of a country, and permit authorities for activities such as entering protected areas, hunting, and legal exportation.

Ceteris paribus, these authorities generally prefer to enforce existing rules, especially those associated with their formal authority. Assuming that such authorities chiefly desire to retain their authority, the very act of illegally harvesting a rhino undermines that authority. However, under standard rational choice assumptions, these authorities will also engage in cost benefit reasoning regarding how they guard and monitor interactions with rhinos. The benefits of sanctioning illegal activities regarding rhinos are constant, in the form of salaries. However, direct costs vary, and likely increase as poachers increase activities. Park security forces must provide for fuel for park vehicles and equipment, and rations for park employees and livestock. Police likewise incur operating expenses, plus costs associated with cultivating and maintaining intelligence networks like informants. Regulators have administrative overhead, often in challenging field conditions. For governments with limited state capacity in the development countries home to wild rhino, the direct costs of enforcement are expensive.

Authorities may not prefer to enforce rules if such enforcement comes at significant costs. Direct costs associated with rule enforcement include those associated with monitoring rhino populations and boundaries of protected areas, cultivating and maintaining intelligence and informant networks, and screening individuals moving through and near protected areas. Indirect costs include opportunity costs of rejected bribes and side payments, and social censure from policing members of one's own

community. Exponential increases in the illicit price of rhino horn particularly increase the opportunity cost of rejecting bribes and corruption.

As public authorities, these actors also have indirect costs to their community relations. To varying degrees, public authorities may be accountable to the communities poachers come from and return to. Enforcing anti-poaching laws may cost authorities popular support; in some countries, park rangers are not even commissioned as law enforcement, and therefore not legally permitted to shoot a would-be poacher without committing manslaughter or even murder. Moreover, enforcing conservation laws against poachers may trigger backlash from communities with poachers, particularly if poachers enjoy community support. This Robin Hood effect can further increase the indirect costs to public authorities for sanctioning poachers. Finally, corruption is endemic in every rhino range state. Public authorities that sanction rhino poaching incur opportunity costs of forgone bribes and side payments associated with poaching. Adding this factors to the potential for shirking in all principle-agent relations yields a situation where authorities may or may not choose to sanction rhino poaching. This ambiguous role of authorities points to the critical actors in determining whether rhino poaching is controlled or unchecked: members of communities adjacent to protected areas and home to poachers themselves.

Community members have tangential interests to rhino conservation. Some may derive income from conservation activities, either directly through employment in ecotourism or indirectly through revenue sharing associated with rhino conservation. Others may simply live near rhino, which creates vulnerability to human-wildlife conflict

and potential damage to human life and property.¹⁹⁸ Finally, community members may have social relationships with other actors, both poachers and public authorities. Maintaining such relationships is a potential interest. Finally, community members may face direct and indirect costs associated with poaching. For direct costs, community members may provide taxes and public revenues to finance anti-poaching enforcement. For indirect costs, community members may face losses in revenue from ecotourism due to poaching, as well as potentially bodily harm to poachers and public authorities with whom community members have relationships.

When a community member encounters a poacher, the community member faces a choice. He or she can ignore the poaching, and do nothing. Second, the community member can inform public authorities. Third, the community member can pressure public authorities to sanction the poacher, or sanction the poacher him/herself.¹⁹⁹

Equilibrium Outcome 1: When a Market Pricing Relational Model Predominates

If all three actors approach this action situation from an economic perspective, as when a market pricing relational model predominates in reference to rhinos, and given the fantastically lucrative contemporary price of rhino horn, we should expect an equilibrium outcome of increasing poaching and the absence of poaching control.

Poachers will weigh costs and benefits, and determine that the profit opportunity of

¹⁹⁸ Human-wildlife conflict frequently ends tragically for humans. For instance, see Nabin Paudel, “3-Year-Old Girl Dies, Gran Injured in Rhino Attack,” *Kathmandu Post*, December 26, 2016, <http://kathmandupost.ekantipur.com/news/2016-12-26/3-year-old-girl-dies-gran-injured-in-rhino-attack.html>.

¹⁹⁹ If the community member accepts a bribe or facilitates the poacher’s criminal activity, that community member crosses the threshold of participation and becomes a poacher him or herself.

approximately \$10,000 USD for ten minutes of relatively easy work is worthwhile.²⁰⁰

Moreover, such profit margins provide plenty of money available to bribe any sanctioning authorities encountered.

Such sanctioning authorities may also deem it profitable to not sanction poaching activity, or to not expend excessive public resources to protect them. In order to protect every rhino all the time, authorities would need to significantly increase the direct costs of enforcement action. Meanwhile, such work could risk alienating community members, upon whose support and resources authorities depend.

If these community members view the action situation through economic lenses, those who derive economic benefits from not poaching (e.g. ecotourism) and from public authorities such as revenue sharing may prefer that poachers do not poach, or that authorities sanction poaching. However, this would only occur if such benefits exceed the windfall profits to be gained through poaching a product valued at prices approaching USD 100,000 per kilogram. For such an outcome to occur, the economic benefits accrued from sustainable uses like ecotourism would have to pay extraordinarily well.

However, if community members do not economically gain from not-poaching, or if such gains do not outweigh fantastic potential gains from poaching, then community members will likely do nothing in relation to poachers. This produces the policy equilibrium of uncontrolled poaching.

²⁰⁰ The extraordinary price commanded by rhino horn on global markets bears stressing here. If the price were lower, say at USD 1,000 per kilogram range where it remained stable for approximately twenty years before the current crisis, it is possible that even where Market Pricing relational models predominate, an equilibrium outcome controlling poaching would be possible. However, the high illicit price of rhino horn is central to this analysis.

Equilibrium Outcome 2: When a Non-Market Pricing Relational Model Predominates

Incorporating relational models theory into the model illuminates a different potential policy outcome. According to relational models theory, individuals who confront the action situation through strictly economic decision-making are employing the market priced relational model, and engaging in routine trade-off reasoning. The costs and benefits of poaching and not poaching, sanctioning and not sanctioning, ignoring or informing will be weighed as fungible options, which tend to lead poachers to poach while authorities and the community look away.

However, when individuals construct rhinos using a non-market pricing schemata, either communal sharing or authority ranking, the policy equilibrium becomes the control of poaching. Poachers will still choose to poach, as some individuals will always engage in taboo behavior. However, public authorities employing the non-market pricing schemata will view poaching as a taboo-trade off, and are more likely to expend resources towards guarding and monitoring regardless of costs. Still, while such attitudes may make for more effective anti-poaching activities, the basic challenge of constantly protecting such vulnerable animals means that committed authorities may not be sufficient to control rhino poaching.

However, if community members employ a non-market pricing relational schemata to construct rhinos, then rhino poaching becomes a taboo tradeoff. Economic incentivizes and cost-benefit calculations will not only fail to incentivize community members to ignore poaching, such measures will paradoxically incentivize community members to instead report poaching activities to public authorities (moral outrage) and

pressure such authorities to sanction rhino poachers (moral cleansing). The act of sanctioning poachers will become legitimizing; authorities who do so will enjoy public support, and those who fail to do so will face public pressure against them. In effect, the community itself becomes an extension of the guard and monitor functions formally assigned to public authorities. When poachers poach, they trigger moral outrage and cleansing in the community. Community members report poachers to authorities, and pressure authorities to sanction poachers. Ultimately, the control of poaching— or even zero poaching— becomes the new policy equilibrium.

Observable Implications of Equilibrium Outcomes

These two scenarios produce two general scenarios. In the first, where the predominate relational model among community member Market Pricing, the following interactions occurs:

1. Poachers engage in the illegal harvest of rhino horn.
2. Most community members who encounter poachers ignore the poaching.
3. Authorities either:
 - a. Lack sufficient capacity to protect rhinos always and everywhere.
 - b. Ineffectively guard and monitor rhino, or ignore what poaching activity they do monitor.
 - c. Do not sanction poachers.

As a result, poaching is not controlled.

Conversely, when community members predominately employ a non-Market Pricing relational model, the following interactions occur:

1. Poachers engage in the illegal harvest of rhino horn.
2. Community members witness poaching, triggering a taboo-tradeoff. As a result, they:
 - a. Express moral outrage, thus inform public authorities of poaching and strengthening the monitoring capacity of such.
 - b. Seek moral cleansing, thus pressuring public authorities to sanction rhino poachers.
3. Authorities:
 - a. Augment capacity with information gained from moral cleansing from community members.
 - b. Respond to pressure generated by moral outrage from community members.
 - c. Sanction poachers.

As a result, poaching incidents decline and the poaching is eventually controlled.

From these scenarios, this model yields the following observable implications:

1. As the price of rhino horn increases, poaching will increase.

Where a Market Pricing relational model predominates,

2. As poaching increases, community members will ignore increased poaching levels rather than report poachers or pressure authorities.
3. As poaching increases, public authorities may increase guard and monitor capabilities, but will not significantly increase sanction activities.

Conversely, in countries where a non-Market Pricing (Communal Sharing or Authority Ranking) relational model predominates:

4. As the price of rhino horn increases, community members experience poaching as a taboo trade-off.
5. As poaching occurs, community members will express moral outrage at the poaching activity, and report it to authorities.
6. Community members will pressure authorities to sanction rhino poaching as a form of moral cleansing.

Both to distinguish moral mechanisms in this model from economic incentives, and because theoretically, moral mechanisms should be most active when persons do not construct rhino through Market Pricing relational models:

4. The community members who express moral outrage and cleansing will not economically benefit from rhino conservation.

5. Conversely, community members who economically benefit from rhino conservation may ignore poaching, or seek economic alternatives like rhino horn legalization rather than moral responses.

Finally, in order to distinguish moral mechanisms from mere coercion from authorities:

6. Sanction by public authorities should be temporally preceded by pressure from community members with no economic incentive for doing so.

The following analytic narrative explores how Nepal successfully controlled rhino poaching. In Nepal, a Communal Sharing relational model predominates and most people associate rhino with their community. Using archival data and contemporary accounts, this narrative describes how Nepal responded to the 2006 shock in the price of rhino horn, focusing on the interactions of the model's key groups and the role of moral mechanisms, before concluding with analysis of the model's utility. This analysis explores how the moral mechanisms of outrage and cleansing have led to a policy equilibrium of controlled rhino poaching.

Analytic Narrative of Nepal's Control of Poaching

Historically, Nepal has struggled to control rhino poaching. From an initial population in the early 1950s of approximately 800 rhino, within twenty years, Nepal's

rhino population fell to between 60 and 80 animals. In 1973, the government of Nepal began deliberate efforts to conserve rhino through the creation of Nepal's first national park, Chitwan. However, this program has consistently struggled to control poaching. Given Nepal's weak system of government and endemic problems with both trafficking and corruption, poaching remained an ongoing threat to Nepali rhino, and was increasing in the years leading up to the current global crisis. Yet just a few years into the poaching pandemic, Nepal has become the most effective country in the world at controlling rhino poaching.

