

ENVIRONMENTAL GOVERNANCE AS A DEVELOPMENT STRATEGY: THE
CASE OF LUCAS DO RIO VERDE LEGAL

BY

©2013
LISA RAUSCH

Submitted to the degree program in Geography and the Graduate Faculty of the
University of Kansas in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

Chairperson J. Christopher Brown

Garth Myers

Xingong Li

Ebenezer Obadare

Brent Metz

Date Defended: February 7, 2013

The Dissertation Committee for Lisa Rausch
certifies that this is the approved version of the following dissertation:

ENVIRONMENTAL GOVERNANCE AS A DEVELOPMENT STRATEGY: THE
CASE OF LUCAS DO RIO VERDE LEGAL

Chairperson J. Christopher Brown

Date approved: February 7, 2013

ABSTRACT

The goal of this dissertation is to describe and analyze one set of efforts to improve monitoring, licensing, accountability, and socio-environmental outcomes of industrial-scale farming in the Cerrado, located in Brazil's southern Amazon. These efforts are collectively called Lucas do Rio Verde Legal [Lucas Legal], an environmental licensing initiative which is the product of a multi-stakeholder partnership. This partnership includes an international environmental NGO, national and multi-national industrial agriculture firms, and local government agencies. Environmental issues in the Cerrado are frequently framed as economic, and, to a lesser extent, policy issues, due to the high profitability of industrial agriculture in the region and shortcomings on the part of the state to adequately monitor rural activities and enforce environmental laws. Lucas Legal is novel not only for its relative successes at improving the effectiveness of environmental licensing of rural properties locally and at the state level, but also for its role in increasing the interest of rural producers in addressing environmental issues and for calling attention to cultural, historical, institutional, and technical factors that contribute to agri-environmental problems in the Amazon.

A multi-method approach, including archival research, ethnographic research, ongoing interviews with key informants, and a semi-structured survey of 20 farmers was used to explore the genesis and outcomes of Lucas Legal from many different angles, and to trace the history of the project and understand the unique history of the municipality (Lucas do Rio Verde) in which the project began. Analysis of the project drew on three distinct literatures – the literature on Environmental Governance; the literature on Environmentality, which is heavily based on Foucault's work on Governmentality; and the combined literatures on Advocacy and Discourse Coalitions. While none of these literatures was sufficient alone to explain the unique history and outcomes of Lucas Legal, the three literatures together offer useful insights into the contributions of different government, market, and civil society stakeholder groups.

The grounded, ethnographic approach of this dissertation research helps fill an important gap in knowledge on this topic; few other studies of environmental governance in the Amazon have been in-depth enough to explore the settlement history of the region, the importance of inter-personal relationships and local politics to environmental and developmental outcomes, and to link these issues to outcomes of projects of environmental governance or local perceptions of environmental conservation. Understanding the diverse motivations of agricultural and non-agricultural actors in the Amazon is crucial to ensuring sustainable environmental outcomes as well as sustainable economic development.

ACKNOWLEDGEMENTS

First and foremost, I'd like to offer my sincerest gratitude to my advisor and chair, Dr. J. Christopher Brown, who offered me continual encouragement as I worked on this project and others, while always allowing me space to develop and work in my own way. I simply would not have been able to complete this dissertation or the other elements of my degree without his support. I know I am fortunate to have been able to work with such a kind, insightful, and selfless advisor. I look up to him as a teacher, a researcher, and as a human being.

I would also like to thank the rest of my committee for their contributions to improving the draft of this dissertation, and for supporting me along the way in personal and email conversations as I conceived of, executed, and attempted to make sense of this project. I have learned a great deal from studying with each member of my committee – Dr. Garth Myers, Dr. Xingong Li, Dr. Ebenezer Obadare, and Dr. Brent Metz – and consider each of them to be role models as I go forward in my career.

This work could also not have been completed without the generous support of the Fulbright Institute for International Education, which funded the bulk of my field research in Brazil. I am also grateful to the KU Center for Latin American Studies' Tinker Fund, the Kollmorgen Fund in the KU Department of Geography, and the KU Center for International Business Education and Research, whose combined support facilitated two pilot research trips to my field site in 2008 and 2009. I would also like to thank the Geoscience Academics in the Northeast group for their support in generously providing a space for me to finish the drafts of two chapters at their writing retreat in 2012, and the Library of Congress and the Gelman Library at George Washington University, where I completed the bulk of my non-field research and writing.

I am grateful to the students, faculty, and staff of the Department of Geography at the University of Kansas. In particular, without the patient assistance of Bev Morey, Bev Koerner, and Melvin D. Kroeger, my graduate school experiences would have been considerably more fraught. I also thank the Environmental Studies Program, which, along with the Department of Geography, gave me multiple opportunities to teach interesting and challenging courses. Teaching both beginner and advanced courses in these departments helped me keep in my mind the importance of being able to communicate clearly about geography and environmental issues to people with all levels of experience.

While this institutional, financial, and professional support was essential to my project, it would all have been for naught without the generosity of the people of Lucas do Rio Verde in Mato Grosso state, Brazil, who accepted a young, American student into their lives and

selflessly gave their time, energy, and insights to help me complete my research. I am not able to list everyone here to whom I am grateful, but I would like to specifically mention Edu Pascoski and his wonderful family, Luciane Copetti, the staff of the Secretaria de Agricultura e Meio Ambiente de Lucas do Rio Verde, Marino Franz, and Dario Munhak. I simply could not have completed my field work without the help of these individuals. I would also like to thank Silvana Puziski and her family, and Barbara Rodrigues and Dorival Durau and their family. The unbelievable openness, kindness, and generosity of Silvana, Barbara, Dori, and their families, is truly inspiring and because of them, my *saudades* for my time in Lucas run deep.

Finally, I offer my sincerest gratitude to my wonderful husband and best friend, Bertram Lyons, who has absolutely been the most loyal supporter, believing in me and in this project even in moments when I was not sure I did. He, along with both of our families and our sweet dog, Baxter, have been crucial supports for me as I have worked to finish this dissertation. They have all been exceedingly understanding on the many occasions when my dedication to finishing this project came at the expense of spending time with them, and, perhaps more importantly, have sometimes intervened for my own good, insisting on my presence at family vacations, walks, and fetching sessions.

Thank you.

TABLE OF CONTENTS

ABSTRACT	III
ACKNOWLEDGEMENTS	IV
LIST OF TABLES	X
LIST OF FIGURES	XI
LIST OF ABBREVIATIONS	XIII
CHAPTER I - INTRODUCTION	1
Guiding questions and the organization of the dissertation	9
Study site: Lucas do Rio Verde, Mato Grosso	13
Data collection	19
CHAPTER II – THEORETICAL FRAMEWORKS	35
(Neoliberal) environmental governance	39
Environmental governance in Brazil	46
Governmentality and environmentality	48
Green governmentality/environmentality.....	60
Discourse and advocacy coalition frameworks	64
Conclusion	78
CHAPTER III – THE SETTLEMENT OF MATO GROSSO AND LUCAS DO RIO VERDE	80
Early settlement of Mato Grosso	83

The March to the West	85
Mato Grosso for sale!.....	88
Operation Amazonia : A mixed private and public endeavor	91
Agricultural modernization in the South: the “push” of settlers to the Amazon/Cerrado	98
Reconciling the frontiers of Vargas and the generals	108
Globalization on the frontier and the rise of the agrocitry.....	110
Settlement of Lucas do Rio Verde on three fronts.....	116
Local settlement prior to the official colonization project	117
Land conflict in Rio Grande do Sul :The formation of the PEA - Rio Verde.....	121
Arrival and settlement at Rio Verde	128
From settlement to district to municipality.....	137
Conclusion	140
CHAPTER IV – THE EVOLUTION OF ENVIRONMENTAL LAW AND POLICY IN MATO GROSSO.....	144
The federal level	145
The Forest Code	146
A federal legacy of weak enforcement	151
Progressive laws and their discontents.....	153
Mato Grosso	156
Unique Environmental License	157
Federal pacts.....	160
The unlikely providence of state-level environmental licensing in Mato Grosso	162
Who to blame for SLAPR’s failure?	171
The meaning of SLAPR for Lucas Legal and MT Legal	174
Conclusion	177
CHAPTER V – THE SOYBEAN ECONOMY IN LUCAS	179
Early soybean production in Brazil	180
Present day soybean production in Brazil	182
Diversification, reduction of distance, and vertical integration.....	194
Emergent environmentalism in Southern Amazon industrial agriculture	201

Grito de Ipiranga : A backlash against government policies	205
State and federal response and producer reception	210
Agriculture’s environmental turn: Greenpeace protests and the Soy Moratoruim	212
Industry response and producer reception	217
Conclusion: The influence of the pro-soy development regime in Lucas	220
CHAPTER VI – THE IMPLEMENTATION OF LUCAS LEGAL	222
Reconciling agricultural and environmental ethics	225
The genesis of Lucas do Rio Verde Legal.....	231
Implementation of Lucas Legal.....	237
Local agriculture elite places trust in an international ENGO.....	246
Property diagnostics	254
The creation of the Rural Environmental Registry (CAR)	262
Conclusion: Environmentalism beyond carrots and sticks?	265
CHAPTER VII – ASSESSING LUCAS LEGAL.....	267
Defining success for Lucas Legal	274
Framing environmental issues as farming issues.....	274
Evolving views of the environment :Subjects made?	287
CAR :Lucas Legal scales up	295
From project to program	298
Who (appears to) regulate and how this matter	308
Project shortcomings	323
Conclusion	329
CHAPTER VIII – CONCLUSIONS	332
The road to decentralization of rule in the Cerrado-Amazon.....	338
Community regulation in Lucas	344
Authority, expertise, and surveillance	349

Environmental subject making in Lucas.....	360
Assessing Lucas Legal: Environmental and human outcomes	366
Conclusion and directions for future research.....	372
APPENDIX A – INTERVIEW INSTRUMENT	377
LITERATURE CITED	384

LIST OF TABLES

Table 1. Key literatures and their main ideas	38
Table 2. Select indicators for municipalities formed in Mato Grosso in 1988	115
Table 3. Land cover in Lucas do Rio Verde, 2006	242
Table 4. Comparison between SEMA and municipal cadastral records for Lucas do Rio Verde	245
Table 5. Criteria for assessing a project of environmental governance	271
Table 6. Sources of dissatisfaction among agricultural producers in Lucas do Rio Verde, Mato Grosso, 2006 (N = 213)	279
Table 7. Sources of satisfaction among Agricultural Producers in Lucas do Rio Verde, Mato Grosso, 2006 (N = 213)	281
Table 8. Farmer environment-positive activities, 2006	291
Table 9. Land use in Lucas, 2008	328
Table 10. Key literatures and their main ideas	336

LIST OF FIGURES

Figure 1. Lucas do Rio Verde in Mato Grosso State	15
Figure 2. Types of environmental governance and their operational social mechanisms	44
Figure 3. Major highways in and around Mato Grosso	97
Figure 4. The Opening of BR-163 at Lucas Do Rio Verde, Mato Grosso, 1981	120
Figure 5. Arrival of INCRA settlers in Lucas do Rio Verde in 1981	130
Figure 6. Soybean expansion in Brazil, major soy producing regions, and Mato Grosso	183
Figure 7. Production of soy in Brazil, major soy producing regions, and Mato Grosso	184
Figure 8. Extent of soybean production in Brazil, 2006	185
Figure 9. Rio Verde Foundation's first test field in 1981	189
Figure 10. The author in front of the Rio Verde Foundation sign, Oct. 2011	189
Figure 11. Area planted of principal crops, 1990-2010, Lucas do Rio Verde - MT. 191	
Figure 12. Total production of principal crops over time, 1990-2010, Lucas do Rio Verde - MT	192
Figure 13. Distribution of properties by size in MT and Lucas do Rio Verde	193
Figure 14. Soy area planted compared with production, 1990-2010, Lucas do Rio Verde	195
Figure 15: Grain transportation by truck on BR-163 in Lucas	197
Figure 16. Schema of major Firms operating at Complexo Industrial Senador Atílio Fontana	199
Figure 17. A flooded soybean field in Lucas in 2006	206
Figure 18. Grito de Ipiranga protest in Lucas	208
Figure 19. A tractor burns on BR-163 during a Grito de Ipiranga protest in Lucas. 208	
Figure 20. Example of perimeter offset on waterway and access road	246
Figure 21. Example of a diagnostic document from Lucas Legal	255
Figure 22. Tractors sink in a flooded field during the corn harvest, January 2005 ..	277
Figure 23. John Deere employees in Lucas plant trees with school children as part of Lucas Legal, 2011	299
Figure 24: LEC members plant saplings as part of the Time Verde project	301

Figure 25: Quotes from producers in Lucas calling for more regulation or greater or more consistent enforcement of existing regulation in agriculture.....	310
Figure 26. Modified boomerang pattern of influence of Lucas Legal.....	320
Figure 27. Environmental licensing status of properties in Lucas, November 2011	326

LIST OF ABBREVIATIONS

ABIOVE	Brazilian Vegetable Oil Industries Association (<i>Associação Brasileira das Indústrias de Óleos Vegetais</i>)
ACF	Advocacy Coalition Framework
ANEC	Grain Exporter's Association (<i>Associação Nacional dos Exportadores de Cereais</i>)
APP	Permanent Preservation Area (<i>Área de Preservação Permanente</i>)
BASA	Bank of Amazonia (<i>Banco da Amazônia S/A</i>)
BNDES	National Economic and Social Development Bank (<i>Banco Nacional de Desenvolvimento Econômico e Social</i>)
CAR	Rural Environmental Registry (<i>Cadastro Ambiental Rural</i>)
CONAMA	National Environmental Council (<i>Conselho Nacional do Meio Ambiente</i>)
CNA	Confederation of Agriculture and Ranching of Brazil (<i>Confederação da Agricultura e Pecuária do Brasil</i>)
DCF	Discourse Coalition Framework
DSG	Geographic Service of the Army (<i>Serviço Geográfico do Exército</i>)
EMBRAPA	Brazilian Enterprise for Agricultural Research (<i>Empresa Brasileira de Pesquisa Agropecuária</i>)
EMPAER	Mato Grossense Firm for Research, Assistance, and Rural Extension (<i>Empresa Mato-grossense de Pesquisa, Assistência, e Extensão Rural</i>)

ENGO	Environmental Non-Governmental Organization
FAMATO	Federation of Agriculture and Livestock of Mato Grosso (<i>Federação da Agricultura e Pecuária de Mato Grosso</i>)
FAT	Mato Grosso State Transport and Habitation Fund (<i>Fundo Estadual de Transporte e Habitação</i>)
FBC	Central Foundation of Brazil (<i>Fundação Brasil Central</i>)
Fehab	Mato Grosso State Transport and Habitation Fund (<i>Fundo Estadual de Transporte e Habitação</i>)
FEMA	State Environmental Foundation (<i>Fundação Estadual de Meio Ambiente</i>)
FEMACA	Southern Federation of Agricultural Cooperatives of Campinas (<i>Federação Meridional de Cooperativas Agropecuarias de Campinas</i>)
GIS	Geographic Information Science
IBAMA	Brazilian Institute of the Environment and Renewable Resources (<i>Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis</i>)
IBGE	Brazilian Institute of Geography and Statistics (<i>Instituto Brasileiro de Geografia e Estatística</i>)
ICMS	Tax on Operations Relative to Circulation of Merchandise and Providing of Interstate and Intermunicipal Transport and of Communication (<i>Imposto sobre Operações relativas à Circulação de Mercadorias e Prestação de Serviços de Transporte Interestadual e Intermunicipal e de Comunicação</i>)
ICV	Center of Life Institute (<i>Instituto Centro de Vida</i>)
INCRA	Brazilian Colonization and Land Reform Agency (<i>Instituto Nacional de Colonização e Reforma Agrária</i>)
LAU	Unique Environmental License (<i>Licença Única Ambiental</i>)
LO	Operating License (<i>Licença de Operação</i>)

LUT	Look-Up Table
MP	Public Attorney's Office (<i>Ministério Público</i>)
MST	Landless Workers' Movement (<i>Movimento dos Trabalhadores Sem Terra</i>)
NGO	Non-Governmental Organization
PEA	Special Settlement Project (<i>Projeto Especial de Assentamento</i>)
PIN	National Integration Plan (<i>Plano de Integração Nacional</i>)
POLOCENTRO (II)	Cerrado Development Program (<i>Programa para o Desenvolvimento dos Cerrados</i>)
PRODECER	Program for the Development of the Cerrado (<i>Programa de Desenvolvimento do Cerrado</i>)
PROTERRA	Program for Redistribution of Land and Stimulation of Industrial Agriculture in the North and Northeast (<i>Programa de Redistribuição de Terras e de Estímulo à Agroindústria do Norte e do Nordeste</i>)
RADAM	Radar of Amazonia (<i>Radar da Amazônia</i>)
RL	Legal Reserve (<i>Reserva Legal</i>)
SAMA	Secretariat of Agriculture and the Environment (<i>Secretaria de Agricultura e Meio Ambiente</i>)
SEMA	State Environmental Secretariat (<i>Secretaria Estadual do Meio Ambiente</i>)
SEPLAN	Secretary of Planning (<i>Secretaria de Planejamento</i>)
SISNEMA	National System for the Environment (<i>Sistema Nacional do Meio Ambiente</i>)
SLAPR	Rural Properties Licensing System (<i>Sistema de Licenciamento Ambiental em Propriedades Rurais</i>)
SPVEA	Superintendency of the Valorization Plan of the Amazon (<i>Superintendência do Plano de Valorização da Amazônia</i>)

SUDAM	Superintendent of Amazonian Development (<i>Superintendência do Desenvolvimento da Amazônia</i>)
SUDECO	Superintendent of Center-West Development (<i>Superintendência de Desenvolvimento do Centro-Oeste</i>)
TNC	The Nature Conservancy
UC	Conservation Unit (<i>Unidade de Conservação</i>)
ZSEE	Socioeconomic Ecological Zoning (<i>Zoneamento Socioeconômico Ecológico</i>)

CHAPTER I - INTRODUCTION

The changes in the southern Amazon since the 1970s have been manifold. Not the least of these have been massive transformations of tropical forests and grasslands to rangelands and croplands, and the settlement in the region of tens of thousands of farmers, ranchers, and other people linked to the agriculture industry. This settlement process was highly heterogeneous, as corporate, spontaneous, and government actors and institutions variously influenced the process at different times, in different places, and at different scales.¹ At the scale of the entire region, some of the most important outcomes of these processes have been the loss of some 17 percent of the region's native vegetation,² (likely much more when factoring in the Cerrado biome), and population growth of more than 1.5 times the total national population growth rate.³ More local scale changes have been highly variable in terms of ecological, social, economic, and political outcomes. Significant progress has been made in measuring these changes,⁴ explaining the mechanisms that drive them,⁵ and predicting future

¹ John O. Browder and Brian J. Godfrey, *Rainforest Cities: Urbanization, Development, and Globalization of the Brazilian Amazon* (Columbia UP: New York, 1997). 91-94.

² Stephen Aldrich et al., "Contentious Land Change in the Amazon's Arc of Deforestation," *Annals of the Association of American Geographers* 102, no. 1 (2012): 103.

³ Instituto Brasileiro de Geografia e Estatística [IBGE], "Censo Demográfico," (Brasília, Brazil 2010).

⁴ Marcelo Fragomeni Simon and Fernando Luis Gargorry, "The expansion of agriculture in the Brazilian Amazon," *Environmental Conservation* 32, no. 3 (2005); Charles Curt Mueller, "Expansion and modernization of agriculture in the *Cerrado* -- the case of soybeans in Brazil's Center-West," in *Textos para Discussão* (Brasília: Universidade de Brasília - Departamento de Economia, 2003); Robert M. Ewers, William F. Laurance, and Carlos M. Souza Jr., "Temporal Fluctuations in Amazonian

impacts of these changes.⁶ In spite of this progress, though, many questions about farmer decision-making and rural governance remains unresolved, even as deforestation and economic development continue at a rapid clip.

At the same time, certain mechanisms of governance that can limit and shape these rapid social and ecological changes appear to be increasingly influential. For example, some thirty years after a combined government-sponsored and spontaneous rush of settlers to Mato Grosso, municipalities in this region are sufficiently established, or are moving in the direction of being sufficiently established, to provide public services and enforce the rule of law where the state- and federal-level presence is scarce.⁷ Additionally, the Amazon's main economic activities, industrial-scale production of soybeans, corn, and other crops, and ranching, are linked to international markets. These markets have already been influential forces toward improving the environmental and social impacts of agriculture and ranching in Brazil,

deforestation rates," *Environmental Conservation* 35, no. 4 (2008); Anna Luiza Ozorio de Almeida, *The Colonization of the Amazon*, Translations from Latin America Series (Austin: University of Texas Press, 1992); David Werth and Roni Avissar, "The local and global effects of Amazon deforestation," *Journal of Geophysical Research* 107, no. D20 (2002).

⁵ Álvaro O. D'Antona, Leah K. VanWey, and Corey M. Hayashi, "Property Size and Land Cover Change in the Brazilian Amazon," *Popul Environ* 27(2006); Peter Deadman et al., "Colonist household decisionmaking and land-use change in the Amazon Rainforest: an agent-based simulation " *Environment and Planning B: Planning and Design* 31(2004); Ricardo Alexandrino Garcia, Britaldo Soares-Filho, and Diana Oya Sawyer, "Socioeconomic dimensions, migration, and deforestation: An integrated model of territorial organization for the Brazilian Amazon," *Ecological Indicators* 7(2007); Andrea Cattaneo, "Deforestation in the Brazilian Amazon: Comparing the Impacts of Macroeconomic Shocks, Land Tenure, and Technological Change," *Land Economics* 77, no. 2 (2001).

⁶ Philip M. Fearnside, "Brazil's Cuiabá-Santarém (BR-163) Highway: The Environmental Cost of Paving a Soybean Corridor Through the Amazon," *Environ Manage* 39(2007); Daniel Nepstad, Claudia M. Stickler, and Oriana T. Almeida, "Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation," *Conservation Biology* 20, no. 6 (2006); Britaldo Soares-Filho et al., "Simulating the response of land-cover changes to road paving and governance along a major Amazon highway: the Santarém-Cuiabá corridor," *Global Change Biology* 10(2004).

⁷ Daniel Nepstad et al., "Frontier Governance in Amazonia," *Science* 295(2002): 630.

as evidenced by the Soy Moratorium,⁸ and new, preferential financing programs for farmers who make certain commitments to social and environmental responsibility.⁹ Additionally, federal and state governments have made strides toward more effective and fairer enforcement of environmental regulations; better monitoring of deforestation trends;¹⁰ and more sophisticated rural licensing initiatives.

This dissertation is situated against this background of rapid and complex regional change and evolving institutions and processes of environmental governance. This study draws on a case study of a rural, southern Amazonian municipality that has been the site of a multi-stakeholder initiative to reduce the negative environmental and social impacts of the local agriculture industry. The municipality, named Lucas do Rio Verde, or Lucas, for short, is located in central Mato Grosso, in the southern part of the region legally recognized as the Amazon in Brazil, at the boundary between the Amazon Forest and Cerrado, or tropical savannah, biomes. The area that is now the municipality was first settled just thirty years ago, and today, boasts one of the highest standards of living in Brazil (it is ranked in the top 2 percent of Brazilian municipalities out of over 5,000)¹¹ and produces a full 1 percent of the total annual soybean crop of Brazil.¹²

⁸ Corrina Steward, "From colonization to "environmental soy": A case study of environmental and socio-economic valuation in the Amazon soy frontier," *Agriculture and Human Values* 24(2007).

⁹ Claudia M. Stickler and Oriana T. Almeida, "Harnessing International Finance to Manage the Amazon Agro-Industrial Explosion? The Case of International Finance Corporation Loans to Grupo Maggi," *Journal of Sustainable Forestry* 27, no. 1-2 (2008).

¹⁰ Nepstad et al., "Frontier Governance in Amazonia," 630.

¹¹ Programa de Nações Unidas para o Desenvolvimento [PNUD], "Índice de desenvolvimento humano - municipal, 1991 e 2000, Todos os municípios do Brasil," (Brasília, Brazil2000).

¹² Instituto Brasileiro de Geografia e Estatística [IBGE], "Produção Agrícola Municipal," (Brasília, Brazil2010).

In 2006, local business elites grew concerned about growing market pressure on the agricultural sector to reduce its negative environmental impacts, and they were growing increasingly dissatisfied with the uneven and inefficient way in which the environment was regulated at the state and federal levels. To resolve these issues, they forged an alliance among the municipal government, the state attorney's office, a set of local, national, and multi-national agricultural supply companies, and a large environmental non-governmental organization (ENGO) to facilitate environmental licensing of rural properties and promote environmental and labor best practices on local farms. This alliance, I will argue, has been part of an effort by these stakeholders to proactively shape the governance of their activities. Their goals were grouped under the umbrella of a project called "Lucas do Rio Verde Legal", or Lucas Legal, for short. The outcomes of their efforts have been mixed. The project has fallen short of its initial goal of achieving 100 percent licensing of rural properties in Lucas by 2012, but has apparently been successful at changing the view and the discourse surrounding environmental conservation in the municipality, including among farmers by foregrounding the social, economic, and environmental benefits of licensing and protection and regeneration of federally-mandated forest set-asides.

Perhaps the most significant achievement of Lucas Legal has been its influence on improving the state-level environmental licensing process and, debatably, reducing the transaction costs of complying with environmental regulations. Brazil's forest code requires substantial private reserves, sometimes referred to as "set-asides," on each property, though compliance with this law has

historically been weak. Improving compliance with this law has long been recognized as crucial for environmental conservation in the Amazon¹³ and identifying and licensing rural properties in the Amazon is an important first step toward greater Forest Code compliance. Until recently, landowners in Mato Grosso had to essentially turn themselves in for environmental crimes in order to discover what they needed to do in order to make their properties compliant and receive a license. As deeply flawed as this process may have been, Mato Grosso's licensing program was actually the most advanced in Brazil.¹⁴ One of the major innovations of Lucas Legal was to greatly improve this process by lowering the legal and symbolic barriers to application for a license. Legislation eventually passed based on Lucas Legal broke the licensing process into two steps by creating a new, proto-license that generates specific compliance instructions, coupled with a type of "temporary amnesty" period under which land owners can bring their properties into compliance without facing fines or jail time. This institutional innovation appears to have had a positive influence on licensing rates as land owners now have some legal protection while they endeavor to comply with environmental regulations that can be quite costly in terms of time and money.

In addition to these important institutional changes, Lucas Legal is part of a significant, but poorly understood shift in farmer values, self-perception, and decision making in the Amazon. Agriculture is both an interesting and an important target for

¹³ Nepstad, Stickler, and Almeida, "Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation," 1600.

¹⁴ Philip M. Fearnside and Reinaldo Imbrozio Barbosa, "Avoided deforestation in Amazonia as a global warming mitigation measure: The case of Mato Grosso," *World Resource Review* 15, no. 3 (2003).

scholarly work on nature and society because agriculture is both an extractive (and often destructive) activity and at the same time, is heavily dependent on the stability of its natural environs. Until relatively recently, farmers were generally seen as nature's stewards.¹⁵ The role of farmers in our collective imagination has shifted, though, accompanied by changes in both the technology of farming, particularly toward the heavy use of chemical pesticides and fertilizers, and in socially-accepted notions of environmentalism or environmental conservation, including, namely, a shift toward viewing conservation as best accomplished by isolating wilderness areas from human contact.

One result of this murkiness in terms of the role of agriculture in popular perception has been a failure on the part of scholars and environmentalists to productively engage with farmers and other agricultural actors, particularly large-scale farmers who are most likely to use advanced technologies in their activities. When included in environmental scholarship, large-scale farmers are frequently only incorporated into studies as short-term profit maximizers, which drastically oversimplifies the complex reality that farmers actually consider when making land management decisions, as well as the mutability of these factors and their relative weighting in decision-making as circumstances change and as farmers' goals and values change. On the other hand, a few studies have attempted to better understand the farmer's relationship to the land, and the results of these have suggested that farm-level decision making is highly "contagious" (in other words, peer pressure is a

¹⁵ Paul B. Thompson, *The Spirit of the Soil: Agriculture and Environmental Ethics* (London: Psychology Press, 1995).

factor), though the mechanisms and implications of this have not been fully explored.¹⁶ On the whole, the way in which individual farmers (land owners or land managers) make decisions is poorly understood, particularly in the Amazon, though this is hugely important in terms of land use change and socio-economic outcomes at all levels of analysis.

The Lucas Legal project is unusual in that it rejects the one-dimensional views of farmers and their decision making that have led many observers and policy makers to assume that farmers will only comply with environmental demands if they receive payment for their actions.¹⁷ While capitalist sustainability approach will likely be crucial to ending deforestation in the Amazon, there is growing recognition of its limitations, and, in any case, it will need to be only one in a portfolio of approaches. The planners of Lucas Legal were successful in promoting environmental sustainability in agriculture locally not because they offered any real material benefits to farmers with their programs, but because they confronted licensing issues faced by farmers head on, by offering information (about the law, about one's property), political and institutional support, and publicity to as encouragement and rewards for farmers' good behavior, instead of payment for environmental services or some other subsidy for farmer participation.

Additionally, the project is cleverly named, as *Legal* in Portuguese means both "legal" and "cool." The project has, thus, has also a symbolic and discursive

¹⁶ Marcellus Caldas et al., "Theorizing Land Cover and Land Use Change: The Peasant Economy of Amazonian Deforestation," *Annals of the Association of American Geographers* 97, no. 1 (2007): 97.

¹⁷ Daniel Curtis Nepstad et al., "The End of Deforestation in the Amazon," *Science* 326(2009): 1350.

component – promotion of the project implies that environmentally (and socially) sound practices on the farm are the right and the popular thing to do.¹⁸ As originally intended, Lucas Legal was designed to provide minimal material assistance to participants in the form of no-cost property mapping, though many farmers report that they paid to have their properties re-mapped before applying for the state license anyway, rendering this material assistance moot. The other rumored direct material benefit for project participation, a “green seal,” or a price differential for soybeans and corn from licensed properties, has not materialized and offers little sign that it will in the future. In any case, positive reception of the project and its achievements, detailed further below, are evidence that farmers are motivated to undertake conservationist behaviors such as pursuing environmental licensing by accurate information, lowered legal risks, positive reinforcement, community- or peer-pressure, and the potential for longer-term economic benefits as well as short term benefits.

Finally, the experience of Lucas and of Lucas Legal lends support to the thesis eloquently put forth by Arun Agrawal in his book *Environmentality: Technologies of Government and the Making of Subjects* that taking an active role in the management of a certain arena (whether taking on an official authority position or simply being compelled to behave in a certain way by a desire to avoid punishment) can lead to “subject formation,” or the internalizing of the arena in question and even the desire to act in the service of the same goals as those set by the government or another

¹⁸ Christian Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," *Land Use Policy* 29, no. 2 (2012): 359.

authority.¹⁹ In Lucas, this process is evident; the implementation of Lucas Legal and a parallel process of decentralization of environmental regulation placed a lot more authority in the hands of municipal employees, who were able to use their “intimate knowledge” of local situations (to borrow another phrase from Agrawal) to make sanctions for infractions productive (resolve the problem) instead of punitive.²⁰ The result is that farmers are now beginning to see conservation as an important obligation to the future of their community, not as a directive from a distant and often resented government; this is evident from interviews and surveys conducted before and after the implementation of Lucas Legal.

Guiding questions and the organization of the dissertation

The guiding questions of this study are: What are the historical antecedents that inform agri-environmental governance in the southern Amazon? How can Lucas Legal best be characterized in the context of multi-stakeholder environmental governance? What factors led to the emergence of Lucas Legal? What have been the successes and failures in terms of the project’s objectives and what can be learned from these successes and failures to inform better agri-environmental governance in

¹⁹ Arun Agrawal, *Environmentality: Technologies of government and the making of subjects*, ed. Arturo Escobar and Diane Rocheleau, *New Ecologies for the Twenty-First Century* (Durham, NC: Duke UP, 2005). 220.

²⁰ *Ibid.*, 199.

the Amazon? And is there evidence that farmer behavior can be modified to produce more sustainable outcomes in the Amazon?

This dissertation is presented in eight chapters. This first chapter, the introduction, has introduced the study and will explain the characteristics of the study site and the methods used in the study.

Chapter 2 will introduce three theoretical frameworks to guide the analysis. These are 1) the literature on governance, which seeks to identify and explain the influence of state and non-state actors on institutions and rule making; 2) governmentality and environmentality, which draws on the work of Michel Foucault on understanding power as a multi-faceted and diffuse force which can both limit and constrain human behavior, as well as produce fundamental changes in the values of individuals as they internalize the goals of a more powerful, rule-making authority; and 3) the literature on advocacy and discourse coalitions, which looks at the motivations and processes by which diverse group of actors come together in pursuit of a common goal, or in the employment of a common discourse while maintaining separate and possibly divergent goals, relatively speaking.

Chapter 3 describes the settlement history of Mato Grosso and, more specifically, of Lucas. The settler experience was extremely formative to most of the families involved in agriculture in Lucas and it has had a profound effect on the strong sense of pride in their community and the high level of political cohesion in Lucas (at least among land owners). This is also important for understanding the roots of the resentment among farmers and local elites, most of who settled in Lucas early

in its history, toward the state and federal governments. The settlement of Lucas was marked by social and physical violence at the hands of government officials and considerable material and spiritual hardship. Because settlement was so recent, many of the original settlers are still alive and involved in agriculture and local leadership, and the families that stuck it out have a commitment to the municipality and the community.

Chapter 4 provides a history of environmental law and policy as pertains to the current situation in Lucas and the Amazon more generally. In spite of its notoriously weak enforcement, environmental law in Brazil and in Mato Grosso has a long and elaborate history. Understanding this history provides important institutional context for the emergence of Lucas Legal. The symbolic and political contexts (presented in Chapters 3 and 4) in which farmers and business elites in places like Lucas operate have real implications for governance arrangements alongside more frequently discussed material and economic considerations.

Chapter 5 explores the development of the industrial agriculture economy in Lucas, as well as its importance and characteristics. These are punctuated by a description of a series of challenges faced by the agricultural sector and dramatic conflicts with the government with regard to these challenges in the years just before Lucas Legal was implemented. I argue that the somewhat apocalyptic sense of desperation among farmers around 2004 and 2005 is key to understanding the emergence of Lucas Legal immediately afterward; dissatisfaction with the state and

federal governments was so high that a corporate-ENGO partnership promising to empower farmers and reduce uncertainty was perhaps an unexpectedly easy sell.

In Chapter 6, the implementation of Lucas Legal is explained, as well as the basic objectives of the project and the process in which it was designed to work. Lucas Legal was sponsored and designed by stakeholders representing the public sphere, the private sphere, and civil society. The material and knowledge resources and the legitimacy of the non-state actors involved in the project appear to have been key to the positive farmer acceptance of the project, but ultimately, project leaders realized that they could not meet their obligations to participating farmers without the strong support of the state environmental agency and fairer and more effective state legislation.

Chapter 7 defines and explores the successes and failures of Lucas Legal. Analysis of the project suggests four important successes of the project: the discursive reframing of environmental issues as farming issues; the mediation of a more positive relationship between the government and farmers, including the promotion of environmental subject-making among farmers; the pluralizing of environmental concern beyond just agriculture in Lucas; and the scaling up of the institutional changes first developed in Lucas to the most appropriate scale. In spite of these successes, the project has not met its main, original goal which was achieving a 100 percent licensing rate among rural properties in the municipality, and the actual environmental outcomes of all of this remain unknown. Continued, constant, local, and long-term monitoring of licensing has also not been improved in spite of the

resources expended to map all of the municipality's properties and to provide GIS (Geographic Information Science) software for monitoring. This is attributable to poor information-sharing between state and local environmental agencies and inadequate training of local staff to use the GIS software. In any case, these successes and failure offer important lessons for other multi-stakeholder initiatives of environmental governance.

The dissertation is concluded by Chapter 8, which reviews the information presented above in the context of the three frameworks from Chapter 2. All three frameworks offer important insights into the case of Lucas Legal, with no one of them fully explaining it.

Study site: Lucas do Rio Verde, Mato Grosso

Lucas is located in the center of the state of Mato Grosso, in the southern part of the Legal Amazon and in the ecotone between the humid tropical forest biome and the Cerrado (Figure 1). Most of the municipality is classified as Cerrado, which is important because it affects the amount of forest required under federal law to be set aside in private reserves. In the forest biome, each property must have 80 percent of its area set aside as a forest reserve; in the Cerrado, the amount is only 35 percent. Under the Köppen classification system, the climate is Tropical Wet and Dry, with the dry season lasting from approximately May through September.

Lucas officially gained the status of municipality in 1988, though settlement in the region had begun as long as 10 years before that. According to the most recent census, in 2010, the population was 45,545 people.²¹ The total area of the municipality is 3,645 km². The municipality is located on the “soy highway,” BR-163, which is a federal highway connecting the capital of Mato Grosso, Cuiabá, with the nearest port city on the Amazon River, Santarém, in the state of Pará. This positioning on the highway was influential in the settlement of the municipality and has been highly influential in the economic development of the municipality. Currently, this highway is the only way in or out of this region, and all of the soy grown in the region must travel this highway, heading either north to Santarém or south to a port in the state of Paraná.

²¹ Instituto Brasileiro de Geografia e Estatística [IBGE], "Censo Demográfico."

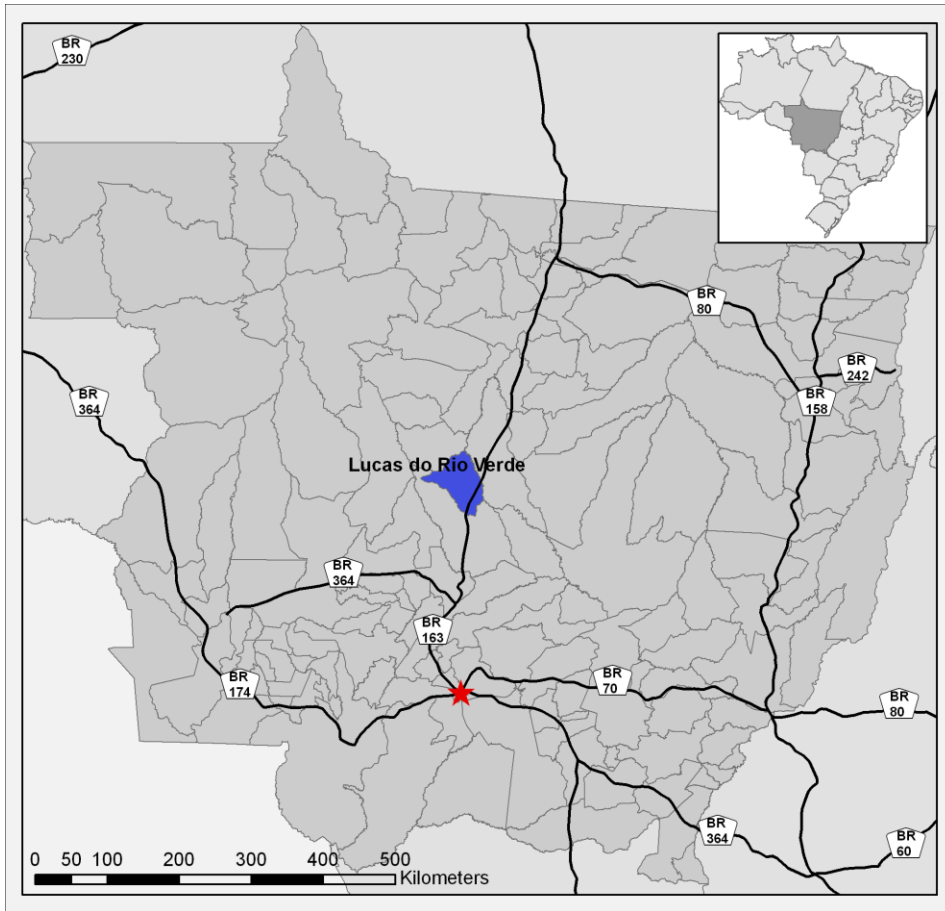


Figure 1. Lucas do Rio Verde in Mato Grosso state

The term Cerrado (“closed” in Portuguese) refers to a diverse set of ecosystems, mainly throughout central and western Brazil, which includes grasslands, gallery forests, scrublands, and sclerophyllous and semi-deciduous forests. The climate in the Cerrado is tropical, extending down into the sub-tropics, and is defined by a rainy period, which runs from approximately October to March, and a dry period, from April to September. The precipitation in the wet season may be as high

as 1000 mm or more, while the precipitation in the dry season is close to zero.²² The cerrados are fire-dependent; natural and anthropogenic fire regimes have played a key role in maintaining the biome since as early as the late Pleistocene.²³

The Cerrado of Brazil is thought to be the most bio-diverse tropical savannah in the world, with considerable variation in floral species within the biome as well. For example, the Cerrado boasts more than 7,000 species of vascular plants, of which 44 percent are endemic, and 914 known species of trees, of which 614 have been found in only one location within the Cerrado.²⁴ In terms of fauna, 199 known species of mammals are largely restricted to forest fragments and gallery forests. More than 830 species of birds have been identified so far in the Cerrado (49 percent of all birds known to Brazil can be found in the Cerrado, but few of these are endemic), and more than 1,200 species of fish, or 40 percent of the total known fish population of Brazil.²⁵ Reptile and amphibian populations are also thought to be high in the Cerrado and invertebrate populations are estimated to be as high as 90,000 species.²⁶ Non-endemic fauna may also migrate to the humid forest during certain seasons, an important link between the Cerrado and the humid forest. Moreover, the Cerrado, and the Cerrado of Mato Grosso, in particular, is a starting point for thousands of springs and streams

²² Vânia R. Pivello, "The Use of Fire in the Cerrado and Amazonian Rainforests of Brazil: Past and Present," *Fire Ecology* 7, no. 1 (2011): 25.

²³ Ibid.

²⁴ Carlos A. Klink and Ricardo B. Machado, "A conservação do Cerrado brasileiro," *Megadiversidade* 1, no. 1 (2005): 149.

²⁵ Ibid.

²⁶ Ibid.

that wind through the Amazon basin, and the deep-rooted, native vegetative cover of the Cerrado may be a more important carbon sink than previously realized.²⁷

Brazil's recent agricultural development and, consequently, the development of some of the country's most productive and wealthy new municipalities, have taken place in the Cerrado biome.²⁸ The Cerrados of Brazil occupy about 207 million hectares, or about 24 percent of the national territory, to the south and to the east of the Amazon Forest, an area larger than the continental US east of the Mississippi River, excluding Florida.²⁹ In the state of Mato Grosso, the cerrado biome covers approximately 40 percent of total land area, while forests cover approximately 50 percent and the wetlands of the Pantanal cover the other 10 percent. Despite the biome's extent, biodiversity, social importance and role as a carbon sink and in water resource management, the Cerrado biome and the human activity within the Cerrado have received considerably less attention from conservationists and social scientists than the humid forest. The results of this "high forest bias" have been a shortage of

²⁷ Ibid., 151.

²⁸ The term Cerrado refers to both an ecosystem and the place where that ecosystem exists – specifically, the area of tropical grassland that encircles the Brazilian Amazon on its south and west sides. In this dissertation, I will follow a convention, sometimes used in other literature, of capitalizing Cerrado, in the same way that "the Amazon" is capitalized as a proper noun, because it is not just any forest, but a particular forested place with specific cultural, geographic, and political attributes. As the both the power of discourse and the tendency toward neglect of the peoples and processes of the Cerrado are underlying themes of this dissertation, supporting the use of Cerrado as a proper noun seems an appropriate, if small, gesture in the direction of appropriate valuation of this place and ecosystem.

²⁹ Philip F. Warnken, *The Development and Growth of the Soybean Industry in Brazil* (Ames: Iowa State University Press, 1999). 30.

adequate environmental and social data,³⁰ a slew of conflicting government policies the region, and massive losses of vegetation and biodiversity in the Cerrado.

Today, the native vegetation of the Cerrado is highly fragmented. Of the estimated 2 million km² of the original land area of the Cerrados, approximately 44 percent (706,000km²) remains under native vegetative cover, while 41 percent is now classified as planted pasture (658,000 km²), 11 percent is classified as monoculture (180,000km²), and the remaining 4 percent is classified as urban, planted forests, or other uses.³¹ Human transformation of Cerrado ecosystems, particularly for agricultural expansion, continues to place pressure on the biome. Economic and government incentives have encouraged settlement and development in the Cerrado, particularly since the 1970s, and environmentalists and the public have been slow to recognize the importance of the Cerrado in the shadow of the more showy tropical humid forests of the Amazon. Although the soils that support the Cerrado are highly acidic, with the proper application of lime to correct for this acidity, these oxisols and ultisols are able to support some of the most productive agriculture systems in the world because their physical properties provide for good drainage and root penetration.³² Low land prices, government policies and topography and climate conducive to agricultural production have been driving forces behind agricultural

³⁰ Susanna B. Hecht, "Soybeans, Development and Conservation on the Amazon Frontier," *Development and Change* 36, no. 2 (2005): 397.

³¹ *Ibid.*, 149.

³² David J. Connor, Robert S. Loomis, and Kenneth G. Cassman, *Crop Ecology: Productivity and management in Agricultural Systems* (Cambridge: Cambridge UP, 2011). 478.

development on Brazil's Cerrado.³³ Despite improving technologies and more recent calls for intensification instead of expansion, 30 percent of cropland expansion in Mato Grosso between 2001 and 2004 was at the expense of Cerrado vegetation.³⁴ Today, annual deforestation in the Cerrado is two to three times greater than in the humid forest,³⁵ a threat to both the Cerrado and the neighboring forests.

Data collection

Data collection for this dissertation was undertaken over the course of nine months in 2011, following up on two, short, preliminary visits to Lucas in mid-2008 and 2009. The data that inform this work are a combination of ethnographic field notes, key informant interviews, semi-structured interviews with producers, and the results of archival research. Respondents for semi-structured interviews were selected using a snowball sampling method in which I enlisted key informants and other respondents to help me identify potential respondents. Emphasis in data collection was on quality and becoming, in the words of Bowen, “‘saturated’ with information on the topic,”³⁶ instead of collecting a certain number of interviews. The diverse

³³ Carlos Augusto Klink et al., "Conservação dos Recursos Naturais em Terras Privadas; O papel das reservas legais no arranjo funcional das paisagens produtivas do bioma Cerrado," in *Cerrado: Ecologia e Flora*, ed. Sueli Matiko Sano, Semíramis Pedrosa de Almeida, and José Felipe Ribeiro (Brasília: Embrapa Informação Tecnológica, 2008), 401.

³⁴ Douglas C. Morton et al., "Cropland expansion changes deforestation dynamics in the southern Brazilian Amazon," *Proceedings of the National Academy of Sciences* 103, no. 39 (2006): 14639.

³⁵ Donald Sawyer, "Climate change, biofuels and eco-social impacts in the Brazilian Amazon and Cerrado," *Phil. Trans. R. Soc. B*, no. 363 (2008): 1749.

³⁶ Glenn A. Bowen, "Preparing a qualitative research-based dissertation: Lessons learned," *The Qualitative Report* 10, no. 2 (2005): 217.

toolbox of field research methods on which I drew, in the end, proved to be the most effective method of data collection given the length and nature of the project.

In some ways, my approach is reminiscent of the “distended case study”/“follow the policy” approach advocated by Jamie Peck for studying “fast-moving”³⁷ policies and the “articulate policy elites” that drive them.³⁸ Indeed, to answer the most pressing question of such successful-policy case studies (How is success produced?) requires access to policy-shaping elites who often come prepared with highly deliberate and prepared responses to questions about those policies or projects. As such, the distended case approach works

[in] its use of a judicious combination of observations, documentary analysis, and in-depth interviews, as a means of probing, interrogating, and triangulating issues...spanning an expansive ‘causal group’ of policy actors, advocates, and critics. It would be naïve and unrealistic, however, for this to be ‘disruptive’ [as called for in other approaches such as the *extended* case approach] from the get go. *The recurrent problem of accessing policy elites in particular and maintaining network access in general, necessitates a degree of strategic circumspection, if not bounded conformity.*³⁹

³⁷ Jamie Peck, "Follow the policy: a distended case approach," *Environment and Planning A* 44(2012): 25.

³⁸ *Ibid.*, 25-26.

³⁹ *Ibid.*, 26., italics mine.

In this spirit, I am confident that my multi-method approach was not only appropriate but allowed me to generate and collect the best data possible given the realities of my situation as an obvious outsider, though one with sufficient prestige as a PhD scholar from abroad and Fulbrighter (in other words, with some support from the Brazilian government) to get limited access to the “causal group” of policy-making elites in Lucas.

In 2008 I took my first trip to North Mato Grosso and visited four municipalities along BR-163, including Lucas, with a field agent of the soy producers’ cooperative Aprosoja as my guide. It was on this first trip that I became familiar with the Lucas Legal project and met some of the individuals involved with the management of the project who would later become key informants. In 2009, I returned to Lucas, this time without a guide, and spent about a week in the municipality interviewing key individuals about the Lucas Legal project and about the settlement history of the municipality. The information gathered from these first interviews served as important background information to help me plan my project and my longer field period.

These two preliminary trips were also important for building trust with persons associated with local political and business leadership, as researching the Lucas Legal project would require that I have access to local opinion-shapers. North Mato Grosso along the BR-163 corridor is a place where Americans inquiring about environmental issues could be misunderstood (in spite of generally favorable reviews of The Nature Conservancy (TNC) sponsorship of this Lucas Legal), so it was

important for me to establish good rapport with some powerful local people before I proceeded with my project. Additionally, since Lucas Legal was conceived of and carried out by local elites, I knew that their cooperation would be essential to the success of my research. Because I made repeated trips to Lucas, emphasized my position as a student, and was able to communicate in Portuguese (although my language skills were still developing), I was successful in gaining the support of the municipal Secretary of Agriculture and the Environment (*Secretaria de Agricultura e Meio Ambiente/SAMA*) to carry out my project.

In 2011, I returned to Lucas to stay for nine months and found that the former Secretary had resigned to work for TNC full time on regional spin-offs of Lucas Legal. Fortunately, the new Secretary welcomed me and was extremely supportive of my work, and even offered me the SAMA conference room to do my work. The room where I did my work also served as the sometimes-office of the project's two permanent TNC employees for the rare occasions that they were not working at other project sites throughout the state. Though my original proposed research relied heavily on interview data, I quickly realized that I had an opportunity to do an ethnographic study of Lucas Legal and the other work of the SAMA staff in addition to interviews. This turned out to be an improvement on my original research plan for several reasons.

First, though I had read as much as I could about the region and I had visited twice, the reality is, upon my arrival in Lucas, I still had a lot to learn to understand the basic workings of environmental and agricultural management at a local scale in a

major commercial agriculture region. At this point, there have simply been very few studies of local environmental governance in Brazil, of elite farmer decision-making in this regard, and of local government involvement in multi-stakeholder schemes more generally. The studies that have been done have been mostly unpublished, or else published only in Brazil. I was able to find some of these studies *in situ* as part of my archival work in Lucas, but watching and listening as producers and other local stakeholders came into the SAMA on a daily basis was the quickest way for me to identify the most common, quotidian issues. By showing up to “work” every day at the SAMA, I was able to develop relationships not only with the Secretary, but also the various field agents and “*fiscais*” (enforcement agents) that work in the SAMA, and ask them to clarify issues for me when I had doubts. I was also able to accompany the SAMA staff occasionally when their work took them out to the field. This provided me constant opportunities for verification and triangulation of information from other sources.

A second, important benefit to my ethnographic approach was that I became a known entity among producers, municipal employees, and other individuals who passed through the SAMA on a regular basis, and to some degree I became associated with the SAMA. This was helpful not only for the progression of my ethnographic observations, but also for the interviews I conducted toward the end of my stay. I was certainly not the first American to visit Lucas, but my husband and I were the first to live there. This gave us a sort-of celebrity status that worked both to my favor and to my detriment at various times during my stay. As I already mentioned, Americans

can be received with a bit of suspicion in this region, and farmers, in particular, can be hesitant about outsiders asking them questions. By simply sitting in the SAMA office, a semi-public space, every day, I became a familiar presence, both less exotic and less threatening. I also became associated with a respected, familiar local agency and respected, familiar individuals at that agency, an association that eventually helped me get one-on-one interviews with farmers.

A third benefit to the ethnographic approach was that I became, to some extent, a member of the team and I was able to contribute a little bit back to my hosts at the SAMA. This was important to me because I know that taking on the role of hosting me was costly in terms of time, money, and perhaps even social capital for the employees of the SAMA and especially the Secretary, although I did the best I could to make this not so. Because Americans can be viewed rather ambiguously in this region, I am sure, and I sometimes specifically got the sense that the Secretary had to assure people or smooth over my presence in the office when certain individuals came to conduct business in the SAMA. Additionally, the Secretary and other staff personally hosted parties for me, included me in family and business outings, and drove me to meet farmers and local elites for interviews. I did not have a car and the Secretary often insisted on personally introducing me and explaining my project to his friends, colleagues and acquaintances. In many cases, I am aware I would not have been able to conduct interviews without him personally vouching for me with my subjects.

At the same time, I tried to help out in any way I could. When the SAMA was staffing a community event, I went with them and did my best to be helpful, though in many cases the best I could contribute was my company due to my still-developing Portuguese-language skills and my lack of familiarity with local customs for community events. Sometimes I was able to help load coolers of water or take pictures. The presence of my husband and me at events with the SAMA staff sometimes seemed to increase the prestige of the event. For example, with my presence, a 10K race I ran in shortly after my arrival became “international.” I gave interviews to local media at the request of the SAMA and in them, made sure to highlight my gratitude to the Secretary and the SAMA for hosting me. I also translated emails that came in from English to Portuguese and helped the SAMA receive groups of American farmers and other interested parties who stopped through Lucas to learn about local farming practices and Lucas Legal. Toward the end of my stay, I provided GIS training to an employee charged with compiling data about the success of the Lucas Legal program; the end result of my work with him was a geodatabase of licensed properties discussed in Chapter 7.

A fourth benefit of the ethnographic approach I took is the main purpose, I suppose, of an ethnographic approach: unscripted (though not unlimited) access I gained from being present in the SAMA office nearly every day for nine months. Though my original research questions centered on farmer participation in the project, I quickly realized upon arriving in Lucas that focusing exclusively or even primarily on farmer “participation” in the project was a something of a red herring. As I explain

in greater detail later in this dissertation, far from actively seeking out participation or enrollment in Lucas Legal, farmers were enrolled in the project by virtue of having farmland within the municipal boundaries of Lucas. Moreover, the working goals of the project are much more measured and less explicit than its widely publicized goals. These factors, in addition to a lack of baseline data available for the purposes of quantifying the results of the project (more on this in Chapters 6 and 7), makes it difficult indeed to measure definitively the outcome of implementing Lucas Legal.⁴⁰ Yet, in spite of the difficulties in gauging its “success” or lack-there-of, because of the considerable scope of influence of Lucas Legal, understanding the context and process of its conceptualization and implementation offers insights into the on-the-ground possibilities and challenges for environmental conservation, licensing, and monitoring in a region heavily dependent on industrial agriculture.

I was not present for the planning and implementation of the Lucas Legal project in around 2005 and 2006. Even if I had been in Lucas at the time, there is very little chance I would have been invited to participate in the planning process. The Lucas Legal project, like most things in Lucas, is the work of a small group of privileged elites. This is not meant to be a criticism of the project *per se*; I would argue, for reasons I will leave to political scientists to explain, that small groups of well-connected elites often make good decisions for good reasons, especially in small

⁴⁰ Active participation by farmers is required for the state licensing program inspired by Lucas Legal, MT Legal. The creation MT Legal by state officials is, in and of itself, an example of the considerable and far-reaching institutional influence of Lucas Legal, in spite of its relative ‘weakness’ in terms of results.... It is also a potential signal of how eager political elites in Mato Grosso are to find a resolution to the conflict between continually increasing agricultural production and mounting pressure to address and minimize the environmental costs of this production.

towns with economies highly dependent on one sector.⁴¹ The involvement of an international ENGO, national and multi-national companies, and the state government in the project only underscores the elite nature of the local project leadership. In any case, this all makes the project very much a political (and possibly business) move on the part of participants, and it is highly unlikely a student, especially a foreign one, would have been granted access to the planning process.

Because local project leaders are political and business elites, they are well-practiced in presenting rehearsed performances regarding their projects to their national and international partners, and the case of Lucas Legal is not an exception. Some of these elites were gracious enough to grant me interviews, and I believe they spoke somewhat frankly with me about the project. Their story-lines, though, were clearly well-rehearsed and rarely differed from the glossy printed materials that they provided to me (and other visitors, and members of the press) about the project. I suspect that they have recited these narratives so much that they believe them to be the whole truth. I do not believe anyone tried to deceive me; to the contrary, I believe that they were unsure how to handle my interest in the details of the project given that the tangible results of the project locally are frankly so thin. My academic training, though, has taught me to approach well-rehearsed and privileged storylines critically and with caution. Indeed, Peck has also noted that

⁴¹ This is poorly documented and wanting of further research, but for some evidence of close-knit communities making decisions collectively, see Dan van der Horst, "Incentive Based Environmental Policies and Collective Response Trends; Spatio-Temporal Patterns of Land Managers' Adoption of Agri-Environmental Measures," in *Handbook of Environmental Policy*, ed. Johannes Meijer and Arjan der Berg (New York: Nova Science Publishers, 2010), 317.

conversations with demonstrably powerful policy actors may often yield exaggerated accounts of foresight, rationality, or relative entrepreneurialism – what might be called ‘agent inflation’. On the other hand, interviews should not always be relegated to the status of ethnography’s poor relation for they have distinctive strengths and can serve particular purposes, not least when attempting to speak to power.⁴²

Throughout my field work, I also found this to be true.

Questions I grappled with in conducting this research include: Why would people getting rich off of industrial agriculture take an interest in environmental conservation efforts, however minimal? How do I know this is not simply another example of greenwashing? And if it is simply greenwashing, what is the value in studying this project? By studying the Lucas Legal project with an ethnographic approach, I was able to see past the public presentation of the project. I am not sure I have come away from this research with definitive answers to these questions, but my time in the SAMA, far from exposing dishonesty on the part of local elites and managers, gave me a stronger and more nuanced appreciation for this project, the context in which it must be understood, and the broader goals of different local actors associated with it.

⁴² Peck, "Follow the policy: a distended case approach," 26.

I was unable to get interviews with individuals at all, or even at most of the sponsor organizations of the project. These organizations are highly selective about granting interviews, and in any case, have elaborate structures in place through which information about their projects is filtered. I had connections at the local Syngenta office, for example, but even with careful explanation of the objectives of my study and the promise of anonymity to the potential interviewee, a local manager, I was not granted an interview due to a corporate policy that frowns on such things. Instead, I was given the web address and some glossy printed literature describing corporate efforts to give back to or participate in socio-environmental initiatives in locations where Syngenta does business. After considerable prodding on my part, I was finally given the chance to submit my questions via email for review by the corporate office in São Paulo, but received back only a PDF of the company's 2010 Sustainability Report, which mentions Lucas Legal in passing twice.

Projects like Lucas Legal are important reputation-bolstering products that large companies like Syngenta invest in, and as with their commercial products like seeds and crop-treatments, the output concerning projects like Lucas Legal must be carefully controlled to ensure good returns. I did not have access to decision-makers at the corporate headquarters in Switzerland, nor at the Brazilian headquarters in São Paulo, only to local management in Lucas.

In the end, I understand that local employees are committed to maintaining and improving the reputation of their company and their position within the company, and are unlikely to go against orders from higher up to grant an interview to a student.

After all, I stayed in Lucas for nine months to conduct research for my dissertation, and then I was leaving. People I wanted to interview in Lucas lived and made a living there and were not leaving any time soon, and I respected their decisions to grant me interviews or not, and tried to be aware of the contexts in which they were making their decisions. Moreover, I got the sense from off-the-record conversations with Syngenta employees and other informants in Lucas that there was little to be said about corporate participation in Lucas Legal. The main role of corporate participation in this project was to contribute funding and to vouch for the project, and the main return to corporations for their investment was the potential for reputation-bolstering. Which manager made the request to cooperate headquarters for participation in Lucas Legal at a given corporation was not seen as important by my contacts there, if anyone even remembered, because of the purely administrative nature of the company's participation. The money they contributed was not a major percentage of their operating budgets.

Besides, the real work of engaging with farmers and addressing environmental issues takes place at the SAMA and the broader knock-on effects of the Lucas Legal project on state and federal environmental governance do not have corporate sponsors. By observing the daily goings-on at the SAMA, where the work of administering Lucas Legal and environmental management more generally went on, I gained a much more thorough understanding of this work than a complete set of stakeholder interviews alone would have given me.

My ethnographic methodology was guided by the recommendations provided by Jon and Lyn Lofland in their 1995 text *Analyzing Social Settings: A Guide to Qualitative Observation and Analysis*, 3rd ed. Like the majority of fieldwork described by Lofland and Lofland, I adopted a stance in my research that was characterized by “trust combined with a heady dose of skepticism; suspicion mixed in with large portions of faith” in my informants.⁴³ In essence, I believe that my informants were forthcoming with me, and indeed, over the course of nine months in their living and workspaces it would have been quite a feat for them to maintain a charade, yet I am aware that at times and particularly at the beginning and concerning certain issues, informants were certainly putting their best foot forward with me, so to speak. I also am aware that, due to cultural and language differences, I might not have always been aware of these guises, though I have enough faith in my own social and cultural perceptiveness to believe that times I was totally unaware were few.

For my part, I did my best to be forthcoming with people who became my informants as well as anyone who expressed curiosity about my work. As I mentioned above, in my pursuit for total transparency, I appeared in the local media to explain the objectives of my work and I gave out my permanent and local contact information to anyone who asked. Of course, knowing and understanding are not always the same thing; as Lofland and Lofland note, “all research is secret to some degree because the people under study do not always believe and/or remember that the researcher is a

⁴³ John Lofland and Lyn H. Lofland, *Analyzing Social Settings: A Guide to Qualitative Observation and Analysis*, 2nd ed. (Belmont, CA: Wadsworth Publishing Company, 1995). 55.

researcher.”⁴⁴ Furthermore, I suspect that my research goals of understanding the genesis and implications of the Lucas Legal project came across as somewhat esoteric, even to the main champions of the project; I often felt them thinking, what more is there to know besides what we printed in the promotional materials?

Field notes for my observations were recorded frequently – approximately every 3 days or less when I was in the SAMA. Some weeks I worked on archival materials or travelled and during those weeks I did not record as frequently. I often recorded my notes in the evening when I got home, but other times I recorded right in the office, because I worked on my computer during the day as things happened around me and between “events” in the office. Field notes also increased in frequency as my confidence in the ethnographic approach increased over time and as my understanding of Portuguese and the issues manifesting in the SAMA each day began to make more sense to me. I recorded observations about individuals who came to the SAMA, the topics of conversations that went on around me, details about how environmental issues were addressed by staff. Any time Lucas Legal was specifically addressed, I took notes, though this was admittedly less frequent than I originally expected it to be.

The SAMA office during my stay had an open format; most employees sat in one, large room. The Secretary had his own office with a door, and the conference room I occupied also had a door, but the walls to these rooms did not go all the way to the ceiling, so nearly everything that was said in the building was audible to

⁴⁴ Ibid., 36.

everyone else, if the air conditioners were not running. One room was fully walled and could be closed off; sometimes I used that room, but usually one or two employees of SAMA used that room to meet with local citizens about various licensing issues. These conversations were the only kind that took place frequently at the SAMA that I did not hear much of.

For all official informants and interviewees, I had an information statement in Portuguese for them to review and take with them regarding the goals and expected risks (none) and outcomes of the research, as required by the Human Subjects Committee at the University of Kansas. Of course, I could not present these slips to every individual with whom I came in contact, and though individuals who did not give me express permission to interview and quote them are not quoted here, I could not help but learn something by overhearing conversations and observing interactions between SAMA staff and visitors every time someone came into the SAMA, as well as in countless conversations I had with friends and their acquaintances during my “down time.” My status as the “American student” or, as I was sometimes described, “intern,” generally seemed to be perceived as non-threatening; internships are common in both businesses and public organizations in Brazil.

In fact, I found that my official informants greeted my information statements with more curiosity than they did my research goals. As is common in American research, the statement promised informants complete anonymity and assured them that they could back out of the study at any time simply by contacting me. Local historians and other, mostly Brazilian students have worked in Lucas on the

settlement history and, to some extent, agricultural practices. In Brazil, as I learned, or at least in this part of Brazil, granting an interview apparently involves quite a different set of expectations than in the United States; after the interview, the Brazilian interviewer transcribes or types up the interview for the interviewee to review; if the interviewee accepts the write-up as correct, he or she signs and dates the interview. Interviews that have not been reviewed and signed are not considered valid. This is somewhat consistent with the oral history approach in the United States. In fact, due to a breakdown in training, a trove of interviews in the municipal archive about the settlement history of Lucas that I would have liked to have used were not available to me because they had not been appropriately verified by their subjects. Thus, my obligation to maintain interviewees' anonymity possibly created more, not less, suspicion of my objectives in Lucas.

I was able to conduct 20 semi-structured interviews with producers in Lucas (Interview instrument in Appendix A). I also interviewed persons associated with the municipal government, the local corporate sponsor of the project (Fiagril), TNC, and the Rio Verde Foundation, an environmental engineer, and the head of the municipal archive. In most cases interviews were recorded and I took written notes as I conducted the interview; interviews were transcribed at a later date. Only one informant declined my request to record the interview. Not all conversations with key informants were recorded because these were frequent and sometimes impromptu.

CHAPTER II – THEORETICAL FRAMEWORKS

Lucas Legal is a multi-stakeholder environmental licensing initiative that incorporates satellite- and GPS-determined property mapping and set-aside delineation with outreach, to orient farmers as they endeavor to increase set-asides to comply with federally mandated requirements.⁴⁵ The emergence of this project, as well as its achievements and failures, as detailed in subsequent chapters, complicates conventional understandings of the nature of agriculture and conservation in the Amazon. It also provides insight into the future of food production, conservation, and land management in the region, as agricultural actors begin to take seriously calls for change to business as usual in the Amazon. The Lucas Legal project (and its spin-off projects) raise important questions about motivating factors driving decision making at the property level, the role of technology and surveillance in the production of knowledge about the environment and activities that take place in relation to it (its management or lack-of-management), and the legitimacy of different sources of knowledge to different stakeholder groups. These issues have important implications for social and environmental outcomes of policy decisions and activities in the private sectors. Moreover, the collaboration in Lucas Legal of stakeholders from

⁴⁵ There are also labor law- and sanitation law-compliance components but these are considerably less prominent aspects of the project both in narrative and in practice.

environmental, industrial agriculture, and governmental organizations is quite novel and complicates conventional understandings environment and development.

The influence of such multi-stakeholder initiatives, or multi-partner governance, as Lucas Legal, at the interface of development and vulnerable natural areas appears to be increasing. The effectiveness and fairness of these partnerships between state, market and civil society actors remains an open question. Scholars have raised legitimate questions about the ability of such partnerships to accommodate truly open participation,⁴⁶ as well as about their potential for contributing to the “commodification of nature,” as they clear the way for private actors to gain greater control over natural resources by virtue of their power, purse, scientific knowledge, or other such factors.⁴⁷ The reasons for the increasing popularity of such arrangements are also unresolved, but appear to be linked to the globalization of commerce; the improvement of communication and cheapening of international travel, allowing for better network formation among groups from diverse places;⁴⁸ and changes to the nature of the state and its ability or desire to respond fluidly to all of the needs of society.⁴⁹

Among the sponsors of Lucas Legal are *elements* of the local/sub-national state (the mayor’s office of Lucas and the Mato Grosso state attorney’s office), but as

⁴⁶ Maria Carmen Lemos and J. Timmons Roberts, "Environmental policy-making networks and the future of the Amazon," *Phil. Trans. R. Soc. B* 363(2008): 312.

⁴⁷ Karen Bakker, "Commons versus commodities: political ecologies of water privatization," in *Global Political Ecology*, ed. Richard Peet, Paul Robbins, and Michael Watts (London: Routledge, 2011), 359.

⁴⁸ Margaret E. Keck and Kathryn Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics* (Ithaca, NY: Cornell UP, 1998). 14-15.

⁴⁹ W. Neil Adger and Andrew Jordan, "Sustainability: Exploring the processes and outcomes of governance," in *Governing Sustainability*, ed. W. Neil Adger and Andrew Jordan (Cambridge, UK: Cambridge, 2009), 12.

explained in Chapter 7, other state elements have been (at times) dismissive or even hostile to the program. Thus, the “state”, insofar as it’s a useful concept in understanding Lucas Legal, has had an evolving and uneven position with regard to the project. Other major sponsors include local, national, and multi-national corporations involved in one or more links in industrial agriculture commodity chains and an international ENGO. In terms of straightforward neoliberal advancement, the project could serve as an agricultural example of such ecological economics as described by James McCarthy, in which the ‘environmental Kuznet’s curve’ hypothesis comes true. In this view, Lucas and its agricultural sector, like the rest of the region, developed rapidly, deforesting everything and showing no regard for the forest/environment. Now the economy there is strong and land ownership is no longer tenuous, so people can now turn to other priorities, like the environment.⁵⁰

In an attempt to resolve these and other issues, the main questions guiding this project are 1) How can Lucas Legal be best characterized in terms of its goals and its structure? 2) How does the project work in terms of meeting its goals? 3) What are the environmental, institutional, and other outcomes of the project? and 4) What lessons from Lucas Legal can be used to improve agri-environmental outcomes elsewhere or at a larger scale in the Amazon-Cerrado?

⁵⁰ James McCarthy, "Privatizing conditions of production: trade agreements as neoliberal environmental governance," *Geoforum* 35(2004): 327-28.

Table 1. Key literatures and their main ideas

Literature	Key Ideas	Key Question	Importance of:		
			Government	Markets	Civil Society
Governmentality/ Environmentality	Technologies of government extend the reach of the state, compel people to act (and even think?) in certain ways	Has the state extended its control via decentralization and technology sufficient to persuade individuals to act in accordance with its environmental goals?	important	Not important	Important
Discourse Coalition	Discourse, or 'storylines' are powerful enough to enact change without requiring true collaboration	Are the various stakeholder groups working together toward a shared goal, or do they maintain divergent goals but share in utilizing a discourse of environmental sustainability in pursuit of those goals?	Not important	Not important	Important
Coalitions	Shared knowledge and collaboration are effective means of achieving goals				
Advocacy Coalition	Actions happen due to more diffuse 'rules in use' stemming from predominantly elite markets or government	Are non-state actors stepping in to manage the environment for the state?	Often important	Often important	Often Important
Governance					

The following sections will describe three literatures that I propose can offer insight into Lucas Legal as an example of multi-stakeholder governance (Table 1). All three literatures have in common an acceptance of the notion that a purely state-centered view of development and conservation in the Amazon is incomplete. All three literatures also provide space to question conventional dichotomizing such as agriculture/the environment and development/conservation; questioning of these dualities is, indeed, a key concept at the heart of the Lucas Legal project.

(Neoliberal) environmental governance

Governance is a concept that has evolved to describe the patterns of “societal steering,”⁵¹ including institutions, behavioral norms, and actors, both state and non-state, that have either emerged or been brought into analytical focus over time as the concept of the state, as an omnipotent force, has waned.⁵² Some of the processes identified as driving the turn to governance include privatization, the reduction of the size of the state due to fiscal concerns, and the increased participation of civil society.⁵³ The concept of governance is by all accounts a loose and flexible term

⁵¹ Adger and Jordan, "Sustainability: Exploring the processes and outcomes of governance," 11.

⁵² Matthew Himley, "Geographies of Environmental Governance; The Nexus and Nature of Neoliberalism," *Geography Compass* 2, no. 2 (2008): 434-35.; Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," 358.; Maria Carmen Lemos and Arun Agrawal, "Environmental Governance," *Annu. Rv. Environ. Resour.* 31(2006): 298.; Diana Liverman, "Who Governs, at What Scale and at What Price? Geography, Environmental Governance, and the Commodification of Nature," *Annals of the Association of American Geographers* 94, no. 4 (2004): 735.

⁵³ Himley, "Geographies of Environmental Governance; The Nexus and Nature of Neoliberalism," 442.

employed by scholars to describe many different scenarios, utilizing it to describe many different geographic and temporal locales, at all scales or even across scales, and with different angles to their analysis.

For example, W. Neil Adger and Andrew Jordan have identified three different discourses of governance throughout the literature – an empirical discourse, that seeks mainly to identify and describe situations in which the state is not the only or even the dominant creator and implementer of policy or rules; a theoretical discourse, in which patterns of governance are examined as new patterns of power and control; and a normative discourse, in which the diversification of actors in social steering is viewed as “good” due to its supposed democratizing effects,⁵⁴ though an alternate normative discourse surrounding governance is that it can be the opposite of democratizing if it involves handing over of power from governments, which are accountable to citizens, to international bodies, NGOs (Non-Governmental Organizations), corporations, or other groups which are not easily held accountable.⁵⁵

This study will focus on the first two discursive understandings of governance, seeking to explain a specific example of policy creation and implementation that was heavily influenced by non-state actors and drawing on this example to contribute to work toward describing and typifying the project in a way that will allow it to be compared with other examples in future work.

⁵⁴ Adger and Jordan, "Sustainability: Exploring the processes and outcomes of governance," 11-14.

⁵⁵ Andrew Garner, "Uncivil society: Local stakeholders and environmental protection in Jamaica," in *Virtualism, Governance and Practice*, ed. James G. Carrier and Paige West (New York: Berghahn Books, 2009), 136.

While governing may yield to governance somewhat spontaneously or accidentally, as corporations or civic groups simply find themselves filling the gaps left behind by a rolling back or shrinking state,⁵⁶ frequently, these groups see in the gaps an opportunity and either independently or in strategically formed partnerships seek to influence or take charge of social steering, norm-setting, and even regulation. These partnerships can take various forms and go by various names, including voluntary agreements, market-based instruments, multi-stakeholder initiatives, public-private partnerships, and multi-partner governance, to name a few. Lucas Legal is an example of these partnerships, as it includes state, market, and civil society partners working toward shared, if evolving, goals. Important questions about Lucas Legal as environmental governance include – What factors led to the creation of Lucas Legal? How does this project function? What are the outcomes of the project? How does the set of stakeholders involved in the project influence its process and its outcomes?

Governance is not always about the environment, of course; studies of decision making about the environment and of resource control more generally are typically referred to as environmental governance regardless of the valuation of nature in a given scenario. Studies have pointed to a shift toward governance (and, so, away from governing) associated with processes of decentralization⁵⁷ and the

⁵⁶ Himley, "Geographies of Environmental Governance; The Nexus and Nature of Neoliberalism," 441.

⁵⁷ Anne M. Larson and Fernanda Soto, "Decentralization of Natural Resource Governance Regimes," *Annual Review of Environment and Resources* 33(2008): 217.

neoliberal reform-driven restructuring of or weakening of the state.⁵⁸ Previously, governments had more tightly controlled access to resources and defined which areas or elements should be conserved and in what way. But the question remains open as to whether environmental governance in the age of neoliberalism is a move toward more inclusive governance or just a shift from one kind of exclusive control (by the government) to another (by the “market” or by elites). Much critical research on environmental governance highlights the negative impacts of neoliberal reforms on access to resources by the poor⁵⁹ and negative ecological outcomes of privatization of nature and natural resources,⁶⁰ though, certainly, scholars are far from agreeing on this and studies have also highlighted the positive outcomes of neoliberalism.⁶¹

As noted above, the flexibility of the term “governance” makes it challenging as well as important to make meaningful comparisons to draw out patterns among governance scenarios, particularly for those studies moving toward a normative approach to the topic. How can we say what “good governance” is, as the World Bank would like to,⁶² for example, if we do not better understand the scope of patterns that define governance, good or bad? In one attempt at theorizing governance, Lemos

⁵⁸ Morgan M. Robertson, "The neoliberalization of ecosystem services: wetland mitigation banking and problems in environmental governance," *Geoforum* 35(2004): 362; M. Shamsul Haque, "The fate of sustainable development under neo-liberal regimes in developing countries," *International Political Science Review* 20, no. 2 (1999): 205.; Matthew Sparke, "Political Geography: Political Geographies of Globalization (2) - Governance," *Progress in Human Geography* 30, no. 2 (2006): 5.

⁵⁹ Karen Bakker, "The "commons" versus the "commodity": Alter-globalization, anti-privatization and the human right to water in the global south," *Antipode* (2007): 432.

⁶⁰ For example, McCarthy, "Privatizing conditions of production: trade agreements as neoliberal environmental governance."

⁶¹ David A. Sonnenfeld and Arthur P.J. Mol, "Globalization and the Transformation of Environmental Governance," *American Behavioral Scientist* 45, no. 9 (2002).

⁶² World Bank, "Social accountability & demand for good governance," The World Bank Group, <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTGOVANTICORR/0,,contentMDK:22675075~menuPK:7430607~pagePK:210058~piPK:210062~theSitePK:3035864,00.html>.

and Agrawal have identified three “social mechanisms” (the state, as well as community and the market) that encapsulate the various ways in which actors endeavor to access or control nature and environmental resources (Figure 2).⁶³ To this I have added a fourth social mechanism, the NGO, as these are frequently assumed to be on the side of the community but in fact, may be operating as much on the side of the State or the Market, or their own independent objectives. The typology in Figure 2 is too general to be used in evaluating the outcomes of a project, partnership, or other scenario of governance, but it provides at least a starting point for identifying the types of stakeholders that may be involved.

⁶³ Lemos and Agrawal, "Environmental Governance," 310.

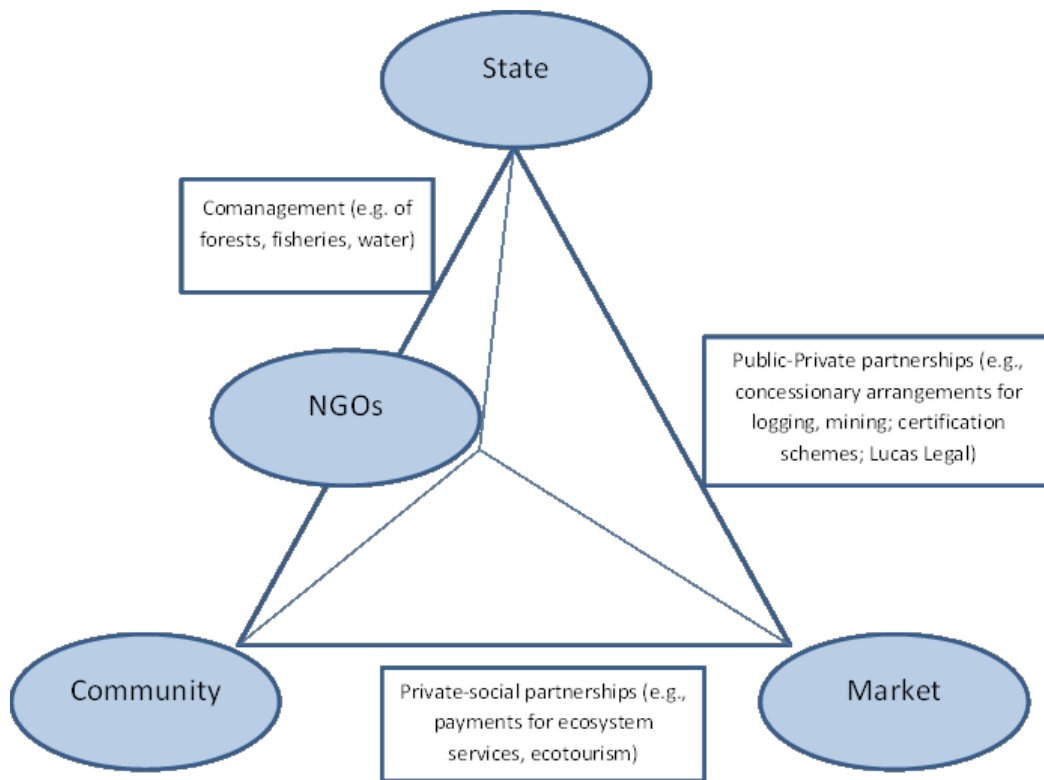


Figure 2. Types of environmental governance and their operational social mechanisms, adapted from Lemos and Agrawal, 2006, pg. 310

If the issue of why and how governance comes to supplant government in terms of social steering is of utmost concern in terms of historical changes to the size and nature of the state, so too are the effects of governance processes on the present and future of the state. Andrew Jordan has identified two different positions on this issue, which he refers to as “state centric” and “society centric” views.⁶⁴ In the state

⁶⁴ Andrew Jordan, "The governance of sustainable development: taking stock and looking forwards," *Environment and Planning C: Government and Policy* 26(2008): 22.

centric view, the “state may have weakened in the sense that it delivers fewer services than it did (say) in the 1960s and 1970s, [but] it remains a critical actor, and a key site of political accountability and public legitimacy.”⁶⁵ In this camp, for example, Ian Hodge has drawn on the experience of liberalization of agricultural management, and more specifically the decoupling of agricultural support payments from production in the United Kingdom, to call attention to the important role of governments in supporting and organizing the various local groups involved in making land management and land resource decisions. The society-centric view, on the other hand, is associated with many works citing Jessop’s notion of the hollowed-out state in the wake of neoliberal extension.⁶⁶ Though Jessop himself has not given up entirely on the utility of the state in neoliberal governance,⁶⁷ his work is often employed to capture the way in which neoliberalism has weakened the influence of the state, or at least created space for the influence of non-state actors, in the process of policy steering.⁶⁸

There is also a temporal element to the study of governance, which underscores the temporal shift from strong, hierarchical governing and control of resources (typified by the Brazilian military dictatorship’s activities to settle and develop the Amazon in the 1960s and 1970s, for example) to a form of state governing that is more responsive to macro-level processes and networks such as

⁶⁵ Ibid.

⁶⁶ Bob Jessop, "Narrating the Future of the National Economy and the National State: Remarks on Remapping Regulation and Reinventing Governance," in *State/Culture: State-Formation after the Cultural Turn*, ed. George Steinmetz (Ithica, NY: Cornell UP, 1999), 390.

⁶⁷ "The Regulation Approach, Governance and Post-Fordism: Alternative Perspectives on Economic and Political Change?," *Economy and Society* 24(1995).

⁶⁸ Jordan, "The governance of sustainable development: taking stock and looking forwards," 22.

globalization and markets, as well as to demands for more specific local policies from local and regional actors.⁶⁹

Environmental governance in Brazil

Important work has already been done on environmental governance models and predicted outcomes of these models on Brazil's rapidly changing "neoliberal frontiers" in the Amazon, and more specifically in the Amazon-Cerrado, or the agricultural areas of the southern Amazon.⁷⁰ The environmental governance scenario described by Daniel Nepstad highlights the (unexpected) role of a newly and differently empowered Brazilian state and pressures from global consumers of Amazon agricultural products in furthering environmental protection and, specifically, reduced deforestation rates in the Amazon.⁷¹ For Nepstad and his colleagues, the fiscal and political empowerment of municipal governments in planning and in regulation has been positive for the environment.⁷² Coupled with consumer demands, or market pressures, this process has led to the emergence of

⁶⁹ Ibid.

⁷⁰ Christian Brannstrom, "South America's Neoliberal Agricultural Frontiers: Places of Environmental Sacrifice or Conservation Opportunity?," *Ambio* 38, no. 3 (2009): 141.

⁷¹ Nepstad, Stickler, and Almeida, "Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation," 1600.