History

Nepal has a checkered history of rhino conservation. Public authorities across various regimes have sought to protect rhinos, beginning with the Rana kings and continuing to today's post-conflict unity government. A series of institutional adaptations sought to balance public authority with community consent and support. However, the effectiveness of these arrangements has ebbed and flowed, and some level of rhino poaching persisted until well into the current global crisis.

Nepal is home to the greater one-horned rhinoceros *Rhinoceros unicornis*, sometimes known as the Indian rhinoceros. The third largest land mammal, this species is the second largest of the five rhino species.²⁰¹ Its horn is comparatively smaller than African varieties due to the absence of a posterior horn, although it has historically

²⁰¹ Eric Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros* (New York: Columbia University Press, 2003), 64.

commanded a higher price.²⁰² Possessing folds of hardened skin resembling armored plates, this species was the first to be successfully imported live into Europe, and dominates visual constructions of rhino in many Western cultures.²⁰³ Behaviorally, the Indian rhino is generally docile, inhabiting surprisingly small-ranges relative to other megafauna.²⁰⁴ In Nepal, rhinos live in a low-lying jungle forest known as the Terai, with ready access to vegetation needed for rhinos' prodigious appetites.²⁰⁵ Rhinos also frequent wallowing sites, making them relatively easy to locate for poachers.²⁰⁶ These animals historically inhabited the floodplains throughout south Asia, but since the 20th century have been essentially reduced to populations in two countries, India and Nepal.²⁰⁷²⁰⁸

The commercial hunting of Indian rhino is a similarly historic practice. While rhino horn is often associated with traditional Chinese medicine, Nepal itself has a long

²⁰² Martin, "Rhino Horn Weights."

²⁰³ Glynis Ridley, *Clara's Grand Tour: Travels with a Rhinoceros in Eighteenth-Century Europe* (New York: Atlantic Monthly Press, 2004).

²⁰⁴ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 110–16.

²⁰⁵ Khagendra Adhikari, "Ecology, Demography, Conservation and Management of the Greater One Horned Rhinoceros (*Rhinoceros Unicornis*) in Chitwan National Park, Nepal" (Wildlife Institute of India, 2015), 114.

²⁰⁶ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 129–133.

²⁰⁷ Rookmaker (2000) provides a fascinating study establishing the presence of rhinos in Pakistan's Indus Valley until the 14th century, and in eastern Afghanistan until the 16th century. See L.C. Rookmaaker, "Records of the Rhinoceros in Pakistan and Afghanistan," *Pakistan Journal of Zoology* 32, no. 1 (2000): 65–74.

²⁰⁸ Two Indian rhino may survive in Pakistan's Lal Sohanra National Park, but data on this population is unreliable after 1995. See Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 24.

cultural history of consuming rhino products (horn, hide, hooves, organs, even urine).²⁰⁹ Perhaps due to the cultural significance of rhino products, in 1846, the first ruler from Nepal's Rana dynasty declared the rhino a Royal Animal, thus reserving the right to hunt rhinos to members of Nepal's royal family.²¹⁰ At the time, poaching was punishable by death.²¹¹ Moreover, mosquito-borne malaria discouraged human settlements near rhino habitats.²¹² The twin protections of royal prerogative and malaria kept Nepalese rhino populations stable until the 1950s.

However, as the 1951 fall of the Rana dynasty removed royal protections from the Terai landscape, malarial eradication enabled human settlement of rhino habitat. Financed by foreign aid, the human population in the Terai increased from 36,000 in 1950 to 100,000 in 1960.²¹³ Within increased human contact came increased poaching. In this same time period, rhino populations plummeted from approximately 1,000 animals to less than 300.²¹⁴ Despite a government-compelled relocation of nearly all human settlements north the Rapti River, human and rhino populations continued to boom and bust respectively. By 1968, rhino population fell to between 81 and 108 animals, while

²⁰⁹ Esmond Bradley Martin, "Religion, Royalty and Rhino Conservation in Nepal," *Oryx* 19, no. 1 (1985): 11.

²¹⁰ Hemanta Mishra and Jim Ottaway, *The Soul of the Rhino* (Guilford, CT: Lyons Press, 2008), 45.

²¹¹ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 54.

²¹² *Ibid.*, 52–54.

²¹³ *Ibid.*, 54.

²¹⁴ Martin and Vigne, "Nepal's Rhinos: One of the Greatest Conservation Success Stories," 11; Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 54.

by 1971, human population reached 185,000.²¹⁵ As rhino populations neared extinction, the government acted.

Initial efforts to protect Nepal's rhino created physical boundaries and established guard and monitor roles for public actors. Spurred in part by a World Wildlife Fund project initiated in 1967 to protect rhinos near Chitwan, in 1973 Nepal's government gazetted the habitat of the last remaining rhino as Chitwan National Park, commissioning a *Gainda Gasti* or rhino patrol from the Forest Department to guard rhino populations.²¹⁶ This created a physical barrier around Nepal's rhinos, and charged a public authority with guarding them. In 1976, the Royal Nepal Army assumed guard responsibilities from the rhino patrol, solidifying the exercise of public authority in protecting rhinos. These actions effectively halted rhino poaching, as from 1975 until 1983, only three rhinos were poached in Nepal.

In the 1980s, Nepal expanded position rules by institutionalizing monitors for its rhino population, and increased security forces stationed in the park. A partnership between the Nepalese government and the American Smithsonian Institution's National Zoological Park led to the 1982 creation of Nepal's first conservation nongovernmental organization, the King Mahendra Trust for Nature Conservation (KMTNC, now known as the National Trust for Nature Conservation or NTNC).²¹⁷ In conjuncture with a newly created Department of National Parks and Wildlife Conservation within the Forest

²¹⁵ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 55.

²¹⁶ Martin and Vigne, "Nepal's Rhinos: One of the Greatest Conservation Success Stories," 12.

²¹⁷ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 55–56.

Ministry, KMTNC's monitors generated scientific data about rhinos and the park, leading to the formation of an epistemic community within the government's public authority. However, this increase in information about Nepal's rhinos accompanied a return of rhino poaching. By 1988, an Army battalion deployed to protect Chitwan National Park, yet poaching continued to rise uncontrolled.²¹⁸ As human populations outside the park also grew, Nepalese rhino conservationists shifted focus from governance within the park to communities that lay beyond it.

In the 1990s, coincident to a democratic transition ending Nepal's absolute monarchy, Nepal expanded the role of community members in rhino conservation. This effort centered on the pioneering creation of buffer zones adjacent to Chitwan National Park, creating a multiple layers of protected areas around the core of the park. The concept of buffer zones originated in UNESCO's Man and the Biosphere Programme in 1971, and community forest development accelerated since the Panchayat Forest Rules of 1978 and the Community Forestry program of 1980.²¹⁹ ²²⁰ In 1988, USAID funded a native tree nursery created on private land owned by a KMTNC employee, creating an environment for community members to harvest valuable thatch grass.²²¹ Coincidentally, this same environment expanded habitat for wildlife like rhinos. The next year, this effort

²¹⁸ Martin and Vigne, "Nepal's Rhinos: One of the Greatest Conservation Success Stories," 12.

²¹⁹ UNESCO, "Biosphere Reserves: The Seville Strategy and the Statutory Framework of the World Network" (Paris: UNESCO, 1996).

²²⁰ Arun Agrawal and Ostrom, Elinor, "Collective Action, Property Rights, and Decentralization in Resource Use in India and Nepal," *Politics and Society* 29, no. 4 (December 2001): 499.

²²¹ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 197–198.

expanded onto government-owned land managed by user group committees. By 1993, national legislation officially sanctioned these community-managed buffer-zone forests, and in 1998, responsibility for these zones transferred from Nepal's Department of Forestry to the Department of National Parks and Wildlife Conservation (DNPWC).²²² These institutions were replicated in additional protected areas created for rhinos in 1986 at Bardia National Park and in 2000 at the Royal Sukla Phanta wildlife reserve.²²³

Buffer zones created positions for community members to involve themselves in governance of rhino conservation. However, they aimed to do more, explicitly anchored in the logic of sustainable development and accomplishing conservation outcomes through generating benefits to local communities.²²⁴ In the 1990s, Nepal's buffer zones did generate indirect benefits from rhino conservation, namely by protecting cropland and flood control.²²⁵ However, direct economic benefits from such zones were small, slow to materialize, and narrowly distributed.²²⁶ Throughout this period of expanding community involvement in rhino conservation, rhino poaching increased. As benefits from conservation failed to materialize, Maoist insurgents ignited a civil war in 1996.

For the next ten years, Nepal experienced escalating violent conflict. As the government struggled to maintain control, Army security forces withdrew from guard

²²² Ibid., 200.

²²³ Kanchan Thapa et al., "Past, Present and Future Conservation of the Greater One-Horned Rhinoceros *Rhinoceros Unicornis* in Nepal," *Oryx* 47, no. 3 (July 2013): 347, doi:10.1017/S0030605311001670.

²²⁴ Katrina Eadie Brandon and Michael Wells, "Planning For People and Parks: Design Dilemmas," *World Development* 20, no. 4 (April 1992): 560.

²²⁵ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 202.

²²⁶ Ibid., 215–17.

roles in protected areas, and public authorities diverted resources away from rhino conservation. For instance, after the government declared a state of emergency in November 2001, the Army shuttered 24 guard posts at Chitwan National Park while it withdrew soldiers for assignment elsewhere.²²⁷ As the insurgency progressed, rhino poaching increased. For over a decade prior to 1996, Nepal lost approximately five rhinos per year to poaching. This doubled for the next two years, and by 2002, close to 40 rhino per year were lost to poaching. By 2005, over a hundred rhinos were lost, leading experts to conclude that “Nepal probably had the worst rhino poaching of any country in the world” due to the insurgency’s effect on security.²²⁸

At the same time, conservationists continued to bemoan the lack of economic development associated with rhino conservation. Several studies documented the lack of direct economic benefits reaching community members from rhino conservations.²²⁹ Economists and conservationists continued to call for the “creation of alternative economic opportunities locally, so as to deter poachers from poaching.”²³⁰ By

²²⁷ Esmond Bradley Martin, “Rhino Poaching in Nepal During an Insurgency,” *Pachyderm* 36 (2004): 92.

²²⁸ Esmond Bradley Martin and Chrysee Martin, “Insurgency and Poverty: Recipe for Rhino Poaching in Nepal,” *Pachyderm* 41 (December 2006): 61–73.