⁷² Nepstad et al., "Frontier Governance in Amazonia," 631.

state-society partnerships such as certification efforts and market-exclusion efforts for soybeans and beef, and other agricultural products, like cotton.⁷³

Christian Brannstrom has drawn heavily on the works of Hecht, Nepstad, and Jordan to work toward the construction of typologies for understanding emerging “efforts to reconcile agricultural and environmental demands” at various sub-national levels.⁷⁴ For Brannstrom, important differences between different governance processes are at least partially dependent on the role of the state actors or of the importance of state policies as a means of achieving the objectives of the particular policy.⁷⁵ Drawing heavily on Jordan’s definition of “governance as an empirical phenomenon,”⁷⁶ the general conclusions drawn by Brannstrom across his work suggest that state environmental policies and laws are important tools used by both conservationist and productivist actors in pursuit of their own, respective missions; indeed, the means by which these policies are/will be implemented is the true site of debate and potential conflict among various stakeholder groups operating in the Amazon and the Cerrado.⁷⁷

⁷³ Nepstad, Stickler, and Almeida, "Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation," 1600-01; Brannstrom, "South America's Neoliberal Agricultural Frontiers: Places of Environmental Sacrifice or Conservation Opportunity?," 142; Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," 358.

⁷⁴ "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," 358.

⁷⁵ Brannstrom, "South America's Neoliberal Agricultural Frontiers: Places of Environmental Sacrifice or Conservation Opportunity?," 141-42; Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," 358.

⁷⁶ Jordan, "The governance of sustainable development: taking stock and looking forwards," 22.

⁷⁷ Brannstrom, "South America's Neoliberal Agricultural Frontiers: Places of Environmental Sacrifice or Conservation Opportunity?," 147-48.

Lesley K. McAlister has also compared various environmental governance schemes across the Amazon and also finds compliance with state environmental policies to be a key component of both effective and non-effective governance regimes; for her, effectiveness at achieving this compliance in producers ultimately depends more on the influence of the non-state actors in the regime than the state agents.⁷⁸ For example, the moratorium in the soy industry on purchasing soy grown on lands deforested after July 2006 is effective because the technology provided by wealthy and technologically advanced actors like Cargill and The Nature Conservancy allowed domestic purchasers to effectively verify the provenience of soy.⁷⁹ Also, siting the enforcement with domestic purchasers, compared with end consumers in foreign markets whose interests may change or who may be less willing to pay price premiums for products like soy, the moratorium was able to work more as an embargo against irresponsible soy than as a certification scheme because “[t]he economic power that industry purchasers have over suppliers is a very powerful mechanism for influencing the suppliers’ behavior.”⁸⁰

Governmentality and environmentality

The concept of governance/environmental governance is a lens through which one can view the emergence of Lucas Legal and similar multi-stakeholder

⁷⁸ Lesley K. McAllister, "Sustainable Consumption Governance in the Amazon," *Environmental Law Reporter* 38(2008): 10880.

⁷⁹ Ibid.

⁸⁰ Ibid.

environmental projects as dependent on interplay among groups with different sources of power (the sovereign power of the government, the market-based power of private industry, and the (less-clear-cut) civil society based power of the NGO). Governmentality and its nature-oriented counterpart, environmentality, on the other hand do not focus so much on the role of the “power holders,” but instead are a prism that bends and refracts apparent structures of power and legitimacies of knowledges and technologies so that hidden properties and sources of this power, knowledge, and technologies of government are revealed.

The concept of governmentality comes from the work of Michel Foucault, who was ultimately concerned with problematizing the concept of power, and thus, that of the relationship between the government and society. Foucault had little to say specifically about the environment and nature,⁸¹ but since the publication of his writings on governmentality, or the technologies of government, at the end of his career in the late 1970s and early 1980s, important work has begun to apply Foucault’s critiques of conventional understandings of power, technology and knowledge, including science and social science disciplines, to processes and outcomes of resource governance and environmental conservation programs.

In his work, Foucault took what he called an “archeological” approach to understanding how power operates in society, rejecting attempts to find the ultimate source of power as irrelevant and impossible, and instead tracing the evolution of the use and outcomes of power through time, including in the formation of subjects who

⁸¹ Éric Darier, "Foucault and the Environment: An Introduction," in *Discourses of the Environment*, ed. Éric Darier (Oxford: Blackwell, 1991), 6.

willingly self-govern in certain ways.⁸² He sought to critique the conventional, more structural, view of power as insufficient and antiquated. In this conventional view of power, the sovereign, who is the bodily representation and ultimate source of power,⁸³ forces society and members of society, individually, to conform to his or her wishes, based on his or her claim to limitless power and the supposed capacity (which was not, in fact, limitless, but quite constrained in reality) to inflict physical harm on anyone who would rebel. Sovereign power, epitomized by the monarchy and essentially ubiquitous until the nineteenth century, is the convergence of power represented in the body of one individual (the king).⁸⁴ A breach of these power relations was, then, equivalent to a figurative attack on the physical body of the king.

Under this type of power relations, the main goal of exercising power is to maintain the power of the sovereign, not to improve the lives of individuals or society. For Derek Hook,

This is a highly violent and demonstrative form of power, a type of physical retribution acted out on the body of the criminal and staged for the benefit of the public at large. In this early era of power, a breach of the sovereign's law was tantamount to an act of war. Such an infringement was to be understood as an act of aggression committed

⁸² Ian Hacking, "The archeology of Foucault," in *Foucault: A critical reader*, ed. David Couzens Hoy (Oxford: Basil Blackwell, 1986), 36.

⁸³ Derek Hook, *Foucault, psychology, and the analytics of power*, Critical theory and practice in psychology and the human sciences (Hampshire, Great Britain: Palgrave, 2007), 9; Joseph Rouse, "Foucault and the natural sciences," in *Foucault and the critique of institutions*, ed. John Caputo and Mark Yount (University Park, PA: Pennsylvania State UP, 1993), 146.

⁸⁴ Hook, *Foucault, psychology, and the analytics of power*: 10.

against the person of the king, whose body had (figuratively) been attacked in the action of the crime. Accordingly, the body of the criminal had to be attacked, tortured, often dismembered or mutilated, in a symbolic display of the sovereign's power.⁸⁵

It turned out, though, that this type of power relations was highly inefficient, as lesser crimes inevitably went unpunished due to the hassle and expense of publicly administered corporal punishment, and the tendency of selective but dramatic displays of power to further threaten the sovereign by invoking the sympathies of the masses with the punished.⁸⁶

Eventually, by the start of the 19th century, or even earlier,⁸⁷ new types of power relations had emerged based on increasing dependence of sovereigns on more efficient, effective, and *productive*, techniques/technologies of power that were based on shaping the lives of people.⁸⁸ These processes, which Foucault referred to as “capillary” power relations, emerged from the myriad and often quite mundane ways in which individuals interact and came to be avenues by which desired goods such as knowledge, health, and wealth were produced.⁸⁹ Foucault was obscure about from

⁸⁵ Ibid., 9.

⁸⁶ Ibid., 10; Rouse, "Foucault and the natural sciences," 146.

⁸⁷ Foucault was almost solely focused on Western or European societies, and relied heavily on historical anecdotes from these countries which generally made clear the geographical limits to his analysis, though subsequent works on his work have certainly fallen for the trap of extrapolating European experiences out to more universalist interpretations.

⁸⁸ Stephanie Rutherford, "Green governmentality: insights and opportunities in the study of nature's rule," *Progress in Human Geography* 31, no. 3 (2007): 298.

⁸⁹ Rouse, "Foucault and the natural sciences," 146.

where the power in power relations originally emerged,⁹⁰ perhaps intentionally so,⁹¹ but the point was that soon it came to be, or else came to be apparent, that the sovereign leader was not the sole possessor of power in a given scenario. Two new, and closely related and mutually constitutive, forms of power (relations) emerged, then, which are known as disciplinary power and biopower, and which are the main ways in which most societies are organized today. The sovereign and rule by threat of bodily harm or constraint, for its part, still remains a relevant concept, but not without the consideration of these other types of power as well.

Over time, as technologies advanced and populations grew, the importance of disciplinary power, or controlling mechanisms that govern the intimate, everyday activities of people, also grew and were epitomized in the development of (proto-) modern prisons, asylums, hospitals, and schools.⁹² Any individual deemed deficient in some way found themselves under constant surveillance in one of these institutions as technologies of government developed that reinforced power relations in favor of the sovereign. Now, techniques of reform were no longer public spectacles, but shrouded in secrecy within the literal or figurative walls of these institutions, but it turned out that these newer technologies were much more consistently effective and efficient than the old methods.

This diffusion of regulatory agency away from, say, the court or the gallows, to these multiple institutional sites of discipline also had the effect of shifting the

⁹⁰ Hacking, "The archeology of Foucault," 35.

⁹¹ Hook, *Foucault, psychology, and the analytics of power*: 77.

⁹² Paul Rutherford, "The entry of life into history," in *Discourses of the Environment*, ed. Éric Darier (Oxford: Blackwell, 1991), 38; Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York: Pantheon Books, 1975). 136, in Rutherford.

sentiment behind the exercise of power; whereas under the public execution model, control was conflated with revenge for a wrong perceived to have been committed against the sovereign, the exercise of disciplinary power was much more about reform, at once less and more personal. An individual out of sync with the goals of society, or not yet aware of them in the case of children, could now be reformed, educated, or healed by prisons, schools, and hospitals, respectively, and (once again) become productive and good members of society.

Related to the issue of disciplinary power is the notion of biopower, or the measurement and management of the populations and of the environment, from which “norms” could be created, against which individuals could be measured and assessed.⁹³ True, the technologies developed for measuring people (and the environment) were obscured, either purposefully by the sovereign or more incidentally, by the increasing level of specialization or privileged personal relations needed to access them. As much as these placed limits on individuals’ lives, (i.e., certain behaviors are prohibited and will land you in an asylum, hospital, or prison for correction), though, they were also productive and created clear pathways for (acceptable) human behavior and ideals to which individuals could aspire.⁹⁴ It is from biopower that the norms to which individuals are held or shaped come, which are, themselves, heavily influenced by the disciplines and technologies given authority by

⁹³ Rutherford, "The entry of life into history," 39.

⁹⁴ John Caputo and Mark Yount, "Institutions, normalization, and power," in *Foucault and the critique of institutions*, ed. John Caputo and Mark Yount (University Park, PA: Pennsylvania State UP, 1993), 5.

the government and other influential organizations such as universities, NGOs, and corporations that can act as proxies for the sovereign.

Essentially, governments learned to use and also created, or supported the creation of, the fields of statistics, geography, demography, economics and other social sciences to measure, quantify, and define the population and produce optimal standards against which to measure subjects and toward which to pressure them, using disciplinary power if necessary.⁹⁵ In fact, as Foucault reminds us, the very fields and lenses through which we study and understand the world are highly historical, contested, dynamic, and political. The field of statistics is a prominent example: sovereigns (governments) needed to measure populations in order to determine norms and changes in those norms, against which to intervene on an individual level when there was some deviation.⁹⁶ For Michael Watts, this creation, accumulation, and administration of quantified data about our lives; the teasing out of norms about all manner of aspects of our lives; and the presentation of these norms as value-free are key methods in which modern governments “conduct our conduct.”⁹⁷ In other words, if through disciplinary power we learn to conform to behavioral norms because we have come to expect that someone might be watching, it is through biopower that we come to understand what the behavioral norms are and how we measure up to them.

Bringing these ideas together, for Foucault, a modern government is one that has

⁹⁵ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 270.

⁹⁶ Rutherford, "The entry of life into history," 39, italics in original.

⁹⁷ Michael Watts, "Development and Governmentality," *Singapore Journal of Tropical Geography* 24, no. 1 (2003): 14.

a plurality of specific aims: for instance, the government will have to ensure that the greatest possible quantity of wealth is produced, that the people are provided with sufficient means of subsistence, that the population is enabled to multiply, etc. There is a whole series of specific finalities, then, which become the objective of government as such. In order to achieve these various finalities, things must be disposed...with government it is a question not of imposing law on men, but of disposing things: that is to say, of employing tactics rather than laws, and even of using laws themselves as tactics – to arrange things in such a way that, through a certain number of means, such and such ends may be achieved.⁹⁸

This recognition of the contingency of all knowledge and expertise has important implications for assessing programs and policies, even those based on careful consideration of the most current, applicable science. For Joseph Rouse:

To understand scientific knowledge in this way, however, as an ideal, ahistorical content that a knower grasps or possesses is to overlook the complex practical achievements through which scientific domains become accessible. Only within such a complex practical field, shaped

⁹⁸ Michel Foucault, "Governmentality," in *The Foucault effect: Studies in governmentality*, ed. Graham Burchell, Colin Gordon, and Peter Miller (Chicago: U of Chicago P, 1999 [1978]), 95.

by the availability of functional and reliable equipment and a variety of subtle technical and theoretical skills, do electrons, viruses, tectonic plates, or quasars become possible objects of knowledge or discourse...I think it is useful to understand these gradual transformations, reproductions, extensions, and mutual alignments of local knowledges as strategic. Out of a confusing array of interacting projects, practices, and capabilities, there gradually emerges an overall pattern or direction (or, rather, a plurality of them). Not, however, because this pattern was what was intended, however dimly, all along, but because some practices turn out to reinforce and strengthen one another and are taken up, extended, and reproduced in various new contexts, while others remain isolated from or in conflict with these emergent strategies and gradually become forgotten or isolated curiosities.⁹⁹

In other words, control is maintained by the governing of things within a certain territory, and individuals are subjugated by this control over the material and symbolic aspects of their lives. These material and symbolic aspects are in many ways defined and understood, if not created, by governments and other fields of authority. Because of this intertwining of knowledge and power, Foucault frequently referred to the two concepts as though they were one – knowledge/power.

⁹⁹ Rouse, "Foucault and the natural sciences," 151-53.

This sounds dire for whoever occupies the inferior position in power relationships, but for Foucault, it did not have to be this way. Ultimately, through his historical investigations of power and knowledge, Foucault sought to revise conventional understandings of power and governing, which in his view, had not moved sufficiently past the concept of the sovereign to accompany the *actual* shift away from all power emanating from the sovereign. Foucault was critical of the concept that power was a substantive thing that certain individuals or groups of individuals could hold; instead, he conceived of power as a rather multi-faceted set of power relations that are diffuse, complex, and circulating.¹⁰⁰ For Foucault:

Power is not a substance. Neither is it a mysterious property whose origin must be delved into. Power is only a certain type of relation between individuals. Such relations are specific, that is, they have nothing to do with exchange, production, communication, even though they combine with them. The characteristic feature of power is that some men can more or less entirely determine other men's conduct – but never exhaustively or coercively. A man who is chained up and beaten is subject to force being exerted over him. Not power. But if he can be induced to speak, when his ultimate recourse could have been to hold his tongue, preferring death, then he has been caused to behave

¹⁰⁰ Rutherford, "Green governmentality: insights and opportunities in the study of nature's rule," 295-96.

in a certain way. He has been subjected to power. He has been submitted to government.¹⁰¹

In other words, power is (no longer simply) the harm or the threat of harm to the physical body, but instead, is made up of a whole host of mechanisms – technologies and discourses about truth, for example – that compel a person to act in accordance with what others, including, but not exclusively the government, expect of him or her.

Yet, for all the progress he made in designing a new conceptualization of power and knowledge, the theory has certain holes. One of the more glaring ones is his more or less linear description of the move away from a sovereign-bound world to one with multi-directional power channels. As a poststructuralist, Foucault was not interested in putting forth a unified or even consistent theory of power or government; instead, he was interested in providing tools with which existing power relations and truth regimes could be historicized and problematized,¹⁰² a position which seems to have been influenced by his disappointment in the corruption of Marxism by totalitarianism.

¹⁰¹ Michel Foucault, "Theories of the political: History, power, and the law," in *Politics, philosophy, culture: interviews and other writings of Michel Foucault, 1977-1984* (New York: Routledge, 1990 [1979]), 84.

¹⁰² Barry Smart, "The politics of truth and the problem of hegemony," in *Foucault: A critical reader*, ed. David Couzens Hoy (Oxford: Basil Blackwell, 1986), 167; Hacking, "The archeology of Foucault," 39; Lawrence D. Kritzman, "Introduction: Foucault and the politics of experience," in *Politics, philosophy, culture: Interviews and other writings of Michel Foucault, 1977-1984* (1990), xii.

Though he refused to provide a theory of power, Foucault nevertheless insisted that power was productive and extended to the creation of subjects who accepted its influence on them.¹⁰³ Foucault:

We must cease once and for all to describe the effects of power in negative terms: it ‘excludes’, it ‘represses’, it ‘censors’, it ‘abstracts’, it ‘masks’, it ‘conceals’. In fact, power produces: it produces; it produces reality; it produces domains of objects and rituals of truth. The individual and the knowledge that may be gained of him belong to this production.¹⁰⁴

This brings us to an important aspect of Foucault’s treatment of power as pertains to governmentality: the formation of subjects. The formation of subjects is a process both individualizing and also homogenizing, as the government has to group citizens together and then divide them into categories based, not on any essential characteristic about them but based on characteristics that “science” or some other authoritative discipline has created. Once these categories have been determined, each individual must be brought into alignment with these categories and with ideals that further the project and power of the “government”/governing bodies/legitimate

¹⁰³ Joseph Margolis, "Redeeming Foucault," in *Foucault and the critique of institutions*, ed. John Caputo and Mark Yount (University Park, PA: Pennsylvania State UP, 1993), 42.

¹⁰⁴ Foucault, *Discipline and Punish: The Birth of the Prison*: 194.

knowledge.¹⁰⁵ In other words, good governing tactics are those that are convenient for managing each of the things that are to be governed¹⁰⁶ and that compel subjects to utilize their personal liberty to act in prescribed ways, limiting the effort that must be put forth by the sovereign. The things that are to be governed are the things that scientists, statisticians and other authorities have determined should be governed to reach certain ends. When individuals are ‘self-disciplined’ due to access to legitimized knowledge and prescribed behaviors, they take often it upon themselves to act appropriately and in accordance with this knowledge; this is subject-formation and the basis of Foucault’s concept of governmentality.

Green governmentality/environmentality

Studies of green governmentality (sometimes called environmentality) explore the relations between people and natural resources by applying Foucault’s historicized understanding of power/knowledge, questioning uncritical acceptance of certain knowledges and discourses about the environment and natural resources, and exploring the technologies employed by the sovereign(s) to advance environmental subject making. These studies do not purport to measure how well governments have identified some truth about the environment and are proceeding to manage it, but instead, ask how knowledge about the environment and environmental actors and

¹⁰⁵ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 219.

¹⁰⁶ Foucault, "Governmentality," 95.

their expertise or lack of is formed and legitimated.¹⁰⁷ In this way, an environmentality approach unveils the historicized power relations hidden in endeavors or actors and their agendas that are often presented as apolitical, innocent, and above reproach (or conversely, devious and deserving of reproach).¹⁰⁸

For example, environmental monitoring is typically framed as apolitical. Conservationists often argue that we can only protect the environment if we track changes to and that scientific methods of monitoring are value-free and objective. The science and techniques used in monitoring, though, are actually the result of highly politicized processes, which in turn affect the form and function of the knowledge(s) being produced by this monitoring, not to mention the way in which the knowledge is then used. However, because of the established legitimacy of science (of all kinds) over time as an authoritative voice on such matters, data and conclusions about the environment produced by scientists at non-governmental organizations are easily accepted by the populace, sometimes even more so than when they are produced by (scientists that are part of) the government, and especially when the results confirm or are only incrementally different than what we already know.

There are at least two important aspects of this situation that can be examined using a governmentality framework: first, the capillary power relations described by Foucault that extend beyond those between government and individuals also exist between these groups and non-state entities like NGOs and even corporations; and

¹⁰⁷ Rutherford, "Green governmentality: insights and opportunities in the study of nature's rule," 295; Reuben S. Rose-Redwood, "Governmentality, geography, and the geo-coded world," *Progress in Human Geography* 30, no. 4 (2006): 475.

¹⁰⁸ Rutherford, "Green governmentality: insights and opportunities in the study of nature's rule," 295.

second, that these power relations are at least as productive as they are repressive.¹⁰⁹ Environmental monitoring produces detailed knowledges about the environment, produces discourses and new avenues for political and personal agendas, and further legitimacy for the NGOs, scientists, and other actors involved in knowledge productions. Governmentality/environmentality studies are concerned with understanding how these knowledges are produced and contested not just by authorities but also individuals on whom authorities seek to act, and how this process changes individuals (or not).

The most thorough exploration of socio-environmental issues through the lens of governmentality is Arun Agrawal's book *Environmentality: Technologies of Government and the Making of Subjects*, in which Agrawal details the transformation of the Kumaoni Indians from deliberate destroyers of forests in reaction to attempts by the British to regulate them, to active participants in the conservation of forests 70 years later. Agrawal found that conventional, punitive efforts to enforce protection of forests were overall ineffective in the face of entrenched Kumaoni resistance, but that, over time, a process of quantifying and defining forests coupled with the devolution of enforcement authority to local leaders has been both effective in improving forest conservation and in changing the way the Kumaon view forest conservation and the limits on their activities in the forest that this entails. The more advanced technologies of government – including increased surveillance and accountability for forest activities from having locals involved in governance and norms against which forests

¹⁰⁹ Ibid., 296.

and forest activities are measured created an avenue in which *some activities* of forest protection became acceptable or even definitive for *some people*. Agrawal found that in the case of the Kumaon,

[n]ew technologies of government dispersed centers of environmental regulation and ecological decision making...and redefined the political relationships between what might broadly be called the state and the local.¹¹⁰

In other words, the crucial element with regard to how (some of) the Kumaon came to regard the environment differently than before was the dispersal of power to local governments, which created opportunities for individuals to follow the paths of acceptable behavior with regard to the forests cut out by these government technologies. This subject formation was possible then, because, like Foucault insisted, power is not “simply the ability of a person to make another do something,”¹¹¹ Instead, subjects are individuals who act in the service of a goal defined explicitly or implicitly, often by the government, without being subjected to brute force.¹¹² Under a framework of governmentality (environmentality), the relentless persuasiveness of technologies of government in the lives of individuals can and does lead to changes in individual behavior and intent.

¹¹⁰ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 202.

¹¹¹ *Ibid.*, 220.

¹¹² *Ibid.*, 221.

Discourse and advocacy coalition frameworks

Discourse and advocacy coalition approaches emphasize the power of diverse actors collaborating in efforts to achieve a shared goal, which is often some combination of symbolic, economic, and material in medium. Discourse and advocacy coalitions are particularly suited to the analysis of environmental issues because understandings of discourse and advocacy coalitions have grown, in part, out of the analysis of environmental issues and the notion of ‘sustainable development.’ Discourse Coalition Framework (DCF) and Advocacy Coalition Framework (ACF) may offer a particularly relevant perspective on the Lucas Legal project because of the importance of sustainable development, the accumulation and distribution of symbolic and non-material or indirectly material resources, and the inclusion of differentially-empowered actors to the project.

DCF and ACF can be explained using the example of the evolution of discourse on environmental sustainability. During the late 1980s and the 1990s, a series of high-profile conferences and summits of state and transnational groups led to global recognition of the unsustainable way in which development had been progressing until that point. Problems with the newly emerging consensus on sustainable development soon became apparent, though. These included the failure of many state and transnational organizations based in the global North to acknowledge and address their privileged positions and often condescending prescriptions; the failure in many ways of the change in discourse to produce meaningful changes in

practice; and the discursive conscription of sustainable development to be more palatable to neoliberal capitalists.¹¹³ Indeed, discourse about sustainable development had become highly accepted among diverse groups, including champions of neoliberal capitalism, precisely because of these features of the discourse. It has been frequently argued, though, that this improving of the palatability of discourse about sustainability for greater acceptance represents for more hard line environmental groups a coopting of environmental ideas by powerful corporations and other neoliberal agents.¹¹⁴

In their work on environmental discourses, though, Hajer (the main architect of DCF) and Fischer call into question the presumption that sustainable development and related environmentalist discourses were ever resistance-oriented at all. For them, “sustainable development was always a reform-oriented *inclusionary* discourse [that] has sought to facilitate a non-adversarial approach to environmental politics.”¹¹⁵ That is, most discourse about sustainable development does not advocate revolution or a restructuring of the system or a dismantling of capitalism on the merits of its ecological and social tendencies toward crisis and never did.¹¹⁶ Indeed, Michael Thompson has argued, the main problem with sustainability discourses – that they

¹¹³ Maarten Hajer and Frank Fischer, "Beyond Global Discourse: The Rediscovery of Culture in Environmental Politics," in *Living with Nature: Environmental Politics as Cultural Discourse*, ed. Frank Fischer and Maarten Hajer (Oxford: Oxford UP, 1999), 2-5.

¹¹⁴ Vaughan Higgins, Jacqui Dibden, and Chris Cocklin, "Neoliberalism and natural resource management: Agri-environmental standards and the governing of farming practices," *Geoforum* 39(2008): 1777-78.

¹¹⁵ Hajer and Fischer, "Beyond Global Discourse: The Rediscovery of Culture in Environmental Politics," 4.

¹¹⁶ McAllister, "Sustainable Consumption Governance in the Amazon," 10873; David Harvey, *Spaces of Global Capital* (London: Verso, 2006); Hajer and Fischer, "Beyond Global Discourse: The Rediscovery of Culture in Environmental Politics," 3.

simply promise a “harmonious Never Never Land” without requiring us to think critically about the complexity of the socio-environmental issues we face or the profound changes that would be required to address them – has been there all along.¹¹⁷

Many scholars are interested in the way in which heterogeneous sets of actors modify discourse about the environment to define environmental problems or situations in ways that make their preferred solutions to these problems convenient or acceptable. Environmental discourses fill different roles for different actors. They may be sincere narratives put forth by grassroots environmental activists or they may be coopted by more powerful organizations, like corporations, NGOs, and governments.¹¹⁸ In fact, the difficulty, if not impossibility, of determining the intentions behind normative discourses about sustainable development has led scholars to call into question the presumption that local and grassroots concerns, organization, and policies are inherently more desirable than those at other scales.¹¹⁹ As concern for what is happening to the environment has become (mostly) universally accepted, the attention of discourse-setters (both the powerful and the marginalized) has turned to interpretation and framing of the environment and crises surrounding it, or struggles to control and define discourses about the environment.

¹¹⁷ Michael Thompson, "Security and Solidarity: An Anti-Reductionist Analysis of Environmental Policy," ed. Frank Fischer and Maarten Hajer, *Living with Nature: Environmental Politics as Cultural Discourse* (Oxford: Oxford UP, 1999). 143.

¹¹⁸ Krista Harper, "Environment as Master Narrative: Discourse and Identity in Environmental Conflicts (Special Issue Introduction)," *Anthropology Department Faculty Publication Series Paper 75*(2001): 101.

¹¹⁹ J. Christopher Brown and Mark Purcell, "There's Nothing Inherent about Scale: Political Ecology, the Local Trap, and the Politics of Development in the Brazilian Amazon," *Geoforum* 36, no. 5 (2005).

Frequently, one actor does not have the power to singlehandedly modify a discourse about a given issue, but in cooperation with other actors or groups of actors (such as a discourse coalition), discourses can be changed, thereby influencing decision-making, policy-setting, and other concrete actions related to the issue the discourse treats.

Discourse coalitions are distinct from other coalitions (such as advocacy coalitions) in that members of a discourse coalition need not take any action together or even agree with one another on other, fundamental levels.¹²⁰ Instead, they are bound together either purposefully or incidentally by their adherence to the same or similar story-lines or discourses that share a “common political project.”¹²¹ Because discourse coalitions do not require that members share a belief system, it is broad, simplified, compelling and actionable story-lines that define a discourse coalition.¹²² The storyline can also persist in the absence of fact-based evidence supporting the narrative, again, because the point of the coalition is not to describe reality but to shape it. The greater the variety among actors that promote the narrative, the more authentic it looks, and the more likely it is to come true.

As evidence of this phenomenon, Hajer offers the example of ecological modernization, the story-line in which by removing inefficiencies, technology can diminish pollution and allow humans to live, consume and grow (in other words, ‘develop’ in the unidirectional sense of the word) while maintaining balance in

¹²⁰ Laureen Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," *Geoforum* 43, no. 2 (2012): 298; Maarten Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (Oxford: Oxford UP, 1995). 13.

¹²¹ *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*: 65.

¹²² Ibid.

nature. This concept is not without some evidential support, but, Hajer argues, it is *more* based on an appealing story line or narrative of hope that we, as humans, are clever enough to somehow head off an impending environmental crisis of our own making.¹²³ Another way of looking at ecological modernization that might make Hajer's point clearer is to consider that we have no way to know if technological advances will indeed tend to improve efficiencies and lead to improved environmental outcomes, even if there are isolated examples of this happening. Indeed, there is likely much more evidence that modernization increases resource use as technology gives people new and easier ways to access resources. And yet, the storyline is compelling for individuals interested in continued consumption and economic development as well as individuals interested in environmental conservation but who might feel that the culture of capitalist consumption is much too strong to be stopped, among others.

In a way, the entire concept is tautological; fundamental to ecological modernization theory are assumptions that modernization always leads to improved outcomes, and that we are able to fully or at least adequately figure our effects of the environment. Reject these assumptions and the concept is meaningless. Accepting these assumptions, though, is appealing, and, its advocates hope, self-fulfilling. Under these assumptions, resource consumption can continue unabated and if it appears that modernization is not leading to improved environmental outcomes, then the answer is more modernization! This broad, appealing and convenient story-line contained in the

¹²³ Ibid, 31.

concept of ecological modernization “took away many of the objections governments [and capitalist enterprises] might have had to a new approach of environmental regulation” and united diverse actors and agencies from various scales who adopted similar discursive frameworks for their projects.

The outcome for those who opted out of this coalition by refusing or failing to frame environmental problems as being due to a shortage of technologies has been that these actors and groups have been discursively marginalized. After all, before ecological modernization, environmentalism (in the US/global North) was precisely a cultural critique of the “technocratic institutional arrangements” now featured by ecological modernization and contemporary, mainstream environmental discourse more broadly.¹²⁴ The broadly attractive discourse of ecological modernization, though, did not feature such fundamental critiques of development, modern western cultural values, or neoliberal capitalism, for example, making it more easily adopted by agents aligned with these concepts. As ecological modernization was more widely adopted through the 1980s and 1990s, its dominance only increased, which limited the possibility for members of the coalition (be they scientists, policy makers or NGOs) to critique the discourse without leaving or being viewed as leaving the coalition.

Hence, the weakness of the discourse coalition in practice for less powerful actors; a weak actor, in the end, has little to gain by joining a discourse coalition

¹²⁴ Ibid., 102; Hajer and Fischer, "Beyond Global Discourse: The Rediscovery of Culture in Environmental Politics," 6; Timothy Luke, "Eco-Managerialism: Environmental Studies as a Power/Knowledge Formation," in *Living with Nature: Environmental Politics as Cultural Discourse*, ed. Frank Fischer and Maarten Hajer (Oxford: Oxford UP, 1999), 104.

because the coalition is based on a shared discourse alone, and may include diverse actors pursuing possibly very different or contradictory objectives in concert based on their common subscription to the same discursive framing of an issue like “the environment,” the coalitions are, for Hathaway, “tenuous and fleeting, and can be quickly dissolved when one side or another changes its orientation.”¹²⁵ But because of the close relationship of discourse to power relations,¹²⁶ because the coalition is bound only by shared discourse, and because power is asymmetrically distributed among actors for various reasons,¹²⁷ criticism of the discourse is akin to withdrawal from the coalition. More powerful members may be able to exercise their influence to reform the discourse.¹²⁸ Weaker actors will not influence the discourse sufficiently to account for the risk of having their reputations with their base tarnished by association with powerful actors who may be repeating the story line but not acting in accordance with it. As a theoretical tool, the DCF can help make sense of actors unlikely to cooperate on an issue due to their historical positions on the issue, who are suddenly appearing publicly to collaborate, or are separately proclaiming unexpectedly similar views on an issue.

Many authors, including the inventor of the DCF, Maarten Hajer, have compared the DCF to the ACF. ACF coalitions are tighter than DCF coalitions, based not only, or not even, around a shared storyline among members but around true and

¹²⁵ Michael J. Hathaway, "Global Environmental Encounters in Southwest China: Fleeting Intersections and 'Transnational Work'," *The Journal of Asian Studies* 69, no. 2 (2010): 1.

¹²⁶ Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," 299.

¹²⁷ Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*: 240.

¹²⁸ Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," 299.

meaningful cooperation toward a shared goal.¹²⁹ Thus, while DCF coalitions are fragile, shifting, and may even be unintentional, ACF coalitions are purposeful and may be resilient to fundamental differences that arise among coalition members, and the narrative or the direction of the coalition may even be altered to accommodate resolutions to these differences.

A prime example of an ACF analysis of multi-actor cooperation is the work of Keck and Sikkink on international environmental networks. They have shown how a multi-scale advocacy coalition focused on diminishing deforestation in the Brazilian Amazon readjusted their discourse about the issue when a group of rubber-tappers and their allies made a public case for the inclusion of social relations in discussions of tropical deforestation.¹³⁰ Previously, the coalition had been organized solely around ecological issues and scientific data that excluded diverse groups of Amazonian forest dwellers from the discussion. Because the coalition included many pro-nature groups who had historically conceived of effective conservation in terms of enclosure and exclusion of human activity, the coalition might have disbanded with the introduction of this new discursive challenge. Instead, though, a mutually beneficial relationship developed among banks and development agencies and the rubber tappers, which resulted in exchanges of information and contributed to building a true common understanding within which activists with very different backgrounds could work together.¹³¹

¹²⁹ Ibid., 298.

¹³⁰ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*: 137-42.

¹³¹ Ibid., 141.

As is the case in discourse coalitions, power relations are often asymmetrical in advocacy coalitions. They have shown how a network of environmentalists concerned about the destruction of the Amazon by road and settlement projects funded by multi-national banks was strengthened in terms of its ability to affect pro-environmental changes in the governance of the region when a group of rubber tappers joined their coalition and shifted the focus of the campaign from defining and enclosing supposedly pristine nature to protecting existing socio-environmental systems in new “extractive reserves.”¹³² The rubber tappers were transformative to the work of the coalition because they brought an essential human perspective, concrete demands for protection of their livelihoods, and a direct link between environmental destruction and international development to the growing global awareness of environmental issues in the Amazon, which was highly influential in Washington.¹³³ The rubber tappers alone likely could not have achieved the amount of domestic and international attention to their cause that they did achieve without allying themselves with the national and international environmental movement and with powerful financial and development agencies.

Environmental networking in Brazil was transformed by the rubber tappers because their participation in the coalition made the work more personal.¹³⁴ Yet, although the rubber tappers had been making their case for land rights for years, the

¹³² Katheryn Hochstetler and Margaret E. Keck, *Greening Brazil: Environmental Activism in State and Society* (Durham, N.C.: Duke UP, 2007). 141.

¹³³ Katheryn Hochstetler and Margaret E. Keck, *Greening Brazil: Environmental Activism in State and Society* (Durham, N.C.: Duke UP, 2007). 155.

¹³⁴ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*: 141.

influence of the rubber tapper movement was considerably strengthened around 1988 as the result of its strengthening international and public ties with environmentalists, especially international environmentalists, as well as the very public events of that year of widespread and widely photographed burning in the Amazon and the death of Chico Mendes.¹³⁵ The rubber tappers, then, were crucial partners in the Amazon environmental advocacy coalition and played a key role in making the overall message of the coalition more compelling, but they were not as empowered to generate tangible outcomes as many other members of the coalition. Hochstetler and Keck described attempts among rubber tappers and other forest peoples (e.g. indigenous groups and small farmers) to build alliances as “not always frictionless,” as many of the groups were traditionally at odds.¹³⁶ Moreover, truly addressing their shared issues, which were all at some level related to land access and tenure, required coordinated action with the federal government at the very least. In the end, the hallmark achievement of these groups, the recognition of extractive reserves as a form of conservation unit, required the involvement of national and international environmental and development groups who made political and public claims for “the link between conservation and sustainable livelihoods that had in principle been part of the ‘sustainable development’ mantra from the beginning.”¹³⁷

Finally, the importance of personal relationships in ACF should be noted here. Because advocacy networks are deliberate and involve true consensus building

¹³⁵ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 111.

¹³⁶ *Ibid.*, 167.

¹³⁷ *Ibid.*

among policy actors,¹³⁸ close personal and professional relationships among individuals associated with groups in the coalition are key to coalition stability. Hochstetler and Keck have described several individuals, typically scientific and policy professionals but sometimes not, as in the case of the rubber tappers, who were able to navigate potential challenges to the coalition based on personal knowledge of issues; broad sets of connections to various agencies and well-positioned individuals due to past and current policy and scientific work; and mutual trust from working together over time.¹³⁹ Hajer has also emphasized the importance of the individual beliefs and relationships among individuals associated with various groups in an advocacy coalition.¹⁴⁰ On the other hand, Elgert has deemphasized the role of personal relationships in advocacy coalitions, instead claiming that it is very solid and well-tested scientific-empirical evidence that forms the backbone of stable advocacy coalitions.¹⁴¹

The ACF, then, is a useful starting point for examining the ways in which actors (typically limited to non-governmental actors) cooperate to leverage their power in influencing a situation or process. Sharing a goal and working together toward its achievement, even at the sacrifice of other positions held by individual members of the coalition, is intuitive and presents an optimistic view of problem-solving among diverse actors. For Hajer, though, the ACF is flawed in important

¹³⁸ Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," 298.

¹³⁹ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 171.

¹⁴⁰ Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*: 69.

¹⁴¹ Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," 298.

ways. For instance, one main idea held by ACF is that individuals must be the unit of analysis because studying institutions and agencies is much too complex. For Hajer, lowering the unit of analysis to the individual does not remove the complexity. He notes,

A person might be a perfect father in the context of his family practices but a tough businessman in the board-room, or even a serial killer after he has put the children to bed...Looking at the beliefs of individuals as variables to explain policy change fails to consider the importance for the process of change of the varied nature of the contributions made by specific individuals in different argumentative exchanges. For instance, the fact that actors utter contradictory statements implies that their activity may help sustain different coalitions. Taking over the new story-lines of a rival coalition (even if this is only to criticize that position) acknowledges the existence of the alternative perspective and may thereby facilitate the reproduction of that coalition.¹⁴²

In other words, the “cement” of advocacy coalitions is supposed to be a shared belief system among individuals, but an individual may hold conflicting beliefs at any given

¹⁴² Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*: 69-70.

time and many change beliefs over time; indeed, he or she is likely to.¹⁴³ The fluidity of DCF accounts for this, simply requires the recognition of some common ground in a certain storyline, regardless of shifting or conflictive interests or beliefs of individuals who make up the coalition.

Because members of a discourse coalition are committed to promoting broad storylines as the “meaning of physical and social phenomena,”¹⁴⁴ existing or emerging conflicting or contradictory ideas among coalition members or from outside may be incorporated or coopted by the fluid and broad discourse which embodies the power relations of its promoters.¹⁴⁵ For Hajer, this is another key difference between DCF and ACF; in DCF, change can, and perhaps, must come from the outside. The strength and resilience, such that it is, of a discourse coalition is that it is able to respond to challenges to the discourse from the outside, because members do not view the discourse as reflective of their core beliefs and, so are more open to its mutability in pursuit of their common objectives. According to Hajer, this is not true of ACF, which seems to require “membership” in the coalition before changes can be made, as individual members are supposed to be much more fundamentally bound to it.

The incorporation of the rubber tappers into the Amazonian environmental movement in the late 1980s, though, calls into question this supposed difference between the two frameworks. The Amazonian environmental movement was an

¹⁴³ Ibid., 70-71.

¹⁴⁴ Ibid., 72.

¹⁴⁵ Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," 299.

association of national and international individuals and their organizations bound together by personal ties as well as shared goals, and was by most accounts an example of an advocacy coalition. Keck and Sikkink, and later Hochstetler and Keck, have shown that this advocacy coalition reacted in a very fluid way to a fundamental challenge that emerged to their authority over the issue – the emergence on the public radar of the rubber tappers movement.¹⁴⁶ The resulting reframing of the coalition's discourse and approach to its policy objectives was not free of conflict but ended up being a positive development for the coalition's effectiveness.

Finally, compared to ACF, DCF is a more cynical view of collaboration among disparate groups. In assuming that a coalition is in a coalition in word only (as opposed to in action), it lowers the threshold for success for the coalition. How can we objectively know if a discourse has truly been changed? And how can we know if it was due to the efforts of the coalition? A discourse coalition requires no action on the part of the members except for repeating the storyline. Thus, DCF may easily serve as a convenient explanation for convergences in storylines when, in fact, there is another, more insightful explanation to be found. It is easy to assume that a similar message on a broad topic like improving the environment, even when coming from unlikely allies, is a cynical attempt to distract the public from actions that run contrary to this message or to coopt the framing of the issue. DCF does not have a ready answer to these charges. Thus, there is more work to be done with DCF as a solid framework on which to assess apparent coalitions.

¹⁴⁶ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*: 141; Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 155.

Conclusion

The project Lucas Legal is part of an upsurge in multi-stakeholder efforts to address concerns about agriculture and environmental degradation in the Amazon. The complex nature of the project, its focus on licensing of private properties, its incorporation of existing laws, its multi-scalar nature, and its diverse stakeholder group problematize conventional understandings of agriculture in the Amazon, which have presumed farmers to be the enemies of forests and have positioned the Brazilian state as a monolith that bows to the whims of foreign and international opinion.