²²⁹ Dinerstein, *The Return of the Unicorns: The Natural History and Conservation of the Greater One-Horned Rhinoceros*, 181–226; Martin, “Rhino Poaching in Nepal During an Insurgency”; Martin and Martin, “Insurgency and Poverty: Recipe for Rhino Poaching in Nepal”; B. Adhikari et al., “Economic Incentives and Poaching of the One-Horned Indian Rhinoceros in Nepal,” *Poverty Reduction and Environmental Management* (Amsterdam: Institute for Environmental Studies, Vrije Universiteit, August 15, 2005); Mahesh Poudyal, Kristina Rothley, and Duncan Knowler, “Ecological And Economic Analysis of Poaching of the Greater One-Horned Rhinoceros (*Rhinoceros Unicornis*) in Nepal,” *Ecological Applications* 97, no. 7 (2009): 1693–1707.

²³⁰ Mahesh Poudyal and Duncan Knowler, “Economic Incentives and Poaching of the One-Horned Indian Rhinoceros in Nepal,” *Poverty Reduction and Environmental Management* (Amsterdam: Institute for Environmental Studies, Vrije Universiteit, June 9, 2005), 19.

2006, Nepal's rhino conservation was characterized by weak security measures, high poverty, and the worst poaching rates in the world.

Thus Nepal's conservation history at the start of the current crisis was mixed. Rhino poaching was an established pattern of interaction. For the previous five decades, public authorities had consistently but ineffectively sought to control rhino poaching, including innovative institutional adaptations like assigning the Army guard and monitor roles, enacting strict choice and pay-off laws into legislation, and the pioneering practice of buffer zone communities. Yet by 2006, these authorities were distracted by an insurgency and constrained by limited resources, and ultimately ineffective at controlling poaching amid the insurgency.

Community members faced physical and economic insecurity, even while increasing participation in rhino conservation. According to capacity- or economic-based expectations about conservation, Nepal should have been hard hit by the global shock in the price of rhino horn. However, few community members had ever associated rhino conservation with economic development. Rather, rhinos became coincident to healthy forests and community life, and associated with community empowerment and governance.

Nepal's Response to the Epidemic

Like many countries, Nepal initially experienced an increase in rhino poaching in the first years after the price of rhino horn increased. However, vigilante action by community members precipitated a wave of policy reforms targeting rhino poachers,

including crackdowns against complicit government officials. By 2010, rhino poaching in Nepal had effectively stopped, and since then, Nepal has gone from the world's worst country for controlling rhino poaching to the world's best.

During the first four years of the poaching epidemic, rhino poaching continued in Nepal. From 2006 until 2010, Nepal lost over 13 rhinos on average per year.^{231 232} This demonstrates that as with other range states, Nepalese poachers responded to global price shock and continued to poach. Contemporary reports on rhino conservation from that time period underscore that in the first years of the global crisis, many conservationists assumed that because of Nepal's demonstrated inability to control rhino poaching when the price of rhino horn was low, Nepalese rhinos were in great danger as the global price skyrocketed and transnational criminal activity intensified.²³³

The start of the crisis coincided with the resolution of Nepal's civil war. In April 2006, Nepal's king abdicated and reinstated Parliament, prompting Maoist rebels to declare a three-month truce. Yet instead of reaping a conservation-dividend from the end of fighting, initial government actions instead exposed deep corruption and complicity with rhino poaching. In May 2006, after security forces killed a rhino poacher in Chitwan National Park, the government arrested park officials for homicide, including the park's

²³¹ Esmond Bradley Martin and Chryssee Martin, "Enhanced Community Support Reduces Rhino Poaching in Nepal," *Pachyderm* 48 (December 2010): 49–50.

²³² Although official records indicate only three rhinos were poached in 2007, this is at best an anomalous year. Moreover, that same year, over 67 rhinos were discovered missing from Bardia National Park. This discovery, plus continued poaching in subsequent years, suggests that more than three rhinos were poached in 2007. Deepak Acharya, ed., "Rhino Numbers Severely Depleted in Bardia," *Conservation Watch-Nepal* 1, no. 2 (September 20, 2007).

²³³ Martin and Martin, "Insurgency and Poverty: Recipe for Rhino Poaching in Nepal"; Ukesh Raj Bhujju, Ravi Sharma Aryal, and Prakash Aryal, "Report on the Facts and Issues on Poaching of Mega Species and Illegal Trade in Their Parts in Nepal" (Kathmandu: Transparency International Nepal, October 2009), 52.

chief warden and chief of anti-poaching. A newly appointed replacement warden soon issued Nepal's lightest possible sentence for poaching to a major rhino horn trader. Nepal's cabinet ordered 13 poachers released from jail that August, and two additional poachers released in September.²³⁴ These actions demonstrate at best ineffective government responses to rhino poaching, if not outright collaboration with poachers.

Tragically, in September 24, 2006, a helicopter chartered by WWF-Nepal crashed in northeast Nepal, killing 24 people. Among those killed were leading conservationists, including Nepal's Forest Minister, several World Wildlife Fund (WWF) employees including nearly its entire Nepali leadership and its country director for Britain, the Finnish charge d'affaires, and two USAID staff.²³⁵ Since 1967, WWF had been the major international NGO supporting wildlife conservation in Nepal. Beyond the organizational impact of losing these key personnel, this event garnered significant public attention in Nepal and the global conservation epistemic community.

Nepal's civil war ended in November 2006 with the signing of a Comprehensive Peace Accord.²³⁶ Soon after, community members began mobilizing through public demonstrations about rhino poaching, and calling for the government to control rhino poaching. In December 2006, a student movement in Kathmandu delivered a petition

²³⁴ This incident is described in Esmond Bradley Martin, Chryssee Martin, and Lucy Vigne, "Recent Political Disturbances in Nepal Threaten Rhinos: Lessons to Be Learned," *Pachyderm* 25 (July 2008): 98–107; Kunwar, *Four Years for the Rhino: An Experience of Anti-Poaching Operations*, 214–243.

²³⁵ For details on the crash, see WWF Global, "Tragic Helicopter Crash in Nepal- Continual Updates," September 29, 2006, <http://wwf.panda.org/?81560/Tragic-Helicopter-Crash-in-Nepal-continual-updates>.

²³⁶ "Comprehensive Peace Agreement Concluded Between the Government of Nepal and the Communist Party of Nepal" (The Government of Nepal, Ministry of Foreign Affairs., November 21, 2006), <http://www.usip.org/publications/peace-agreements-nepal>.

with more than 100,000 signatures to the Forest Ministry, urging the government to stem poaching.²³⁷ This action is consistent with the public disassociation described as moral cleansing. By early 2007, civil society groups from the buffer zone regions around Chitwan National Park were pressuring the government to dismiss homicide charges against the jailed officials from the previous May, and media reports criticized the light sentencing of the rhino horn trader that followed.²³⁸ These actions demonstrate the desire for punishment described by moral outrage.

Throughout 2007, public authorities began taking steps to improve rhino protection as pressure from community members mounted. In March 2007, the government withdrew its homicide case against the Chitwan park leadership, and arrested a trading ring of Level 2 poachers in Kathmandu, including a Nepali soldier who was supplying ammunition.²³⁹ By mid-2007, the government reestablished 22 security posts in Chitwan National Park, and allocated a special budget of USD 57,423 for Army operations within national parks.²⁴⁰

While public authorities scaled up guard activities, community members also increased interactions mobilizing public engagement aimed at controlling rhino poaching. A public-private partnership between the Nepali government's DNPWC and WWF-Nepal launched Operational Unicornis, a nationwide program to increase political commitment for rhino conservation. A similar partnership between the DNPWC, WWF-

²³⁷ Martin, Martin, and Vigne, "Recent Political Disturbances in Nepal Threaten Rhinos: Lessons to Be Learned," 100.

²³⁸ *Ibid.*, 101.

²³⁹ *Ibid.*

²⁴⁰ *Ibid.*

Nepal, the formerly-named KMNTC now known as the National Trust for Nature Conservation (NTNC), the Zoological Society of London, and the UK Darwin Initiative began a law-enforcement monitoring system developed by the Wildlife Conservation Society (WCS), known as MIST.²⁴¹ In August 2007, international and Nepali NGOs launched the Empowering People for Rhino Conservation (EPRC) project in five buffer zone communities adjacent to Chitwan National Park, including *Conservation Watch-Nepal*, a news service publishing information about rhino and other wildlife conservation.²⁴² By September 2007, this newsletter was publicizing information about a recently butchered rhino, which it characterized as “cruel,” “brutal,” and “pathetic,” and describing the complicity of government authorities in condoning this practice.²⁴³ Later that month, *Conservation-Watch Nepal* reported that 67 rhinos had gone missing from Bardia National Park’s official counts, presumably lost to poaching.²⁴⁴ Student activism among community members also increased. The EPRC project began organizing rhino clubs in high schools near areas with high poaching, and an October 2007 student rally near Chitwan centered on the slogan, “Save rhino, it saves us.”²⁴⁵ Students even began

²⁴¹ Thapa et al., “Past, Present and Future Conservation of the Greater One-Horned Rhinoceros *Rhinoceros Unicornis* in Nepal,” 348.

²⁴² Deepak Acharya, “Cruelty on Dead Rhino in Nepal,” *Conservation Watch-Nepal* 1, no. 1 (September 1, 2007).

²⁴³ *Ibid.*

²⁴⁴ Acharya, “Rhino Numbers Severely Depleted in Bardia.”

²⁴⁵ *Ibid.*; Deepak Acharya, “Three Megafauna Died Between Nine Days,” *Conservation Watch-Nepal* 1, no. 4 (n.d.).

organizing volunteer anti-poaching patrols in communities adjacent to protected areas.²⁴⁶ Beyond schools, the EPRC also began hosting conservation summits between park leaders and buffer zone village development councils.²⁴⁷ These actions demonstrate increasing involvement and activism from community members to counter rhino poaching.

As public authorities slowly increased guarding and monitoring activities throughout 2007, rhino poaching continued. In September 2007, two Level 2 poachers were arrested outside Chitwan National Park, and in October 2007, a Level 3 poacher was arrested near Kathmandu.²⁴⁸ Community members appeared at public forums to denounce both poaching and the government's ineffective responses to it, including those who had reported their own relatives for poaching. Despite these arrests, government efforts to address poaching remained sluggish and focused on repairing and reoccupying previously abandoned posts within parks.²⁴⁹ Security positions would not be fully occupied until 2009.²⁵⁰ As the government acted slowly, Level 1 poachers continued to kill rhinos, including a rhino calf in Bardia National Park in December 2007.²⁵¹

²⁴⁶ Martin, Martin, and Vigne, "Recent Political Disturbances in Nepal Threaten Rhinos: Lessons to Be Learned," 101.

²⁴⁷ Deepak Acharya, "Rhino Poaching Is a Serious Conservation Threat," *Conservation Watch-Nepal* 1, no. 6 (n.d.).

²⁴⁸ Acharya, "Rhino Numbers Severely Depleted in Bardia"; Acharya, "Three Megafauna Died Between Nine Days."

²⁴⁹ Richard Kock, Rajan Amin, and Naresh Subedi, "Rogue Army Staff Involved in Poaching in Bardia National Park, Nepal, 2007-2008," *Pachyderm* 45 (July 2008): 116.

²⁵⁰ Martin and Martin, "Enhanced Community Support Reduces Rhino Poaching in Nepal," 50–51.

²⁵¹ Deepak Acharya, "Infant Rhino Poached Heinously," *Conservation Watch-Nepal* 1, no. 7 (January 1, 2008).

Throughout 2008, twelve rhinos would eventually be lost to poaching.²⁵² In this environment of sluggish public authorities and continued poaching, community members continued to act decisively.

Near Bardia National Park, community members finally confronted poachers directly. In the first three months of 2008, a volunteer group of community members formed essentially a vigilante raid on poachers operating in collusion with Army personnel. Building intelligence for two months, this group seized Level 1 and 3 poachers along with four Army soldiers, along with weapons and rhino horn, and delivered them to government officials in Kathmandu.²⁵³ Subsequently, this same group arrested 17 additional Army soldiers, eventually leading to the relief of the Army commander in Bardia.²⁵⁴ Poachers conducted a final operation at Bardia in May 2008, but were challenged by security forces, killing two guards in the process.²⁵⁵ After these raids, rhino poaching in Bardia effectively stopped.²⁵⁶

Following the community raids in Bardia, Nepalese government officials in Kathmandu began aggressively pursuing poachers. While rhino poaching continued in Chitwan National Park, government leaders began signaling that corruption and complicity with rhino poaching would no longer be tolerated. The Army commander at

²⁵² Adhikari, "Ecology, Demography, Conservation and Management of the Greater One Horned Rhinoceros (*Rhinoceros Unicornis*) in Chitwan National Park, Nepal," 77-81.

²⁵³ Kock, Amin, and Subedi, "Rogue Army Staff Involved in Poaching in Bardia National Park, Nepal, 2007-2008," 116.

²⁵⁴ Ibid.

²⁵⁵ Deepak Acharya, "Rhino Hurt Women in CNP.," *Conservation Watch-Nepal* 1, no. 12 (n.d.).

²⁵⁶ Martin and Martin, "Enhanced Community Support Reduces Rhino Poaching in Nepal," 50.

Bardia was relieved, and in April 2008, the government announced embezzlement charges against the deposed king and senior leaders of the NTNC NGO for using conservation programs to launder bribes.²⁵⁷ In May 2008, the leader of Nepal's Maoist party declared that Nepal's rhinos had been liberated "from the clutches of the royal family," and pledged to increase government security measures at parks throughout Nepal.²⁵⁸ In June 2008, an Army spokesperson admitted that over 30 Army personnel had been caught participating in poaching, and pledged to cooperate and not interfere with the DNPWC investigations into rhino poaching.²⁵⁹ At the same time, DNPWC officials called for shoot to kill policies to be enacted to protect rhinos, and arrested a *National Geographic* journalist for alleged complicity in wildlife trafficking.²⁶⁰ In November 2008, the government publicized a seizure of the royal treasury of rhino parts, include 81 rhino horns, emphasizing the Nepal government's assumption of responsibility for the parts.²⁶¹ This actions show public authorities beginning to respond to moral outrage and cleansing in response to rhino poaching.

As rhino poaching continued in Chitwan National Park in 2009 and 2010, public authorities began a series of institutional adaptations to tackle multiple levels of criminal activity involved in rhino poaching. In June 2009, Chitwan's chief warden declared that

²⁵⁷ Kock, Amin, and Subedi, "Rogue Army Staff Involved in Poaching in Bardia National Park, Nepal, 2007-2008," 115; Deepak Acharya, "Alarming Situation of Megafaunas in Nepal," *Conservation Watch-Nepal* 1, no. 11 (April 5, 2008).

²⁵⁸ Acharya, "Rhino Hurt Women in CNP."

²⁵⁹ Deepak Acharya, "Shoot At Sight Order Sought For Poachers" 1, no. 13 (n.d.).

²⁶⁰ Ibid.

²⁶¹ Deepak Acharya, "Tiger Killed A Rhino Calf," *Conservation Watch-Nepal* 1, no. 18 (n.d.).

in-park security measures were insufficient to tackle the problem, and called for expanded joint patrols and community involvement.²⁶² The following month, DNPWC unveiled a plan to create District Conservation Coordination Committees comprising leaders from park staff, the police, Army, and district forestry offices. This plan aimed to identify poachers accessing protected areas from surrounding communities.²⁶³

However, responses at the national level continued to lag. In May 2010, the government released more than 100 rhino poachers only halfway through ten year terms for poaching.²⁶⁴ Throughout 2010, poaching continue at Chitwan. Anti-poaching efforts were largely limited by jurisdiction to national parks themselves and adjacent buffer-zones, frustrating efforts to tackle broader syndicates. However, by late 2010, public authorities enacted an institutional adaption to counter the network of transnational trafficking.

In November 2010, the Nepal government established a series of joint interagency tasks forces to counter transnational trafficking networks. A National Wildlife Crime Control Coordination Committee (NWCCCC) involved members from DNPWC, the Forest Department, Customs, the Nepal Army, Nepal Police, and other ministerial level actors, charged with establishing policy control for wildlife trafficking. A Wildlife Crime Control Bureau (WCCB), consisting of representatives from the aforementioned ministries plus the National Investigation Department and the Crime

²⁶² Deepak Acharya, "Daily Rhino Count In the Offiing. Buried Carcasses of 19 Rhinos Found.," *Conservation Watch-Nepal* 1, no. 23 (June 8, 2009).

²⁶³ Deepak Acharya, "External Measures Need to Be Bolstered," *Conservation Watch-Nepal* 1, no. 24 (July 8, 2009).

²⁶⁴ Geeta Pandey, "More Rhinos Down, Setting Poachers Free," *Headlines Himalaya*, no. 110 (May 8, 2010): 2.

Investigation Bureau (CIB), enacted policies at the national level. Reporting to the WCCB were 19 WCCB District Levels, involving officials from the same agencies excluding the CIB. These district level bureaus coordinated interagency collaboration countering wildlife crime including rhino poaching.²⁶⁵ As a result of these changes, public authorities began to counter wildlife-trafficking operations throughout Nepal beyond the parks.

In 2011, the pocket of effective control that began in Bardia spread throughout Nepal. Throughout 2011, over 250 rhino poachers were arrested across Nepal, including 50 with warrants over 10 years old.²⁶⁶ More significantly, poaching effectively stopped in Nepal in 2011. Two rhinos were poached that year; for at least one of the poached rhino, the Level 1 and Level 2 poachers were arrested shortly thereafter.²⁶⁷

This effective control of poaching continued in 2012 and beyond. During April that year, only a single rhino was lost to poachers, who were subsequently tracked to and extradited from India.²⁶⁸ By year's end, five of the seven trafficking syndicates known to operate in Nepal during the crisis had been shut down.²⁶⁹ Anti-poaching activities by community members continued to grow. In January 2013, community members with a

²⁶⁵ Esmond Bradley Martin, Chryssee Martin, and Lucy Vigne, "Successful Reduction in Rhino Poaching in Nepal," *Pachyderm* 54 (December 2013): 68–69.

²⁶⁶ Diwaker Chapagain, "Zero Poaching in Rhinoceros Hailed in Nepal," *Traffic Bulletin* 24, no. 1 (April 2012): 4.

²⁶⁷ Martin, Martin, and Vigne, "Successful Reduction in Rhino Poaching in Nepal," 68.

²⁶⁸ *Ibid.*, 68–69.

²⁶⁹ *Ibid.*, 72.

volunteer anti-poaching patrol arrested a Level 2 poacher near Bardia, and by 2014, over 400 community anti-poaching units were operating in Nepal.²⁷⁰

Since 2011, Nepal has achieved four one-year periods of zero rhino poaching. A gilded sign in the Nepal Army Officer's Mess at the Chitwan National Park Headquarters says it all: Zero-Poaching Bar. Army battalions now rotate through the park, as duty conveys national prestige. Yet even as elite units take turns protecting rhino, community members remain the linchpin and focus of counter-poaching operations. For instance, family members of poachers appear in public to condemn poaching, including some who turned in relatives to authorities.²⁷¹ The Chief Warden of Chitwan National Park expressed his focus concisely: "anti-poaching means protecting the youth of our community" as much as it means protecting rhinos.

Poachers remain a threat, as demonstrated by a rhino shot in August 2016. However, even in that case, community members secured the wounded rhino before its horn was removed, alerting public authorities in the process.²⁷² This failed attempt at poaching demonstrates that rhino poaching in Nepal is now effectively controlled.

Analysis

This narrative presents evidence suggesting that social factors, particularly pressure generated by moral outrage and cleansing, temporally preceded and led to

²⁷⁰ Sarah Wade, "Changing the Guards: How a Whole Country Rallied Behind Protection of Nepal's Wildlife," *World Wildlife Magazine*, Winter 2014, 40.

²⁷¹ Media Consultancy Nepal, "Monthly Report of Empowering People for Rhino Conservation," September 1, 2007.

²⁷² Kumar Paudel Ramesh, "Chitwan Rhino Wounded By Gunshots Recovering," *myRepublica*, August 25, 2016.

Nepal's effective control of poaching. As rhino poachers engaged in wildlife trafficking, public authorities initially preferred to do little to interfere with poachers, and in some cases collaborated with them. Only when community members began pressuring public authorities did the trajectory of Nepal's control of rhino poaching change. This pressure from community members was consistent with the moral outrage and cleansing hypothesized by the sacred value protection model.

Rhino poachers consistently poached rhinos in Nepal since the late 1980s. As Nepal's civil war intensified from 1995 onward, public authorities diminished protection efforts for rhinos, demonstrating that they rationally sought to minimize expenditures for rhino conservation, particularly given opportunity costs of security operations against rebels. In some cases, public authorities even became complicit in poaching themselves, underscoring their aversion to incurring costs by countering rhino poaching. Community members in areas adjacent to protected areas engaged in governance activities and community resource management tangentially related to rhinos.

After the global price in rhino horn began increasing in 2006, community members began displaying moral outrage and cleansing regarding rhino poaching. In late 2006 and throughout 2007, community members began publically demonstrating against rhino poaching, and pressuring the government to increase enforcement actions. A pivotal moment occurred in 2008 when community members raided a poaching camp in Bardia National Park, catching Army personnel collaborating with poachers. This action effectively ended rhino poaching at Bardia, and triggered a cascade of government actions nationally. Over the next two years, Army officers were relieved, security forces

increased at parks, and anti-poaching efforts and interagency collaborations expanded nation-wide. By 2011, rhino poaching in Nepal was effectively controlled.