Here, three frameworks have been proposed to guide a more nuanced analysis of changing landscapes in the southern Amazon. These include the literature on environmental governance, often closely associated with the rolling back of the state. The increased importance of environmental *governance* over environmental *governing* by just the state is thought by many scholars to have contributed to more diverse actors determining policies on the environment and otherwise,¹⁴⁷ though others have pointed to the potential for decreased transparency as non-democratic actors become more involved in resource management and environmental monitoring. The governmentality literature, on the other hand, views the involvement of these non-state actors as evidence of the effectiveness of government; so pervasive have

¹⁴⁷ Watts, "Development and Governmentality," 13.

become the 'tactics' of achieving certain goals that ensure the continued legitimacy of the government,¹⁴⁸ that the government need not constantly act on behalf of itself to ensure the discipline of the populace in pursuit of these goals. Decentralization of government to local scales and passing off of the tasks of surveillance and discipline of the population in accordance with set norms is, then, not the weakening of the government, but an advanced stage of governmentality in which self-governance is internalized and individuals become self-disciplined subjects.¹⁴⁹ In the third framework presented, discourse and advocacy coalitions (DCF/ACF) frameworks, relative power among partners is more contextual than in the other two frameworks. The association is, by definition, cooperative in nature, and power and authority do not necessarily belong only to actors empowered by the market or the state.

¹⁴⁸ Foucault, "Governmentality," 95.

¹⁴⁹ Rutherford, "Green governmentality: insights and opportunities in the study of nature's rule," 299.

CHAPTER III – THE SETTLEMENT OF MATO GROSSO AND LUCAS DO RIO VERDE

Consolidation of technologically-advanced, highly-productive industrial agriculture is a key feature of the present-day southern Amazon. This consolidation is the outcome of more than eighty years of public and private investments, the creation of new territorial boundaries and teleconnections, processes of environmental change, and the innovations of diverse cultural and social groups. The changes in the Amazon have been complex and precipitated by multiple drivers, of which only one has been the state and its policies. And yet, the state is often depicted as the dominant, driving force behind changes in the region because the physical outcomes of state policies, such as roads, bridges, and ports, as well as the institutional legacy of state planning, including bureaucratic agencies and governing institutions such as laws are highly visible throughout the region. The influence of global markets also tends to be exaggerated to the exclusion of other forces, as markets and government policies are closely linked in traditional political economic approaches.

For example, in a classic political-economic work, Anthony Soskin is unambiguous about his view of the reasons for the successful development of soybeans in Brazil (a process that was significant, but not exclusive, to the Amazon):

The expansion of soybean production in Brazil has been an amazing achievement, but it was facilitated by three overriding and interdependent factors: a favorable world market and the consequent price incentives, a readily available technology, and a favorable policy environment.¹⁵⁰

In this view, successful implantation of commercial-scale soybeans seems as though it was inevitable and conflict-free once the government, markets, and agronomists determined that it should be so.

The conventional emphasis on the political-economics approach to the development of the Amazon frontier is curious because the state was actually terribly ineffective there, given the force and financial backing it had available to its efforts under two periods of authoritarian governments. Massive infrastructure projects including roads were begun, and abandoned, or if completed, were poorly made. Agencies were formed but did not install permanent offices or sufficient staff in the regions there were meant to be managing. As this chapter will show, individuals, social groups, and private industry were the main drivers of *effective* settlement on the frontier in northern Mato Grosso.

Indeed, the conventional, political-economic view of the frontier has been subject to much criticism. Scholars writing more recently have called attention to the inadequacies of focusing too much on the state and global markets to explain changes

¹⁵⁰ Anthony B. Soskin, *Non-traditional Agriculture and Economic Development: The Brazilian Soybean Expansion, 1964-1982* (New York: Praeger, 1988). 128.

on Brazil's Amazon frontiers. Examples of these shortcomings in the political economy view of the frontier include not adequately explaining the heterogeneity of actors and experiences on the frontier,¹⁵¹ over-simplifying the process by which state subsidies, credits and other incentives were transferred to actors on the frontier,¹⁵² and discounting of the importance of the asymmetry of information available to different groups.¹⁵³ The political-economic frontier theory, in other words, undersells the importance of the local agency of individual people and of institutions, instead emphasizing the role of the global economy and demand for frontier products on world markets in creating neoliberal frontiers.¹⁵⁴

With an aim of better the documenting the large roster of actors and processes that have contributed to changes on the Amazon frontier in the 20th and 21st centuries, this chapter will trace the history of the settlement of Mato Grosso, as an important part of the frontier as a whole, and of Lucas do Rio Verde. The history presented here will show clearly the unevenness of the reach of markets, government agencies, and their technologies on the frontier; the social and physical conflict and hardship experienced by settlers related to this unevenness; and the importance of local agencies, individual actors, and institutional arrangements in steering settlement

¹⁵¹ David Cleary, "After the Frontier: Problems with Political Economy in the Modern Brazilian Amazon," *Journal of Latin American Studies* 25, no. 2 (1993). John O. Browder et al., "Revisiting Theories of Frontier Expansion in the Brazilian Amazon: A Survey of the Colonist Farming Population in Rondônia's Post-frontier, 1992-2002," *World Development* 36, no. 8 (2008).

¹⁵² Wendy Jepson, "Private agricultural colonization on a Brazilian frontier, 1970-1980," *Journal of Historical Geography* 32(2006): 296.

¹⁵³ "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil," *Economic Geography* 82, no. 3 (2006): 295.

¹⁵⁴ Hecht, "Soybeans, Development and Conservation on the Amazon Frontier."

processes and guaranteeing as well as challenging the objectives of markets and the federal government.

Early settlement of Mato Grosso

Proponents of development and environmentalists alike have portrayed the Cerrado of the southern Amazon, and of present-day Mato Grosso, as ‘empty’,¹⁵⁵ but in fact, the region has supported “large, densely settled, and integrated” populations for at least the past 1000 years.¹⁵⁶ Brazilians of European descent have lived in the region since colonial times, but these settlements were mostly restricted military posts along navigable rivers in the southern part of present-day Mato Grosso.¹⁵⁷ There was also some gold prospecting- and mining-related migration through the region after the discovery of gold in Cuiabá in 1719.¹⁵⁸

After the Paraguayan War (1864-1870), Mato Grosso experienced a small surge in immigration of resource-poor ranchers who squatted in the region, tipped off to the abundant lands and “feral cattle for the taking” by soldiers who had fought in

¹⁵⁵ A popular slogan for the populating of the Amazon with Brazilians from other parts of the country during this time was “land without people for people without land.”

¹⁵⁶ Michael J. Heckenberger et al., “Amazonia 1492: Pristine Forest or Cultural Parkland,” *Science* 301(2003): 1713; Seth Garfield, *Indigenous Struggle at the Heart of Brazil: State Policy, Frontier Expansion, and the Xavante Indians, 1937-1988* (Durham, N.C.: Duke UP, 2001). 100.

¹⁵⁷ Prior to 1977, the territory or state of Mato Grosso included present-day Mato Grosso do Sul. In 1977 the territory was dismembered to create two states. I’ve tried to address only historical processes that would have affected the ‘north’ Mato Grosso (present-day Mato Grosso) or the state as a whole (Mato Grosso combined with Mato Grosso do Sul) for the time period prior to the dismembering.

¹⁵⁸ Alexandre Panosso Netto, *Vera, a Princesinha do Nortão : Uma contribuição ao Estudo da Ocupação da Amazônia Mato-grossense* (Campo Grande, MS, Brazil: A. Panosso Netto, 2000). 21.

the war.¹⁵⁹ At this point, the Cerrado was still difficult for European Brazilians to access and settlement was mostly limited to the Pantanal region and the *campo limpo* (clean pastures) of the southern and the western parts of the state.¹⁶⁰ A few families, who would go on to form the state's first oligarchic class, amassed legal holdings of large tracts of land in these regions.¹⁶¹

The onset of World War I quickly drew Mato Grosso into the national economy as an important livestock producing region. Brazil was heavily involved in the war effort on the side of the Allies. The country completed a long-promised railroad from São Paulo to the Bolivian border, traversing Mato Grosso, in order to respond to the high European demand for beef and leather.¹⁶² This railroad was the first significant transportation route connecting Mato Grosso to the coast, though much of the state still remained isolated by travel times of several days on horseback.

High demand for cattle, the vastness of the Cerrado, and the isolation of the region led to the emergence of a regime of highly extensive ranching in Mato Grosso. So extensive were these operations, in fact, that ranches with between five hundred and one thousand head of cattle on up to five thousand hectares operated merely as "subsistence" ranches; only larger ranches, of up to 50,000 hectares, generated any

¹⁵⁹ Robert Wilcox, "'The Law of the Least Effort': Cattle Ranching and the Environment in the Savanna of Mato Grosso, Brazil, 1900-1980," *Environmental History* 4, no. 3 (1999): 343.

¹⁶⁰ Ibid.

¹⁶¹ Zephyr Lake Frank, "Elite Families and Oligarchic Politics on the Brazilian Frontier: Mato Grosso, 1889-1937," *Latin American Studies Association* 36, no. 1 (2001); Wilcox, "'The Law of the Least Effort': Cattle Ranching and the Environment in the Savanna of Mato Grosso, Brazil, 1900-1980," 343.

¹⁶² "'The Law of the Least Effort': Cattle Ranching and the Environment in the Savanna of Mato Grosso, Brazil, 1900-1980," 343-4.

significant wealth.¹⁶³ Beef production continued to be an important industry and export for Mato Grosso and Brazil even after the end of the war.¹⁶⁴ Rubber and *erva mate* (used for a drink similar to tea) were also important export products from Mato Grosso during the 19th and early 20th centuries, though these were much less significant than cattle and beef.

Thus, Mato Grosso has a long history of interconnectedness with world markets and dependence on revenues from raw material extraction typical of frontier economies,¹⁶⁵ but also of self-sufficiency. Early nationalistic forays into Mato Grosso were complementary, not deterministic, of activities that began spontaneously there. This pattern of spontaneous activity complemented by subsequent state policies and projects would continue throughout the 20th century and into the 21st.

The March to the West

The relative isolation and independence of Mato Grosso and the rest of Brazil's West started to wane after World War I. In 1938, President Getulio Vargas announced a new project to be called the "*A Marcha para o Oeste*" or the "March to the West." The official objectives of the March included incorporating the supposedly empty lands in the West into the national project and alleviating social pressures in the northeast, the southeast, and the south by redistributing people from these more

¹⁶³ Ibid., 346-7.

¹⁶⁴ Ibid., 344.

¹⁶⁵ Frank, "Elite Families and Oligarchic Politics on the Brazilian Frontier: Mato Grosso, 1889-1937," 55.

crowded areas to the relatively more sparsely populated lands of the West.¹⁶⁶ The March was part of a broader geo-political strategy on the part of the military government to establish over-land access to rubber plantations in the northern part of the Amazon biome, as well as an ideological tool for asserting the government's power.¹⁶⁷ This was easier said than done. Due to the un-empty nature of the so-called empty lands it was trying to occupy, the state constantly had to negotiate the terms of its power with the parties already there.¹⁶⁸

As a result, the legacy of the March to the West is mixed at best. The government developed an ambiguous reputation among residents of the West due to the inconsistency in action and policy and the distance of the governors from the governed that marked the project. Inspiring rhetoric of land reform, progressive measures such as the limiting of immigrations from foreign countries, and the creation of impressive-sounding agencies, including the *Superintendência do Plano de Valorização da Amazônia* (Superintendency of the Valorization Plan of the Amazon, SPVA); and the *Fundação Brasil Central* (Central Foundation of Brazil, FBC) charged with organizing and executing the settlement of "inhabitants of impoverished areas" in the Center-West and the Amazon,¹⁶⁹ were simply not enough

¹⁶⁶ João Carlos Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," in *Mato Grosso: do Sonho à Utopia da Terra*, ed. João Carlos Barrozo (Cuiabá: EdUFMT, 2008), 19.

¹⁶⁷ João Marcelo E. Maia, "Ideas and state action: the case of Central Brazil Foundation," in *European Social Science History Conference, Historical Ethnographies of Latin American States I: State Imaginings* (Ghent, Belgium 2010), 4-5.

¹⁶⁸ See, for example, Garfield, *Indigenous Struggle at the Heart of Brazil: State Policy, Frontier Expansion, and the Xavante Indians, 1937-1988*.

¹⁶⁹ The Constitution of 1934 assured "the national worker preference in the colonization and utilization of public lands" and another law of the time stated that "the Union and the States will organize agricultural colonies to which inhabitants of impoverished areas will be sent, as well as those that want to go,

to supplant effective and legitimate governance onto the frontier. For example, the most important accomplishment of the SPVEA appears to have been the drafting of Mato Grosso, Goiás and Maranhão into the Legal Amazon region, a move, or “bureaucratic coup,” in the words of Hecht and Cockburn, which made SPVEA the planning authority for a full 60 percent of national territory.¹⁷⁰ This surely gained considerable funding for the SPVEA, but the funds did not translate into public works in the Amazon. In the case of the FBC, the agency coordinated expeditions into the Cerrados and the forests of the West. It was responsible for some of the first collections of cultural and geographic knowledge about the Center-West and the Amazon by the Brazilian government, and was also responsible for endowing the region with a reputation of being place of “adventure and excitement” as the agency published adventurous accounts of expeditions in the hopes of stirring up interest and participants for future expeditions.¹⁷¹ Overall, under Vargas’ March, a handful of colonies for the poor were established in the West, but discourse remained a much more prominent feature of the March than action.¹⁷²

and those without work” from Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 17.

¹⁷⁰ Susanna B. Hecht and Alexander Cockburn, *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon* (London: Verso, 1989). 100; Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 18.

¹⁷¹ Maia, "Ideas and state action: the case of Central Brazil Foundation," 17; Gilberto Torres Alves Jr., "O Planejamento Governamental e seus Reflexos na Estrutura Fundiária de Mato Grosso," *Caminhos de Geografia* 4, no. 9 (2003): 17.

¹⁷² Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 18.

Mato Grosso for sale!

The 1930s and 1940s had featured the first concentrated, if ineffective, centralized effort to fold the West into the national project. The death of Vargas precipitated a weakening of federal power, and western states jumped on what they saw as an opportunity to raise funds without federal intervention – selling off or, in some cases, giving away public lands, ostensibly with the purpose of encouraging colonization of the vast expanses of their territories. State officials and politically connected elites in Mato Grosso made the most of the situation, and what ensued basically amounted to a free-for-all land grab by politically connected elites, who were attempting to seize new avenues for consolidating their wealth and power. Officially, lands were offered up for sale for settlement and development, though state officials did little to assure that buyers invested in improving their lands, or even ever saw them in person. Two things suggest that a settled, agrarian frontier was never really the goal of Mato Grossense officials during the 1940s: the amount of fraud surrounding the sale of land, even at high levels of state government, and the lack of organization surrounding some attempts to encourage the migration of settlers to the frontiers of Mato Grosso. Instead, state policy and actions tended to spur speculative land-grabbing.

Mato Grosso state officials set about auctioning off state lands by classifying vast areas of public lands as suitable for pasture, farming or extractivism, pricing them accordingly, and offering them up for sale at prices that undercut land prices in

neighboring states. It was during this time that the institution of the private colonization firm was formally introduced into the settlement regime of the state. Colonization firms bought up large swaths of land, but few colonies were ever actually established. Meanwhile, the government of Mato Grosso embarked on a campaign to promote the burgeoning interconnectedness of the state brought on by the opening of roads by inviting farmers to come check out the lands for themselves. The campaigns advertised state roads providing access in and out of the state, as well as the establishment of newly established legal pathways to acquiring the land.¹⁷³ These pathways, though, were frequently paved by well-connected private colonization companies, which drastically marked up the land on the resale to the settlers, supposedly to cover the cost of their efforts to process the titles.¹⁷⁴

Advertisements for buying land from Mato Grosso during this period sometimes took a patriotic slant to goad Brazilians into buying land in the West. One such advertisement announced that “*Estão vendendo Mato Grosso!*” (They are selling Mato Grosso!) and urged Brazilian *moços* (young men) to buy up the lands of Mato Grosso before local officials resorted to selling it off to foreigners.¹⁷⁵ State officials actively promoted the view of their state as “empty” so that prospective buyers would

¹⁷³ Andréia de Cássia Heinst, "Mato Grosso e a Comercialização dos seus "Espaços Vazios" durante as Décadas de 1950 e 1960," in *Mato Grosso: do Sonho à Utopia das Terras*, ed. João Carlos Barrozo (Cuiabá: EdUFMT, 2008), 80.

¹⁷⁴ *Ibid.*, 89.

¹⁷⁵ “[...]Estão vendendo Mato Grosso! A febre de loteamento na região esta destruindo uma riqueza nacional que jamais se poderá recuperar. Terras ricas, capazes de construir toda nossa riqueza agrícola do país, vão sendo impiedosamente queimadas, para – envergonha dizer – serem trocadas por dólares e francos com a conivência das próprias autoridades locais. Por onde se passa vêm-se anúncios de terras para vender, mapas e contratos. Só indo lá para ver. E o que devem fazer principalmente os moços, que são os interessados. Vão lá e deem esse Socorro ao Brasil [...]” Anonymous, "Estão Vendendo Terras em Mato Grosso," *O Estado de Mato Grosso*, 21 November 1954 1954; qtd. in Heinst, "Mato Grosso e a Comercialização dos seus "Espaços Vazios" durante as Décadas de 1950 e 1960."

not worry about competing land claims and conflicts.¹⁷⁶ Of course, Mato Grosso, vast as it was, was not actually empty, as there had long been scattered populations of indigenous peoples and posseiros throughout the state. State officials created indigenous reserves and colonies to isolate these groups in cases where these extant populations became “obstacles” to their land deals.¹⁷⁷ There was plenty of self-interested behavior to go around, though; land speculation and fraud on the part of settlers and colonization companies, as well as government officials, was rampant. The speculation was further facilitated by the inability of a poorly-funded state to adequately maintain a register of its expansive territory.¹⁷⁸

Fraud reached all levels of the government, and would continue to do so for decades.¹⁷⁹ For example, the governor from 1950-1954, Correa da Costa, personally transferred lands in northern Mato Grosso to private colonization companies from São Paulo and Paraná, over 4 million hectares in all, claiming this to be a massive development project, though no colonization projects materialized on this land.¹⁸⁰ A 1964 federal investigation into political leaders in Mato Grosso found blatant admissions of fraud and corruption in land titling by various state officials,¹⁸¹ which served to further fuel speculation. Stories abounded of people who earned quick

¹⁷⁶ Aldina Cássia Fernandes da Silva, "O fetiche das terras: dos sonhos e desejos à nova vida," in *Mato Grosso: do Sonho à Utopia da Terra*, ed. João Carlos Barrozo (Cuiabá: EdUFMT, 2008), 143.

¹⁷⁷ Ibid.

¹⁷⁸ Garfield, *Indigenous Struggle at the Heart of Brazil: State Policy, Frontier Expansion, and the Xavante Indians, 1937-1988*: 94-7.

¹⁷⁹ Ibid.

¹⁸⁰ Ibid.

¹⁸¹ Ibid., 100; Heinst, "Mato Grosso e a Comercialização dos seus "Espaços Vazios" durante as Décadas de 1950 e 1960," 86.

profits of 1000 percent, selling the land at 10 times what they had bought it for only a short time before, many times sight unseen.¹⁸²

Taken together, these speculative practices and the rampant fraud at various levels of government, including ‘donations’ of land by leaders to political allies and friends, quickly lead to land concentration into the hands of a few as a key outcome of state policy in Mato Grosso in the 1950s through the early 1960s.¹⁸³ Because of this long history of diversion of resources toward speculative land-acquisition and away from public works, non-politically-connected settlers in Mato Grosso, who hoped to live off of the supported-subsistence farming promoted to them by the government in its official rhetoric, quickly achieved self-sufficiency or were quickly forced to return home.¹⁸⁴ These notions - the virtue of self-sufficiency and the awareness of the benefits that come with political capital - continue to inform Mato Grossense culture and politics today.

Operation Amazonia : A mixed private and public endeavor

Promotion of ranching in Mato Grosso at the turn of the 20th century was tied to spontaneous international demand, but the expansion of the beef and agricultural commodities markets in Mato Grosso since World War II has been more closely related to policies promoting industrialization and domestic economic growth fueled

¹⁸² "Mato Grosso e a Comercialização dos seus "Espaços Vazios" durante as Décadas de 1950 e 1960," 83, 90.

¹⁸³ Ibid., 90-92.

¹⁸⁴ Ibid., 92.

by exports of key commodities in sectors targeted by the government for development.¹⁸⁵ A military takeover in 1964 ushered in twenty one years of authoritarian rule in Brazil, which endured at least in part due to rapid economic growth precipitated by ambitious policies, which were themselves enabled by the authoritarian control of the government. Many of the sectors originally selected by the military government continue to be key players in Brazil's economy as the result of these early investments. One of these sectors is agriculture, specifically soy and wheat crops.

The 1960s saw a rapid modernization of Brazil's agricultural sector under the direction of the federal government – for example, in 1960, only 9,908 tractors were produced in the entire country; by 1972, this number had increased to 34,000.¹⁸⁶ State policies for modernization of the economy during this time were multi-pronged: the traditional agricultural areas of the south had to be modernized and made more productive, while the supposedly empty and unproductive lands of the Amazon and of the Cerrado were to be finally made productive and integrated with national and international markets. Fiscal and financial subsidies, including rural credit programs for machinery and other expenses, and minimum price supports stimulated industrial agricultural export products like soybeans, sugar and frozen orange juice.¹⁸⁷ These stimuli encouraged private investors to buy and improve farmlands, and for who

¹⁸⁵ Marianne Schmink and Charles H. Wood, *Contested Frontiers in Amazonia* (New York: Columbia University Press, 1992). 47.

¹⁸⁶ F.E. Wagner and John O. Ward, "Urbanization and Migration in Brazil," *American Journal of Economics and Sociology* 39, no. 3 (1980): 256.

¹⁸⁷ Warnken, *The Development and Growth of the Soybean Industry in Brazil*: 56-7.

could afford it, land was seen as a desirable investment after decades of inflation had made more liquid stores of wealth less desirable.¹⁸⁸

While development of the agricultural sector greatly benefited the country's traditional agricultural regions, including the South, this initiative was also closely related to the government's plan for developing the Legal Amazon, known as Operation Amazônia. Operation Amazônia's slogan – "*integrar para não entregar*," or "integrate [into the rest of the country] so as to not hand over," or in other words, "use it or lose it," – was famous, though Barrozo points out, it should have been the other way – "*integrar para entregar*" (integrate to hand over) – as these settlement-oriented projects frequently ended up working hand in hand with extractivist multinational endeavors (mining and agriculture) in the region.¹⁸⁹ These companies needed workers in areas with little population, and the colonization projects needed infrastructure, jobs/money, and products, so the colonization projects, far from becoming the instruments of land reform there were supposed to be, simply became "*pepineiras de mão-de-obra*" (labor camps).¹⁹⁰

Under the umbrella of Operation Amazonia, the government created a whole host of new agencies under the auspices of managing the enormous project of settling and developing the Amazon, including the agriculture sector. In 1966, the SUDAM (*Superintendência do Desenvolvimento da Amazônia*/Superintendent for the Development of the Amazon) replaced the Vargas-era SPVEA. Because SUDAM

¹⁸⁸ Ibid., 71.

¹⁸⁹ Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 21.

¹⁹⁰ Ibid.

was a creation of the military government, the agency's powers were broadened even beyond what they had been when the agency had been SPVEA, its resources grew even further, and its power, concentrated in Brasilia by the generals, was "almost absolute."¹⁹¹

Other agencies formed during the 1960s and 1970s that operated in Mato Grosso include BASA (*Banco da Amazônia S/A*/Bank of the Amazon, a recreation of the Vargas-era *Banco de Crédito da Borracha* or Credit Bank for Rubber), INCRA (*Instituto Nacional de Colonização e Reforma Agrária* / Brazilian Colonization and Land Reform Agency), POLOCENTRO (*Programa para o Desenvolvimento dos Cerrados*/Cerrado Development Program), SUDECO (*Superintendência de Desenvolvimento do Centro-Oeste*/Superintendent of Center-West Development), and EMBRAPA (*Empresa Brasileira de Pesquisa Agropecuária*/ Brazilian Enterprise for Agricultural Research).¹⁹² SUDECO replaced the inefficient FBC, and was charged with planning the occupation of the state of Mato Grosso with the objective of integrating the productive processes with those in the South and Southeast of Brazil.¹⁹³ The objective of SUDECO was to create the means to occupy areas of the Cerrado which had previously been considered uncultivable. A specific program, POLOCENTRO was created in 1975 (decree no. 75.320/75) to oversee the construction of silos, the exploration of lime deposits, which are crucial for correcting the acidity of Cerrado soils for agriculture, and the development of modern

¹⁹¹ "quase absolute," *ibid.*, 18.

¹⁹² *Ibid.*, 19.

¹⁹³ Alves Jr., "O Planejamento Governamental e seus Reflexos na Estrutura Fundiária de Mato Grosso," 18.

agricultural practices in the Cerrado, including the states of Goiás, Mato Grosso, and Minas Gerais.¹⁹⁴ In Mato Grosso, two areas were selected – Parecis (including the municipality of Diamantino of which *Projeto Especial de Assentamento*/Special Settlement Project, PEA-Lucas do Verde, was still a part) and Xavantina, in the eastern part of the state.¹⁹⁵ SUDAM and BASA offered very favorable financial incentives for businesses to take advantage of vast and cheap lands and abundant and cheap credit to do business in Amazônia.¹⁹⁶ The objective of EMBRAPA was to research and develop agricultural technologies, though they would not extend their research into the cerrados for several decades, leaving private initiative and the efforts of SUDECO/POLOCENTRO to develop the most important early advances in cerrado agriculture. INCRA was in charge of developing and carrying out colonization projects related to land reform.

The military government during this time was notoriously worried about the security of the national borders and the instability of the extractivist nature of what economy had existed in the Amazon up until that time.¹⁹⁷ It was for this reason that the generals went to such great lengths, and established so many agencies, to plan and transform the region. Thus, their goals for the Amazon were: to form a stable population (of non-indigenous) Brazilians throughout the region; to create conditions for self-sufficiency of these populations; to create a policy of encouraging

¹⁹⁴ Ibid., 21.; Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 20.

¹⁹⁵ Alves Jr., "O Planejamento Governamental e seus Reflexos na Estrutura Fundiária de Mato Grosso," 21.

¹⁹⁶ Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 20.

¹⁹⁷ Ibid.

immigration to the region, which included taking advantage of existing populations and selected external populations; and the adoption of stimulus policies including fiscal stimulus and favorable credit. Essentially, private initiative would be given fiscal incentives, access to cheap and abundant lands, and favorable credit from BASA and Banco do Brasil, and in the end, they would end up with the resources to engage in rent-generating activities (agriculture, ranching, and mining), while the federal government would provide the basic development and the necessary infrastructure.¹⁹⁸

As part of this project, in the early 1970s, the federal government began the construction of three highways – BR-158 connecting Barra do Garças in with the southern border of Pará; BR-364 connecting Cuiabá with Porto Velho; and BR-163 connecting Cuiabá-Porto Velho, under the *Plano de Integração Nacional* (National Integration Plan, or PIN) (Figure 3). Yet in such an isolated landscapes, even highways were not sufficient to guarantee settlement. One way the government facilitated colonization along these highways was by passing Decree/Law 1.164/71 which designated 100km on either side of federal highways in Amazônia Legal as subject to appropriation for agrarian reform.¹⁹⁹ The areas around the highways, as a consequence, were sold and rapidly increased in value as various private colonization

¹⁹⁸ Ibid.

¹⁹⁹ Alves Jr., "O Planejamento Governamental e seus Reflexos na Estrutura Fundiária de Mato Grosso," 19.

projects were installed; along BR-163 this included projects which eventually became the towns of Nova Mutum, Sorriso and Sinop.²⁰⁰



Figure 3. Major highways in and around Mato Grosso

As with the Vargas-era projects, the legacies of these military government-era agencies and their projects have been mixed. The generals took a greater interest

²⁰⁰ Ibid., 20.

than Vargas did in promoting “structural transformations” that would facilitate the entry of national and trans-national industry in the Amazon and generate capital than they were in promoting agrarian reform.²⁰¹ They claimed to promote agrarian reform and more equitable land distribution as a part of this process, even passing a progressive land-reform law that allowed for massive redistribution of land (known as The Land Statute) the first year they were in power, but in reality, they simply used agrarian reform as a vehicle for facilitating the entrance of large firms and the consolidation of capital on the frontier. Corruption was another area in which strong government control did not bring improvements. Fraud in state agencies was rampant during this era just as it had been in previous eras. For example, Mato Grossense historian Fiorelo Picoli has found that from 1966 to 2001, SUDAM distributed over 10 billion reais (R\$) for projects in the nine states of Legal Amazon, but very little of that money found its way to the people of Legal Amazon because much of it was embezzled; alas, the principal objective of SUDAM appears to have not been the true development of the Amazon but simply the subsidization of “capitalist project” of extractive resource exploitation in Brazil.²⁰²

Agricultural modernization in the South: the “push” of settlers to the Amazon/Cerrado

²⁰¹ Betty Nogueira Rocha, ""A Trama do Drama": A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT" (Universidade Federal do Rio de Janeiro, 2010), 29.

²⁰² Fiorelo Picoli, *O Capital e a Devestação da Amazônia* (São Paulo: Editora Expressão Popular, 2006). 39.

Government policies in the 1960s and 1970s promoting agricultural “development” and mechanization in the South, and throughout Brazil more generally, also had profound effects, both intended and unintended, in the Amazon. Policies promoting mechanization in the South came at the expense of subsistence and small-scale farming. This only worsened the problems for the region’s rural poor, who were already plagued by a set of complex problems, including soil-exhaustion and insecure land tenure.²⁰³ Government-established criteria for mechanization called for *minimum* areas of at least 36 hectares for mechanization.²⁰⁴ Many farmers did not meet or barely met the criteria for cost-effective mechanization; thirty-six percent of farmers in soy- and wheat-producing Rio Grande do Sul had properties of less than 100 hectares in 1970.²⁰⁵ What this meant for these small-holder farmers was that turning a profit would become ever more difficult as government support for their livelihoods waned. Similarly, falling prices and freezes plagued the coffee crop of Paraná in the early 1970s, leading the government to eventually order the eradication of millions of hectares of coffee plantations there.²⁰⁶ On the whole, these policies pushed families whose livelihoods and identities were thoroughly agricultural off the lands in the South.

For the government – still a dictatorship, the solution to these problems was to resettle small farmers and the landless in newly opened frontier areas of the southern Amazon, including Mato Grosso, where land was abundant and settlement assistance

²⁰³ Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 21.

²⁰⁴ Ibid.

²⁰⁵ Instituto Brasileiro de Geografia e Estatística [IBGE], "Estabelecimentos Agropecuários, Censo Agropecuário 1920/2006," (Rio de Janeiro 2007).

²⁰⁶ Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 21.

was promised. INCRA was formed in 1970 to plan and execute colonization projects to settle landless and land-insecure families from various parts of Brazil in the Amazon. These new official settlements were to serve as “escape valves” for the unrest in the South and, at the same time, transfer what the generals surely saw as an adept population of farmers from the South to the agricultural frontier of the southern Amazon.²⁰⁷ Yet, other people also saw an opportunity and migrated north to the Amazon frontier for the vast expanses of cheaper land they had been hearing about since the 1940s; based on the promises of the government and new colonization programs; and based on a determination to maintain the agricultural lifestyles that were traditional in their families. The state of Mato Grosso, though, had already been allowing private colonization schemes and speculation to take place in the northern part of the state the 1940s.²⁰⁸ Thus these resettlements simply transferred the conflict over land and unrest from the South (and to a lesser extent, other regions) to the frontier, as competing claims for the same properties emerged with greater frequency.

In other words, starting in the 1960s and increasingly in the 1970s and 1980s, multiple streams of migrants responded to a combination of government incentives and personal ambition and headed north and west to the new frontiers of the Amazon. The best-known type of colonization in the Amazon is the official colonization project, coordinated by INCRA, though this was neither the most common nor the most effective means of settlement. This was either because the agency’s programs

²⁰⁷ The phrase “escape valve” has been borrowed from the work of Turner on the United States and applied to this process in Brazil. *Ibid.*

²⁰⁸ Barrozo notes that the land ceded to private colonization companies in Mato Grosso in the 1950s was equal to 2 million hectares (20 projects of 200,000 hectares each). Of these 20 projects, in only two cases were colonization projects actually executed. Garfield, *Indigenous Struggle at the Heart of Brazil: State Policy, Frontier Expansion, and the Xavante Indians, 1937-1988*: 94-7; Barrozo, “Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste,” 23.

were never intended to successfully resettle the poor and help them toward self-sufficient farming in frontier regions, or else because even an agency empowered by an authoritarian regime could not establish the permanent resettlement of four million poor in unfamiliar frontier environments.²⁰⁹ Official colonization was complex, because, on the one hand, the rural poor and landless agitated for colonization projects as a solution to their problems; on the other hand those who managed to be included in official colonization projects found that the government officials and agencies who coordinated the projects were unhelpful or downright hostile to them upon their arrival to the frontier, which was, itself, a challenging place to make a living.

Official colonization projects, bolstered by the progressive ideas put forward by the military government's own 1964 Land Statute, had the potential to be transformative. The Land Statute equated the productive use of land and the "social functions" of land, and called for the redistribution of lands that did not meet these conditions. In practice, though, the Statute turned out to be a "dead letter," and was enforced only as a "last recourse," when agrarian reform activists managed to force the hand of the dictatorship.²¹⁰ *Latifundiários*, or large, unproductive land-holdings, had been common in Brazil since colonial times. Fiscal policies enacted by the military government promoted further land concentration by favoring the mechanized production of grain crops in demand on global markets.

²⁰⁹ Picoli, *O Capital e a Devastação da Amazônia*: 61.

²¹⁰ Zander Navarro, "Expropriating Land in Brazil," in *Agricultural land redistribution: toward greater consensus*, ed. Hans P. Binswanger-Mkhize, Camille Bourguignon, and Rogerius Johannes Euger den Brink (Washington DC: World Bank Publications, 2009), 273.

In passing the progressive Land Statute but failing to enforce it, or indeed, in promoting policies that directly contradicted the Statute, the legitimacy of the authoritarian rule could be called into question. Authoritarian rule is based on absolute power concentrated in the hands of the sovereign(s), or at least the appearance of this;²¹¹ contradictory policies emanating from the sovereign undermined the absoluteness of sovereign power by highlighting inconsistencies in the government's mission. In the case of the Amazon frontier in the 1960s and 1970s, either the priorities of the authoritarian government had changed over time or the agrarian reform ideals featured in the Land Statute had proven to be disingenuous or unpalatable to enact on the part of military leaders. An opening was created, in other words, for hope for progressive policies where before there had not been any, and it was in this context of unrest and uncertainty that social forces (in this case, peasants demanding agrarian reform) challenged the legitimacy of the authoritarian government by demanding that it enforce laws it had established. The relative weakness of the dictatorship in Brazil was progressively exposed over time, as, especially from 1970 on, various sectors of civil society began to organize and agitate for "political openness" and effective solutions to social and economic problems, including agrarian reform.²¹²

In spite of high hopes for land reform during the dictatorship, only about 7 percent of the rural poor in Brazil were resettled by INCRA between 1970 and 2000,

²¹¹ Nikolas Rose, *Powers of freedom: Reframing political thought* (Cambridge: Cambridge UP, 1999). 23.

²¹² Telmo Marcon, *Acampamento Natalino: História da Luta pela Reforma Agrária* (Passo Fundo, Brazil: EDIUPF, 1997). 22.

and the administration of the settlements was plagued by problems of poor management, corruption, inefficiencies and favoritism.²¹³ In cases where peasants achieved action on the part of the government as a response to their complaints about unjust land distribution, the government's solution was the creation of an official agrarian reform colony in the Legal Amazon. To the settlers, these settlements, though administered by the agents of the authoritarian government, were both practical and ideological endeavors on the part of the peasants who entered into them. They were practical in that they meant finally receiving access to the means to meet their physical and material needs in the land; they were ideological in that they represented overcoming in some small way the exclusionary nature of the process of accumulation of capital by the dominant classes and the authorities.

Shortly after the creation of INCRA, the federal government also began to allow private colonization projects to "complement" INCRA's work in the Amazon.²¹⁴ In 1971, Decree/Law 1.179 established PROTERRA (*Programa de Redistribuição de Terras e de Estímulo à Agroindústria do Norte e do Nordeste* /Program for Redistribution of Land and Stimulation of Industrial Agriculture in the North and Northeast), which would ostensibly promote private colonization by providing credit for the purchase of small- and medium-sized landholdings, though PROTERRA mainly provided subsidized credit to large ranches. As mentioned above, the state of Mato Grosso had apparently already been allowing private colonization schemes, most of which were fraudulent, in the northern part of the state

²¹³ Picoli, *O Capital e a Devastação da Amazônia*: 61.

²¹⁴ Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 22.

for years.²¹⁵ The result of many different settlement regimes in Mato Grosso was a hodgepodge of often competing claims and a lack of effective effective authority that continues to characterize many rural areas today.

For Barrozo, PROTERRA's legacy was "the destruction of opportunities for the reproduction of the small family farmer and establishing on the struggle for land the historical role of peasant resistance against capitalist development."²¹⁶ Yet, despite such diversions of funds, thousands of Brazilians moved to new agricultural frontiers with the help of private colonization firms. The work of Wendy Jepson on the settlement history of eastern Mato Grosso has shown that private colonization organizations were responsible for the settlement of 3.9 million hectares of land in Mato Grosso between 1970 and 1990, which is equivalent to 39 percent of all the land settled in the Amazon during those two decades.²¹⁷ State-led colonization in Mato Grosso, on the other hand, totalled only 550,000 ha during the same time period. Looking at the Amazon as a whole, official colonization projects settled slightly more land area than private colonization (about 5,431,000 ha compared to 4,716,000 ha).²¹⁸ These colonization firms were so productive because they reduced the costs of the process of moving people to the frontier for the government, and, for would-be colonists with the resources to buy into a project, private colonization firms reduced

²¹⁵ Barrozo notes that the land ceded to private colonization companies in Mato Grosso in the 1950s was equal to 2 million hectares (20 projects of 200,000 hectares each). Of these 20 projects, in only two cases were colonization projects actually executed.

Garfield, *Indigenous Struggle at the Heart of Brazil: State Policy, Frontier Expansion, and the Xavante Indians, 1937-1988*: 94-7; Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 23.

²¹⁶ Rocha, "'A Trama do Drama': A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT," 43.

²¹⁷ Jepson, "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil," 298.

²¹⁸ "Private agricultural colonization on a Brazilian frontier, 1970-1980," 844.

some of the bureaucracy and risks (transaction costs) associated with moving to the frontier.

Settlement initiatives and subsidies created for the Amazonian frontier in the 1960s and 1970s generated opportunities for farmers with at least some capital to obtain cheap land and a certain amount of government support, but the risks associated with setting up a new farm in an unfamiliar area were high. These private organizations were a transformative force on the frontier and facilitated the acquisition of land by farmers by negotiating with state agencies on behalf of farmers, providing “organizational structure” to farmers, such as access to markets, and generally mitigating the risks faced by farmers in remote locales.²¹⁹

Spontaneous colonization by farmers and ranchers not associated with public or private colonization projects also played a role in transforming the frontier. These spontaneous settlers, known as *posseiros* in Brazil, challenged the power of the state’s project in the far reaches of the frontier. These settlers, who had enough capital to provide for their own basic needs in the absence of state- or private-assistance, but who lacked the capital to accompany the agricultural modernization processes taking place in the traditional agricultural heartland in the South, represented an alternate path that was not reliant on federal support and, frequently, was extralegal. They are frequently referred to in English as “squatters” because they sometimes claimed public or privately owned lands without purchasing them, but this terminology belies the heterogeneity of the posseiro experience and the transformative role they played

²¹⁹ "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil," 311-2.

on the advancing frontier. Sometimes posseiros simply claimed a parcel of land and set to work, but in many other cases, they purchased the land in good faith from a previous owner or someone who claimed they were a previous owner.

The posseiros, in Martins's view, are the true protagonists of frontier expansion in Brazil – they occupied the lands to work them, investing their own time, money and resources in altering the land to meet their productive needs.²²⁰ Sometimes they continued to follow the frontier as it advanced, but many times, they planned to apply for title to the lands they claimed after several years of working to “improve” it; a title was required to apply for financing for further improvement projects.²²¹ As a result, these settlers offered resistance to official projects like roads and planned settlements, calling into question the legitimacy of the authoritarian state in the distant reaches of the frontiers of the Amazon and the Cerrado. And yet, as Leite notes, the resistance offered by the posseiros was not ideological in nature. Instead, he says,

it was, above all, a struggle to guarantee the reproduction of a form of life and work that these social actors longed for and that, they figured,

²²⁰ José de Souza Martins, *Capitalismo e Tradicionalismo* (São Paulo: Pioneira, 1975).

²²¹ Zuleika Alves de Arruda, "As 'Agrocidades' e as Interfaces entre Mundo Rural e Urbano: Repercussões Sociospaciais do Agronegócio no Território Mato-grossense," in *Novas Territorialidades nas Cidades Mato-grossenses*, ed. Sônia Regina Romancini (Cuiabá, Brazil: edUFMT, 2009), 186.

brought them that dreamed-of independence. In this sense, it was essentially a practical struggle.²²²

This practical nature of the posseiro experience set it apart from the experience of the colonist associated with official settlements, and to a certain extent, the colonist associated with private or cooperative settlements, for whom, at least at the organizational level if not at the individual level, there was an important element of ideology.

Creating bureaucratic agencies and channeling money toward individuals and groups for agricultural endeavors was not enough for the government to generate the development of an agricultural sector capable of generating exports. To coordinate the mosaic of inter-related agencies and strategies being pursued with relation to the advancement of the frontier in the Amazon and the modernization of the agriculture sector, and the geographical redistribution of the population tied to these goals, the military government created a series of National Integration Plans, or PINs.

At the same time, the generals were pursuing strategies to modernize the agricultural system in the more traditional agricultural regions of the country, including Rio Grande do Sul, where mobilization of landless peasants was beginning and fragmentation of properties and low soil fertility stood in the way of mechanization of agriculture, specifically soy and wheat production.²²³ These goals

²²² José Carlos Leite, "Posse e conflito pela terra em Jauru - MT: 1980-1990," in *Mato Grosso: do Sonho à Utópia da Terra*, ed. João Carlos Barrozo (Cuiabá: EdUFMT, 2008), 236.