This change in outcomes was consistently driven by pressure from community members exhibiting moral outrage. Beginning with student petitions and culminating in interagency reforms, moral outrage facilitated costly enforcement actions and institutional adaption. As predicted by the model, community members pressured public authorities with anger and enthusiastic support for punishing poachers as norm violators, even going so far as to raid poacher camps and conduct volunteer anti-poaching patrols. Community members also targeted ineffective public authorities as metanorm violators, such as the embezzlement action against the king's conservation NGO and the seizure of rhino parts from the royal treasury. Throughout this period, community members displayed moral cleansing through public statements, protests, workshops, and their participation in rhino clubs and volunteer anti-poaching patrols.

Important shifts also occurred in state capacity and in the strategies and preferences of public authorities. Public authorities increased the number of security forces guarding and monitoring Nepal's park throughout 2008 and 2009, and the 2010 interagency committees led to nation-wide enforcement efforts. This latter policy shift was the final significant institutional change preceding the halt in poaching, demonstrating the necessary role for public authorities in controlling poaching. However, these changes occurred only after community members acted, and is best explained by accounting for preferences of community members expressed through moral outrage and cleansing. Moreover, the ongoing complicity of public authorities in poaching throughout

2008 and 2009 demonstrates that state capacity in itself is insufficient to explain why Nepal controlled poaching.

Likewise, the incorporation of rhino poaching into the policy agendas of the Maoist leader and later of the Prime Minister likely influenced changes in national policy and resource allocation. However, the exposure of the disposed king's complicity in conservation corruption between the Maoist party's embrace of anti-poaching and the shifts in national policy suggest that these changes were more than mere elite preference. Rather, controlling rhino poaching has become a legitimizing activity for Nepal authorities, and a relatively uncontroversial issue around which to build national unity. In this sense, the present government's strong commitment to continuing Nepal's zero-poaching success demonstrates a legitimizing tradition of protecting Nepal's rhino extending back to the first Rana king.

The source of this legitimizing pressure was the constructed sacred value of rhino, and not just public pressure to strengthen governance, reduce corruption, or otherwise improve government accountability. For one, community members explicitly mobilized on the issue of rhino conservation, whether through community anti-poaching patrols, student rhino clubs, or lobbying for the release of jailed rhino conservation actors. Moreover, Nepal's improved effectiveness at controlling rhino poaching has not coincided with broader improvements in combatting corruption or improving governance. Throughout the crisis, Transparency International has consistently rated Nepal as one of the world's most corrupt countries; at the same time that Nepal effectively halted rhino

poaching, corruption across Nepal actually worsened.²⁷³ Similarly, Nepal’s public sector capacity and law enforcement remain extremely weak.²⁷⁴ This underscores the puzzle of why a weak and poor country like Nepal has nevertheless effectively controlled poaching, and speaks to the legitimizing potential of wildlife for fragile developing states.

At no point in this narrative were economic arguments for conservation evidenced. Despite the economic logic central to the establishment of buffer zones near Nepal’s national parks, hypothesized economic benefits from conservation never significantly materialized for these communities. If anything, the decade-plus of civil war preceding the mobilization of community members should have made this group less likely to agitate for control of rhino poaching. In fact, at the start of the crisis, several leading conservationists, including WWF-Nepal’s country representative at the time, believed the biggest challenge facing Nepal’s rhinos was a lack of economic benefits accruing to Nepalis from conservation.²⁷⁵ Paradoxically, just as community members raided the poachers camp near Bardia and captured complicit Army personnel, conservationists were decrying the lack of tourist access and complete lack of funding for buffer zones in that same area.²⁷⁶ Community members proved most decisive where economic incentives to counter poaching were most absent.

²⁷³ Transparency International, “Corruption Perceptions Index 2016,” 2016, www.transparency.org.

²⁷⁴ Rama Krishna Regmee, “National Integrity System Assessment Nepal 2014” (Transparency International Nepal, 2014).

²⁷⁵ Adhikari et al., “Economic Incentives and Poaching of the One-Horned Indian Rhinoceros in Nepal”; Martin and Martin, “Insurgency and Poverty: Recipe for Rhino Poaching in Nepal.”

²⁷⁶ Martin, Martin, and Vigne, “Recent Political Disturbances in Nepal Threaten Rhinos: Lessons to Be Learned,” 103–104.

Two further points underscore the lack of economic motivations in this narrative. First, the government only increased park entry fees in 2012, the principle source of conservation revenue sharing, after poaching was controlled.²⁷⁷ Second, in 2009, the government ordered all ecotourist resorts within its national parks closed, including Tiger Tops, an iconic lodge closely associated with the creation of Chitwan National Park.²⁷⁸ These lodges were the most luxurious options in Nepal's moribund ecotourism sector, catering almost exclusively to foreign tourists. The government's rationale for this decision was concessions within the park were unsound for both anti-poaching and for ecology, though some operators claimed victimization by protectionist policies favoring Nepali businesses over foreigner-operated and oriented hotels like Tiger Tops. In any event, these decisions underscore the absence of material economic incentives spurring community members in the critical actions leading to Nepal's effective control of poaching.

Conclusion

At a time when rhino poaching increased exponentially around the globe, and countries with more state capacity and developed ecotourism sectors have failed to control poaching, Nepal has emerged as an unlikely leader in successful rhino conservation. Despite a checkered history of poaching, pronounced poverty and civil conflict, conservation in Nepal developed deep support throughout communities living near rhino populations, particularly in buffer zones surrounding protected areas. Shortly

²⁷⁷ Martin, Martin, and Vigne, "Successful Reduction in Rhino Poaching in Nepal," 70.

²⁷⁸ Smriti Basnet, "Restoring Resorts," *Nepali Times*, April 1, 2016.

after the global price in rhino horn increased in 2006, and incidents of poaching began rising across rhino range states, community members throughout Nepal began pressuring public authorities to control the decades-long problem of poaching. As Nepal's government recovered from its civil war, moral outrage and cleansing behaviors exhibited by community members regarding poaching were followed with a series of institutional adaptations by public authorities. Ultimately, these measures led to near total cessation in poaching by 2011.

The sacred value protection model best explains this shift in pressure from community members. Amid a backdrop of civil war, as public authorities diverted resources away from conservation and even collaborated with poachers, community members acted. Pressuring the government to arrest poachers, dismiss charges against guards who interdicted poachers, forming volunteer anti-poaching patrols, and even raiding poachers camps, these community members manifested the moral outrage predicted by the model, particularly in seeking to punish both poachers as norm violators and the metanorm violators who support them. Moreover, community members organized public actions through demonstrations, petitions, student groups, and workshops—all forms of the moral cleansing that “reaffirms core values and loyalties by acting in ways that shore up those aspects of the moral order that have been undercut by the transgression” of poaching.²⁷⁹ The embrace of this cleansing by the national government and its security forces underscores the depth of this social influence.

²⁷⁹ Philip E. Tetlock et al., “The Psychology of the Unthinkable: Taboo Trade-Offs, Forbidden Base Rates, and Heretical Counterfactuals,” *Journal of Personality and Social Psychology* 78, no. 5 (2000): 854, doi:10.1037//0022-3514.78.5.853.

This narrative makes clear that state capacity-based explanations are insufficient to explain Nepal's success. Public authorities in Nepal responded to social pressure, not vice-versa. Moreover, the complicity of such authorities in poaching during the first years of the crisis shows that even when state capacity is lacking, conservation progress remains possible. At the same time, both security forces to guard and monitor protected areas and interagency cooperation to counter trafficking networks ultimately proved necessary to control poaching.

However, economic explanations of how Nepal controlled poaching fail. The only actors in Nepal who seemed motivated by economic incentives were poachers themselves and public authorities who collaborated with them. Nepal's buffer zones had never realized the neoliberal dream of ecotourism generating economic growth, and when the crisis began, nearly all tourist revenue streams had stopped due to the civil war. Even now that Nepal has effectively controlled poaching, existing ecotourism capacity caters towards accommodating Nepali visitors rather than foreigners and luxury tour operators.

This analysis is limited by scope and focus. In seeking to understand whether social constructions of wildlife can influence conservation outcomes, I treated how Nepalis construct rhinos as exogenous. I did not consider why most Nepalis relate to rhinos in terms of their community rather than in economic terms, i.e. using a Communal Sharing instead of a Market Pricing relational model. The exclusion of such questions is justified by the limited time horizon under investigation; I assume that the predominate social construction did not significantly change during the half-dozen years it took Nepal to effectively control their poaching after the present crisis started. Moreover, the

misguided yet deeply embedded bias for explaining conservation outcomes using economic approaches justifies excluding exploration of why relational models vary. For now, it is enough to demonstrate that they do, and that such variance matters.

My level of analysis creates a more significant limitation to my findings. In seeking to explore national level outcomes like the control of poaching across Nepal, I made generalizations regarding both actors and structural factors. In reality, these categories are significantly more complex than categories like poacher, public authority, and community member suggest. Pleading eclecticism, I sought to minimize bias in my generalizations by anchoring my analysis in the social-ecological systems framework developed by the Ostrom Workshop at Indiana University and the analytic narrative methodology.²⁸⁰ Still, it is possible that greater detail at the expense of generalizations may enrich understanding of how Nepal controlled poaching. For instance, even though few community members materially benefited directly from rhino conservation, prospect theory would hold that individuals may have believed in future earnings potential associated with successfully controlling poaching. Similarly, some public authorities likely embraced institutional reforms more for political gain than for improving conservation outcomes. Further exploration of individual motivations anchored in historical contexts would illuminate the validity of generalizations made here.

²⁸⁰ Ostrom, Elinor, “Beyond Markets and States: Polycentric Governance of Complex Economic Systems”; Bates et al., *Analytic Narratives*.

CHAPTER SIX: CONCLUSION

HOW SACRED VALUE FACILITATES THE CONTROL OF POACHING

In the present global epidemic of rhino poaching, why have only weak and poor countries controlled rhino poaching? In the preceding chapters, I explored this puzzle to understand why some countries are more effective than others at controlling poaching. Rhinos are effectively controlled when individuals construct them using Communal Sharing or Authority Ranking relational models, thus protecting them through moral mechanisms even when state capacity and economic alternatives are lacking. This research is both significant— in that rhinos are critically endangered throughout the globe— and puzzling, given dominant assumptions throughout conservation literature and practice that privilege state capacity and economic incentives.