²²³ Barrozo, "Políticas de Colonização: as políticas públicas para a Amazônia e o Centro-Oeste," 21.

and actions eventually led to the creation of the PEA-Lucas do Rio Verde, among other settlements, which would serve as “escape valves” for the unrest in the south and, at the same time, transfer what the generals saw as an adept population of farmers from the south to the agricultural frontier of the southern Amazon.²²⁴ The process of occupation of the PEA-Lucas do Rio Verde is discussed in depth below.

Reconciling the frontiers of Vargas and the generals

Though apparently similar, the frontiers of Vargas and those of the military dictatorship of the 1960s and 1970s were different in a few key ways. First, as Betty Rocha describes, the Vargas government was interested in stimulating agricultural production in the Amazon to meet domestic needs, while the military dictatorship was primarily interested in modernizing agriculture in the country in general as part of a plan to further integrate the Brazilian economy into global markets, of which the Amazon was only one part.²²⁵

Additionally, Vargas was not actively seeking so much a modernization of agriculture, but more a redistribution of it, and viewed the “fixing” of man to the land as an important part of healthy economic growth – as the cities grew more prosperous, a healthy rural population would be needed to absorb the growth in industrial production.²²⁶ For the military government, it was quite the opposite – the

²²⁴ The phrase “escape valve” has been borrowed from the work of Turner on the United States and applied to this process in Brazil. *Ibid.*, 21.

²²⁵ Rocha, ““A Trama do Drama”: A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT,” 29.

²²⁶ *Ibid.*, 31.

frontier of the Amazon was to absorb those who were not contributing to the capitalist expansion in the cities and the traditional agricultural frontiers, and either get them out of the way or convert them into a laboring class to supply capitalist endeavors on the frontier.

Another key difference between the two eras was ideological. For Vargas, frontier settlement was “motivated by the principal of nationality and the affirmation of a national identity,”²²⁷ along with some concern about protecting national borders. The military government was even more concerned about protecting national borders, to the point of paranoia, and somewhat paradoxically sought to dissolve boundaries on the flow of capital. Nationalist rhetoric was, for the military government, principally in service of other goals and not an ideology in itself. In fact, the deliberate actions taken by the state during the dictatorship amounted not just to capturing the symbolic and material resources generated by the frontiers; but as Becker notes,

the state itself began to generate new space and frontiers through the deliberate policies of a socially exclusive military regime...In alliance with industrial and financial forces, legitimized by the middle class, and repressing the working class, the military regime inaugurated a new-style authoritarianism,²²⁸

²²⁷ Ibid., 35.

²²⁸ Bertha K. Becker, "Brazil's Frontier Experience and Sustainable Development: A Geopolitical Approach," in *Frontiers in regional development*, ed. Y. Gradus and Harvey Lithwick (Lanham, MD: Rowman & Littlefield, 1996), 75.

or in other words, bureaucracy.

Globalization on the frontier and the rise of the agrocities

By the 1980s, Brazil's agricultural frontier had advanced far to the North and the West. A mosaic of agencies and private endeavors had reached far into the cerrados and the forests of the Legal Amazon with settlements, roads, farms, and the emergence of urban areas. The nature of the dominant economies operating in the region – industrial agriculture, ranching, mining and logging – and the discourse about the expansion of the agricultural frontier together imply that the setting for these changes is predominantly rural, almost exclusively oriented toward the efficient conversion of natural resources into commodities for national and global consumption, and otherwise relatively less developed than the country's urban areas.²²⁹ Yet, today, these agricultural frontier zones are the scenes of some of the most intense development of mechanized agriculture in the world, and are closely linked to global and national markets for agricultural commodities.

State and capitalist forces initiated and facilitated the creation of many of these globally-oriented “agrocities”, but many other factors have also influenced their development. By the end of the dictatorship, state power had essentially been eroded in the region, yielding to domination of global agricultural firms (*tradings*) and creating space for the emergence of local power (municipal leaders and local

²²⁹ Charles T. Stewart Jr., "The Urban-Rural Dichotomy: Concepts and Uses," *American Journal of Sociology* 64, no. 2 (1958).

businesses). Settlement of the Amazon was an elaborate process of re-territorialization of the region by state and capitalist forces, in an attempt to more effectively control the economic opportunities being generated there.²³⁰ Dozens of new municipalities were created in the 1970s and 1980s. Persons and families that settled in these cities and make up the workforce of the industrial-technical agricultural industry in the region have created still other industries to meet their daily needs, local and regional links among neighboring cities, and problems that characterize life in any urban environment, as well as unique solutions to these needs and challenges.²³¹ Though the dominant economic activity in the region remains industrial agriculture oriented toward national and international markets, diversity among these urban centers is high in terms of population, infrastructure, local investment in agribusiness and other industries, and linkages to other cities and global markets.²³² This diversity in turn has a real influence on the heterogeneous economic and environmental outcomes of neoliberal agricultural expansion in the region.

The same conditions that made doing business on the frontier attractive to many settlers also created conditions favorable for the social and physical violence characteristic of frontier areas as people struggled for position in a location with few

²³⁰ Rosangela Alves Sobrinho, "Dinâmica territorial, agronegócio e re-territorialização: O Município de Diamantino/MT," in *Novas Territorialidades nas Cidades Mato-grossenses*, ed. Sônia Regina Romancini (Cuiabá, Brazil: edUFMT, 2009); Wendy Jepson, Christian Brannstrom, and Anthony Filippi, "Access Regimes and Regional Land Change in the Brazilian Cerrado, 1972 - 2002," *Annals of the Association of American Geographers* 100, no. 1 (2010).

²³¹ Daniel Borges de Souza and Rosana Lia Ravache, "Estruturação do espaço urbano-regional do centro-norte mato-grossense: Sinop, Sorriso e Lucas do Rio Verde," in *Novas Territorialidades nas Cidades Mato-grossense*, ed. Sônia Regina Romancini (Cuiabá, Brazil: edUFMT, 2009).

²³² Alves Sobrinho, "Dinâmica territorial, agronegócio e re-territorialização: O Município de Diamantino/MT."

(enforced) rules, which was a prominent feature of territorialization and settlement in much of Mato Grosso a generation ago. The scars of this process on the social and physical landscape are apparent in land tenure, social links, and a sense of pride, permanence, and investment in the area among those who chose to and were able to endure the challenging beginnings in these locales. In the climate of instability on the frontier, local factors including the informal economy, strategic acquisition of properties and local knowledge, physical attributes of the local geography, personal relationships, and savings and local investments in technology of the first groups of settlers in these cities had marked effects on the relative success of the blossoming industrial-agriculture sectors there. In spite of this, researchers have tended to treat the agricultural frontier of western Brazil as homogenous due to the prominent and rapid development of monocrop agriculture there. However, over time, the variation across the region will become more apparent in the social and environmental effects of the area's agricultural boom and continued urbanization.

Indeed, similar, contemporary cases of the creation and development of so many cities and towns in one region in such a short period of time; with their economies oriented around profitable industrial agriculture; and with such drastic environmental consequences, are difficult to find in any other part of the world. And yet, in spite of the economic, social, and environmental importance of this new agro-industrial heartland in Brazil, settlement histories for the region in general are poorly

understood in English-language literature, with a few notable exceptions.²³³ The diversity and influence of these urban environments call for closer inspection in the context of the motivations of the settlers, the roles of government agencies in the settlements, and the environmental changes associated with these settlements. In the words of Alves Sobrinho,

the conceptions of the territorial dynamic brings us to reflect about a geography of power, in which the idea and the use of territory serve as the base for development, which fosters the reorganization of the territory through the structuring of valid micro and macro systems. The specifics are well-evidenced in the state of Mato Grosso, where the process of insertion into the national productive system demanded large territorial transformations, facilitated by modernizations in the political-administrative organization, which created space for the emergence of new internal frontiers for the operation of new powers, including new municipalities.²³⁴

In other words, political-administrative institutional shifts in the orientation of the national economy required major territorial transformations at the local level as well.

²³³ Jepson, "Private agricultural colonization on a Brazilian frontier, 1970-1980."; "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil."; Ozorio de Almeida, *The Colonization of the Amazon*.

²³⁴ Alves Sobrinho, "Dinâmica territorial, agronegócio e re-territorialização: O Município de Diamantino/MT," 156.

In Mato Grosso, agrocities linked to highly-technological, productive systems on relatively large-scale properties, emerged in the areas best able to link into and garner advantages from connections to global productive systems, even in geographically remote areas (Table 2). These municipalities have high standards of living and have been characterized by rapid economic growth. This has occurred via what Alves Sobrinho calls “specific combinations of economic, political and variables that determined the intensity of the competitive advantage of a territory.”²³⁵ Technical innovations made by national and multi-national firms and individuals in the growth of soybeans in the tropics and changes in market demand, along with local factors such as access to roads and adequate storage and processing facilities, social services, and soil type converged to “‘sprout’ [cities] in economically productive areas.”²³⁶ For Alves Sobrinho, this is a highly exclusive process, as a relatively small number of actors are involved in the soy chain and the infrastructure/technology is high tech,²³⁷ and the local economies in these regions are frequently dominated by agricultural activities, with a large share controlled by multi-national companies. As a result, economic benefits of these activities are somewhat unevenly divided.

²³⁵ Ibid., 158.

²³⁶ Ibid., 163.

²³⁷ Ibid., 165.

Table 2. Select indicators for municipalities formed in Mato Grosso in 1988

Municipality	Pop 2000	Pop 2010	Percentage Growth since 2000	HDI (PNUD 2000) (avg. Brazil : .699)
Apiacás	6665	8567	28.5371343	0.713
Campo Novo do Parecis	17638	27577	56.3499263	0.809
Campo Verde	17221	31589	83.4330178	0.8
Castanheira	7790	8231	5.66110398	0.73
Cláudia	10249	11028	7.60074154	0.813
Juruena	5448	11201	105.598385	0.751
Lucas do Rio Verde	19316	45556	135.845931	0.818
Matupá	11289	14174	25.5558508	0.753
Nova Mutum	14818	31649	113.584829	0.801
Tapurah	11561	10392	-10.111582	0.783

Source: IBGE except for HDI (source PNUD)

It's also worth commenting on the nature of teleconnections in these agrocities. de Arruda views agrocities as exclusively oriented to attend to global markets, with the prominent placement of *armazéns*, or grain storage facilities, and the connections in terms of internet, satellites and airports that give access to the global at least as much as to the rest of the country²³⁸ For de Arruda, the agro-technological specialization of these cities “breaks their geographic isolation and promotes the insertion of the predominant activities, which are attending to the demands of a globalized market.”²³⁹ This view, however, ignores important regional connections among families, businesses, and political projects. Simply put, there is

²³⁸ de Arruda, "As 'Agrocidades' e as Interfaces entre Mundo Rural e Urbano: Repercussões Sociospaciais do Agronegócio no Território Mato-grossense," 194-5.

²³⁹ Ibid., 194.

more to life in Mato Grosso than being connected to São Paulo, even if this is where most of the grains produced there eventually end up, and important regional alliances among municipal leaders, powerful landowners and innovative businessmen, as well as families, are also defining, but normally overlooked, characteristics of life in the agroculture post frontier.

Settlement of Lucas do Rio Verde on three fronts

Set against the more general history of settlement in Mato Grosso as laid out so far in this chapter, the story of Lucas' settlement is particularly instructive of the complexity of the state-private hybrid processes that have influenced settlement of the Amazon. This is because Lucas' story incorporates all of the three separate settlement initiatives described so far, which generated heated conflicts and negotiated resolutions to these that continue to influence the culture, politics and economics of the municipality.

In the mid-1970s, three distinct groups of settlers, known locally as *posseiros*, *parceiros* (settlers who participated in official settlement projects and who were formerly landless), and *associados* (members of a cooperative, originally from São Paulo) converged on the banks of the Rio Verde (the Green River). The 85 *posseiro* families of *posseiros* were spontaneous migrants to the area, mainly from the state of Paraná, who either purchased their lands from brokers or simply claimed them by setting about the business of farming them, but relied heavily on the land titling

process initiated by the other settlement projects to gain free and clear titles to their lands. The 203 families of *parceiros* came from the state of Rio Grande do Sul and received their lands through an INCRA settlement project and are the most traditional representatives of the state-led model of settlement. The 50 families of *associados* were from São Paulo and were members of a cooperative that organized a state-sanctioned but private settlement project in the area that would become Lucas.

Here I show that all three groups both received state assistance and furthered the state project of divvying up and opening land in the Amazon for industrial agriculture expansion, but also, that all three groups ultimately had rather ambiguous relationships with the state. In the end, the personal relationships and private investments made by the settlers were also highly influential to the outcome of the settlement project in Lucas. The *posseiros* group ended up benefitting the most from the municipality's contentious beginnings, and this outcome continues to mark the social, economic, and political situation of the municipality today.

Local settlement prior to the official colonization project

The earliest documented ownership of the area on either side of the Rio Verde (Green River), the present territory of the municipality of Lucas, was by the *seringalista* (rubber tapper) Francisco Lucas de Barros, the namesake of the future municipality. Not much is known about de Barros, aside from the fact that he made a living along the Rio Verde from the end of the 19th century until the profitability of

extracting rubber in the region declined around 1912.²⁴⁰ Then, in the 1970s, a few families from the state of Paraná began to buy up land in the area in lots of 1000 to 5000 hectares in size from individuals or organizations that had registered the lands, perhaps sight unseen, in the early- and mid-1970s.²⁴¹

Land titling in Brazil, particularly in frontier areas and particularly in the 1970s, has a long and well-documented history of fraud, deceit, and contradictory legal treatment.²⁴² In this vein, the early settlement of Lucas was a classic case: the *grileiros* (speculators) had staked their claim to land that was otherwise unclaimed and untitled (land known in Brazil as *terras devolutas*, or public lands), and had then turned around and sold the land, with or without some kind of legal contract of sale. As this was common practice, the families that bought land in Lucas at this time, the *posseiros*, knew that, although the legality of their initial land purchase was questionable, staying on the land and making it “productive” for one year and one day (Federal Law 4504, November 30, 1964/Land Statute) would be extremely favorable for their eventual attempts to regularize, or make legal, their land claims in the future.

As it happened, the *posseiros* arrived essentially concurrently with the 9^oBEC (9^o Batalhão de Engenharia e Construção do Exército, or 9th Battalion of Engineering and Construction of the Army) and the construction of federal highway BR-163, a

²⁴⁰ Prefeitura Municipal de Lucas do Rio Verde, "Plano Diretor do Município de Lucas do Rio Verde - MT: Reavaliação e Atualização," (Prefeitura Municipal de Lucas do Rio Verde, 2007).

²⁴¹ José Dario Munhak and Luiz Dziúba Junior, "Lucas do Rio Verde: Um Resgate Sócio-Histórico-Econômico" (Universidades Unidas de Várzea Grande, 2001).

²⁴² (see, for example: Angus Lindsay Wright and Wendy Wolford, *To inherit the earth: the landless movement and the struggle for a new Brazil* (Food First Books, 2003); Jepson, "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil.," Cynthia S. Simmons et al., "The changing dynamics of land conflict in the Brazilian Amazon: The rural-urban complex and its environmental implications," *Urban Ecosystems*, no. 6 (2002).¹)

trunk road running from the state capital of Cuiabá north into the state of Pará. The posseiros by and large were not disenfranchised, uncaptialized settlers; these were mostly families who had voluntarily sold some or all of their land holdings in Paraná and had come to Mato Grosso with the goal of buying larger landholdings and achieve social mobility in Mato Grosso more easily than they could in Paraná.²⁴³ Even though the legality of their land purchases was murky and they had few other resources,²⁴⁴ the local bank – a branch of the national Banco do Brasil — accepted these titles and even provided financing for agricultural activities based on them in those years.²⁴⁵

From approximately 1976 until 1981, the posseiros' claims were uncontested in Lucas, and they were able to focus their full attentions on the practical problems at hand – learning to farm in a tropical climate on land with sandy, acidic soils. Opening the frontier was exciting, but challenging.²⁴⁶ Though opening of nearby highway BR-163 had been completed (

243 "nós éramos uma família de sete pessoas, então se você quisesse usufruir algum bem no future era preciso ir para um lugar que oferecesse progresso. Aqui era um lugar onde se falava muito na época, de prosperidade para o futuro, as terras eram baratas, porque eram posses que logo se tornaram documentadas, pois o governo incentivava a ocupação do Centro-Oeste, e meu pai viu uma oportunidade de uma vida melhor para a família" (interview with Mário Agostinho Dall'Alba, Fernanda Celina Nicoli Da Silva, "A história do cotidiano de Lucas do Rio Verde do início de sua colonização à sua emancipação" (Universidade Regional do Noroeste do Estado do Rio Grande do Sul, 2011).¹

244 The first years were difficult, 'foi um pessoal 'esquecido', porque naquela época o Brasil já passava por uma imensa crise e não tinha estabilidade de nada. Então o governo incentivava a abertura, mas ao mesmo tempo o pessoal tinha que se virar por conta, e as pessoas já não tinham muitos recursos, os recursos eram escassos e os meios de comunicação e de acesso a tudo isso era difícil" (interview with Mário Agostinho Dall'Alba *ibid.*).

245 Munhak and Dziúba Junior, "Lucas do Rio Verde: Um Resgate Sócio-Histórico-Econômico."

246 "Quando eu cheguei tive os dois lados, porque o Mato Grosso dava aquela idéia de fronteira de desbravamento, mas por outro lado a gente pensava que o Mato Grosso era o fim do mundo, imagina um lugar que era basicamente uma selva. ...Problems communicating, etc... Então teve os dois lados, teve o lado interessante da descoberta da novidade, mas também teve o lado das dificuldades, do sofrimento, e parecia que nunca mais íamos sair desse buraco" (interview with Mário Agostinho Dall'Alba Da Silva, "A história do cotidiano de Lucas do Rio Verde do início de sua colonização à sua emancipação."¹

Figure 4), the quality of the road was terrible, prone to wash-outs, and combined with the long distances (it was 200km to the nearest town, the municipal seat of Diamantino), travelling was a significant undertaking and represented a serious hardship for anyone settling in Lucas.²⁴⁷



Figure 4. The Opening of BR-163 at Lucas Do Rio Verde, Mato Grosso, 1981 (Source: Municipal Archive, Lucas do Rio Verde)

²⁴⁷ Laudemir Luiz Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80" (Universidade Federal de Santa Catarina, 1998).

In 1981, the posseiros were informed that the area had been appropriated for an urgent land reform settlement and that their lands would be confiscated without compensation for the settlement of landless families in conflict with the government in the south. In spite of promises to the contrary that INCRA had made to the posseiros, this settlement project included land that was already claimed by them,²⁴⁸ thereby setting the stage for continued land conflict and struggle over the government's contradictory agendas regarding titling, populating and developing the area. Some of the posseiros returned home or moved on, but those who did not have anywhere to return to decided to organize and work with INCRA for continued access to the land there.²⁴⁹ To understand the creation and struggles of the INCRA managed settlement project in Lucas, it is useful to examine the roots of the settlers' land problems in Brazil's southern-most state, Rio Grande do Sul.

Land conflict in Rio Grande do Sul :The formation of the PEA - Rio Verde

Land conflict has a long history in Brazil. Land consolidation has plagued Brazil since colonial times.²⁵⁰ Colonial land claims were so exaggerated, in fact, that for a time, land titles in Brazil lacked boundaries for the property.²⁵¹ Fraud on the part of landholders (*grilagem*), fraud and corruption on the part of the government,

²⁴⁸ Prefeitura Municipal de Lucas do Rio Verde, "Plano Diretor do Município de Lucas do Rio Verde - MT: Reavaliação e Atualização."

²⁴⁹ Munhak and Dziúba Junior, "Lucas do Rio Verde: Um Resgate Sócio-Histórico-Econômico."

²⁵⁰ Simmons et al., "The changing dynamics of land conflict in the Brazilian Amazon: The rural-urban complex and its environmental implications."; Wright and Wolford, *To inherit the earth: the landless movement and the struggle for a new Brazil*.

²⁵¹ *To inherit the earth: the landless movement and the struggle for a new Brazil*.

carelessness and lack of oversight, and contradictory regulations regarding land use and land tenure have created a centuries-long history of incorrect titles, missing titles, titles for nonexistent lands, and duplicate titles issued to the same person for the same piece of land. Land scarcity was caused by the growing rural population, due to immigration from European countries through as recently as the 1950s and generational population growth. This combined with physical violence against small-landholders and peasants on the part of large landed interests kept landownership and rural population settlement in Brazil's south dynamic.²⁵² The availability of public lands in Brazil and the creation of federal institutions charged with addressing settlement and land tenure issues created expectations among landless Brazilians and small farmers that state-managed resolutions would be found for these problems. All of these factors were at play during the founding and settling of Lucas by Southern Brazilians.

Claims to indigenous land also contributed to the general conflict over land in Brazil and had a direct influence on the chain of events that eventually led to the settlement of Lucas hundreds of kilometers away. Starting in the early 20th century, Brazil had begun to set aside reservations for indigenous populations. Almost immediately, though, white families also began to settle on these lands, though with shaky legal standing.²⁵³ For example, by 1962, there were 400 families of white colonists living in the Nonoai reserve in Rio Grande do Sul (a reserve that belonged

²⁵² Miguel Carter, "The Landless Rural Workers Movement and Democracy in Brazil," in *International Peasant Day* (2009).

²⁵³ José Vicente Tavares dos Santos, "Programma de Colonização Terranova," in *Mato Grosso do sonho à utopia da terra*, ed. João Carlos Barrozo (Cuiabá: EdUFMT/Carlini & Caniato Editorial, 2008).

to the Kaingang people). In 1969, 600 more families tried to squat there, but two-thirds of them were turned back by the Kaingang. These invasions by squatters escalated tensions between the white settlers and the Indians, and in 1974, there was another invasion, resulting in the deaths of 10 people.²⁵⁴ In addition to the Nonoai reserve, similar situations occurred in the Cacique Double and Guarita reserves in northeastern Rio Grande do Sul and the Chapecó reserve in Santa Catarina, among others.

In spite of resistance on the part of the indigenous peoples, one important result of these invasions was that portion of the reserves actually available to the Indians was considerably reduced in size due to these invasions of white colonizers.²⁵⁵ For example, by the end of 1975, there were 974 white colonist families occupying 65 percent (9,634 ha) of the Nonoai reserve.²⁵⁶ As of 1976, 228 families were living legally on Kaingang land in Nonoai, but another 682 families were squatting with no formal relationship with the Indians.²⁵⁷

In 1978, after years of protracted legal battles and petitions with INCRA, the indigenous took matters into their own hands and forcibly expelled white settlers from the Nonoai, Cacique Double and Guarita reserves in northeastern Rio Grande do Sul, and from the Chapecó reserve in Santa Catarina.²⁵⁸ The expelled colonists, 1000 families in total, were penniless. With nowhere to go, they camped by the side of the

²⁵⁴ Ibid.

²⁵⁵ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

²⁵⁶ dos Santos, "Programa de Colonização Terranova."

²⁵⁷ Wright and Wolford, *To inherit the earth: the landless movement and the struggle for a new Brazil*.

²⁵⁸ dos Santos, "Programa de Colonização Terranova."

road in protest of their inability to get secure access to land, thereby setting off the modern landless movement in Brazil.²⁵⁹

The decamped colonists began talking about retaliating against the Indians and the federal government realized that it had to finally step in. In this conflict, it saw a chance to use settlers to kill two birds with one stone, so to speak – by settling these colonists in the Amazon, they thought they could resolve the landless problem brewing in the south, and at the same time advance their interests of productive settlement in the Amazon.²⁶⁰ The settlers, though, still held out hope that they would remain in the South, where they were from. Thus began a long series of solutions proposed by government officials (government jobs, settlements in the Amazon) and rejected by settlers. Meanwhile, the day-to-day situation of the settlers was growing steadily more precarious.

In May 1978, around 800 of the families were installed in temporary structures inside the Parque de Exposições de Agropecuária in Esteio – RS.²⁶¹ The other 200 or so families stayed on the side of the road in Alto Uruguai. Soon after, the government launched a half-hearted attempt to settle the colonists in Mato Grosso. Over 500 of the displaced families were transferred to a settlement called Terranova, in Mato Grosso, with promises of basic infrastructure, a good climate and biome conducive to farming, and the favorable financing necessary for them to clear the land and farm there. In the end, the government provided none of this, and the

²⁵⁹ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

²⁶⁰ Wright and Wolford, *To inherit the earth: the landless movement and the struggle for a new Brazil*.

²⁶¹ dos Santos, "Programa de Colonização Terranova."; Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

majority of the Terranova colonists quickly returned to Rio Grande do Sul.

Meanwhile, the remaining settlers stayed in the temporary camps and held out hope that they would be able to eventually obtain land for settlement in Rio Grande do Sul, close to their families and in a familiar climate.

For those who refused to go north to Mato Grosso, two options remained – one was to illegally occupy land, the other was to work with the government to attempt to get settled in Rio Grande do Sul. Frustration with the dirty and precarious nature of the camps and the failure of land to become available began to stoke resentment toward the handling of the crisis on the part of the government, and what had at first been a struggle driven by practicality (the need for land to be made available), evolved into an ideological struggle based on the *right* to land on which a family could make a living.

Moreover, some Esteio families elected to try to force the government's hand by occupying land. In 1978, 150 families from Esteio occupied the farm Granja Brillhante, and in September of that year another 110 families occupied the farm Granja Macali, two farms that had been set aside for agrarian reform purposes some time before, but had since been tied up in lengthy court battles. Starting in February 1981, the remaining 900 families or so from Esteio set up camp at an intersection that came to be known as Encruzilhada Natalino (Natalino's Crossing – named for the first settler who put his tent there). Nearby Fazenda Sarani, also tied up in a court battle over land reform, was taken over by settlers as well. The situation of the landless in Rio Grande do Sul was now no longer one of separate groups of families

looking for land; this was now a full-blown social movement willing to take on the state, using its own laws, to demand their right to land that was not already being used productively (Land Statute, Law 4504, 30 November 1964).²⁶²

Government attempts to offer the settlers compensation other than land in Rio Grande do Sul, such as jobs at agricultural research stations on lands in the Amazon, were rebuffed. At the same time, conditions in the camps continued to deteriorate. There were food and water shortages, illnesses and deaths.²⁶³ Dwellings were made of cardboard and plastic, and so provided virtually no protection against the elements. On top of all of this, state and local police threatened violence against the settlers and local landowners hired gunmen to infiltrate the camps and threaten and beat the settlers.

As bad as these conditions were, the settlers were unmoved in their insistence that they be given land in Rio Grande do Sul until the arrival of Major Sebastião Rodrigues de Moura (known popularly as Major Curió) of the Conselho de Segurança Nacional (CSN – National Security Council), who further ratcheted up the physical and psychological threats against the colonists. He informed the settlers that there was no land available in the South (in contrast to the surveys INCRA had already conducted which identified over 800,000 hectares of land eligible for redistribution in RS alone) and promised that the soils in Mato Grosso were fertile, that the settlements had organized amenities, and that it would feel just like home when they got settled in

²⁶² This was the the same law, incidentally, that the posseiros were already using to claim land in Lucas.

²⁶³ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

there.²⁶⁴ This was far from the truth, and the settlers knew that. They had already heard about the experiences of the Terranova settlers, but by this point, many of the settlers were desperate to get out of the camp conditions and try to find a better situation for their families.

In the end, 203 families agreed to take part in a new settlement project to be called PEA-Rio Verde. The PEA-Rio Verde was to have more than 270,000 ha available for settlement in the *gleba* (unparceled land) along the Rio Verde and the new highway BR-163. These 270,000 hectares would be divided into lots of 200 hectares each, with 100 hectares of each plot to be reserved and the other 100 hectares available for productive use.²⁶⁵ Economic activities predicted for the area were rice, corn and soy, as well as a guarantee of rapid return on investments made there.²⁶⁶ The colonists were promised the following amenities in PEA-Rio Verde by INCRA – basic infrastructure including 96 km of local roads, three schools, two health centers, administrative buildings and an armazém as well as access to credit to work the land and for planting, including deforestation, root removal, cleaning, grading, technical assistance, and fertilizer and corrections.

Credit was to be conditional based on technical assistance and a requirement to plant basic food crops for at least 2 years, a requirement which was to be reduced by 50 percent during the rest of the finance period. The cost of the lot was to be based on the land value at the time – 370 cruzeiros per hectare in the Municipality of

²⁶⁴ Wright and Wolford, *To inherit the earth: the landless movement and the struggle for a new Brazil*.

²⁶⁵ Sueli Pereira Castro et al., *A Colinzação Oficial em Mato Grosso : "a nata e a borra da sociedade"* (Cuiabá, Mato Grosso, Brazil: Editora Universitária da Universidade Federal de Mato Grosso (UDUFMT), 1994).

²⁶⁶ Ibid.

Diamantino – to be paid back over 20 years, with a grace period of 480 days. Value would be added to the land by the settlers by demarcating and clearing it and installing infrastructure, thereby adding to the incentives presented to the colonists by the government.²⁶⁷

Arrival and settlement at Rio Verde

The settlers who went to Lucas from Rio Grande do Sul became known as *parceiros* because of the small parcels of land they received from the settlement project. They arrived in Lucas in three rounds in 1981 and 1982 (

Figure 5). At first, the mood among the *parceiros* was positive and hopeful, but doubts quickly set in as questions about the legitimacy of their land titles, soil quality and the unavailability of expensive fertilizers they would need started to be raised.²⁶⁸

Posseiros had been farming some of the land there for five years, but they had not begun the construction of any infrastructure related to a town. All that existed at Gleba Rio Verde when the *parceiros* arrived were tents from the army corp, 9^oBEC, that was clearing and building the highway and the Rio Verde itself. Soon after the settlers arrived, INCRA assigned lots by a drawing. According to Zart, this was one of the first dehumanizing tactics taken by what would turn out to be a very

²⁶⁷ Ibid.

²⁶⁸ Laudemir Luiz Zart, "Lucas do Rio Verde: As vozes dos *parceiros* no processo de construção de um novo espaço social," in *Mato Grosso do sonho à utopia da terra*, ed. João Carlos Barrozo (Cuiabá: EdUFMT/Carlini & Caniato Ed., 2008).

hostile INCRA director in Lucas.²⁶⁹ Many of the *parceiros* had come to Lucas in groups of extended family members or friends, and intended to settle near each other in order to cooperate on the arduous tasks of setting up a homestead in a new place. However, because of the drawing, they were not even allowed to settle near people of their choice. The *parceiros* had been promised houses, but upon their arrival in Mato Grosso, they found out they would have to build their own houses with wood provided to them by INCRA. Out of the 200 hectares they had each been promised for farming, they learned that in addition to having to leave 50 percent of it forested according to the federal Forest Code as written at the time, only 2 ha of the land was cleared for them on which to build their houses and begin to plant their crops. They would have to figure out what to do about the other 98ha of dense vegetation with no machinery and no access to financing.

Given the sizes of the plots, the lack of transport available, and the lack of roads in the area, the random drawing of lots also contributed to the isolation felt by the *parceiros*; the distances between plots and the amount of work required to subsist meant that even one's neighbors were too far away to see often. Friends and relatives settled on lots that did not adjoin one's own were seen even less frequently. All of the settlers were supposed to receive plots in town as well, but given the hostile situation that soon developed between the *parceiros* and the director of the settlement project, some had to pay for them and some never acquired land in town at all. Further adding to the tension, many men had come alone to set up the homestead,

²⁶⁹ "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

planning to send for their families later. Even worse, they discovered that they would need permission from INCRA to leave the camp to collect their families, a journey that was at least a 5 day round trip by bus.



Figure 5. Arrival of INCRA settlers in Lucas do Rio Verde in 1981, Source: Municipal Archive, Lucas do Rio Verde

Further adding to their difficulties, farming was extremely challenging for the *parceiros* in Rio Verde. The soil, the climate, the landscape – everything was different. They tried to plant the same things they had planted back home – oats, potatoes, garlic, onions – but nothing grew. Based on the best science of the time

(which was still very basic) for farming the Cerrado, rice had to be planted before anything else, to correct the soil. The rice crop only produced in the first couple of years, and then other crops could be grown. Even this information, though, basic as it was, was not freely shared with less experienced farmers. It was not in the interest of INCRA or the more experienced farmers to lift up the settlers who were struggling the most. Their failure and departure would mean opportunities for more cheap land for whoever could afford to buy it.

INCRA was supposed to be providing the *parceiros* with the assistance they needed to settle and farm in Mato Grosso. Instead, the INCRA executor in Lucas, José Ferreira Soares, served mainly a source of threats of violence, corruption and oppression in the lives of the *parceiros*.²⁷⁰ Just as Major Curió had done in the camp in Rio Grande do Sul, Ferreira physically attacked the *parceiros*, insulted them and threatened their families. Thus, the *parceiros* were completely dependent on the services of third party vendors for everything from clearing and plowing to planting and harvesting, due to the terms of their contracts with the Banco do Brasil, the bank that administered financial aspects of the settlement.²⁷¹ These prices of the services and the payment for the services were conducted exclusively between the bank and the vendors, who frequently failed to perform services or failed to perform them adequately or with the appropriate timing. The *parceiros* never received the money they were being loaned; it went directly to the vendors, meaning the *parceiros* were

²⁷⁰ Anton Huber, *Tempestade no Cerrado* (Cuiabá, MT: Carlini & Caniato, 2010); Vitale Joanoni Neto, *Fronteiras da Crença: Ocupação do Norte de Mato Grosso após 1970* (Cuiabá, MT: Carlini & Caniato Editorial; EdUFMT, 2007).

²⁷¹ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

stripped of their power to bargain for better services or prices. The nearest Banco do Brasil office was more than 200 km away in the city of Diamantino, a week's journey round trip on foot; complaints that did make it to the bank were simply lost in a bureaucratic triangle among the employees of the Bank, INCRA and the vendors; and the *parceiros* were so busy scraping together enough resources to survive that they did not have the time to unite and plan any kind of collective action to demand better treatment from INCRA and the bank.

Low crop yields during the first year and changes made to the terms of the loan by the Bank furthered the troubles of the *parceiros*. Poorly performing crops meant that the *parceiros* were unable to bring in income via the sale of their crops to pay their loans, and a forced refinancing by the Bank meant that the *parceiros* had to start making payments during the 2nd year of their loan instead of the 5th year, as had been the original agreement. INCRA declined to evaluate the terms of the contracts between the *parceiros* and the bank during the 2nd year of the settlement based on the actual conditions of the settlement rather than the predicted ones which had been used as the basis for the original contracts. This meant that the *parceiros*' inability to start making payments was viewed by the Bank as noncompliance with the terms of the loan, and the Bank refused to issue any more funds for the settlement in 1982, meaning that many of the settlers were unable to plant anything the second year.²⁷² Because INCRA was to hold the title to the parcels of land for five years, the

²⁷² Ibid.

parceiros did not even really own their land in the settlement either, leaving them with nothing with which to bargain.

Because their crops were not producing well, some parceiros worked as day laborers on the remaining farms of the posseiros in order to earn a bit of money to buy food at the Cobal (government-dry goods store) store in town and make their loan payments. Others relied on hunting and fishing.²⁷³

Cooperlucas

In addition to the parceiros and the posseiros, a third group of settlers, the associados, representing the third type of government-facilitated settlement commonly found on Amazonian frontiers, also set its sights on settling the Gleba Rio Verde in the late 1970s. The members of the fledgling cooperative, first known Holambra 3, originally had an agreement to create a settlement in Mato Grosso with FEMACA (*Federação Meridional de Cooperativas Agropecuarias de Campinas/Southern Federation of Agricultural Cooperatives of Campinas*), but the oil crisis of the 1970s had a negative effect on the finances of this group and the members of Holambra had to turn to INCRA for assistance in starting their project.

After sending scouts to the Rio Verde area and finding it agreeable, the members of Holambra consulted old maps on file with INCRA and finding the name of the old rubber-tapper Lucas associated with the area. They decided they would call

²⁷³ Munhak and Dziúba Junior, "Lucas do Rio Verde: Um Resgate Sócio-Histórico-Econômico."

their settlement project Lucas do Rio Verde, and the name of the cooperative itself was changed to Cooperlucas.²⁷⁴ At the time, the associados were not aware that INCRA would soon create a planned settlement in that very area.²⁷⁵ With their plans in place, the cooperative was officially founded on December 22, 1981 with 50 members. Because the area was frontier territory, the cooperative would be responsible for the provision of education, social and cultural resources, and the technical assistance and infrastructure necessary for producing, buying and selling agricultural projects.

Upon arrival in Lucas, the associados were surprised to find out that not only was INCRA settling people from Rio Grande do Sul there, but that there were also posseiros in the area who claimed to have rights to the land by virtue of having settled it for the five previous years. To preserve whatever they could of their plans for the settlement of the region, a *projeto integrado* (integrated project) was proposed by the associados, which was to include the posseiros in the settlement and operate alongside the official settlement project. This proposal, however, had to be negotiated with the regional and national management of INCRA, who eventually accepted the continuation of Cooperlucas in the Rio Verde area, with some conditions. The cooperative would be allowed to settle up to 150 families (though only 50 ended up going), but it had to set up a “control post” to deal with the expected influx of land seekers after word got out about the place.

²⁷⁴ Huber, *Tempestade no Cerrado*.

²⁷⁵ Ibid.

This deal created hard feelings between the associados and the posseiros, who were still struggling to resolve situation of their land with INCRA. The cooperative, which planned to provide schools and other social services to everyone at the settlement, should have been a unifying force, but instead it was viewed suspiciously by the posseiros who viewed it as a sneaky move on the part of the associados to get preferential treatment from INCRA. The posseiros were especially suspicious of the associados because they had come from São Paulo with a relationship with INCRA already established, though this relationship was certainly not an easy or a happy one.

The employees of INCRA who were charged with the administration of the PEA-Lucas do Rio Verde had a hard time understanding how they were to distribute benefits to the settlers, so they tended to maintain strict control over what went on in the settlement. This draconian approach to running the settlement spilled over into other parts of life there; for example, INCRA employees made it difficult for the cooperative to execute planned projects such as educational programs, which might provided something for the diverse factions to rally around. The cooperative leaders also felt obligated to denounce corruption as they observed it, including the illegal purchase of land from colonists for extremely low prices, and the subsequent sale of this land to posseiros, by a land broker with close ties to INCRA who was operating in the area.²⁷⁶ Like the other settlers, the associados were not immune from aggressive behavior on the part of the INCRA executor. Cooperative leaders reported receiving

²⁷⁶ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

death threats from Ferreira,²⁷⁷ though at least one author has accused some of the *associados* of threats and social violence to further their cause, as well.²⁷⁸

The fortunes of the cooperative and of Lucas changed in 1983, though, when Cooperlucas received a Japanese commission to negotiate and install PRODECER (*Programa de Desenvolvimento do Cerrado/Program for Development of the Cerrado*), a project incentivized by Japan for the production of grains in Brazil's Cerrado region for export to Japan. Through this project, the cooperative was able to install the settlement's first grain drier – until then, contrary to the promises made by INCRA to the *parceiros*, they had been dependent on grain middle-men to store and process their grains, at considerable cost. The drier was important in this history of Lucas because universal access to it improved relations between the cooperative and the remaining *parceiros*, as well as the *posseiros*, all of whom benefitted from the presence of a local grain drier.²⁷⁹

The PRODECER project represents yet another example of the public-private cooperation that characterized the settlement and territorialization of the Amazon. Projects like PRODECER were a continuation of the state project for developing the Amazon, but this was now carried out in partnership with private agencies as sources of funding. The government's goals for extending its control over the region were also articulated via other types of hybrid state and private initiatives including regularization of lands claimed through *posse* (settlement first and applying for the

²⁷⁷ Mario Osava, "Agricultura-Brasil: soya, expansão y polémicas," *Noticias en Español*, March 28, 2005 2005.

²⁷⁸ Castro et al., *A Colinzação Oficial em Mato Grosso : "a nata e a borra da sociedade"*.

²⁷⁹ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

title later) and the collaboration with cooperative settlements in the Amazon. All of these projects had in common that they created opportunities for individuals who were able to meet the requirements set explicitly or implicitly by the state to turn the country's so-called empty spaces into globalized production spaces and effectively extend the reach of the state to regions and resources that were previously uncontrolled by it in practice.

From settlement to district to municipality

On August 5, 1982, the municipality of Lucas was declared an *agrovila* (agricultural settlement), within the municipality of Diamantino. The text of the declaration act gives the impression that relations among the residents of Lucas were good by then, but this was an overly optimistic view of the situation, at best.²⁸⁰ As a result of the social tensions, physical hardships, isolation, violence, and lack of economic opportunities, many *parceiros* had already abandoned their plots or were in the process of doing so by the end of 1982. In fact, more than 90 percent of the *parceiros* would leave Lucas do Rio Verde by the end of 1983, almost without exception 'selling' their plots to *posseiros* for the cost of a bus ticket home or to the

280 "[E]stá sendo processada a regularização fundiária dos posseiros, os primeiros moradores e agricultores desta área, que com seus próprios esforços demonstraram a qualidade e a boa aptidão da terra, transformaram o Cerrado em imensas áreas produtivas e ainda em atendimento ao decreto presidencial, foi criada a Cooperativa Agropecuária Mista de Lucas do Rio Verde Ltda – Cooperlucas, sendo o seu primeiro Presidente o Sr. Anton Huber, cuja finalidade será agregar os colonos, dando-lhes apoio e assistência técnica" (Ata de Fundação da Cidade, 1982); "[A]s condições favoráveis de solo, clima, cobertura vegetal, regime de águas; a experiência e tradição agrícola, o número e a qualidade dos colonos assentados e dos posseiros enfrentando as maiores adversidades e pagando o ônus do pioneirismo, colonos os presentes nesta solenidade histórica, sejam autoridades ou colonos, são unânimes em concordar com um inegável e próximo futuro promissor para esta cidade, como um polo de desenvolvimento econômico, social e cultural de toda uma imensa região" (Ata de Fundação da Cidade, 1982).

next settlement.²⁸¹ These ‘sales’ of land were illegal, since the *parceiros* had never truly owned their lands; the terms of their contracts with INCRA and the Banco do Brasil had deferred transfer of titles to the colonists until five years after settlement. They appear, however, to have gone uncontested by the government, not uncommon in the region even today. After all, the main purpose of the settlements from the government’s perspective had already been achieved – the land had been delimited and entered into the national register for titling, thereby extending the Brazilian state’s control of the territory.

In spite of the exodus of *parceiros*, the population of Lucas continued to grow and the settlement was granted the status of District in 1985. One driver of continued immigration to Lucas was the opening of branches two cereal processing companies - COPACEL and Sementes Palotina - from Paraná. Another factor was that starting in 1982, after the *parceiros* started to leave, the local INCRA employees sold and gave away rural and urban lots in Lucas indiscriminately.²⁸² Though these sales and transfers were illegal, ultimately the legal transgressions involved in these transactions were absolved or forgotten.

From the point of view of the land tenure and regularization priorities of the government, the settlement was successful even though the majority of the settlers left. The cumbersome, contentious and legally ambiguous process of converting the

²⁸¹ Neto, *Fronteiras da Crença: Ocupação do Norte de Mato Grosso após 1970*. (personal communication, 2008) Cristiano Desconsi, *A marcha dos pequenos proprietários rurais: Trajetórias de migrantes do Sul do Brasil para o Mato Grosso*, ed. Sociedade e Economia do Agronegócio, vol. 1 (Rio de Janeiro: E-papers Serviços Editoriais, 2011).

²⁸² Da Silva, "A história do cotidiano de Lucas do Rio Verde do início de sua colonização à sua emancipação."; Desconsi, *A marcha dos pequenos proprietários rurais: Trajetórias de migrantes do Sul do Brasil para o Mato Grosso*, 1.

lands in Lucas from *terras devolutas* to parcels that could be privately owned and farmed had been completed. After the settlement in 1981-1982, though, federal involvement in the settlement of Lucas was nearly complete. In 1985, INCRA brought 10 families from São Gabriel do Oeste, Mato Grosso do Sul. They also got 200 hectare lots, but from this point on, settlement and development in Lucas became essentially a private endeavor, facilitated by the government only in terms of favorable conditions for the growth of the agro-industrial sector, as discussed further in Chapter 6.

Lucas was legally elevated to the status of municipality on 4 July 1988 (State Law no. 5.318), counting 5,500 inhabitants at the time. These legal milestones for the city did not come easily, as Diamantino and other neighboring municipalities were reluctant to cede their land and shares of resources to the newly forming city of Lucas.²⁸³ Moreover, the residents of early Lucas had to grapple with the history of social and physical violence among their neighbors.²⁸⁴ This history left scars in the social fabric of the new town that are still visible today, in the discrepancies between the official history of settlement as told by municipal sources and the stories told by early settlers, both those who stayed and those who left.

²⁸³ Munhak and Dziúba Junior, "Lucas do Rio Verde: Um Resgate Sócio-Histórico-Econômico."

²⁸⁴ "Lucas hoje nem se compara com antigamente está bem melhor, até porque a estabilidade do país ajudou que isso acontecesse. Eu vejo que Lucas é uma boa cidade, sempre gostei, até porque a gente sempre morou, praticamente fundamos a cidade digamos assim, mas eu percebo que há uma violência na cidade que foi de alguma forma criada, não digo que intencionalmente, mas pelas propostas econômicas que se viabilizaram através dos políticos, que eu penso que poderia ser diferente. Acho que se visou muito a questão econômica e não se deu prioridade à questão humana e social, isso fez com que a cidade ganhasse áreas de violência desnecessárias" (interview with Mário Agostinho Dall'Alba Da Silva, "A história do cotidiano de Lucas do Rio Verde do início de sua colonização à sua emancipação." He basically thinks the bad things that happened here were because of greed.

Rapid changes in property ownership due to high turnover of settlers of Lucas in the 1980s also brought changes to society. During the 1980s, early settlers report, links among communities in the region were strong. In spite of the violence among some persons and groups, in general, settlers on the frontier relied on one another to accomplish large and small tasks, fomenting relationships among the families of early settlers in the region that remain strong today. The frequent sale of land and the resultant concentration of land as people bought up their departing neighbors' lands had the effect of creating more closed communities and weakened the links among settlements in the region.²⁸⁵ The lasting influence of this process is also apparent today. Long-time residents and “founders” of Lucas continue to be extremely influential in town, and local and regional leadership frequently positions itself as protecting local interests against damaging or out-of-touch economic and environmental efforts by state and federal governments.

Conclusion

The military government was eager to industrialize the country's agricultural sector in order to become more self-sufficient and to capture profits from international markets.²⁸⁶ In the mid-20th century, they enacted several policies to this end, including the removal of bans on the import of tractors, rural credit programs,

²⁸⁵ interview with Pedro Dalastra, *ibid.*

²⁸⁶ Geraldo Hasse, *O Brasil da Soja: Abrindo Fronteiras, Semando Cidades* (Porto Alegre, Brazil: CEVAL, 1996).

minimum price supports and the construction of highways.²⁸⁷ These policies had the combined effect of increased land-concentration in the south, the country's traditional bread-basket and of encouraging the development of more mechanized agriculture on newly opened land in the Center-West of the country. Moreover, the military government also continued the work of past governments of actively trying to populate the Amazon through the creation of organized settlement projects. These developments, in turn, spurred spontaneous migration of smaller-scale and less-capitalized farmers toward cheaper and more abundant lands to the north.²⁸⁸ There is a rich and well-documented literature on unofficial colonization and private and hybrid (cooperative) colonization projects that had varying levels of state support.²⁸⁹ In fact, all three of these kinds of settlement projects – official, private, and spontaneous – were incorporated into Brazil's Land Statute and federal plans for development of the Amazon.²⁹⁰

The conventional view of the authoritarian, state-driven frontier expansion in Brazil from a political economic point of view has been the most prominent

²⁸⁷ Ibid.; Warnken, *The Development and Growth of the Soybean Industry in Brazil*; ibid.; de Arruda, "As 'Agrocidades' e as Interfaces entre Mundo Rural e Urbano: Repercussões Sociospaciais do Agronegócio no Território Mato-grossense."

²⁸⁸ John H. Sanders and Frederick L. Bein, "Agriclutural Development on the Brazilian Frontier: Southern Mato Grosso," *Economic Development and Cultural Change* 24, no. 3 (1976); Ozorio de Almeida, *The Colonization of the Amazon*; David Carr, "Population and deforestation: why rural migration matters," *Progress in Human Geography* 33, no. 3 (2009).

²⁸⁹ Jepson, "Private agricultural colonization on a Brazilian frontier, 1970-1980."; "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil."; Ozorio de Almeida, *The Colonization of the Amazon*; Huber, *Tempestade no Cerrado*; Neto, *Fronteiras da Crença: Ocupação do Norte de Mato Grosso após 1970*; Browder et al., "Revisiting Theories of Frontier Expansion in the Brazilian Amazon: A Survey of the Colonist Farming Population in Rondônia's Post-frontier, 1992-2002."; David J. Carvalho, "Papel do Estado no processo de diferenciação camponesa," in *Série Seminários e Debates* (Belém: NAEA, 1982).

²⁹⁰ José Dario Munhak, "O Processo Migratório para Lucas do Rio Verde," (Museu Histórico de Lucas do Rio Verde, 2011); Rocha, "'A Trama do Drama': A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT."

framework employed to describe the settlement and development of the Amazon since the 1970s. This view asserts that the frontier of the Amazon has featured a more or less linear expansion of capitalism – in which there is an ever increasing level of accumulation until the whole place was homogenized, hollowed out, and gobbled up by powerful landed interests and capitalism.²⁹¹ Yet the rural frontiers of the Amazon remain diverse and appear to be diversifying further, even years after the expansion of capitalism supposedly began.²⁹² Further problems with this view, illustrated by a careful look at the settlement histories of Mato Grosso and Lucas do Rio Verde, include the essentializing nature of the frontier it depicts, the failure of it to address the frequently decoupled nature of policy and practice on the frontier, and the lack of space in this view for agency of local actors and non-economic actor motivations.

In this chapter, the trajectory of development and frontier expansion in Mato Grosso, and more specifically, Lucas has been explored and critiqued drawing on theories of frontier expansion in the Amazon. The state was an important driving force as far back as WWI in the expansion of the economic frontier in Mato Grosso, but it did not act in a vacuum. Nor is it possible to trace the linear progression toward the state's goals because these were not static through time or throughout its bureaucracy. Moreover, various forces and agencies acting in the region led to the recreation of some traditional social structures on the frontier (in the political-

²⁹¹ Warnken, *The Development and Growth of the Soybean Industry in Brazil*: 3.

²⁹² Castro et al., *A Colinzação Oficial em Mato Grosso : "a nata e a borra da sociedade"*: 17; Jepson, "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil."

economy view), but also created opportunities for new social and economic structures to emerge through the process of (re)territorialization of the frontier.

As for the efforts of the state, its efforts to develop an agriculture industry that would link the frontiers of the Amazon to global markets may have in a sense worked too well in the end, and despite the resistance and challenges to these plans; the generation of new agro-cities and the erosion of the rural/urban divide in post-frontier regions has weakened the legitimacy of the state as the state has proven increasingly incapable of responding to needs and opportunities generated in the Amazon.

CHAPTER IV – THE EVOLUTION OF ENVIRONMENTAL LAW AND POLICY IN MATO GROSSO

Brazil has recently been making strides toward more effective environmental policy and management after decades of notorious corruption and ineffective enforcement of laws in the environmental arena, particularly in the Amazon. Federal laws governing the environment have long been quite progressive in Brazil, beginning with the enactment of the Federal Forest Code in 1964, and prior to even more developed countries passing laws of comparable scope and strength. Effective enforcement and application of these laws, though, especially with regard to limiting deforestation, has proven to be elusive, in spite of periodic national- and state-level attempts. More recent decentralization of environmental responsibilities to the state level has also had uneven results in this regard.

Given these challenges at the national level, it has long been assumed that controlling deforestation would prove to be exceptionally difficult in Mato Grosso, which has, since the 1970s, been one of the states most rapidly undergoing land use change related to agriculture and ranching,²⁹³ and where these industries are also the predominant drivers of the state's economy and have formidable political influence, which could be leveraged to block environmental policies viewed as threatening to these industries. Somewhat surprisingly, though, some of the most visionary and

²⁹³ Jeffrey A. Cardille and Jonathan A. Foley, "Agricultural land-use change in Brazilian Amazonia between 1980 and 1995: Evidence from integrated census data," *Remote Sensing of Environment* 87(2003): 560.

effective developments in terms of environmental law application and enforcement have occurred in Mato Grosso – namely, the creation of *Sistema de Licenciamento Ambiental em Propriedades Rurais*/Rural Properties Licensing System (SLAPR) in 1999, the founding of Lucas Legal in 2006, and the 2009 scaling up of Lucas Legal to Mato Grosso Legal (MT Legal). This chapter will explore the evolution of environmental legislation and management in Brazil and Mato Grosso as pertains most specifically to the present-day situation in Mato Grosso. State-level, socio-political factors that help explain the shift in disposition toward environmental licensing and monitoring observed in Mato Grosso since 1999 will also be presented.

The federal level

Environmental regulations set at the federal level set the minimum standards for environmental conservation. Most regulations that affect rural producers are legislated by the federal Forest Code, a progressive law that has been periodically updated but inconsistently and weakly enforced. This has made the Forest Code a lightning rod for both environmentalists looking for more rigorous enforcement of the instruments in the Code and of a block of agriculturalists looking to strip many of the same instruments from the Code. For most rural landowners, consistency between the law and enforcement regimes is the main concern.

The Forest Code

Brazil's current Forest Code has been in effect since 1964, though it has undergone several revisions since that time.²⁹⁴ In terms of its importance to agricultural activities, deforestation, and native vegetative cover more generally, the current Forest Code requires all farmers to maintain riparian zones (known as *Áreas de Preservação Permanente*/Permanent Preservation Areas, or APPs) on their properties intact, as well as a private reserve (*Reserva Legal*, or RL) of a certain percentage of their land holding, depending on the biome in which it is classified. In the humid tropical forest (or “Amazonian”) biome of the Legal Amazon (an administrative district), the reserve must total 80 percent of the size of the property; in the Cerrado biome inside the Legal Amazon, the reserve must total 35 percent of the property; and on all properties outside of the legal Amazon, the reserve must total 20 percent of the size of the property, these percentages do not include the APPs – they

²⁹⁴ It should be noted that Brazil, as a former colony of Portugal, follows the civil law tradition, as opposed to the common law tradition followed in places like the United States and England. Lesley K. McAllister, *Making law matter: Environmental protection and legal institutions in Brazil* (Stanford: Stanford UP, 2008). 59. Whereas under common law, decisions made in courts about how to apply law become, in turn, part of the legal framework, under civil law, decisions made by judges are simply bureaucratic applications of laws passed by the legislature or enacted by executive decree, in that, they do not necessarily influence future decisions regarding similar matters. Thus, laws as passed down from the legislature are potentially more directly influential in Brazil than say, the United States, where the real-life application of the law can be shaped by subsequent legal challenges.

are in addition to them.²⁹⁵ These reserve requirements are ambitious; properties in compliance with the reserve requirements are the exception rather than the rule.²⁹⁶

The Forest Code, now viewed as a fairly progressive environmental instrument, dates from the 1960s when less than 1% of the Amazon region was deforested²⁹⁷ and Brazil was under a military dictatorship. However, Brazil's military period was not known for its progressiveness in terms of the environment or otherwise. Thus, it is worth asking - why would the generals pass such a sweeping piece of environmental legislation, especially given their contemporaneously and contradictory strategizing regarding developing the Amazon for foreign and domestic investment,²⁹⁸ extraction of natural resources, bolstering against potential "guerilla subversion", and bolstering their legitimacy by finally "unifying" the whole of the country via the "fervent ideology of modernization"?²⁹⁹ It appears that these inconsistencies in the generals' objectives are precisely the reasons that such a law could be enacted.

²⁹⁵ There are some exceptions – for example, in some cases the legal reserve for the Cerrado, inside the Amazon can be lowered to 20% so that the total APP and RL area does not equal more than 50% of the total property.

²⁹⁶ In fact, Sparovek and colleagues have recently confirmed what has long been suspected: that in many of the most heavily transformed regions, there are high forest "deficits" – that is, there is not enough locally available land not in use to conceivably meet existing Forest Code requirements without incurring high social- and economic costs that would come with replanting forests and grasslands in productive agricultural areas, Gerd Sparovek et al., "Brazilian Agriculture and Environmental Legislation: Status and Future Challenges," *Environmental Science & Technology* 44, no. 16 (2010): 6049.

²⁹⁷ Igor Nicolau Richwin Ferreira, "Parcerias para o Gestão Ambiental em Propriedades Rurais: O caso de Lucas do Rio Verde - MT" (Universidade de Brasília, 2010), 31.

²⁹⁸ Exemplified by the tagline from the time: *Esto é um país que vai prá frente*, or This is a country that is going forward.

²⁹⁹ Hecht and Cockburn, *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*: 100-04.

The Amazon was still largely viewed as “virtually unpopulated,”³⁰⁰ (the “land without people” as the saying went³⁰¹) and, thus, remote from the realities of individual land ownership in the 1960s. As such, the prohibitions on land use, perhaps intended all along to only be enforced at some later date, would have easily gone without objection because they would have seemed “insignificant”³⁰² to many due to their apparently hypothetical nature. The much smaller percentages for areas outside of the Amazon with many already established properties appear to have never been consistently or rigorously enforced, which perhaps served early on as a reassurance to agricultural groups that subsequent settlement in the Amazon would not be limited by this law.

Taking another view, as the generals were evidently aware of the importance of natural resources to Brazil’s development, this law may be perceived not as a way to protect the environment, but as a way to ensure that natural resources (in this case, forests and land) would be available for later stages in the country’s development. In this way, the law is part of a discursive project, common to industrializing nations, to demarcate, quantify, and define nature in such a way that it could be incorporated into industrial projects.³⁰³ On the other hand, if the law was, indeed, more about environmental protection than natural resource rationing, it is evident in any case that the law reflects the dominant view of conservation at that time, which, in the words of

³⁰⁰ Rolf Sternberg, "Brazilian Amazonia: A Metamorphosis in Progress," *Revista Geográfica*, no. 125 (1999): 7.

³⁰¹ Hecht and Cockburn, *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*: 108.

³⁰² Ferreira, "Parcerias para o Gestão Ambiental em Propriedades Rurais: O caso de Lucas do Rio Verde - MT," 31.

³⁰³ Luke, "Eco-Managerialism: Environmental Studies as a Power/Knowledge Formation," 104.

Ferreira, “did not consider the human dimension in conservation strategies.”³⁰⁴ While the military government was hardly known for its environmentalism, neither was it known for its humanism; if land and forests were determined to be of national import, individual rights over that land would hardly have been an obstacle for this government.

And yet, though it is little discussed today, there is historical reason to believe that environmental conservation might have registered on the generals’ radar even in the 1960s. Brazil had, by the 1960s, witnessed the near total destruction of the Atlantic Forest; legislation like the Forest Code calling for the creation of large protected areas and restrictions on private use could serve as a tool to prevent the loss of other biomes,³⁰⁵ though given the uneven enforcement of the law, these conservation concerns were likely only secondary to more resource management-oriented motivations as discussed above. Ferreira suggests that the blatant “loopholes” written into the law are codified proof that environmental conservation was not, in fact, a prime motivation for the law:

[a]lthough the land owners were obligated to maintain a certain minimum percentage of native vegetation, there were no restrictions on the sale of the forested area, that, once acquired, could be newly

³⁰⁴ Ferreira, "Parcerias para o Gestão Ambiental em Propriedades Rurais: O caso de Lucas do Rio Verde - MT," 31.

³⁰⁵ Onil Banerjee, Alexander J. Macpherson, and Janaki Alavalapati, "Toward a Policy of Sustainable Forest Management in Brazil: A Historical Analysis," *The Journal of Environment and Development* 18, no. 2 (2009): 132.

deforested respecting the limits [percentages of forest required on a property] and so on and so forth.³⁰⁶

In this interpretation, the Forest Code appears from the outside to be a piece of environmental legislation but actually serves as a tool to encourage rent-seeking behavior in land purchasing: each purchase and sale added value to the land by increasing the amount of land that could be deforested. Of course, this legal positioning was really of little consequence because, as has been amply documented, the restrictions on deforestation set forth in Forest Code have historically been notoriously poorly enforced.³⁰⁷

Furthermore, whatever the true motivations for the law on the part of the government, because the country was under a dictatorship instead of democratic rule, objection to such a law on any grounds by the populace would have been highly unlikely. The foreign and domestic elites who sympathized with the military rulers were receiving plenty of kickbacks related to the Amazon – in the form of tax breaks, land concessions, and favorable terms of trade, credit, and loans – in the simultaneous promotion of development in the region and elsewhere in the country,³⁰⁸ so they had little incentive to object to the law. The more humble classes lacked the power to object, and even still, they too eventually received their piece of the Amazon in the

³⁰⁶ Ferreira, "Parcerias para o Gestão Ambiental em Propriedades Rurais: O caso de Lucas do Rio Verde - MT," 31.

³⁰⁷ Nepstad et al., "Frontier Governance in Amazonia," 631; McAllister, "Sustainable Consumption Governance in the Amazon," 10880.

³⁰⁸ Hecht and Cockburn, *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*: 106.

form of settlement projects to occupy the region, although these settlement projects were poorly executed and, in hindsight, seemed designed to fail from the beginning.³⁰⁹

A federal legacy of weak enforcement

Until the 1980s, after the return of democracy in Brazil, the requirements of the Forest Code were essentially inconsequential to the majority of activities taking place in and around the Amazon due to lack of enforcement, as mentioned above.

Development initiatives have at various times aimed to populate the Amazon for national security reasons, incorporating the area into the national economy (“*Integrar para não entregar*,” or “Integrate to not hand over”), alleviating population pressures on the coasts, and providing agricultural and natural resource commodities for consumption in the major population centers and abroad (See chapter 3). On the whole, these development initiatives have had significant and negative impacts on the environment, as well as yielding mixed results in terms of their development goals. These projects have played major roles in deforestation, massive carbon releases, threatening biodiversity and altering soil and hydrological resources in the Amazon (which includes both the humid-tropical forest biome and the Cerrado biome).

The federal requirement for licensing of environmental activities in rural areas began in 1983, following the passage of a law in 1981 (L6938/81) bestowing the

³⁰⁹ Ibid., 109-12.

responsibility for licensing on state agencies under a National System for the Environment (SISNEMA), and eventually supporting the quite visionary formation of a National Environmental Council (CONAMA) to recommend policies and coordinate action among different levels of government (federal, municipal, and state) and non-state actors.³¹⁰ The timing of this move, at the beginning of a period of transition from the military dictatorship to democracy, was key, as the federal government was systematically relinquishing power to ease the transition and, as one observer has noted, was likely also seeking to relieve itself of obligations in light of the economic crisis during that period.³¹¹ Unfortunately, the law was unclear about which level of government was to be responsible for which tasks, thereby setting a precedent of vagueness that would undermine many future environmental laws in Brazil.³¹²

Following the SISNEMA legislation, the 1980s in Brazil was a watershed period for the creation of environmental laws and for environmental activism, though these achievements did not always translate into improved environmental protection. As Hochstetler and Keck have clearly documented, the transition to democracy during the 1980s created new opportunities for environmentalism, in both the state and extra-state realms. Among these changes were the formation of the Green Party, the passage of several laws relating to the federal organization of environmental agencies, and the return of many environmental activists from abroad following an

³¹⁰ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 33-34.

³¹¹ *Ibid.*, 32-33.

³¹² Andréa Aguiar Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)" (Universidade de Brasília, 2009).

amnesty granted in 1979 to persons in exile for their opposition to the military government.³¹³ Democratization has not, however, proved to be either “unidirectional [n]or unilinear” for environmental conservation objectives.³¹⁴ Rapid political change and social problems tied to stark inequality variously complicated, diffused, and intensified different elements of the Brazilian environmental movement. The strong tradition of federalism in Brazilian politics (featured in all eight of Brazil’s constitutions) has also been influential, though again, in sundry and changing ways. The infamous Brazilian bureaucracy that results from the federalist division of power into multiple jurisdictions has, after all, the effect of both increasing the opportunities for political conflict over policies, confusion, and inefficiencies, as well as allowing for input from more varied actors at various levels.³¹⁵

Progressive laws and their discontents

Corruption and more general mismanagement of funds and power in federal agencies have seriously undercut the effectiveness of even promising environmental laws in Brazil – a situation that seems to have reached its nadir in the 1990s. Stories of corrupt officials have been well documented in the press, though infrequently studied and documented in academic literature.³¹⁶ The Brazilian government began to address this situation in earnest in 2003. Between 2003 and 2006, for example, 90

³¹³ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 12, 38.

³¹⁴ *Ibid.*, 12.

³¹⁵ *Ibid.*, 14.

³¹⁶ McAllister, *Making law matter: Environmental protection and legal institutions in Brazil*: 39-40.

IBAMA (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*/Brazilian Institute of the Environment and Renewable Resources) officials were fired for corruption and another 300 were otherwise disciplined, whereas between 1989 and 2002 only 10 IBAMA officials lost their jobs for corruption, in spite of widespread public knowledge of corruption during this time period.³¹⁷

Other challenges faced by Brazilian environmental agencies include the contradictory nature of their charges with respect to missions such as development, of other agencies,³¹⁸ and the high level of susceptibility to outside influence fostered by the high number of appointed positions in environmental agencies.³¹⁹ Appointed positions are, of course, more easily filled with individuals who might be disposed to look the other way in the case of a violation of the law by the lawmakers who appointed them. A related issue is the high level of turnover these appointed positions create in environmental agencies;³²⁰ when different people move into positions every time there is an election, continuity of programs and commitment to undertaking long term projects both suffer. Another issue was the refusal of the federal government to comprehensively address the environmental issue at any point after the transition to civilian rule. In the words of Hochstetler and Keck:

³¹⁷ Ibid., 40.

³¹⁸ An issue surely faced by nearly all environmental agencies given nearly universal externalizing of environmental services in economic and policy arenas.

³¹⁹ McAllister, *Making law matter: Environmental protection and legal institutions in Brazil*: 40-41.

³²⁰ Ibid., 42.

The content of [environmental] reforms [since the transition to democracy] shows a profound uncertainty about the definition of environmental issue: Are they basically urban? About natural resource development – or their conservation? Instead of projecting a holistic vision of environmental concerns, each reform emphasized one piece or another of the environmental agenda. Major institutional restructuring every two years, on average, undermined the agencies' sense of mission and direction.³²¹

Environmental management in the Brazilian Amazon has been heavily influenced by federal legislation (as opposed to state legislation). Federal law has addressed issues such as natural resource management and the establishment of protected areas – issues that predominate in the Amazon, while states have traditionally legislated more urban issues like pollution control, which have so far been less important in the Amazon.³²² State agencies take their authority largely from powers granted to them by the federal government, then, and have become somewhat more empowered since the mid-2000s when the federal government began actively seeking to decentralize control over environmental and other issues. As for Mato Grosso, the state signed a *Pacto Federativo* (Federative Pact) in 2005 which specifically granted the state control over environmental licensing and led to the

³²¹ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 39.

³²² McAllister, *Making law matter: Environmental protection and legal institutions in Brazil*: 22.

creation of the first state-level environmental licensing system in Brazil, SLAPR, discussed in greater detail below.

McAllister has identified three ways that environmental agencies (federal and state) act under the authority of environmental laws – issuing environmental permits or licenses, performing inspections, and imposing penalties or fines for noncompliance.³²³ In practice, this has often meant three different opportunities for environmental agencies to fail to fulfill their obligations, be it through corruption or lack of capacity. There is some evidence, though, that the capacity of environmental management is improving in recent years as a series of laws and decrees granting more autonomy and reach to various government agencies and to the public attorney's office have been passed and as these three aspects of environmental management have become much more closely linked. The next section will explore how these three aspects have become more integrated in Mato Grosso and what this has meant for the effectiveness and evolution of environmental management there.

Mato Grosso

As a state with an economy heavily dependent on agriculture, ranching, and mining, Mato Grosso may be viewed as an unlikely site for innovations in environmental licensing and monitoring. On the other hand, its bursts of progressiveness in licensing and monitoring of rural activities can be traced precisely

³²³ Ibid., 42.

to its need for these types of institutions that meet the needs of the stakeholders who participate in them. Innovations in environmental licensing at the state level in Mato Grosso have been obscured by the corruption that has plagued the state government and by failure to execute well the institutions, but the efforts of the state of Mato Grosso beginning in the 1990s form an important part of the technical and institutional legacy of the Lucas Legal project.

Unique Environmental License

Mato Grosso was the first Brazilian state to institute a state-level environmental license for rural activities including agriculture, the legal framework for which was initiated in 1995 with Lei Complementar 38.³²⁴ This law marks the first appearance of the *Licença Única Ambiental* (Unique Environmental License - LAU), which currently features in licensing in several states, including Mato Grosso and Pará, and was included in heated negotiations for revisions of the Forest Code in 2011. The creation of LAU was meant to give teeth to the Forest Code in Mato Grosso, until this point basically unenforced, by officially linking environmental management to individual properties in a real way and prohibiting any further deforestation outside of the percentages of each property allowed in the Forest Code and, crucially, tying environmental licensing to the legal registration of properties.³²⁵

³²⁴ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 67.

³²⁵ Ibid.

As outlined in the Forest Code, the unit for licensing was thereby set at the “*unidade produtiva*” (productive unit), or, in other words, the property. GIS and ground-truthing were to be used to track activities on individual properties and provide the information needed for licensing. The LAU was to be complemented by a deforestation licensing system, whereby the producer would have to apply for official permission to deforest on his property, even if he had not yet surpassed the allowed percentage on his land. Thus, the Mato Grosso approach would be two-pronged: the LAU, once fully instituted, would freeze deforestation in place with every property meeting or exceeding federal rules for Legal Reserve sizes, and the deforestation licenses would allow state certification and tracking of all future deforestation.

The problem was that, faced with the task of licensing all of the properties of Mato Grosso, it soon became clear to FEMA (*Fundação Estadual de Meio Ambiente*/State Environmental Foundation) officials that the more than 30-year gap between the creation of the Forest Code and the creation of the LAU, particularly the large amount of settlement that took place in Mato Grosso during that time, meant that there was a staggering amount of vegetation that had been cleared already and that there needed to be some workable legal solution to this. With that in mind, in 2000, Mato Grosso passed law 7330, creating the possibility for landowners to “compensate” past environmental transgressions in state-held *Unidades de Conservação* (Conservation Units), or UCs, an option not included in the Forest Code or other federal legislation.

The UC solution was something of a challenge to the Federal Forest Code in two ways – 1) it called attention to the inadequacy of the Forest Code in providing solutions in situations in which there were transgressions and 2) the Forest Code had always been assumed to require that Forest Reserves were to be private and the sole responsibility of the property owner. Now, the possibility for *servidão ambiental*, or making up for excess deforestation by renting a forested area or paying money into a state-managed fund, had been created. In 2001, the federal government followed Mato Grosso’s lead and with federal provisional regulation 2166-67/2001, landholders nationwide gained the right to satisfy their forest requirements via a forest reserve located on another property. This law also opened the possibility for one’s reserve to be owned by someone else, which in turn created a possibility for a market in legal reserve rights, a market previously impossible under Brazilian law.

Shifting set-aside requirements also hampered efforts at licensing and increased farmer resentment of environmental regulation. From 1964 until 2000, the Forest Code required 50 percent reserves in the “Amazon,” defined inexplicitly but understood to be the North region and the northern part of the Center-West (above parallel 13). Everywhere else, RL was 20percent. In 2000, a law was passed changing the required amount of RL to 80percent in the Amazon, 35percent in the rest of the Legal Amazon and 20percent outside of the Amazon. Meanwhile, in 1989, the government increased the significance of violating these requirements, declaring transgressions of the law to be environmental crimes, whereas before they had simply been administrative infractions.

Federal pacts

In 1999, the state of Mato Grosso signed a Pacto Federativo with the national government, effectively granting the state agency FEMA the right to police the environmental activities of the state. Under the pact, properties larger than 200ha (in other words, the vast majority of properties in Mato Grosso, where even the MST/agrarian reform settlements are often at least 200ha) would be governed by FEMA, while IBAMA would control small-holder licensing.³²⁶ In 2005, a new pact was signed, transferring licensing responsibilities for all properties, regardless of size, to the state. In theory, the federative pacts mean that as long as environmental activities in Mato Grosso were held at least to the level of the standards set by the federal government in the Forest Code, federal agents should not be involved in enforcement and fining of rural producers and other activities in Mato Grosso.

Unfortunately, FEMA was plagued by corruption and inefficiencies that impeded its ability to effectively carry out licensing and enforcement. The corruption, in particular, did nothing to improve the image of FEMA in the eyes of Mato Grosso's farmers and land owners, an image that was already poor (see Chapter 6). Therefore, farmers' willingness to comply with its regulations, given that compliance usually came at the expense of profits, was also low. Farmers knew that if they were to be fined (unlikely, in any case, due to the expanse of the state and the few

³²⁶ Philip M. Fearnside, "The Roles and Movements of Actors in the Deforestation of Brazilian Amazonia," *Ecology and Society* 13, no. 1 (2008).

resources available to FEMA agents); the going-rate for a bribe to have the fine disappear was around 10 percent of the total value of the fine. Corruption was so prevalent that farmers report that they were basically obligated to enter into bribery if they were fined – the fines were significant and the agencies were so corrupt that one could not fight the charges legitimately. Moreover, if a farmer declined to bribe, he found himself at a significant competitive disadvantage to his neighbors, who had likely bribed their way out of the full costs of compliance with the law.³²⁷

In 2005, Federal Police and IBAMA busted a major ring of illegal timber harvesting and selling based in Mato Grosso. Among those arrested were the president of FEMA, Moacir Pires, and the superintendent of IBAMA in Mato Grosso, Hugo José Scheuer Werle, along with more than 80 other loggers, agents, officials and businesspeople. The sting, known as Operation Curupira, was a watershed event in forest management in Mato Grosso and carried significant consequences for environmental management in general in Mato Grosso, even for sectors besides forestry, including ranching and agriculture. This was the first major action on the part of the government to end the deep-seated corruption that had forestalled attempts to control the impacts of environmental change in rural areas (further detailed in Chapter 6).

Operation Curupira led to the dissolution of FEMA and the creation of SEMA (*Secretaria Estadual do Meio Ambiente*/State Environmental Secretariat) (under law 214 (23/06/2005)). The creation of SEMA included the reaffirmation of the

³²⁷ Interview with GR, 29 October 2011

Federative Pact between the government of Mato Grosso and the federal government, in principle, affirmed the responsibility of Mato Grosso for managing its own forest resources. In reality, incongruence between the missions of INCRA and IBAMA,³²⁸ lack of transparency in processes related to land titling and licensing, a lack of resources, and lack of coordination with IBAMA plagued SEMA from the beginning and rendered the agency less effective than it might have been given its strong mandate.

The unlikely providence of state-level environmental licensing in Mato Grosso

The organization of Mato Grosso's state environmental agencies and the legal requirements and opportunities for licensing the state's rural properties underwent substantial changes in the 2000s – so, too, did environmental licensing and monitoring processes. The first, and most fundamental of these was the establishment of SLAPR in 1999. SLAPR was the first targeted attempt in Brazil at licensing and monitoring activities on rural properties on the basis of geo-referenced property boundaries and regular satellite monitoring. Permits for *legal* deforestation up to the limits defined by the federal Forest Code were tied to this licensing process. Thus, SLAPR was meant to create the first, complete geo-database of properties and APPs/RLs in the state, as well as an inventory of *deforestable* land. The second goal, though, was lost on many landowners in Mato Grosso, who viewed the program as a

³²⁸ In terms of favoring productive use or legal reserve requirements in the Forest Code

threat and evidently preferred to take their chances with illegal deforestation rather than enroll in the program to get permits for clearing.

From one point of view, the emergence of a more comprehensive approach to environmental management in Mato Grosso is unsurprising and reflects, if predates slightly, an emerging trend toward more comprehensive solutions to environmental degradation in Brazil. The traditional, fining-only approach has proven to be almost completely ineffective in terms of environmental enforcement in Mato Grosso. Andrea Aguiar Azevedo has done meticulous work documenting metrics related to the efficiency of operations of SEMA-MT. According to Azevedo, the average proportion of fines actually received by the state versus the fines levied in the years for which she has data, 2005-2007, is 7 percent,³²⁹ the received/applied proportion drops to a mere 2.8 percent when looking only at fines related to deforestation in Legal Reserves (the main aspect of environmental legislation dealt with by Lucas Legal). Looking further back, the effective payment rate of environmental fines in Mato Grosso for 2001-2003, as calculated by the federal Ministry of the Environment, was only 6.2 percent,³³⁰ indicating that the figures calculated by Azevedo were not anomalous. They are also consistent with reports I received from informants during my time in the field in Mato Grosso. In 1998, the passage of the federal Environmental Crimes Law created the possibility for criminal prosecution for

³²⁹ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 228.

³³⁰ *Ibid.*, 229.

environmental crimes, but this is typically used as an option of last resort,³³¹ and in any case, massive arrests of landowners and farmers would hardly be a productive approach to maintaining economic growth while pursuing more effective environmental compliance.

And yet, the creation of SLAPR in Mato Grosso in 1999 was unexpected for several reasons. First, prior to 1999, there had been very little organized effort on the part of the state to control the rapid deforestation taking place in Mato Grosso since the 1970s.³³² SLAPR, far from being a cautious step toward geo-based licensing, represented an expensive and extensive investment in satellite imagery, technological infrastructure, and staff. The cost of the program was about R\$6 million per year (~3 million USD/year), though most of these costs were covered by the World Bank-funded PRODEAGRO loan program and grants from the PPG7 (Pilot Program to Conserve the Brazilian Rainforest).³³³

A second curiosity concerning the emergence of SLAPR in Mato Grosso in 1999 was that it came to be not with the election of a new, more environmentally-concerned state government, but in the middle of a governor's tenure. This governor, Dante de Oliveira (1995-2003),³³⁴ had previously shown little interest in deforestation and related issues.³³⁵ According to Sheila Wertz-Kanounnikoff's political economic interpretation of SLAPR's creation, the reason for de Oliveira's sudden interest in

³³¹ Field notes, 13 September 2011.

³³² Fearnside and Barbosa, "Avoided deforestation in Amazonia as a global warming mitigation measure: The case of Mato Grosso," 358.

³³³ *Ibid.*, 357.

³³⁴ *Ibid.*, 358.

³³⁵ Sheila Avelina Wertz-Kanounnikoff, "Forest policy enforcement at the Amazon frontier: the case of Mato Grosso, Brazil" (Ruprecht-Karls-Universität, 2005), 74-75.

environmental licensing and monitoring was not due to a sudden concern about deforestation so much as a desire to leverage PPG7 funding for the project as a springboard to other international funds for improving infrastructure and other services in the state.³³⁶ Indeed, Wertz-Kanounnikoff reports that supplemental funds from the PRODEAGRO loan seem to have freed up state monies to fund improvements to the state's water supply, rural electrification, and road improvements.³³⁷ Azevedo seems to concur, suggesting that SLAPR was two projects in one: both an environmental and an economic project. In this view, the monitoring aspect of SLAPR, which was more explicitly environmentally-positive than the licensing aspect of the project, was more weakly supported by the state government, even under de Oliveira. The licensing aspect, on the other hand, offered clear economic benefits to farmers and the state, as licensing would create more opportunities for *legal* deforestation, and so, received greater support.³³⁸

The program was enacted after de Oliveira's reelection to his second and final term as governor, and it is reasonable to assume, given the growing economic and political clout of agricultural interests in the state of Mato Grosso at that time, that de Oliveira would have faced difficulties being reelected had the program been instituted earlier in his tenure as governor. As it was, it took "[s]ubstantial state-level political support" to implement SLAPR in the milieu of the unsurprisingly "strong opposition

³³⁶ Ibid., 75.

³³⁷ Ibid.

³³⁸ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 276.

of the state-deputies who were mostly rural producers.”³³⁹ A final factor that likely contributed to the successful implementation of SLAPR was friendship between de Oliveira and the State Secretary of the Environment, and their mutual respect based on their common professional background in civil engineering.³⁴⁰ Given these factors, the election in 2002 of Blairo Maggi, a major agricultural producer and landowner, appears to have been, at least partially, a referendum on SLAPR, which Azevedo believes was seen by the rural producers bloc “as a strictly environmental project whose objective was to do them harm,” instead of the economic/commercial endeavor as it had been presented by the de Oliveira administration.³⁴¹

In fact, so dissatisfied with the state government were the rural producers at the time that SLAPR was created, they organized and presented a plebiscite (PDC 495/2003) on the issue of separating the northern part of Mato Grosso (where the economy is almost exclusively tied to farming, ranching, and to a certain extent, logging) from the southern part of the state where the capital is located and where agriculture, in particular, plays a less prominent role. The plebiscite eventually failed, perhaps due to the election of Maggi, whose interests aligned closely with those of the rural producers in the North, but their dissatisfaction with the direction of the government in Cuiabá had been registered. Indeed, funding to SLAPR quickly dried up after Maggi took office, though environmental licensing and monitoring continued quietly without the banner of the SLAPR program over it.

³³⁹ Wertz-Kanounnikoff, "Forest policy enforcement at the Amazon frontier: the case of Mato Grosso, Brazil," 75.

³⁴⁰ Ibid.

³⁴¹ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 280.

In any case, SLAPR and subsequent environmental licensing in Mato Grosso hardly turned out to be the crushing blow to the agricultural sector that some had feared it would be. André Lima and Alicia Rolla of the Instituto Socioambiental determined that FEMA managed to license properties totaling approximately 17 percent of the total land area of the state during the four years that the project was fully functional, 2001-2004, and that even for properties in the program, the licenses did little to curb deforestation and in fact, seem to have had the opposite effect.³⁴² They found that, based on INPE's deforestation data for 2003-2004, 2.15 percent of the total area of private properties not enrolled in SLAPR was deforested, while within the total area covered by the SLAPR program, 3.21 percent was deforested and 1.75 percent of the total registered RLs were deforested illegally,³⁴³ though only forest (not cerrado) areas as detected by PRODES/INPE were part of the analysis.³⁴⁴ It is unknown how effective SLAPR would look if Cerrado data were incorporated. On the other hand, some scholars, including Fearnside, have hailed SLAPR as highly effective and cite talk from the federal level of environmental management about extending the SLAPR system to "all of Amazonia based on the experience in

³⁴² André Lima and Alicia Rolla, "Mato Grosso, Amazônia (i)Legal," (Brasilia: Instituto Socioambiental, 2005), 7.

³⁴³ Ibid., 9.