Literature Explaining Conservation Outcomes

Mainstream conservation literature inadequate explains the success at controlling poaching demonstrated by countries like Nepal and Swaziland. Social scientific explorations of conservation outcomes are a nascent field, originating only four decades ago with the advent of the modern environmental movement.²⁸¹ The 1970s saw work in

²⁸¹ Raymond L. Bryant and Sinéad Bailey, *Third World Political Ecology* (London ; New York: Routledge, 1997), 10; Clark Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa* (New York: Cambridge University Press, 1999), 5; Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (New York: Cambridge University Press, 1990), 2.

this field emphasized public structures to constrain individual decisions regarding common pool resources, while the second decade emphasized varied preferences from private interests within those structures. By the 2000s, both approaches were insufficient, and scholars increasingly looked to communities as the focal level of analysis.²⁸² Recent critical scholarship points to wildlife value orientations and social factors as potentially significant; yet within this dimension, it is unclear what social factors matter and why.²⁸³

Relational models theory illuminates such factors. Identifying four fundamental, universal, and innate modes structuring interaction between individuals, this theory postulates that individuals construct value for objects depending on the relational mode with which they associate that object.²⁸⁴ When individuals associate an object with a Communal Sharing, Authority Ranking, or Equality Matching relationship, the object attains incomparable or sacred value. Conversely, when individuals associate an object

²⁸² R.H.V. Bell, "Conservation with a Human Face: Conflict and Reconciliation in African Land Use Planning," in *Conservation in Africa: People, Policies and Practices*, ed. Anderson, David and Grove, Richard (New York: Cambridge University Press, 1987), 79–101; Peter D. Little, "The Link Between Local Participation and Improved Conservation: A Review of Issues and Experiences," in *Natural Connections*, ed. Western, David, R. Michael Wright, and Shirley C. Strum (Washington, D.C.: Island Press, 1994), 347–402; David W. Bromley, "Economic Dimensions of Community-Based Conservation," in *Natural Connections: Perspectives in Community Based Conservation*, ed. Western, David and R. Michael Wright (Washington, D.C.: Island Press, 1994), 428–47; Gary C. Gray, *Wildlife and People: The Human Dimensions of Wildlife Ecology* (Chicago: University of Illinois Press, 1993); Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*; Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*.

²⁸³ Arun Agrawal and C. Gibson, Clark, *Community and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation* (New Brunswick: Rutgers University Press, 2001); Michael J. Manfredo and Ashley A. Dayer, "Concepts for Exploring the Social Aspects of Human–Wildlife Conflict in a Global Context," *Human Dimensions of Wildlife* 9, no. 4 (December 2004): 1–20, doi:10.1080/10871200490505765; Manfredo, Michael J., Teel, Tara L., and Kimberly L. Henry, "Linking Society and Environment: A Multilevel Model of Shifting Wildlife Value Orientations in the Western United States," *Social Science Quarterly* 90, no. 2 (June 2009): 407–27; Tara L. Teel et al., "Understanding the Cognitive Basis for Human–Wildlife Relationships as a Key to Successful Protected-Area Management," *International Journal of Sociology* 40, no. 3 (2010): 104–23.

²⁸⁴ Fiske, Alan P., *Structures of Social Life: The Four Elementary Forms of Human Relations* (New York: The Free Press, 1991); Fiske, Alan P., "Relational Models Theory 2.0," in *Relational Models Theory: A Contemporary Overview*, ed. Haslam, Nick (Mahwah, NJ: Lawrence Erlbaum Associates, 2004), 3–26.

with a Market Pricing relationship, the object possesses fungible or secular value. The type of value an individual associates with an object determines how that individual responds to proposed trade-offs regarding that object.

The Sacred Value Protection Model identifies three forms of trade-off reasoning.²⁸⁵ In routine trade-offs, individuals compare two objects of fungible or secular value. In essence, this assigns a price to an object. In tragic trade-offs, individuals compare two incomparable or sacred objects, such as weighing the life of a mother against that of a child during a difficult pregnancy. Such situations where significant loss is unavoidable define tragedies.

Taboo trade-offs are the third form of trade-off reasoning, where an individual compares an object with fungible or secular value to an object with incomparable or sacred value. Such situations threaten the social relationship associated with the sacred object, eliciting cognitive, emotional, and affective behaviors from individuals who contemplate the taboo trade-off, specifically moral outrage and moral cleansing.

Moral outrage refers to actions by an individual seeking to punish both the norm violator who proposes the taboo trade-off and a metanorm violator who approves of the taboo trade-off. An example of moral outrage is pressuring an authority to harshly punish a poacher, or seeking to inform on or punish a poacher oneself.

Moral cleansing refers to symbolic actions by an individual to outwardly disassociate oneself with the taboo trade-off. An example of moral cleansing is joining a

²⁸⁵ Fiske, Alan P. and Tetlock, Philip E., "Taboo Trade-Offs: Reactions to Transactions That Transgress the Spheres of Justice," *Political Psychology* 18, no. 2 (June 1997): 255–97; Philip E. Tetlock et al., "The Psychology of the Unthinkable: Taboo Trade-Offs, Forbidden Base Rates, and Heretical Counterfactuals," *Journal of Personality and Social Psychology* 78, no. 5 (2000): 853–70, doi:10.1037//0022-3514.78.5.853.

protest or advocacy group, making public statements against poaching, or disavowing previous participation in poaching. Out, damned spot! Out, I say!²⁸⁶

If individuals living near endangered wildlife construct such species with non-Market Priced relational models, then poaching of those species becomes a taboo trade-off, eliciting moral outrage and cleansing that can facilitate effective control of poaching.

To assess this hypothesis, this research first sought to understand where rhino poaching has been effectively controlled by cataloging rhino poaching events around the world by country. Next, to assess whether relational models correlate with the effective control of poaching, I utilized formal institutional rules as proxy measures for predominate relational models. After establishing that such a correlation exists, I then sought to understand whether the relational models manifested by individuals correspond with that suggested by formal institutional rules in three cases. I selected three cases whose formal institutional rules suggested ideal type variance of relational models, namely Communal Sharing in Nepal, Authority Ranking in Swaziland, and Market Pricing in South Africa. After finding that individuals within these cases employed relational models consistent with the relational model suggested by formal institutional rules, I then investigated the case of Nepal to understand how moral outrage and cleansing mechanisms facilitated the effective control of poaching. I did so by assessing an analytic narrative of Nepal's successful control of poaching after the 2006 crisis.

²⁸⁶ William Shakespeare, *MacBeth*, V.1.25.

Findings

The Control of Rhino Poaching

In Chapter 3, I explored the relationship between the control of poaching and formal institutional rules associated with certain relational models. Drawing from literature on social control, criminology, and common pool resource management, I operationally define poaching as controlled when the illegal harvesting of rhino is rare, punished, and does not threaten a population with extirpation.²⁸⁷

Since 2006, rhino poaching has been effectively controlled in five rhino range states: Botswana, Nepal, Swaziland, Tanzania, and Zambia.

Poaching has not been controlled in the Democratic Republic of Congo, India, Kenya, Malaysia, Mozambique, Namibia, South Africa, Vietnam, and Zimbabwe; rhino have been extirpated in the Democratic Republic of Congo in 2010, in Malaysia in 2011, in Mozambique in 2013, and in Vietnam in 2010.

In Indonesia, Malawi, and Uganda, poaching may have been controlled; however, I exclude these from my analysis because it is unclear whether poaching is controlled there or simply absent. While the absence of poaching is beneficial for conservation, it is not the same as effectively controlling poaching. It is hypothetically possible that transnational criminal organizations engaged in rhino poaching have simply not attempted to operate within these countries. While such an agential decision merits

²⁸⁷ Robert M. Muth and John F. Bowe, "Illegal Harvest of Renewable Natural Resources in North America: Toward a Typology of the Motivations for Poaching," *Society & Natural Resources* 11, no. 1 (January 1998): 9–24, doi:10.1080/08941929809381058; Stanley Cohen, *Visions of Social Control* (Cambridge: Polity Press, 1985); Martin Innes, *Understanding Social Control* (Berkshire: Open University Press, 2003); Morris Janowitz, "Sociological Theory and Social Control," *American Journal of Sociology* 81, no. 1 (July 1975): 82–109; Wilbert E. Moore, *Order and Change* (New York: Wiley, 1967), 171–219.

further inquiry, it lies beyond the scope of this research into whether social constructions of rhino significantly vary.

Relational Models and the Control of Poaching

Of the universe of countries with wild rhino populations, all five countries with formal institutional rules for rhino conservation consistent with Communal Sharing or Authority Ranking relational models effectively controlled poaching.

Conversely, nine countries with formal institutional rules for rhino conservation associated with the Market Pricing relational model did not effectively control poaching; in four of these, rhino were extirpated.

There was no relationship between state capacity indicators or economic incentives and the control or lack of control of poaching, except that states with the largest capacity and ecotourism sectors also experienced the most intense poaching.

Manifestations of Relational Models in Individual

In Chapter 4, I explored whether formal institutional rules accurately reflect actual relational models used by individuals within a country.

Focusing on three countries whose institutional rules suggested ideal type variance among relational models, I found that a significant majority of rhino conservationists in Nepal, Swaziland, and South Africa employed a single relational model, and that model was consistent with the formal institutional rules in that country for rhino conservation. In Nepal, this predominant model was Communal Sharing (n= 31

of 35). In Swaziland, the predominant model was Authority Ranking (n=18 of 24). In South Africa, the predominant model was Market Pricing (n=28 of 32).

Moral Mechanisms in Nepal's Control of Poaching

In Chapter 5, I investigated whether the moral outrage and moral cleansing mechanisms predicted by the Sacred Value Protection Model facilitated Nepal's effective control of poaching.

Through an analytic narrative, I established that moral outrage and cleansing were the key mechanisms generating community pressure on public authorities to control poaching. This community pressure occurred despite a lack of material economic incentives, and countered state capacity that was at best ambivalent to and occasionally even complicit in rhino poaching. This moral outrage and cleansing was critical in facilitating Nepal's effective response to poaching and emergence as the world's most successful country in controlling rhino poaching.

Summary

These findings collectively establish that relational models are a critical variable in explaining the effective control of rhino poaching. Since the 2006 global epidemic in rhino poaching began, only countries where non-Market Priced relational models predominate have effectively controlled poaching. In these countries, most individuals construct rhinos either as something they hold in common or in relation to a hierarchical authority. Rhino poaching then becomes a taboo trade-off, eliciting moral outrage and cleansing that pressures public authorities to adapt to poaching operations and effectively

control poaching. This moral outrage and cleansing can occur despite weak state capacity and in the absence of economic incentives to control poaching. Paradoxically, such economic incentives might be incompatible with these moral mechanisms, and mute any outrage or cleansing poaching might otherwise elicit.

Limitations

This research is chiefly limited in its scope and level of analysis. First, this research has examined whether social constructions of rhino vary, and if any such variance matters. This focus is significant, as conventional discourses on conservation uncritically embed assumptions about state capacity and especially economic incentives. For example, during a recent contested debate over legalization of rhino horn trade at the Convention on the International Trade in Endangered Species' 17th Conference of Parties, one legalization advocate exclaimed "conservation that doesn't generate profits is merely conversation!" This research has critically examined such perspectives, demonstrating that constructing wildlife as a commodity (i.e. relating to it with a Market Pricing relational schemata) is a choice some actors make while other actors do not. Those who do not construct rhino as commodities are more effective at controlling rhino poaching in the current crisis.

Yet in seeking to demonstrate that social constructions of rhino can vary in a significant way, I have not explored why such constructions vary. What causes individuals to use one relational model versus another? Under the pressures of a taboo trade-off, what is the durability of a non-Communal Sharing or Authority Ranking relational model? In other words, how long will moral outrage and cleansing last?

Experimental research in trade-off reasoning suggests that these effects mute in the presence of confusing framing, and potentially with time.²⁸⁸ What is the instrumental purpose of ascribing incomparable value to an object?²⁸⁹ How do relational models change and evolve?²⁹⁰ Having established that sacred values matter, future research should explore the causes and dynamics of changes of such values and relational models.

Moreover, I do not claim that the institutional trajectory of Nepal nor relational models themselves offer panaceas to the contemporary challenge of poaching, rhino or otherwise. Mindful of Ostrom and Cox's injunction to avoid such panaceas while moving towards a diagnostic approach in understanding social-ecological systems, this bears underscoring.²⁹¹ Just as rhino present unique conservation challenges distinct from those posed by other endangered species, each country and indeed each community engaging in resource management is distinct from others. Rhino are not elephants, and Nepal is not South Africa.

However, even as we should not conflate distinct cases into one universal template for conservation, neither should we assume no parallel generalities exist between cases. My analysis of institutional rules and relational models research conforms to Levin's call for searching for patterns across cases, and my analytic narrative to

²⁸⁸ A. Peter McGraw and Philip E. Tetlock, "Taboo Trade-Offs, Relational Framing, and the Acceptability of Exchanges," *Journal of Consumer Psychology* 15, no. 1 (January 2005): 2–15, doi:10.1207/s15327663jcp1501_2; Tetlock et al., "The Psychology of the Unthinkable."

²⁸⁹ In a personal conversation with Alan Fiske, the pioneer of relational models theory, in September 2015, he identified this question as the cutting edge of relational model research.

²⁹⁰ Nick Haslam, ed., *Relational Models Theory: A Contemporary Overview* (Mahwah, NJ: Lawrence Erlbaum Associates, 2004), 47–48.

²⁹¹ Elinor Ostrom and Michael Cox, "Moving beyond Panaceas: A Multi-Tiered Diagnostic Approach for Social-Ecological Analysis," *Environmental Conservation* 37, no. 4 (December 2010): 451–63.

George and Bennett's for typological theorizing.²⁹² An essential task for scientific research is to explore what is distinguishable from what is common across varied cases. This research suggests that relational models are one such distinguishable commonality.

A second limitation lies in this project's level of analysis and generalizability. I have focused on outcomes at the national level, moving through explanatory variables from the national level through the community to the individual. In doing so, I have conflated action situations while assuming holons, nested subassemblies of part-whole units in complex adaptive systems.²⁹³

In reality, there may be systematic effects and connections between these levels that this research did not consider. For instance, my analysis of state capacity privileged instrumental uses of that capacity. Given the inescapable politics of wildlife policy outcomes, it is both possible and likely that public authorities responded to public pressure to control poaching for political purposes beyond the efficacy of addressing poaching.²⁹⁴ From this, it is likely that the politics of rhino poaching policy contributed to successful adaptations to the contemporary crisis, such as the embrace of anti-poaching by Nepal's Maoist leader. While this research's focus on varying social constructions has

²⁹² Simon A. Levin, "The Problem of Pattern and Scale in Ecology," *Ecology* 73 (1992): 1943–67; Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge, MA: MIT Press, 2005).

²⁹³ Ostrom, Elinor, *Understanding Institutional Diversity* (Princeton: Princeton University Press, 2005), 11–12.

²⁹⁴ Gibson, *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*; Margaret Levi, "A Logic of Institutional Change," in *The Limits of Rationality*, ed. Karen Schweers Cook and Margaret Levi (Chicago: University of Chicago Press, 1990), 402–17.

identified a source of political pressure for that political decision, I have not fully explored the politics of that decision itself. This question bears further research.

Similarly, I operationalized *actors* for rhino social-ecological systems as belonging to three categories: poachers, public authorities, and community members. This generalization is consistent with the framework approached advocated by Ostrom and others.²⁹⁵ However, such generalization may miss important variation among actors within these groups, such as that between a national park official and an Army soldier within the broad category of public authority, or among different levels of poachers. This potential variation could also be explored in further detail to assess its significance.

Against such limitations, I plead theoretical eclecticism in pursuit of understanding why weak and poor states have controlled poaching, and investigating whether social constructions can matter. This type of “methodological ‘bet’ about which unit of aggregation will produce tractable and empirically powerful explanations” is justified both by its attention to micro-foundations of actors, and I hope by its findings.²⁹⁶ However, future research should explore variance among levels of analysis and within categories of actors.

A deeper challenge to these findings lies in my privileging material interests in appraising economic incentives. For instance, following prospect theory, it is possible that individuals who did not materially benefit from ecotourism nonetheless believed that

²⁹⁵ Michael McGinnis and Elinor Ostrom, “Social-Ecological System Framework: Initial Changes and Continuing Challenges,” *Ecology and Society* 19, no. 2 (2014): 30.

²⁹⁶ David A. Lake, “Theory Is Dead, Long Live Theory: The End of the Great Debates and the Rise of Eclecticism in International Relations,” *European Journal of International Relations* 19, no. 3 (September 1, 2013): 573–74, doi:10.1177/1354066113494330.

if rhino poaching were controlled, such benefits would materialize in the future. Against that critique, I note that such benefits have still not yet materialized in countries like Nepal, and that individual statements and behaviors I observed did not suggest that individuals are motivated by economic gains. Nevertheless, given the centrality of utility maximization in conservation discourses and the challenge my research poses to that economic approach, this potential critique should be further explored through prospect theory.

Theoretical Implications

This research has implications for the theoretical employment of relational models and the diagnostic approach to explaining conservation outcomes, and suggests an institutional sequence of endangered species protection.

Relational Models Theory and Sacred Value Protection

First, this research has demonstrated the utility of relational models theory and the sacred value protection model in explaining conservation outcomes. Contemporary research in wildlife policy points towards psychological variance in wildlife value orientations,²⁹⁷ social capital,²⁹⁸ and institutionalized norms²⁹⁹ as key explanatory factors

²⁹⁷ Manfredo, Michael J., "Human Dimensions of Wildlife Management," *Wildlife Society Bulletin* 17, no. 4 (Winter 1989): 447–49; Manfredo and Dayer, "Concepts for Exploring the Social Aspects of Human–Wildlife Conflict in a Global Context"; Teel et al., "Understanding the Cognitive Basis for Human–Wildlife Relationships as a Key to Successful Protected-Area Management."

²⁹⁸ Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*.

²⁹⁹ Agrawal and Gibson, Clark, *Community and the Environment: Ethnicity, Gender, and the State in Community-Based Conservation*.

in understanding outcomes regarding wildlife policy and common pool resource management. This research suggests that the relational schemata identified in relational models theory are important variables previous studies pointed towards.

Social-Ecological Systems Framework

Similarly, these findings lend credence to the utility of Ostrom's diagnostic framework for understanding social-ecological systems. This approach enabled cross-case comparison and analysis of a variety of cases involving rhino conservation. Ostrom and McGinnis (2014) argued that this approach could enable scholars and practitioners to compare diverse cases by focusing on a key level of analysis, identifying which variables at that level can be observed and measured, and communicating the results of such variables across research communities.³⁰⁰ My research fruitfully followed that approach, focusing on the interactions between poachers, public authorities, and community members, particularly the relational models employed in those interactions. These findings are relevant not only to political and social scientists, but also to scholars and practitioners from the wide range of disciplines engaged in conservation. As such, this demonstrates the value of the social-ecological system framework approach and its potential for further illuminating wildlife policy and conservation outcomes.

An Institutional Sequence for Endangered Species Protection?

From that perspective of institutional analysis, it appears that successful conservation of endangered species may follow an institutional sequence. In Nepal,

³⁰⁰ McGinnis and Ostrom, "Social-Ecological System Framework: Initial Changes and Continuing Challenges," 30.

effective control of poaching began with a critical juncture, at the point where populations of the endangered species fell to an alarming level. This occurred around 1973, after the lifting of royal protections from rhino habitat joined with increased human population pressure on rhino populations following DEET-induced malarial eradication.

At this critical juncture, a public authority established a physical boundary separating the endangered species from human populations, and assigned guards and monitors to enforce that boundary and generate information about the species. In Nepal, this occurred when the government established the Chitwan National Park as a protected area, and assigned the Nepalese Army to guard the park. Meanwhile, Forestry Department officials monitored populations in conjunction with both international NGOs (WWF-Nepal) and domestic NGOs (the KMTNC).

Next, community members were re-socialized to interact with the endangered species in a non-exploitative way. In Nepal, this occurred through the creation of the national park buffer zone community forests. Significantly, these community members were allowed to harvest grass and other forest products from rhino habitats, but not to profit from rhinos themselves. Ecotourism drawing foreign tourist receipts and revenue was pitched by international conservationists but never materialized in reality; even today, Nepal's ecotourism sector today remains a world apart from thriving ecotourism sectors across sub-Saharan Africa and even neighboring India. In this manner, community members became socialized to construct the endangered species with their community, forming Communal Sharing relational models.

Echoing Marx's concept of a metabolic rift, it may be that when unsustainable extraction of a resource threatens a species with extirpation or extinction, the key to

averting that outcome is restoration of a species' social and ecological ties to the community members who live near it, and the public authorities who guard and monitor it. This *metabolic restoration* socially restores the exploited wildlife from alienation to an ecological metabolism.³⁰¹ Social welfare studies identify that *de-commodification* occurs when a service formerly constructed as a commodity becomes a matter of right, severing its existence from a market.³⁰² Nepal's rhinos may demonstrate the potential of species de-commodification as a means of protection against surging illicit demand in wildlife trafficking.

These moral mechanisms proved critical to Nepal's effective control of rhino poaching despite the fantastically lucrative price commanded by rhino horn after 2006 and the absence of effective state capacity after Nepal's civil war. Further research into protection of endangered species should compare this institutional sequence to path trajectories in other cases where communities have attempted to conserve endangered flora and fauna.

The Price of Rhino Horn and the Evolution of Relational Models

Finally, more research is needed into understanding two factors outside the scope of these findings. First, further study should be conducted into why the global price of rhino horn increased as it did in 2006. Based on extent literature on the crisis, this study assumed that this price shift occurred exogenously due to a market manipulation by

³⁰¹ John Bellamy Foster and Brett Clark, "Marxism and the Dialectics of Ecology," *Monthly Review* 68, no. 5 (October 2016).

³⁰² Gosta Esping-Andersen, *The Three Worlds of Welfare Capitalism* (Princeton: Princeton University Press, 1990), 20–21.

syndicates trafficking rhino horn to emerging markets in East Asia, namely Vietnam and China. However, this event is prone to facile explanations and inferences derived thereof.