³⁴⁴ Satellite monitoring of the Cerrado for "deforestation" is complex because it is highly gramineous and heterogenous, which makes it difficult to distinguish accurately and systematically between pasture and some crops and intact vegetation. Progress is being made in this regard by a team at the University of Goiania Geoprocessing Lab (LAPIG) <http://www.lapig.icsa.ufg.br/lapig/>, and Brazil's National Institute of Spatial Research (INPE).

the Mato Grosso” [sic].³⁴⁵ Wertz-Kanounnikoff also found that SLAPR had a positive effect on reducing deforestation.³⁴⁶

Though a full assessment of the precise environmental outcomes of SLAPR is unavailable, retrospection on the process of implementing the program and of the inefficiencies of FEMA/SEMA in general are available. Many of the current misgivings about the project seem to be institutional and technical in nature, as opposed to political. For example, the first years of the SLAPR program relied on manual interpretation of LANDSAT-TM imagery by staffers to detect deforestation, which involves magnifying an image on the computer screen and manually tracing over the features with a cursor to detect changes in the vegetation since the last year,³⁴⁷ – hardly a reliable and consistent long-term method for such a large area (the state of Mato Grosso is over 900,000 km²). Moreover, there were serious problems with the images and the geographic databases available for the region. Lacking the capacity to do the work in house, SEMA contracted a company called Tecnomapas (<http://www.tecnomapas.com.br>) in 2000 to create a cartographic database at 1:100,000 scale, using the national-level survey data from Radar da Amazônia (RADAM) that comprised the state’s hydrographic database, to use as their “primary material” for georeferencing the satellite images.³⁴⁸ This database was not approved

³⁴⁵ Fearnside and Barbosa, "Avoided deforestation in Amazonia as a global warming mitigation measure: The case of Mato Grosso," 357.

³⁴⁶ Wertz-Kanounnikoff, "Forest policy enforcement at the Amazon frontier: the case of Mato Grosso, Brazil," 112.

³⁴⁷ Fearnside and Barbosa, "Avoided deforestation in Amazonia as a global warming mitigation measure: The case of Mato Grosso," 343.

³⁴⁸ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 218.

by the DSG (*Serviço Geográfico do Exército/Geographic Service of the Army*), though, citing lack of procedural and methodological documentation and poor scanning equipment, so the SEMA database was never reconciled with the national level database held by IBGE (*Instituto Brasileiro de Geografia e Estatísticas/Brazilian Institute of Geography and Statistics*), and as of 2007, still was not.³⁴⁹ In any case, the “primary material” hydrographic database is based on survey data from the 1960s and 1970s and is inaccurate and out of date.³⁵⁰

The only other complete geographic database for the state is the one created by SEPLAN (*Secretaria de Planejamento/Secretary of Planning*) via ZSEE (*Zoneamento Socioeconômico Ecológico/ Socioeconomic Ecological Zoning*), at the scale of 1:250,000, but the resolution of this database is far too coarse for property-level analysis. In fact, even the geodatabase made by Tecnomapas (but rejected by the army) is too low in resolution for meaningful property-level analysis. In general, a lack of data with appropriate resolution, as well as *deslocamento* (dislocation, or the failure of layers to correctly match up) have plagued licensing efforts in Mato Grosso. Thus, precise property boundaries were often impossible to define during the licensing process, making property areas, and consequently, RL areas as a percentage of the property area, impossible to precisely calculate. Under SLAPR, up to 120 meters of dislocation and 80 meters of tolerance in cases of overlap were accepted

³⁴⁹ Ibid. In spite of this conflict with DSG, it appears that Tecnomapas is highly competent and successful with government and non-government clients alike. Their website lists IBGE, FUNAI, INFRAERO, several state-level projects throughout the country, and the Nature Conservancy as clients for completed projects, as recently as 2011.

³⁵⁰ Ibid., 218-19.

due to the low resolution of the maps,³⁵¹ which could easily lead to considerable error in property and Legal Reserve size estimates. Delays in receiving the licenses were also considerable due to these complications.

Over time, and in spite of farmer resistance to licensing, reasons for farmers to be interested in licensing became apparent as license applications gradually accumulated and as pressure to get licensed after being fined or in order to access rural credit increased. This greatly increased pressure on FEMA to improve their methods to more efficiently process all the licenses, even as they were provided little support. This became particularly true after 2005, when a new federative pact transferred licensing responsibilities for all properties, including small properties of less than 200ha, which previously had been excluded from FEMA's purview, to SEMA (née FEMA). These developments further crystalized the technical problems related to the mapping and licensing, and according to Azevedo, led to a move by SEMA in 2008 to require certification from INCRA regarding one's property title in order to apply for the LAU.

This move was apparently an effort on the part of SEMA to reduce the flow and backlog of applications, which could take years to process. In the words of Azevedo:

[b]ecause the certification is difficult to get, for various reasons...the same criteria as the [INCRA] certification came to be established [with

³⁵¹ Ibid., 219.

SEMA]: precision GPS measurement (geodetic) and declaration of boundaries [of the property] within a reasonable buffer. Preference was given to projects that entered with these specifications met. This caused a long time period (5 to 10 years) for the correction of the database.³⁵²

In other words, after decades of environmental agency missions being undercut by competing and contradicting institutional mandates on the part of other types of agencies (like INCRA, which historically relied heavily on the Land Statute to require land owners to deforest excessively), requiring properties to be vetted by INCRA alleviated some of the burden on SEMA. In fact, this was a rather cunning example of self-defensive behavior and blame shifting in the face of substantial problems in the process. Now, future backlogs would be the fault of INCRA, who many landowners were quick to blame in any case due the agency's history of poor project execution, and even violence in the region (See Chapter 6).³⁵³

Who to blame for SLAPR's failure?

Azevedo suggests that when Mato Grosso signed its first Federative Pact in 1999 and took on the responsibility of environmental licensing, the state inherited a complex set of internal and external pressures regarding the management of rural

³⁵² Ibid.

³⁵³ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

areas. Pressure on Brazil to better protect forests had grown considerably through the 1980s and 1990s, and, by 1999, it was clear that a strictly developmentalist approach without concern for the environment was no longer acceptable. Democratization had created space in the political scene for both homegrown and foreign/international environmental activism in the country and for a larger scientific voice in public policy.³⁵⁴

The state of Mato Grosso could have avoided or put off the environmental question at the time of SLAPR. For example, it might have focused more narrowly on the type of development advocated by the agricultural bloc, which ostensibly held sway comparable to international environmental interests.³⁵⁵ Instead, though, the state opted to place the deforestation issue prominently in the public agenda, in order to capitalize on political legitimacy it stood to gain from pulling in funds from the national and the international sphere.³⁵⁶ In implementing SLAPR, the de Oliveira government was not truly interested in reigning in agricultural production. Instead, de Oliveira and his allies took a calculated risk of disregarding the interests of one power bloc (land-owners) in favor of the interests of another bloc (international funding groups) that they perceived would provide them greater latitude to act in the future.

Another controversial aspect of SLAPR was the fact that the government contracted out most of this work, a move for which the state was heavily criticized. From the point of view of proponents of the outsourcing, Tecnomapas had a clear

³⁵⁴ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 43.

³⁵⁵ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 147.

³⁵⁶ *Ibid.*, 148.

capacity to quickly do work that the state was under-prepared to do.³⁵⁷ Once the federal government “punted” the issue of deforestation down to Mato Grosso in 1999, the state found to match the technological level of federal-level INPE in order to produce useable maps, which had been monitoring the Amazon biome since 1988 with satellites,³⁵⁸ though apparently without having access to INPE’s data. In this view, the state outsourced the work in order to “compete” with and accelerate its independence from the federal government in a grasp for greater legitimacy. In doing so, though, it opened itself up to criticism for not having the capacity to do its own work and not being transparent. It also missed what could have been a crucial opportunity to integrate licensing of forests with other environmental issues such as game management and management of water resources.³⁵⁹ The result of having a company in charge of the license was that the lack of capacity in the public sector was self-perpetuating and no institutional memory was created in the state agencies – the public employees did not understand anything about the licenses or the mapping and so they “just signed” the licenses without developing effective improvements to the process as it went on.³⁶⁰

³⁵⁷ Ibid., 143.

³⁵⁸ Ibid., 154-55.

³⁵⁹ Ibid., 152.

³⁶⁰ Ibid., 143-44.

The meaning of SLAPR for Lucas Legal and MT Legal

SLAPR has been roundly criticized for its lack of transparency, the degree of involvement of contractors in the process, and its lack of effectiveness. Yet, though not explicitly recognized as such by the architects of Lucas Legal and MT Legal, it was a precursor to these programs and must have influenced their design, and it would have been well-known to all landowners in Mato Grosso in the mid-2000s. Thus, the story of SLAPR (actually the first satellite-monitoring-based environmental licensing system in Mato Grosso, and, indeed, in Brazil) can give us some important insights into the institutional logic of the design of Lucas Legal and of pursuing greater environmental control over the rural sector when the rural sector was the clear driver of economic growth and a formidable political force in general.

Azevedo argues that the creation of SLAPR was far from being an endeavor based on ideals of environmental conservation. Instead, it was part of a broader strategy on the part of the state government to contend with a still rapidly expanding agricultural frontier at a time when this kind of unabashed “developmentalist approach was continually losing legitimacy.”³⁶¹ Wertz-Kanounnikoff agrees, noting that under the leadership of de Oliveira, the interests of international donors (i.e., environmental interests) held sway due to their part in a larger strategy for development held by the administration and due to the temporary lack of influence of the rural producers bloc given that de Oliveira would not be up for reelection again

³⁶¹ Ibid., 147.

after SLAPR was established.³⁶² On the other hand, after Maggi took office in 2002, the availability of international funding for environmental projects diminished in Mato Grosso,³⁶³ and licensing and monitoring once again became secondary to agricultural development in the discourse of the state.

Regarding the practical and institutional challenges that ultimately marred the legacy of SLAPR and contributed to its end, at least two possible explanations can be considered. The simplest is that, given the novelty of this project, the learning curve was bound to be steep, particularly in the context of a poorly staffed government agency. Unfortunately, more comprehensive numbers were unavailable to the author at the time of writing, but a snapshot of the staffing situation at SEMA as detailed in a report by the non-profit Instituto Centro de Vida (ICV), funded by the Packard Foundation and USAID, indicates that in 2008-2009 there were at most 45 total employees and interns at SEMA involved in monitoring for the entire state of Mato Grosso,³⁶⁴ a small number indeed when the large size of the state and the complexity of monitoring wide-scale land use change in an area with 3 or 4 distinct biomes. Moreover, it is reasonable to assume that during the first half of the 2000s, there were even fewer employees involved as government commitment to environmental issues was even less consistent and well-defined then, and due to the fact that the flagship environmental project in Mato Grosso, SLAPR, was largely outsourced as described

³⁶² Wertz-Kanounnikoff, "Forest policy enforcement at the Amazon frontier: the case of Mato Grosso, Brazil," 91-94.

³⁶³ Ibid., 96.

³⁶⁴ Yandra Bastos, Laurent Micol, and João Andrade, "Transparência florestal Mato Grosso: análises do desmatamento e da gestão florestal," (Cuiabá, Mato Grosso: Instituto Centro de Vida [ICV], 2011), 24.

above. Thus, a rapid and effective implementation of such a complex program was bound to face challenges.

Another, more cynical explanation is that the de Oliveira administration (and FEMA at the time) understood that the project would come with high political costs and purposefully implemented it in a less than efficient manner in order to deflect some of the backlash. Azevedo has suggested that the de Oliveira administration attempted to frame the project as apolitical and inevitable by emphasizing its technological aspects and deemphasizing its political aspects. Drawing on the work of Habermas, she notes that the “in a technocratic society, instrumental interests overpower the emancipatory interest, creating the myth of science and technology... which is more flexible than [often] understood by political actors and need not be transformed into a black box,”³⁶⁵ although it frequently is. In other words, if a political power faces uncertainty in a confrontation, presenting the issue as scientific or technical can dampen objections. Of course, technology does not determine what is legal or illegal, or even what counts as deforestation: people do, and in this case, the people who determined it were not even public officials.

Furthermore, the (unsurprising) inefficiencies in applying the technology (satellite monitoring and geo-referenced property lines) to the on-the-ground situation in Mato Grosso in some ways allowed the state to have its cake and eat it, too, so to speak: the state could take a suddenly hardline stance on environmental issues by

³⁶⁵ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 150; Jürgen Habermas, *Toward a rational society: student protest, science, and politics*, trans. Jeremy J. Shapiro (Boston: Beacon, 1970). 105.

requiring licenses in order to carry out rural activities – so hardline, in fact, that no grace period was offered for landowners to undertake the work required to get their properties into compliance – and impress international funding-agencies with newfound environmental predilections. At the same time, the technological (and indeed, *outsourced*) challenges faced by the project allowed the “targeted,” but also economy-driving agri-ranching sector, to largely continue to conduct business as usual, thereby reducing and deflecting the blame directed at the state government. Of course, in the end, de Oliveira’s party was passed over in the next election for a soy-producing land-owner, under whose administration SLAPR was quickly ended, but who, eventually, and paradoxically, would come to champion a similar project – MT Legal.

Conclusion

The experiences of SLAPR can be readily applied to the current situation with Lucas Legal (and Mato Grosso Legal). By the time of Lucas Legal, some farmers and other stakeholders had become convinced that licenses could be in their favor, too. The two-pronged approach of 1) depoliticizing the issue by emphasizing the role of technology, and 2) simultaneously promoting the project as a way to legitimize farm activities, instead of limiting them was unsuccessful with landowners when the de Oliveira administration used it to market its SLAPR program. However, the same approach has had much better success as a feature of the Lucas Legal project

narrative. The question is: how and why did farmers and landowners come to have this shift in perspective? Is it due to differences in the two projects, and if so, which ones? Or did the outlook on environmental conservation and licensing of the farmers and landowners in Mato Grosso really undergo such a dramatic change in the seven years between the implementation of SLAPR and the implementation of Lucas Legal and the ten years between the implementation of SLAPR and the implementation of Mato Grosso Legal that similar policies shifted from highly unpalatable to tolerable, or even desirable, in their view?

CHAPTER V – THE SOYBEAN ECONOMY IN LUCAS

The cultivation and processing of soybeans is the principal economic activity in Lucas and was an early, key factor in the settlement and development of the municipality. Soybeans were produced in the South of Brazil prior to their expansion northward and westward beginning in the 1970s, and many of the farmers who eventually settled in Lucas had experience farming soybeans and other row crops in the South. This chapter will first describe the history and nature of the soybean industry (and industrial agriculture more broadly) in the Amazon-Cerrado, in Mato Grosso, and in Lucas. Then it will describe a series of crises that shook the sector in the mid-2000s, as well as the responses to these crises by various actor groups. Finally, it will examine how the unfolding of the crisis events and the disjointed and incomplete nature of the state's responses to them help contextualize the emergence of Lucas Legal shortly thereafter.

This chapter continues the task begun by previous chapters of constructing a historical framing of the emergence of the specific scenario that produced the Lucas Legal project, and more broadly, the highly industrialized agriculture in Lucas. A combination of secondary literature review, primary documents such as newspaper articles and archival sources, and agricultural census data are used.

Early soybean production in Brazil

Before the soybean “boom” began in the 1970s, soybean production in Brazil faced a number of significant hurdles. Soybeans have been grown in Brazil since the early 20th century, but, until the 1940s, they served primarily as a forage crop. In the 1940s, a handful of foreign companies (Anderson Clayton (US), Sanbra (Argentina) and Matarazzo (Italy)) entered the Brazilian market to develop the domestic vegetable oil industry.³⁶⁶ Thanks to the marketing efforts of these companies, vegetable oil, and specifically soya oil, slowly became a mainstay in Brazilian kitchens.³⁶⁷ Prior to this, Brazilians had relied on lard, coconut fat and tallow for cooking. Brazilian export soybeans and soy products only took off in earnest after the conclusion of World War II.³⁶⁸

Given this early growth in domestic and international opportunities for a Brazilian soybean market, beginning in the 1960s, the Brazilian government began to encourage wheat farmers in the south of Brazil to alternate the planting of wheat in the winter with the planting of soy in the summer in an effort to bolster the profitability of wheat production. Brazilian farmers were slow to warm to soybeans due to their exoticness.³⁶⁹ The failure of the wheat crop in 1972 and rapidly increasing prices for soy on world markets finally convinced Brazilian farmers of the

³⁶⁶ Hasse, *O Brasil da Soja: Abrindo Fronteiras, Semando Cidades*: 199.

³⁶⁷ Ibid.

³⁶⁸ Ibid., 200.

³⁶⁹ Apparently, Brazilians had not even settled on the appropriate gender for the word *soja* (soybean) in Portuguese as of the early 1970s, and even major magazine articles on the curious new crop vacillated between assigning a masculine and a feminine gender to the word. Eventually, the feminine gender was selected. Ibid., 218.

value of soy.³⁷⁰ Stories abounded of farmers who had made their fortunes growing soybeans.

Soon, another major change came to Brazilian agriculture -- the settlement of the Amazon-Cerrado. Though the reasons for frontier expansion and extension starting in the 1970s were diverse [this is discussed in greater detail in Chapter 3], rapid expansion in soybean production in Brazil in the 1970s was both a driver and an effect of this process. Land prices in the South quickly rose as the market for soybeans and soybean products developed both domestically and abroad; as farmers began to realize the potential for making quick money growing soybeans; and as governments and cooperatives provided incentives and facilitated the planting of soybeans, both on new lands and at the expense of other crops.³⁷¹ This put a lot of pressure on less well-capitalized farmers, many of whom eventually moved north and west to settlements in the Amazon-Cerrado.

At first, soybean farming was not possible in the Amazon or the Cerrado. The principal reason is that the soil is highly acidic, though some soils can be made suitable for agricultural production. To become suitable for agriculture, these oxisols (or *latossolos* in Portuguese) require the addition of lime, which is mined throughout the region, to reduce the acidity and fertilizers to improve fertility. Additionally, farmers have traditionally grown rice on new lands for about three years to prepare Amazon-Cerrado soils for the production of other crops. Secondly, soybeans are

³⁷⁰ Ibid.; Warnken, *The Development and Growth of the Soybean Industry in Brazil*: 15-16.

³⁷¹ Hasse, *O Brasil da Soja: Abrindo Fronteiras, Semando Cidades*: 219-20; Warnken, *The Development and Growth of the Soybean Industry in Brazil*: 10.

temperate crops, and so traditional varieties had to be selectively modified to grow in the tropical sun and under the relatively shorter daylight hours of the tropical soy growing season.³⁷² Present-day productivity and profitability of soybean production in the Amazon-Cerrado would not have been possible without significant research on the part of government agencies like EMBRAPA,³⁷³ as well as private companies and farmers who experimented with different varieties.

Present day soybean production in Brazil

In 1960, Brazil planted only 171,000 ha of soybeans, and 92 percent of the crop was grown in Rio Grande do Sul.³⁷⁴ By 1981, the year Lucas was “officially” settled as part of an INCRA project, about 8 million ha of soybeans were being planted in Brazil, with the majority of these still being produced in the South: 71.5 percent of Brazilian of the soybean-growing area being in Rio Grande do Sul and Paraná, 12 percent in São Paulo and Santa Catarina,³⁷⁵ and 10.5 percent in Mato Grosso and Mato Grosso do Sul.³⁷⁶ Today, nearly 24 million ha of soybeans are

³⁷² Sergio Schlesinger, "O grão que cresceu demais: A soja e seus impactos sobre a sociedade e o meio ambiental," (FASE, 2006), 7.

³⁷³ Ibid.

³⁷⁴ Soskin, *Non-traditional Agriculture and Economic Development: The Brazilian Soybean Expansion, 1964-1982*: 4.

³⁷⁵ The other southern state, Santa Catarina, had few soybeans because it is more mountainous and, so, more difficult to develop for mechanized agriculture, of which most soybean farming is. Santa Catarina was also targeted by the national government for the development of non-agricultural industries, like manufacturing, which remains an important part of the Santa Catarina economy today.

³⁷⁶ Soskin, *Non-traditional Agriculture and Economic Development: The Brazilian Soybean Expansion, 1964-1982*: 4.

planted in Brazil. About 40 percent of this area is in the states of the Center-West (Mato Grosso, Mato Grosso do Sul and Goiás).³⁷⁷

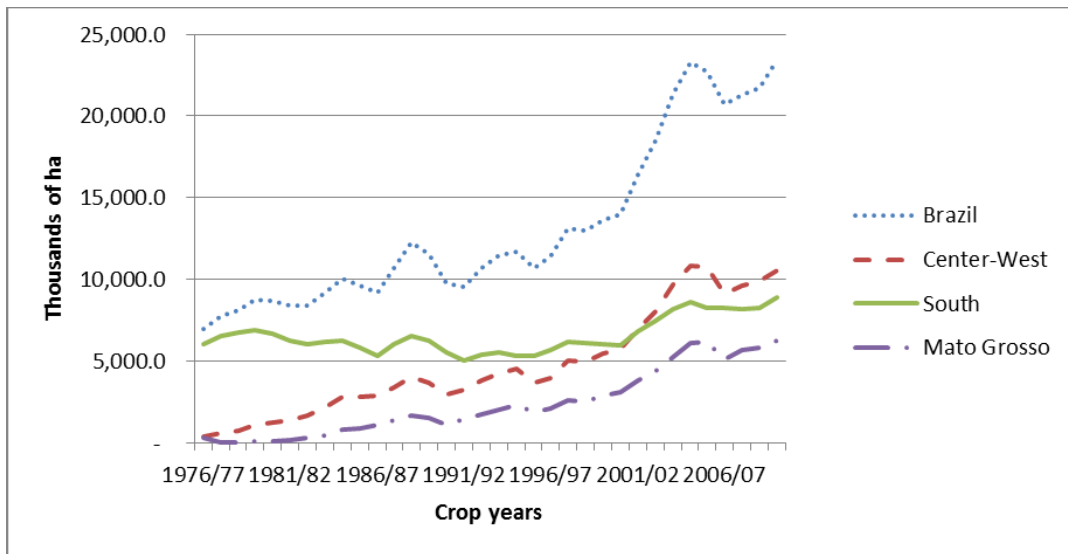


Figure 6. Soybean expansion in Brazil, major soy producing regions, and Mato Grosso, Source: CONAB

³⁷⁷ Companhia Nacional de Abastecimento [CONAB], "Soja-Brasil, Série Histórica de Área Plantada," (2012).

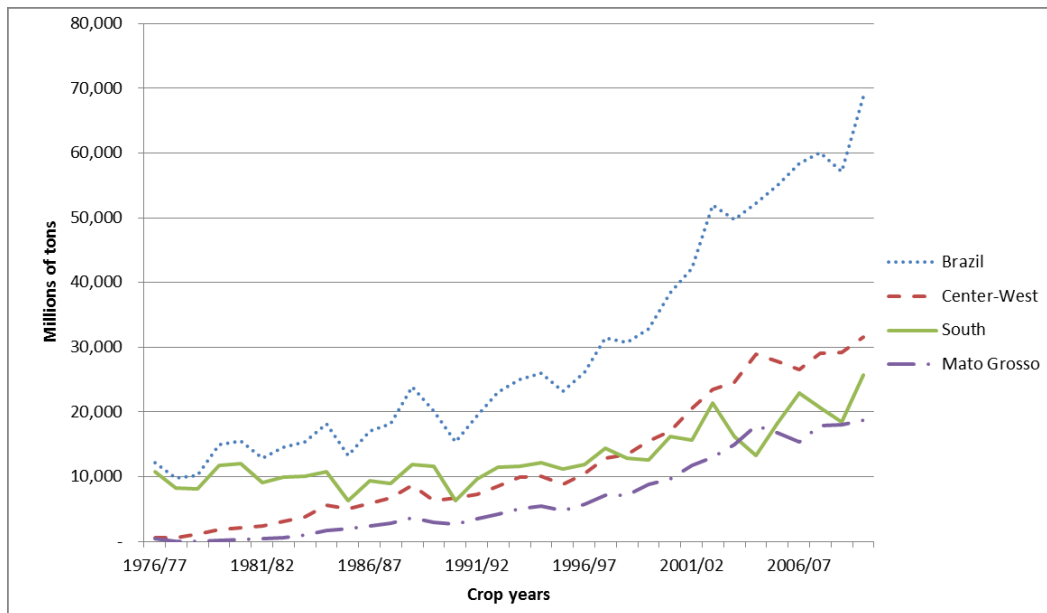


Figure 7. Production of soy in Brazil, major soy producing regions, and Mato Grosso, Source: CONAB

As shown in Figure 6, the area devoted to soybean production has expanded rapidly in Brazil as a whole, as well as in the present major soybean producing regions, the Center-West and the South (Paraná, Santa Catarina and Rio Grande do Sul), though the area being planted with soy in the South has increased less rapidly than in the Center-West. Production has also expanded considerably throughout Brazil (Figure 7). Figure 8 shows the geographic extent of soybean production in Brazil as of the most recent agricultural census in 2006.

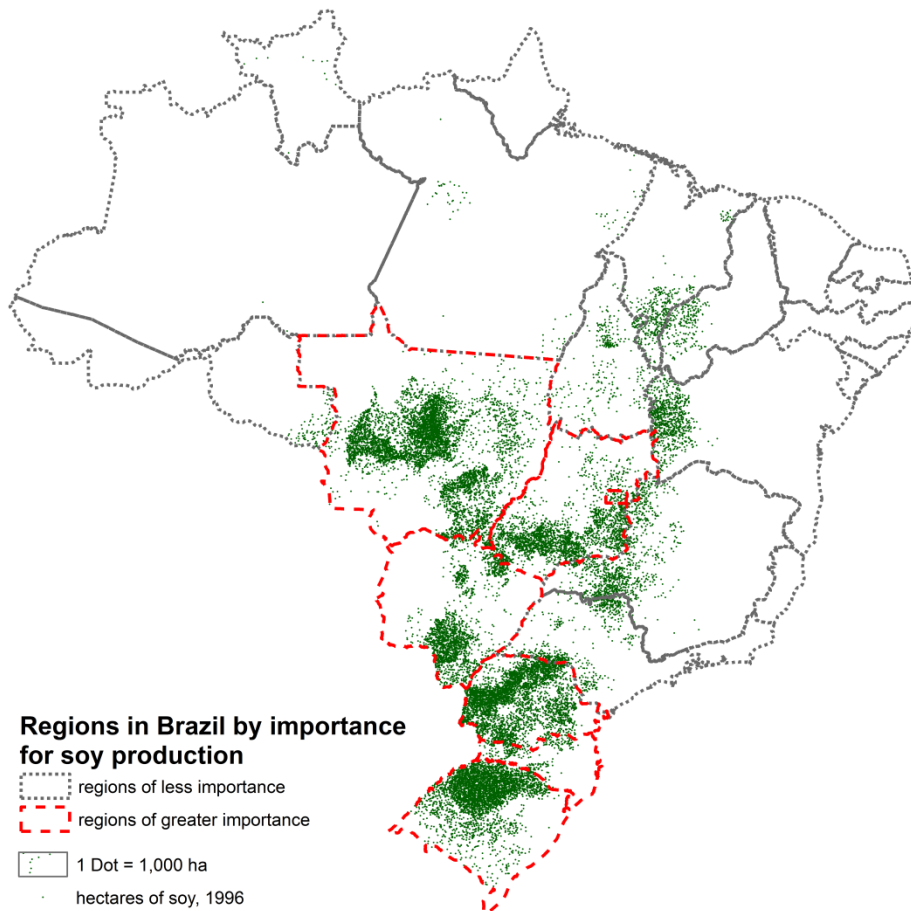


Figure 8. Extent of soybean production in Brazil, 2006, Source: IBGE

Industrial Agriculture in Lucas

When the first settlers in present-day Lucas arrived at the end of the 1970s, the area was decidedly not conducive to productive agriculture, much less the profitable, industrial-scale agriculture described above. The area was covered with Cerrado vegetation and, in many places, it was quite ‘heavy’ Cerrado (dominated by trees and shrubs as much as or more than grasses), which made the work of clearing the land and planting difficult. INCRA itself said as much; official documents note that the soil in Lucas “is poor in natural nutrients,” but that rice, corn, manioc and soy could be profitably grown there as long as it is “adequately treated with correctives and fertilizers.”³⁷⁸ Looking back on those years, one of the municipality’s pioneers put it thusly: “there were so many difficulties: the land was poor, we planted, but it hardly produced, because it [the land] needed correction.”³⁷⁹ Many settlers report that they realized early on that Lucas could be a promising region for soy if they just learned to correct the soil, learn to work in the harsh conditions of the cerrado, and adapt to a strange, new climate defined by oppressive heat and daily rains for half the year and almost no precipitation the other half of the year.³⁸⁰

Because Lucas was primarily settled by families with little or no capital, the work of clearing the native vegetation and preparing the land for agriculture was particularly difficult, as most settlers did not have tractors or even trucks, and had to

³⁷⁸ Castro et al., *A Colinzação Oficial em Mato Grosso : "a nata e a borra da sociedade"*: 95.

³⁷⁹ "Um Sonho Feito de Dificuldades, Trabalho, Superação e Esperança," *Folha Verde*, 1 August 2008.

³⁸⁰ Rocha, ""A Trama do Drama": A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT," 117.

either hire the clearing out at exorbitant fees or do it by hand.³⁸¹ Many settlers left within two or three years because they could not adequately feed their families on this land with so few resources. It was not until around 1984 that farmers in Lucas first began to plant soy, after they had first prepared the soil, having eked out little more than their subsistence growing rice for a few years. Most families only survived in Lucas if they had enough kids to work in another city and send them money for the first few years.

Besides the poor quality of the soil for agricultural purposes, early farmers in Lucas faced the challenge of not having varieties of soybeans and other temperate crops adapted to the tropical climate of the Cerrado. The state did not provide assistance of this type; the nearest EMBRAPA office was hundreds of kilometers away in Dourados – Mato Grosso do Sul,³⁸² which has a completely different climate, soil profile, and ecology than the tropical Cerrado of northern Mato Grosso. Pioneers in Lucas frequently relate that they themselves were responsible for breeding the first varieties of soy that were viable to plant there. In fact, the apparent lack of effort on the part of the government to develop cultivars of soy and other crops for the tropical climate during this time remains a point of contention in Lucas and in northern Mato Grosso in general even today, and contributes to the sense of independence from and disavowal of the state, especially the federal government, that is characteristic of farmers' and local leaders' rhetoric.

³⁸¹ Zart, "Desencanto na Nova Terra. Assentamento no Município de Lucas do Rio Verde-MT na Década de 80."

³⁸² Fundação Rio Verde, "Nossa História," <http://www.fundacaorioverde.com.br/secao.php?secao=historia>.

Finally, after years of struggle, by 1984, farmers in Lucas were planting soybeans. The local cooperative, COOPERLUCAS, was an important early supporter of local efforts to produce soybeans at a commercial scale. The cooperative's efforts received a major boost in 1985 when Lucas was selected for participation in PRODECER II, a Nipo-Brazilian partnership with the objective of promoting agricultural development in the Cerrado via cooperative organization and resource distribution. PRODECER resources helped COOPERLUCAS construct silos, granaries, farm machinery, offices, and technology and resources for researching soy cultivars for the Cerrado,³⁸³ as well as planned for the settlement of up to 40 new farmers who were to be 'pre-screened' for their "entrepreneurial spirit.,"³⁸⁴ though in the end, only a handful of farmers arrived in Lucas through this program. In total, the budget for PRODECER's projects in Lucas was nearly \$20 million dollars.³⁸⁵

³⁸³ Rocha, "'A Trama do Drama': A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT," 113.

³⁸⁴ Huber, *Tempestade no Cerrado*: 219 & 30; Rocha, "'A Trama do Drama': A Trama das Fronteiras e o Drama dos Migrantes nas Configurações do Desenvolvimento de Lucas do Rio Verde - MT," 113.

³⁸⁵ Huber, *Tempestade no Cerrado*: 219 & 30.



Figure 9. Rio Verde Foundation's first test field in 1981, Source: Fundacaorioverde.com.br



Figure 10. The author in front of the Rio Verde Foundation sign, Oct. 2011, Source: Éverton Ventura

Producers in Lucas and surrounding municipalities also organized separately from the activities of the cooperative and started the Rio Verde Foundation for the Support of Research and Integrated Development (*Fundação de Apoio a Pesquisa e Desenvolvimento Integrado Rio Verde*), known today as the Rio Verde Foundation (*Fundação Rio Verde*). The Foundation's first efforts were a complete survey of the soils of the region and the creation of test fields for rice cultivars (Figure 9).³⁸⁶ Eventually, the scope of the Foundation's research activities expanded to include other crops, including soy and corn, as well as cotton and wheat. EMPAER (Mato Grossense Firm for Research, Assistance, and Rural Extension/*Empresa Mato-grossense de Pesquisa, Assistência, e Extensão Rural*) and EMBRAPA, as well as the Rural Credit Union (SICRED) and several national and multi-national agricultural firms became partners with the Foundation by the beginning of 2000 (Figure 10).

Years of personal, state, and cooperative investments of time, money, and sweat have paid off in Lucas. Today, Lucas is one of the most productive agricultural municipalities in Brazil, if not the world. According to the municipal government's website, the municipality produces a full 1 percent of the total amount of grains produced in Brazil, while occupying only 0.4 percent of the national territory (Figure 10 and Figure 11).³⁸⁷ The main crops produced in the municipality are soybeans (typically grown from November to March) and corn (typically grown as *safrinha* (little crop, or second crop) from March to June). Cotton, beans and rice are also

³⁸⁶ Fundação Rio Verde, "Nossa História".

³⁸⁷ Prefeitura de Lucas do Rio Verde, "Economia Fortalecida," <http://www.lucasdoriorverde.mt.gov.br/economia.asp>.

produced. Some farmers produce coconuts, wheat, and other non-traditional crops as supplements to the main crops, though the economic impact of these alternate crops is insignificant at the municipal level.

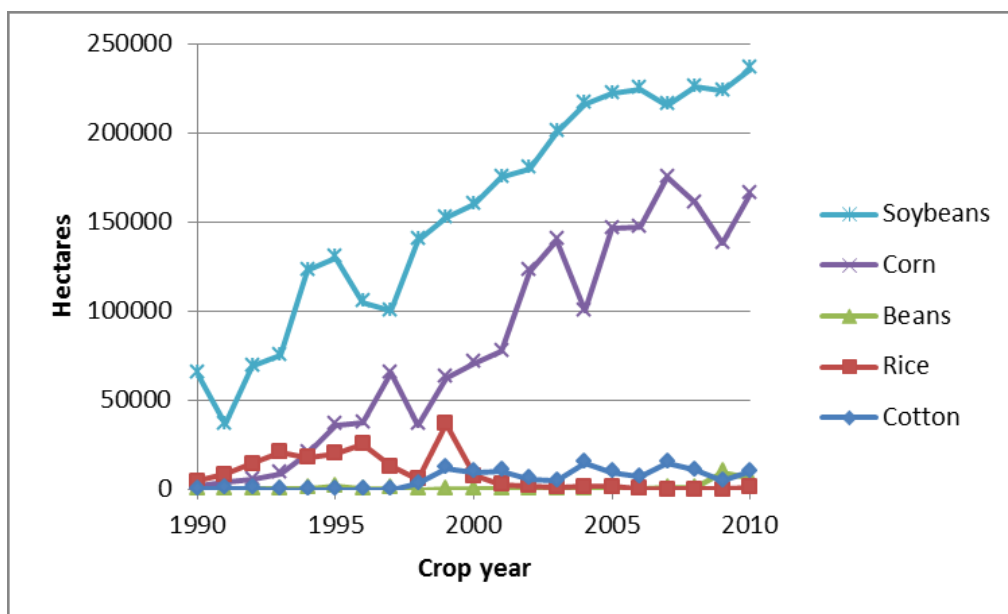


Figure 11. Area planted of principal crops, 1990-2010, Lucas do Rio Verde – MT, Source: IBGE - Produção Agrícola Municipal

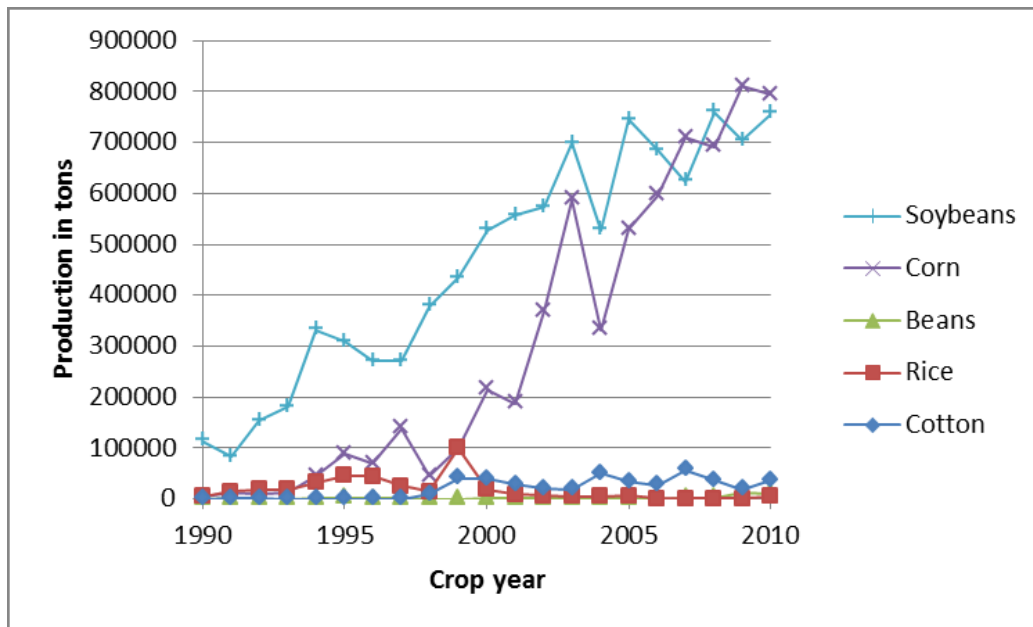


Figure 12. Total production of principal crops over time, 1990-2010, Lucas do Rio Verde – MT, Source: IBGE - Produção Agrícola Municipal

Present-day agriculture in Lucas is overwhelmingly industrial, and properties are fairly large. The median property size in Lucas in 1996 was between 201 and 500 ha, while in the state of Mato Grosso as a whole, the median size was between 51 and 100 ha (Figure 13 **Error! Reference source not found.**). Even when you remove properties of less than 100 ha from consideration to consider only properties large enough to be likely to be used for commercial scale agriculture or ranching, median property size in Lucas is larger than the average in Mato Grosso (501 – 1000 ha range in Lucas compared to 201 – 500 ha range in Mato Grosso as a whole).

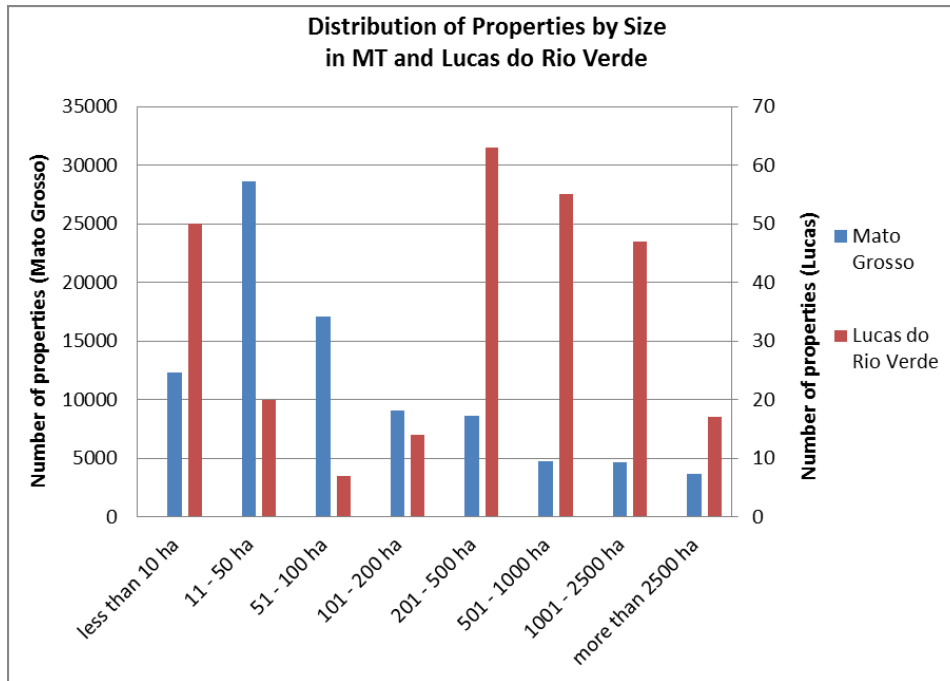


Figure 13. Distribution of properties by size in MT and Lucas do Rio Verde, Source: IBGE, compiled by author

The municipality is generally not affected by the issues related to land tenure insecurity common to other parts of Brazil because land titling in Lucas is highly secure. As of the 2006 Agricultural Census, only 23 out of 273 rural establishments had less than secure title, and these were all small properties (one property between 51 and 100 ha, and the rest less than 10 ha).³⁸⁸ These few cases of insecure land tenure in Lucas are easily explainable; except in one case, the owners of properties with insecure title had been on their properties for less than 5 years. Most farmers are own and operate their land themselves, with only a few relying on hired managers or renting out their land completely.

³⁸⁸ Instituto Brasileiro de Geografia e Estatística [IBGE], "SIDRA (Sistema IBGE de Recuperação Automática). Censo Agropecuário (Agricultural Census) 1996 and 2006.," (Available from <http://www.sidra.ibge.gov.br/>, last viewed January 20, 2012, 2012).

Diversification, reduction of distance, and vertical integration

A pro-development coalition has undertaken various projects in Lucas, all of which have been closely linked to an umbrella project of making Lucas into a center for agro-industrial activity at all levels on the production end of the commodity chain, from growing soybeans, corn and soy to processing these products into animal feed, to raising poultry and livestock, to processing these animals.

Lucas is in many ways very well situated geographically for the development of industrial-agriculture activities. It is located on a major highway (BR-163, or the Cuiabá-Santarém), has ample water supplies in the form of rivers, streams and springs, has a predictable rainy season and well-drained soils, and crucially, its vegetation is classified as Cerrado so most properties in Lucas are only required to have 35 percent of their property under native vegetation (as opposed to up to 80 percent in the Amazon forest biome). Farmers are able to plant two crops per year – soybeans and corn—(or three with the help of irrigation), and highly productive tropical varieties of soybeans and corn have been developed. Current soy yields in Lucas average from 55 to 58 sacks per hectare (3,300 to 3,480 kg/ha), with potential for even higher yields depending on the variety and planting strategies (Figure 14). Corn yields may reach nearly 90 sacks per hectare.