Many assume that rhino horn is a normal good, and that demand pressures driving current poaching can be reduced by simple measures such as creating a legal trade for horn, farmed or otherwise,³⁰³ or synthetically creating a substitute good.³⁰⁴ However, rhino horn is in fact more properly considered a Veblen good, whose demand is proportional to and a function of its high price. This concept was first identified in the late 19th century as part of the conspicuous consumption of industrialization's nouveau riche.³⁰⁵ In today's demand for rhino horn, it appears this phenomenon now occurs in contemporary East Asia. Further economic research should explore market dynamics of such Veblen goods, particularly as they involve illicit markets and transnational criminal organizations.

Similarly, having established what relational models can cause in relation to conservation outcomes, further research should explore what causes relational models. Why do relational models vary? How do relational models change? When engaged in taboo trade-off reasoning, how long a non-Market Priced relational model endure? Relational model theorists have identified relational model evolution as a future direction for research, exploring why and how some objects attain incomparable value while others

³⁰³ Duan Biggs et al., "Legal Trade of Africa's Rhino Horns," *Science* 339 (March 1, 2013): 1038–39.

³⁰⁴ Steven Broad and Gayle Burgess, "Synthetic Biology, Product Substitution, and the Battle Against Illegal Wildlife Trade," *Traffic Bulletin* 28, no. 1 (April 2016): 23–28.

³⁰⁵ Thorstein Veblen, *The Theory of the Leisure Class*, 1899.

do not.³⁰⁶ Synthesizing these questions with political science research into varying social constructions of wildlife and privatization in governance could generate novel insights into why relational models change.³⁰⁷

Policy Implications

This research demonstrates that how we think about endangered wildlife matters. This holds practical implications for the immediate challenge of rhino conservation and the protection of other endangered species, and for broader issues of state-building, ecotourism, and countering illicit trafficking.

For rhino conservation, these findings suggest that the path toward successful conservation and the control of rhino poaching lies in socializing community members to value rhinos as communal responsibilities, rather than in a militarized focus on increasing state coercive capacity or through economic incentives like ecotourism. While state capacity remains a necessary element of effective control of poaching, it is no substitute for price-shock resistant moral mechanisms built on de-commodified community relationships. The recent success of community-centered anti-poaching efforts in South Africa such as the Black Mambas underscores the external validity of such mechanisms.³⁰⁸

³⁰⁶ Haslam, *Relational Models Theory: A Contemporary Overview*.

³⁰⁷ Charlotte Epstein, *The Power of Words in International Relations* (Cambridge, MA: MIT Press, 2008); Rodney Bruce Hall and Thomas J. Biersteker, eds., *The Emergence of Private Authority in Global Governance* (Cambridge, MA: Cambridge University Press, 2002).

³⁰⁸ Jeffrey Barbee, "World's First All Female Patrol Protecting South Africa's Rhinos," *The Guardian*, February 26, 2015.

Similarly, these findings suggest that efforts to protect rhinos and endangered species through economic incentives like ecotourism are problematic. Given the fantastically lucrative profit potential for a single act of poaching, promoting sustainable alternative uses of rhino and similar endangered species are at best ineffective. At worst, such measures may exacerbate the very poaching they seek to address by legitimizing the economic exploitation and commodification of wildlife like rhino, and socializing community members and public authorities alike to see such wildlife through Market Pricing relational schemata, thereby suppressing moral mechanisms that could contribute to endangered species protection.

Similarly, current public discourses about economic solutions to rhino poaching are likewise at best ineffective, and may in fact contribute to increased poaching. Legalizing trade in rhino horn, promoting the agricultural farming of rhino for ecotourism game parks, and auctioning hunting permits for rhino to the highest tourist bidder likely legitimizes the construction of rhinos as commodities and encourages individuals to reference rhinos using the Market Priced relational model. Regardless of any short term gains in revenue generated for endangered species protection and conservation, such economic solutions may ultimately prove counterproductive by dampening the only demonstrated mechanism for effectively controlling rhino poaching in the current crisis.

In the end, it matters how we think about endangered species like rhino. When we construct rhino as commodities, we relate to them through a Market Pricing relational model. Under such circumstances and discourse, whether a poacher successfully kills a rhino becomes a function of the profit potential for that poacher and the capacity of public authorities. To effectively control poaching under this Market Priced

circumstance, either the price of rhino horn must decrease or the socioeconomic status of that poacher must increase until such poaching becomes irrational.

Alternatively, increasing the capacity of the public authorities relative to rhinos could increase to the point where guards could guarantee the rhino's security. However, Kenya's example regarding state capacity is instructive. There, the last three northern white rhino in existence are continuously guarded by rangers at arms' distance, suggesting that while a concentration of public authorities around rhino is possible, it can only exist with populations teetering on the brink of extinction. At the same time, the intensely militarized intensive protection zone of South Africa's Kruger National Park continues to lose rhino to poachers at an alarming rate. During 2015, this area was losing approximately three rhinos per day, demonstrating that not even green militarization is enough to controlling poaching.

Yet countries like Nepal show that an alternative outcome is possible. When we think about endangered species like rhino in reference to our community or to a common hierarchical authority— when we use Communal Sharing or Authority Ranking relational models to construct rhino— poaching becomes a threat not only to wildlife but to our relationships with a community. This elicits moral responses— outrage and cleansing— that block cost-benefit calculations of profit potential and pressure public authorities to guard, monitor, and sanction poachers.

The essence of these moral mechanisms is for a community member to see in the rhino him or herself, and to associate rhino with his or her relationship to the community. During fieldwork for this dissertation, Nepali respondents repeatedly responded to the question, "Are rhinos important to you?" by exclaiming, "I am Nepali!" Many continued

speaking of personal encounters with rhino. One flatly told me, "rhinos are safe here," while another teenager took me into his community forest to proudly show me his community's resident rhino, living openly without a guard or a fence in sight. These respondents overwhelmingly described Nepal's rhino as fellow members of their community, for whom they felt moral responsibility.

Ultimately, the responsibility one feels for wildlife protection is a function of how one values it. In his essay "Money Versus Goods," the poet and conservationist Wendell Berry observed that:

A proper economy, moreover, would designate certain things as priceless. This would not be, as now, the "priceless" of things that are extremely rare or expensive, but would refer to things of absolute value, beyond and above any price that could be set upon them by any market. The things of absolute value would be fertile land, clean water and air, ecological health, and the capacity of nature to renew herself in the economic landscape. . . . there are precedents in all societies and traditions that have understood the land or the world as sacred—or, speaking practically, as possessing a suprahuman value. The rule of pricelessness clearly imposes certain limits upon the idea of land ownership. Owners would enjoy certain customary privileges, necessarily, as the land would be entrusted to their intelligence and responsibility. But they would be expected to use the land as its servants and on behalf of all the living.³⁰⁹

From this perspective, if we designate certain wildlife like rhino beyond and above any price set upon them by a market, we simultaneously constrain our choices of actions regarding such wildlife and create positive moral obligations to act toward that wildlife in a public trust.

This research supports that view. In today's crisis of rhino poaching, the only effective control of poaching occurs where community members construct rhino as elements of that community, to be defended against profit seeking poachers and despite

³⁰⁹ Wendell Berry, "Money Versus Goods," in *What Matters? Economics for a Renewed Commonwealth* (Berkeley: Counterpoint, 2010), 4.

resource constrained authorities. In a globalized market where rhino horn costs more than cocaine and gold, and rhino exist only in remote environments guarded by authorities of limited capacity, de-commodification and the morality of community members may be wild rhino's only hope.

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APPENDIX

Interview Questionnaire

Project Synopsis

This project explores how various communities manage rhino conservation and rhino poaching, and assesses factors that impact the control of poaching. In particular, field research is being conducted to assess rules, norms, and shared strategies vary in different locales, and how factors affect responses to poaching.

Research Questions

- 1) What is the social construction of a rhino in a given locale?
- 2) What is the dominant relational model used to construct rhinos in a locale?
- 3) What are the institutional characteristics of communities that control rhino poaching?
- 4) How do conservation organizations manage the threat of poaching?
- 5) What lessons have been learned from the various ways in conservationists have sought to protect rhinos?

Research Participants: Government officials involved in rhino conservation, professional conservation practitioners; local scholars and analysts; international conservation specialists, local conservation leaders and participants.

Assessment: In order to assess and compare various episodes of rhino poaching, I will interview government officials, conservation actors, and local participants and experts regarding their roles, insights, and perceptions of rhinos and efforts to conserve rhinos and counter rhino poaching.

Interview Questions

Introduction and Context Assessment

1. Tell me a bit about your own professional pathway, and in particular what drew you personally to become involved in rhino conservation? (e.g., How did you come to work in your current occupation? Or, what is your relationship to the conflict episode under consideration?)
2. What do you do in relation to rhino conservation?
3. What are the present opportunities for, and challenges, to rhino conservation in [location]?

Social Construction and Relational Model to Rhinos

4. What do you think should happen to rhinos?
5. Is it important to conserve rhinos? If so, why?
6. Why are rhinos important in [place]?
7. How should rhinos be treated by society?
8. Are there other things that are equivalent to rhinos? If so, what?
9. Who is responsible for rhinos?
10. Where do rhinos live? Who does that land belong to?
11. Who should make decisions about rhinos?
12. What groups are involved with rhinos?
13. What is happening to rhinos? Why do you think that is happening?

Institutions Regarding Rhinos

14. What are rules associated with rhinos in your country?
15. Is there a boundary around rhinos?
16. Who guards rhinos?
17. Is hunting a rhino legal? Is it ok?
18. Can you legally own a rhino? Should you?
19. What do you think about poaching?
20. What is the penalty for poaching a rhino? What do you think the penalty should be?

Historical Experiences with Poaching

21. When have rhinos been poached in your country? What happened?

22. Was there a response to the poaching? What do you think should have happened?
23. What do you think prevents poaching?
24. What do you think should be done about rhinos in your country?

Assessment of Rhino Conservation

25. What is your view of the role that conservation actors have played in supporting rhino conservation in [insert location]? When did your organization start working in this region? Has it received support from the state or international donors?
26. What is the approach of the rhino conservation policy as it relates to controlling poaching? How does the conservation program aim to achieve its stated goals?
27. What were the principal challenges in terms of the design, organization, or implementation of the rhino conservation in [insert location]? What constraints does your organization face in implementing its projects and programs (e.g., economic, political, temporal, normative)?
28. In your view, how important has your organization's programming been for helping to improve conservation and this community?
29. In what ways has conservation programming protected rhinos? What are various metrics of success (e.g., decreased poaching rates, more arrests, less attempts etc.)?
30. What are your reflections on the scale and scope of the efforts in terms of its overall contribution to rhino conservation?
31. What are the principal lessons learned for rhino conservation (e.g., what works or does not work)? In your view, what could conservation organizations do differently to have a greater positive impact on preventing rhino poaching in this community?
32. Is there anything else that I haven't covered here that you would like to share?