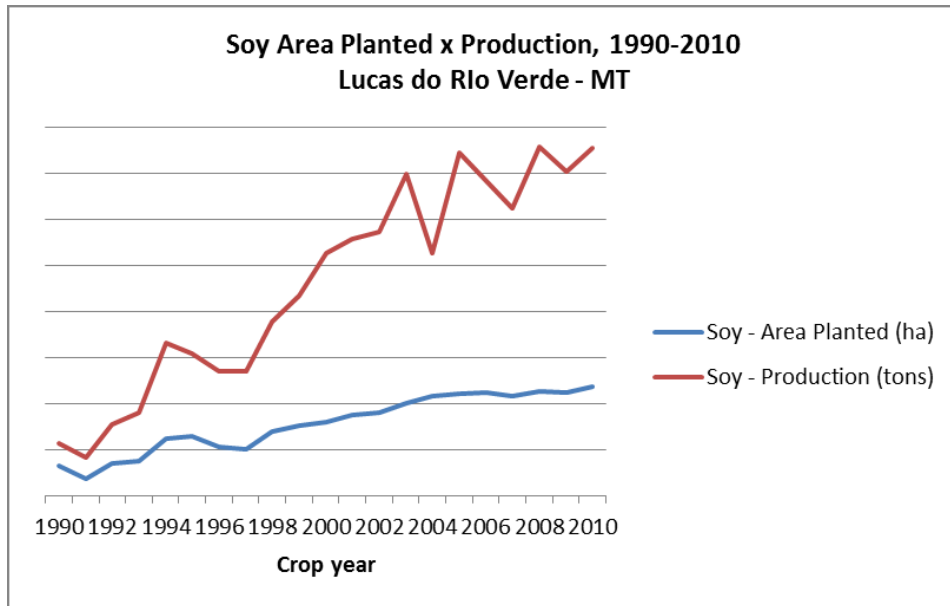


Figure 14. Soy area planted compared with production, 1990-2010, Lucas do Rio Verde, Source: IBGE - Produção Agrícola Municipal

Industrial-scale agricultural production in central Mato Grosso, though, has significant challenges that are extremely expensive and difficult to surmount. The most important of these is the physical isolation of Lucas from major population centers in Brazil and from ports that ship products to overseas markets (Figure 15). Lucas is situated on a federal highway that leads to Santarém, Pará, a port city on the Amazon River, but much of this road is still unpaved, making it impassable for soy trucks for much of the year. The road is currently being paved, a process that is expected to be completed in 2012. Until the pavement is completed, soy, corn, and other products must travel south to Porto de Paranaguá in the state of Paraná, more than 2,000 km by truck from Lucas. Once the trucks arrive, they often face long waits

to unload, as the line to unload can stretch dozens of kilometers, due to the high volume of soy that must pass through the port and the outdated infrastructure at the port. The considerable costs of this transport are ultimately paid by the producer, who can receive up to 5 dollars less per sack of soy in Lucas as a farmer near the port in Paraná would receive for the same soy.

Producers, political leaders and business elites in Lucas (categories which are not mutually exclusive) and other municipalities along the route, as well as state leaders in Mato Grosso and Pará, have lobbied extensively for pavement and improvements to the road for years, but misdirection of funds and challenges from environmental groups have been among the factors delaying the project.³⁸⁹ The journey to Santarém is 1,400 km from Lucas, and the paved road will only be two lanes in most places, meaning that this shorter journey to port will still not exactly be short and freight costs for products out of Lucas will likely always be high.

³⁸⁹ Fearnside, "Brazil's Cuiabá-Santarém (BR-163) Highway: The Environmental Cost of Paving a Soybean Corridor Through the Amazon," 608-12.



Figure 15: Grain transportation by truck on BR-163 in Lucas

To this end, local leaders and elites have embarked on an elaborate process to, to some extent, bring the market home for themselves. Until recently, most Lucas soybeans were sold whole and exported to China, Europe, and the Middle East, where they were then crushed and processed. In 2008, a soy crush facility was installed in Lucas. Now soybeans and other commercial crops in Lucas can be put through a crush process that extracts the oil from the seeds for use in vegetable oils, biofuels or other industrial processes and separates the husks for use in animal feed, including for cattle, poultry and swine, all of which create new economic opportunities for the agriculture sector in Lucas. The facility is an installation by the Grupo Amaggi, a

major soybean buying firm owned by the former governor of Mato Grosso (2003-2010) and Senator (2011-present), Blairo Maggi, who is also the world's largest soybean producer. The superintendent of the Amaggi facility in Lucas was frank that the facility's construction was also related to other efforts being made in Lucas to extend the "vertical" reach of the local agriculture sector: "The decision for the construction of this facility is due to the new economic outlook that is also being built in the municipality, in which more value will be added to the product via industrialization."³⁹⁰

The installation of the crusher was just one part of a local scheme to integrate industrialization processes and other agricultural activities to the production of grains. The crusher is part of a large industrial complex constructed on the outskirts of the city with the express purpose of attracting national and international firms to operate in a coordinated manner at locations on the production chain and in concert with local business. The firms that make up the industrial complex and their relationships are shown in Figure 16 below.

³⁹⁰ Só Notícias, "Lucas R. Verde: Esmagadora de Soja Operará em Maio," *Notícias*, 25 October 2008., emphasis mine.

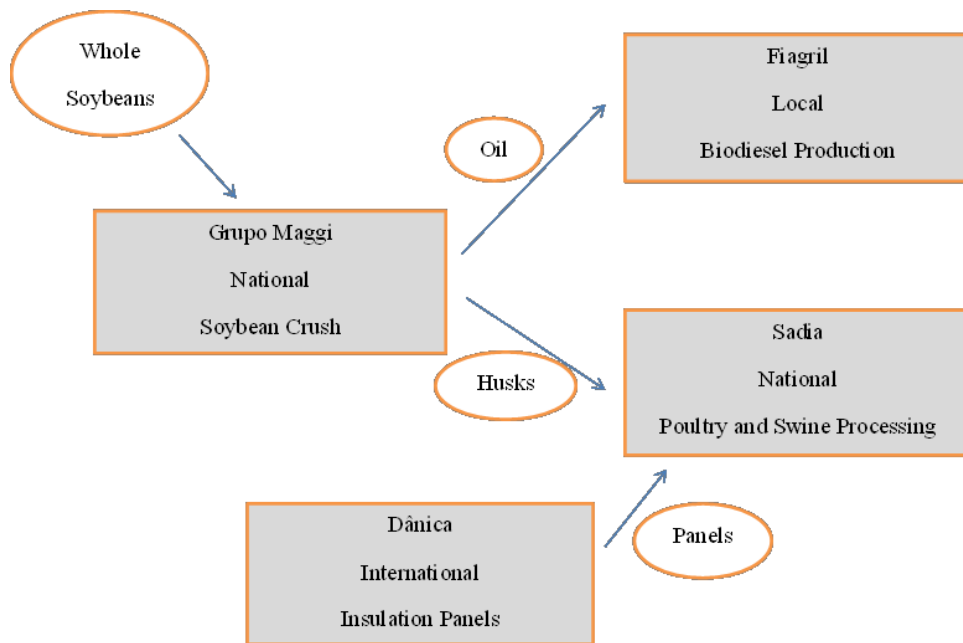


Figure 16. Schema of major Firms operating at Complexo Industrial Senador Atilio Fontana

Products travelling among the firms do not generally even need to be loaded onto trucks or trailers; pipe lines and conveyer belts connect the firms. Firms were offered incentives to buy into the complex, including subsidized land with “all of the necessary infrastructure” and guaranteed access to subsidized energy and water.³⁹¹ Prior to this, construction of a 28 megawatt power station on the Rio Verde in Lucas, financed by the Brazilian Development Bank (*Banco Nacional de Desenvolvimento Econômico e Social* – BNDES), began in 2005 and was completed in 2007, just before the Amaggi facility was installed. It should also be noted that one of the

³⁹¹ Prefeitura de Lucas do Rio Verde, "Economia Fortalecida".

companies that installed a facility in the industrial complex, Fiagril, is owned and operated by the mayor of Lucas, Marino Franz, and his two brothers.

Stated goals of the municipal government include promoting “vertical integration” of the local economy, becoming a local center for “big business,” and having a “strong presence in regional and national levels” of production.³⁹² In 2006, Sadia S/A (now part of Brazil Foods, Inc.) began construction on a massive slaughterhouse in the Industrial Complex of Lucas. The facility is capable of processing 375,000 chickens and 5,000 swine per day.

The presence of Sadia in Lucas, like that of Amaggi, can be directly tied to the efforts of local business and political elites to promote development in their municipality. In 2005, a group of local business elites in Lucas approached Sadia about installing a facility in Lucas. These elites, themselves major local producers, were searching for a way to avoid paying freight costs for their grains. Initially, Sadia was not interested. Undeterred, the group (including the brothers Franz, one of whom is the current mayor of Lucas) formed their own business, called Grupo EMA, and set about the process of securing permits and contracts to process poultry in Lucas. There is reason to believe that the Grupo EMA never intended to open a slaughterhouse, but instead only wanted to facilitate the entry of Sadia. The Grupo EMA project never grew larger than a small building with a few computers in it, and none of the owners of the project had ever been involved in working in or running a slaughterhouse. In the end, this did not matter. One of Sadia’s national competitors – Perdigão – opened

³⁹² Prefeitura Municipal de Lucas do Rio Verde, "Lucas do Rio Verde: Cenário de Oportunidades," ed. Prefeitura Municipal de Lucas do Rio Verde (Lucas do Rio Verde 2010?).

a large facility in a neighboring municipality in 2005. Within days, Sadia bought out Grupo EMA and began plans for a slaughterhouse in Lucas. In 2009, Perdigão and Sadia merged to form Brasil Foods, Inc.

During the 2000s, a host of other multinational companies in the industrial agriculture sector opened branches or franchises in Lucas. These include John Deere, New Holland, Case, Dow Chemicals, Bayer, Bunge, Cargill and Archer Daniels Midland. Many smaller firms are present as well. Together, firms and producers have invested heavily in non-transferrable assets in terms of land improvements, buildings, roads, and other infrastructure.

Emergent environmentalism in Southern Amazon industrial agriculture

Industrial scale agriculture, ranching, and other extractive activities are expanding rapidly not just in Lucas, but in the Amazon as a whole. Agricultural exports make up 40 percent of Brazil's trade surplus, and the country's agricultural sector as a whole contributes to 25 percent of the country's gross domestic product (GDP).³⁹³ Much of the recent growth in agricultural production comes from Brazil's Amazon region, where production has jumped from 5.6 percent of national totals to 24.4 percent since 1977.³⁹⁴ Brazil is a major producer and exporter of soybeans, second only to the United States; in 2009, it produced 25 percent of the world's

³⁹³ Luiz A. Martinelli et al., "Agriculture in Brazil: impacts, costs, and opportunities for a sustainable future," *Current Opinion in Environmental Sustainability* 2(2010).

³⁹⁴ Companhia Nacional de Abastecimento [CONAB], "Milho total (1a e 2a safra) - Brazil; série histórica de área plantada," (2010).

soybean crop.³⁹⁵ Of the Amazonian states, Mato Grosso continues to be by far the most productive, representing 26.8 percent of total production of soybean production in the 2008/2009 harvest.³⁹⁶

Some of this agricultural expansion is still occurring at the expense of environmental objectives as enforcement and licensing on the ground race to catch up with promises being made at the national and state levels. Deforestation rates have fallen in recent years (down from 27,770km²/year in 2004), but remain significant (estimated 6,451km²/year in 2010).³⁹⁷ These environmental gains, while laudable, may be misleading, as conversion of the Cerrado biome is not included in “deforestation” tallies by INPE.³⁹⁸

Conversion of the two main biomes inside the Legal Amazon, the Cerrado and the humid tropical rainforest, to soybeans and sugar cane for biofuel production has been shown to create a “carbon debt” that will take decades to repay.³⁹⁹ Amazon transformation may cause the release of between 15 and 32 billion tons of carbon by 2050 (or 1.5 – 3.2 decades worth of total anthropogenic carbon emissions based on the 2008 rate), depending on measures taken by markets and the Brazilian

³⁹⁵ Food and Agriculture Organization of the United Nations [FAO], "Brazil," in *Monitoring progress towards hunger reduction targets of the World Food Summit (WFS) and the Millenium Development Goals (MDG)* (Food and Agriculture Organization of the United Nations, Statistics Division, 2008).

³⁹⁶ Companhia Nacional de Abastecimento [CONAB], "Milho total (1a e 2a safra) - Brazil; série histórica de área plantada."

³⁹⁷ PRODES and Instituto Nacional de Pesquisas Espaciais [INPE], "Taxas Annuais do Desmatamento - 1988 até 2011," (Brasilia, Brazil2011).

³⁹⁸ Philip M. Fearnside, "Deforestation control in Mato Grosso: A new model for slowing the loss of Brazil's Amazon forest," *Ambio* 32, no. 5 (2008).

³⁹⁹ Joseph Fargione et al., "Land Clearing and the Biofuel Carbon Debt," *Science* 319, no. 1235 (2008).

government.⁴⁰⁰ The availability of local water resources may also be threatened.⁴⁰¹ The environmental consequences of these changes will be felt globally, but the more immediate effects will be noted locally, particularly reductions in precipitation.⁴⁰² Such changes represent eventual but very real threats to the livelihoods of local residents of “neo-liberal agricultural frontiers” and “agro-cities” in the Legal Amazon, giving them a strong stake in the outcomes of environmental and agro-industrial changes in the region.⁴⁰³

Pressure from domestic and international academics, politicians, pop stars, NGOs and indigenous groups have called attention to these changes in the environment of the Amazon. As Brazil takes on a more prominent role on the world stage, pressure on political leaders in Brazil and on the businesses that operate in the Amazon to minimize environmental destruction and increase accountability for the actions of individuals and groups acting in the Amazon has increased. To this end, the Brazilian government has increased monitoring and enforcement of environmental laws, enacted transparency measures, and decentralized enforcement responsibility. At the same time, market pressures for ‘sustainable, ‘green’, or ‘traceable’ products have led to a number of private and/or NGO initiatives that either extend the work of the state or, in some cases, circumvent the state all together in fostering conservation

⁴⁰⁰ Britaldo Silveira Soares-Filho et al., "Modelling conservation in the Amazon basin," *Nature* 440, no. 23 (2006).

⁴⁰¹ Yadvinder Malhi et al., "Climate Change, Deforestation, and the Fate of the Amazon," *Science* 319(2008).

⁴⁰² Werth and Avissar, "The local and global effects of Amazon deforestation."

⁴⁰³ Brannstrom, "South America's Neoliberal Agricultural Frontiers: Places of Environmental Sacrifice or Conservation Opportunity?."; de Arruda, "As 'Agrocidades' e as Interfaces entre Mundo Rural e Urbano: Repercussões Sociospaciais do Agronegócio no Território Mato-grossense."

of forests, grasslands and other natural resources. In any case, there is now more interest than ever before on the part of the agricultural industry to improve its environmental practices in the Amazon. Thus, though considerable work remains to be done, in terms of meeting environmental goals in Brazil, there is reason to be optimistic. Furthermore, these advances are not coming at the expense of economic growth in Brazil or in Brazil's agricultural sector more specifically.

While lofty environmental goals set at the national level receive both laudatory attention and criticism, it is licensing and compliance programs at the state level, inter-agency agreements regarding enforcement jurisdiction, local governance climates, and local socio-economic situations and histories that most affect how and where conservation measures occur. The Amazon is a vast and remote place, and accessibility and a frontier culture of independence from and distrust of higher-level government officials are deeply ingrained in even the most integrated parts of it. At the same time, higher-level (federal, and to some extent, state) goals for conservation are often complex, changing, poorly communicated to the public, and known to be circumventable with bribes due to notoriously rampant corruption in the public sector. The importance of these factors is frequently discounted in discussions of conservation and exploration in the Amazon. Environmental regulation mechanisms were undergoing transformations and so was the economic and public climate for agricultural production in the Amazon.

In 2005, a downturn in market prices and the valuation of the real eroded producer profits. Inconveniently-timed and excessive rains supported the spread of

Asiatic rust and made harvests difficult or impossible. Roads were washed out and tractors and trailers engaged in the transport of soy were stuck or overturned. When this diverse set of bio-climatic, economic and extra-economic challenges manifested themselves simultaneously in 2006, producers and their allies mobilized to demand solutions from federal and state governments. Some assistance was eventually provided, but producers were disappointed in the scope of the assistance offered. A near-simultaneous assault on the reputation of the industry for environmental and social abuses posed further economic threats, particularly in terms of market access. To address this, powerful, non-governmental industry groups rapidly mobilized to address these charges by imposing a strong, but narrowly-focused ban on purchasing soybeans that had contributed to recent deforestation.

Grito de Ipiranga : A backlash against government policies

In 2006, the agriculture sector in Mato Grosso faced a crisis that can be traced to a complex set of contributing factors. An appreciating real and weak soybean prices meant negative returns on harvests for many producers.⁴⁰⁴ Asian soybean rust was wreaking havoc on fields, adding the cost of three or four applications of fungicide to producers' tabs in order to save the crops. Excessive rains in the 2004/05 planting season had left soybeans rotting in fields as trucks and tractors were unable to navigate flooded fields and the washed out dirt roads which comprise not only the

⁴⁰⁴ Foreign Agriculture Service [FAS] United States Department of Agriculture [USDA], "Brazil: 2005/06 Soybean Area Projected to Decline," ed. Michael J. Shean (USDA, 2005).

transportation networks of the interior, but also state and federal highways (Figure 17). Federal funds for subsidized loans to banks and private-sector lenders such as agricultural trading firms and agrochemical dealers were delayed and credit outlays were restricted due to overdue payments and defaults from previous years' loans, thereby compounding financial problems for all producers dependent on loans.⁴⁰⁵



Figure 17. A flooded soybean field in Lucas in 2006, Source: Municipal Archive - Lucas do Rio Verde

⁴⁰⁵ Ibid.

In order to express their dissatisfaction with the perceived-lack of support from the federal government, a block of producers, with the support of several industry organizations, civil society organizations, and soy buyer firms, mobilized and staged a protest under the name of the “*Grito de Ipiranga*,” or “Shout of Ipiranga”⁴⁰⁶ in April of 2006. Producers alleged that the nation relied heavily on the agriculture sector for food supplies and foreign exchange, but lacked adequate policies and institutions to mitigate the hardships periodically faced by producers in the volatile global markets for primary agricultural products. The producers blockaded highways and silos against the transport of grains in several cities, and threatened to extend their blockade to halt bus and car traffic if their demands were not met (Figure 18). In some cities, tractors were set ablaze on the highway (Figure 19).

⁴⁰⁶ This is a play on the name of the city in the north of Mato Grosso, Ipiranga do Norte, and the September 7, 1822 declaration of Independence from Portugal voiced by Pedro I on the Ipiranga River, which is also known as the Grito de Ipiranga.



Figure 18. Grito de Ipiranga protest in Lucas, Source: Municipal Archive: Lucas do Rio Verde



Figure 19. A tractor burns on BR-163 during a Grito de Ipiranga protest in Lucas, Source: Éverton Ventura

Though the roots of the crisis were diverse, the president of the Federation of Agriculture and Livestock of Mato Grosso (*Federação da Agricultura e Pecuária de Mato Grosso – Famato*) framed the protest as an open threat to the federal government, proclaiming “[i]f the government does not meet our demands, we are still going to achieve one thing: we will cause discomfort to the president of the Republic who opted in favor of the financial system in detriment to the producer class of Brazil.”⁴⁰⁷ The governor of Mato Grosso, Blairo Maggi, himself a major producer, took the message to heart and visited many of the cities that participated in the protest, including Lucas do Rio Verde. He also personally relayed the message of the Grito regarding the direness of the situation faced by the agricultural sector to Brazilian President Luis Ignacio da Silva (known popularly as Lula), in a meeting convened with the president and the governors of the 13 so-called agricultural states. Asked about the meeting, Maggi was blunt: “[w]ithout agriculture, and without ranching, the [agricultural] states do not exist. We are working on the political line and the producers are there to convince society...And it is not a situation to play with, because agribusiness is responsible for 35 percent-37 percent of the wealth of Brazil.”⁴⁰⁸

⁴⁰⁷ Juliana Menezes, "Homero Pereira diz que Grito do Ipiranga vai extrapolar fronteiras de MT," *Portal do Agronegócio*, 5 February 2006 2006.

⁴⁰⁸ Fundação Meridional, "Governadores se reúnem com Lula dia 16 e cobram soluções para crise no agronegócio," *Fundação Meridional* 2005.

State and federal response and producer reception

The producers' demands for solutions to these problems were ambitious and diverse. They called for the dissolution of the Mato Grosso State Transport and Habitation Fund (*Fundo Estadual de Transporte e Habitação – Fethab*), the use of the Workers' Support Fund (*Fundo de Amparo ao Trabalhador – FAT*) to absolve producer debts to private-sector lenders, and a reduction in the state ICMS tax (*Imposto sobre Operações relativas à Circulação de Mercadorias e Prestação de Serviços de Transporte Interestadual e Intermunicipal e de Comunicação/Tax on Operations Relative to Circulation of Merchandise and Providing of Interstate and Inter-municipal Transport and of Communication*). They called for vaguely defined changes in enforcement of regulations related to their activities, improvements in infrastructure, and the emergence of an “agricultural politics” in the state and federal governments.⁴⁰⁹ They also called for the Ministry of Agriculture to declare Asian soybean rust as an epidemic, thereby freeing up federal resources for combatting it. Above all, they called for a change in policies related to the exchange rate. Economist Fábio Silveira told reporters, “[t]he principal driver of the crisis in agriculture is the exchange rate. The climatic problems, the plagues and the fall in international prices are contributing factors.”⁴¹⁰ Because the valuation of the real was thought to be the direct result of federal policy (and the state was actively pursuing

⁴⁰⁹ Tania Rauber, "Agriculturoes preparam bloqueio, declaram moratória e fecharão bancos em MT," *Reporter News*, 21 April 2006 2006.

⁴¹⁰ Patrícia Campos Mello, "Produtores de soja devem ter perdas de US\$1,1 bi," *OESP, Economia*(2006).

conventional neoliberal policies of economic management including targeted inflation and privileged surplus creation), it was clear that the producers blamed the federal government for the crisis. As one producer succinctly put it, “The [valuation of the real against the] dollar is a situation that the government created and needs to resolve.”⁴¹¹

The protest and periodic blockades went on for over a month, and appear to have been modestly persuasive at both the state and the federal levels. Fethab was not dissolved, but its funds were redirected toward paving roads, another of the producers’ concerns.⁴¹² FAT monies were freed up for refinancing of rural debts.⁴¹³ The Federal Government released a *Plano Safra* (Agricultural Plan) for 2006/07 that included 50 billion reais in credits for commercial agriculture, an increase of 13 percent over the previous year, and the opportunity for refinancing depending on the region and the product for which the loan had been offered.⁴¹⁴ In spite of these significant concessions, the producers were not impressed, mainly because of the limits placed on refinancing with government monies and because, unsurprisingly, no measures to correct or compensate for the valuation of the real were included. The president of the Confederation of Agriculture and Ranching of Brazil (Confederação

⁴¹¹ Ibid.

⁴¹² Rauber, "Agricultores preparam bloqueio, declaram moratória e fecharão bancos em MT."

⁴¹³ CaféPoint, "Dívidas serão refinanciadas com recursos do FAT," <http://www.cafepoint.com.br/cadeia-produtiva/giro-de-noticias/dividas-serao-refinanciadas-com-recursos-do-fat-33369n.aspx>.

⁴¹⁴ Roberto Samora, "Insatisfeito, agricultor avalia protesto e redução de plantio", *International Business Times Brasil*(2006), <http://br.ibtimes.com/articles/568/20060528/protesto.htm>.

da Agricultura e Pecuária do Brasil – CNA) called the plan an example of “governmental myopia” for not offering more extensive relief to the farmers.⁴¹⁵

Agriculture’s environmental turn: Greenpeace protests and the Soy Moratorium

At the same time as the events related to the Grito de Ipiranga were unfolding, the reputation with global consumers of commercial agriculture in the Amazon came under attack as the ENGO Greenpeace International launched a coordinated and pointed campaign against the soy industry in the Brazilian Amazon. In April of 2006, Greenpeace released a report entitled “Eating Up the Amazon” detailing social and environmental abuses related to the expansion of industrial-scale soy production in the Amazon.⁴¹⁶ On 19 May 2006, Greenpeace activists parked their ship, the “Arctic Sunrise”, at Cargill’s grain port in the Amazonian port city of Santarém, Pará and staged a public protest against the activities of the grain giant in the Amazon. They succeeded in stopping port operations for a short time, and the event garnered international attention for the environmentalists’ cause.⁴¹⁷ Starting with companies that buy beef and soy from the Amazon, such as McDonalds of Europe, this negative attention set off a chain-reaction of international market pressure for measures to improve traceability of soybeans. This pressure rapidly led to the creation of the Soy

⁴¹⁵ Ibid.

⁴¹⁶ Greenpeace, "Eating Up the Amazon," (Amsterdam: Greenpeace International, 2006).

⁴¹⁷ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance."; Greenpeace UK to Forests, 2006, www.greenpeace.org.uk/blog/forests/come-together.

Moratorium, a pledge by Brazil's vegetable oil industry association (ABIOVE) and grain exporters association (ANEC) to not trade soy grown on fields deforested within the "Amazon Biome" after the date of the agreement, 24 July 2006.⁴¹⁸ The Moratorium was signed into effect a mere two months after the protest in Santarém.

The Moratorium itself is inconsequential for most soy farmers in Mato Grosso, as the Cerrado Biome, secondary forest areas, pasture and already-cleared areas, which describe the vast majority of potential and current soy-growing areas in Mato Grosso, were not addressed by the Moratorium language. Still, the unfolding of the Moratorium was closely watched from Mato Grosso and pressure from international markets was keenly felt by producers there; after all, the exclusion of much of Mato Grosso (including most of Lucas) from the Amazon Biome, the entirety of Mato Grosso's inclusion in the administrative definition of the Amazon, and the "high-forest bias" of the Moratorium agreement are somewhat semantic,⁴¹⁹ and would be largely lost on global consumers. As the mayor of Lucas put it, "if someone was going to not buy or eat McDonalds because McDonalds is buying beef from Mato Grosso or from someone who is buying soy to turn into feed for the meat from Mato Grosso, well, that was really shocking."⁴²⁰

⁴¹⁸ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance."

⁴¹⁹ Hecht, "Soybeans, Development and Conservation on the Amazon Frontier," 397.

⁴²⁰ Interview with Mayor, 6 September 2011.

The efficacy of the ban and the benefits of it to soybean farmers and the environment are far from clear,⁴²¹ but the significance of the ease and forcefulness with which ABIOVE and ANEC moved to address the issue is difficult to overstate. Firms and other private industry organizations are highly motivated to protect their reputations with regard to social and environmental issues for fear of losing market access.⁴²² Political leaders and government agencies and institutions, on the other hand, may have a less direct incentive to address a single-sector crisis, may have other, more pressing priorities, and the multitude of institutions and agencies that must respond may hinder the speed and flexibility of government response.⁴²³ Indeed, in the case of the 2005/06 crisis, the state proved to be slow and partial in its reactions to (different elements of) a crisis, while the industry groups were able to present a solution to a different but also significant crisis (though this solution was also imperfect) within only two months, and this solution was also able to evolve over time as needed.⁴²⁴

The Moratorium was a swift and effective response to a crisis, as opposed to the set of government responses to the crises that spawned the Grito de Ipiranga protests, because its developers were largely unencumbered by the complex concerns and bureaucratic processes of government. The stakeholders in the Moratorium and

⁴²¹ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance."; Eugenio Y Arima et al., "Statistical confirmation of indirect land use change in the Brazilian Amazon," *Environmental Research Letters*, no. 6 (2011).

⁴²² Liverman, "Who Governs, at What Scale and at What Price? Geography, Environmental Governance, and the Commodification of Nature," 735.

⁴²³ Irma Adelman et al., "Institutional Change, Economic Development, and the Environment," *Ambio* 21, no. 1 (1992): 107-08.

⁴²⁴ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance."

the associated meetings of the Roundtable on Sustainable Soy included a cross-section of participants in the global market for commercial agriculture, including consumer, foreign government, academic, and civil society groups. No representatives of the Brazilian government were included as participants in the moratorium until two years after it was established.⁴²⁵ However, government institutions including the Forest Code Legal Reserve requirements and the definition of the Amazon Biome established by the Brazilian government were integral parts of the Moratorium agreement. In this way, Moratorium signatories benefitted from legitimacy lent to their agreement by incorporating longstanding governmental rules and goals – advocating for compliance with forest reserves required by a long standing federal law and beyond – without the bureaucratic constraints of the government.

The Moratorium may be seen as a sort of vigilante-style approach to the federal (governmental) Forest Code, which had previously been poorly enforced. Under the Moratorium, the forest code is to be complied with, and beyond that, there will be no new deforestation for soy production, even if that deforestation is “legal.” Thus, within an admittedly limited scope, an industry agreement quickly achieved compliance with a law that had eluded the state for decades. And yet, an institution like the Moratorium is an opportunity for self-regulation on the part of the firms that buy and trade soy from the Amazon. The government had ineffectively enforced its

⁴²⁵ Ibid.

own laws in the past;⁴²⁶ the Moratorium spares signatories the uncertainty of eventual effective enforcement. It may also bring other benefits like consumer preference and premium prices, though this is far from certain.⁴²⁷ It is also a formalization of the direct link between the soy that comes from the Amazon, the transnational companies that buy that soy, and the global markets where it the soy is sold.

In the Amazon, there is considerable distrust of upper-level government institutions based on decades of local dissatisfaction with government assistance, uncooperative agencies and uneven enforcement of outdated laws by state and federal governments.⁴²⁸ Moreover, because they are unencumbered by many of the trappings of a well-established bureaucracy in Brazil, non-governmental and corporate entities are much freer than government agencies to swiftly respond to changing circumstances. Producers were not enthusiastic about the Moratorium itself, as they were not represented in the negotiations and would ultimately bear the cost of implementing the agreement,⁴²⁹ but the establishment of the Moratorium outlined an alternate path to addressing some of the very real problems the industry faced.

⁴²⁶ Fearnside, "The Roles and Movements of Actors in the Deforestation of Brazilian Amazonia."

⁴²⁷ Rhett A. and Laurance Butler, William F., "New strategies for conserving tropical forests," *Trends in Ecology and Evolution* 23, no. 9 (2008): 470.

⁴²⁸ Emily Boyd, "Navigating Amazonia under uncertainty: past, present and future environmental governance," *Phil Trans R. Soc. B*, no. 363 (2008): 1911-12.

⁴²⁹ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance."

Industry response and producer reception

As the crises in 2006 evolved, soy trading firms and other industry groups organized around a common concern – maintaining continued market access for commercial agriculture products in the face of changing economic realities and increased global scrutiny over local production methods. They pursued strategies to this end within the resources available to them, including the appropriation of the legal restrictions on planting included in the Forest Code in a new marketing strategy – a public pledge to produce soy sustainably. Thus, the soybean industry of the Amazon made a play to flip the discourse and present itself as an environmentally sustainable option for soybeans and soybean products in Brazil. Soybean farmers were not included in the Soybean Working Group that administers the Moratorium, and most of the producers in the southern Amazon were unaffected by the Moratorium, but the events of 2006 proved to producers in Mato Grosso that they could not rely on the state to promote their interests, and so international industrial agriculture and its newfound friends in Big Environment began to look like a more appealing recourse for their problems.

At first, the apparently-muddled or unenthusiastic responses from the state to the demands of producers appears to be a consequence of the state being unable to fully accommodate the demands of the capitalist project as it becomes ever-more globalized. The price-fluctuations, currency valuation, bio-climatic problems and crisis-of-reputation issues faced by the producers could all be traced to national

policy, as well as global factors, and, yet, the federal state was evidently unable or unwilling to solve them.⁴³⁰ The refusal on the part of federal entities to fully accommodate the producers and the importance of more local and extra-governmental responses to the producers demands can be seen as symptoms of what Harvey has called the “radical reconfiguration of state institutions and practices” that accompany the neo-liberal project and the related process of globalization of markets.⁴³¹ Harvey has associated neoliberalism with a process of re-scaling regulatory and institutional power “up” to international and transnational scale and/or down to the local.⁴³² For Himley, the growing role of nonstate actors and institutions in environmental governance scenarios has sometimes occurred when marginalized groups have “wrested” authority over resources or decision making from the state. In other cases, power has been ceded to non-state actors and institutions in an ongoing process of decentralization of power.⁴³³ The role of the state is not eliminated, it is simply reconfigured.

Though this rescaling of agency away from the state or the federal level has been an important feature of the evolving neoliberal project, so has been a “stretching of the neoliberal policy repertoire” to include not only non-state extra-market regulatory mechanisms (e.g. NGOs, public-private partnerships),⁴³⁴ but also reconfigured roles for federal-level institutions. Peck and Tickell have observed that

⁴³⁰ Samora, "Insatisfeito, agricultor avalia protesto e redução de plantio ".

⁴³¹ Harvey, *Spaces of Global Capital*: 28.

⁴³² Jamie Peck and Adam Tickell, "Neoliberalizing Space," *Antipode* 34, no. 3 (2002): 386.

⁴³³ Himley, "Geographies of Environmental Governance; The Nexus and Nature of Neoliberalism," 435.

⁴³⁴ Peck and Tickell, "Neoliberalizing Space," 390.

“[a]t the level of the national state, neoliberalized forms of macro-economic management – based on low inflation, free trade, flexible job markets, regressive taxation, downsized government, and central-bank (relative) autonomy – now constitute the taken-for-granted context for political debate and policy development.”⁴³⁵ Likewise, Harvey has shown that the contemporary neoliberal state seeks to, above all, promote a “good business climate” by careful regulation of social programs to ensure accountability and the establishment of pro-business policies, particularly financial institutions, as well as the “reduction of [external] barriers to movement of capital across borders,” even when this requires “discipline” of internal elements.⁴³⁶ The state has not been rendered unnecessary by neoliberalism; it has simply shifted its priorities.

In 2005, the industrial-agriculture producer class of Mato Grosso found itself confronting the ground-level realities of these transformations in the priorities or role of the late- neoliberal state. When a series of crises struck, the (federal) state offered a sympathetic ear, but from the producers’ point of view largely declined to offer aggressive short-term solutions, whereas, previously, they had been part of a preferred industry. For producers, the straw that broke the camel’s back was what they perceived to be a state-directed policy to promote valuation of the real, prejudicing farmers who entered into futures agreements when the dollar was high, but this issue was not addressed in government responses to the crisis, as the (federal) state’s focus remained the preservation of longer-term capital-centered financial

⁴³⁵ Ibid., 390-91.

⁴³⁶ Harvey, *Spaces of Global Capital*: 25-6.

including maintaining an elevated real. Instead, more local agencies and transnational agricultural corporations offered quick if imperfect solutions to their plight.

Conclusion: The influence of the pro-soy development regime in Lucas

The soybean economy in Lucas is heavily capitalized and industrial, and by all accounts, will continue to develop in this way for the foreseeable future. Less than thirty years ago, though, subsistence-scale production in this region was difficult and highly profitable agriculture was only a dream for early settlers in Lucas. Well-timed and well-placed investments by some early producers in the region, as well as by powerful politicians and agricultural firms have made Lucas one of the most productive municipalities in Brazil in a very short time. These investments and their high potential for continued returns have contributed to the formation of a local pro-development coalition to promote the continued diversification and growth in the agricultural sector in Lucas.

Investment in fixed assets may be evidence of the formation of pro-development industrial agriculture regimes in places like Lucas related to the continued expansion of capital in Mato Grosso. Once national and international firms, as well as producers, have invested heavily in a building, in staff for a local facility, or in land, their capital is spatially “fixed,” which creates an incentive for these non-local firms to join forces with local producers and business and political elites to

make continued investments in the success of the region.⁴³⁷ In Lucas, because the mayor is also heavily invested in the local agricultural sector, national and global firms apparently face little resistance in local government. Moreover, though donations and frequent civic involvement on the part of local staff, national and multi-national firms have forged close ties with local politicians. Thus, national and international firms have become part of the pro-development coalition in Lucas, though their interests also continue beyond the local scale to include regional, national and even global capital concerns.⁴³⁸

In the following chapters, I will trace the influence of this regime on the creation of the Lucas Legal project, and contrast this explanation with other possible explanations for the emergence of the project, including the development of a sustainable development discourse/advocacy coalition and the possibility that the project simply fills a more instrumental role in the governance gap created by a retreating federal and state government in the environmental arena. I will ask, is the Lucas Legal project a strategy for continued development and economic growth on the part of heavily invested members of a local regime? If so, has there been any evolution on the part of project participants (i.e., elites, farmers, or any residents of Lucas) in their environmental views as the result of their participation in the project and as the scope of the project has evolved and expanded, and does this matter?

⁴³⁷ Ibid., 101-03.

⁴³⁸ Mickey Lauria, "Reconstructing Urban Regime Theory: Regulation Theory and Institutional Arrangements," in *The Urban Growth Machine: Critical Perspectives Two Decades Later*, ed. Andrew E.G. Jonas and David Wilson (Albany: State University of New York P, 1999), 137.

CHAPTER VI – THE IMPLEMENTATION OF LUCAS LEGAL

Among the questions at the heart of this dissertation are how and why Lucas Legal developed and what this means for how its leaders and other associated stakeholders define and successfully meet the objectives of the project. As described more fully in chapter 2, I have proposed three frameworks for analyzing these questions – an environmentality approach that contends that Lucas Legal represents and extension of power in Lucas via technologies of government and the resulting creation of environmental subjects even out of unlikely agricultural frontier residents; a discourse or advocacy coalition (or hybrid of these) approach that views Lucas Legal as the outcome of some diverse actors working toward a shared goal; and a more general environmental governance approach in which Lucas Legal is an example of a sort of middle ground between fully government-led or fully private sector-led management of the environment. In this chapter, I draw on field notes, interview data, and primary and secondary printed and electronic sources to describe the genesis and early accomplishments of Lucas Legal, which viewed through any of the proposed theoretical lenses, is, in any case, an evolving scenario dependent on a variety of structural and personal factors.

Lucas Legal is, in some ways a performance of the changing views of environmental conservation amid the changes that neoliberal globalization has

brought to the agriculture sector. By now, neoliberal globalization has led to “a radical reconfiguration of the organizational and institutional arrangements through which society-environment relations are governed,”⁴³⁹ which can easily be observed in the trajectory of Lucas’ history and development. Indeed, no longer are farmers largely responsible to and dependent on their communities as they were in the past;⁴⁴⁰ instead, they are now supported and constrained by a host of institutions, organizations, and technologies functioning at scales ranging from the farm level to the global level. As such, the agriculture sector of contemporary Lucas is not limited to farmers, but instead encompasses a wide range of actors including locally influential business elites, foreign investors, and even foreign consumers. The presence of this range of agricultural actors likewise creates space for a wide range of views for the appropriate positionality of agriculture with regard to the environment, which is an important input for agricultural activities, and environmental policy, which can be an important constraint.

In this chapter and the next, I argue, though, that an actor’s place in this structural matrix, while certainly influential, is not wholly determinant of how he or she relates to nature or the environment. Put in more blunt terms, my argument is that even among people with considerable power and motivation for personal financial gain, persons motivated purely by short-term economic interests to the exclusion of all other goals and values are difficult to find. It is in this context that I seek to

⁴³⁹ Himley, "Geographies of Environmental Governance; The Nexus and Nature of Neoliberalism," 434.

⁴⁴⁰ Wendell Berry, *The art of the commonplace: The agrarian essays of Wendell Berry*, ed. Norman Wirzba (Berkeley: Counterpoint, 2002). 202-03.

position the emergence and evolution of Lucas Legal and to problematize overly simplistic and dualistic notions of development versus the environment, or agriculture versus the environment. The agricultural actors in Lucas participate in a variety of power networks, which help shape their behavior and beliefs; a network oriented around the continued production of agricultural commodities is one of these and a (strengthening) network of discipline with regard to environmental constraints and changing environmental knowledges is another.

I am not, of course, the first to observe the complexity of agri-environmental positions in Brazil. Christian Brannstrom has analyzed environmental discourses in industrial agriculture (in another part of Brazil) to identify four distinct social perspectives on the environment (Critical environmentalism, Agri-environmentalism, Private environmentalism, and Statist environmentalism), in an attempt to more fully define “environmentalism” in agricultural areas.⁴⁴¹ He has shown that the discourses associated with these environmentalisms “are not attributable to an actor’s structural position within a bureaucratic, political, or socioeconomic system; rather, they are deeply held and contested truths representing foundational ideas about environmental or social processes,”⁴⁴² an idea I seek to expand on here.

As I show in this and following chapters, initial drivers for the creation of the project included both economic development and environmental motivations, as well as goals apparently consistent with what would be expected given the leaders of the

⁴⁴¹ Christian Brannstrom, "A Q-Method Analysis of Environmental Governance Discourses in Brazil's Northeastern Soy Frontier," *The Professional Geographer* 63, no. 4 (2011): 537.

⁴⁴² *Ibid.*, 532.

project. For example, agricultural elites who founded the project point to continued market access as a motivation for creating the project. Many farmers point to the same thing with regard to their initial motivation for participating in the project, though it is unclear how direct material benefits have transpired as a result of the project. Instead, as the project has progressed and evolved. In fact, some producers in Lucas credit Lucas Legal with helping them meet environmental goals and sparking their interest in environmental conservation and preservation. Thus, the task in this chapter and the next is to understand what Himley has called “the complex and place-based sets of practices through which particular actors have produced, reproduced, and challenged [this] novel [mode] of governance.”⁴⁴³

Reconciling agricultural and environmental ethics

The modern agriculture industry of the type dominant in Lucas is generally viewed as environmentally destructive due to the environmental processes that are associated with it, such as increased carbon emissions, changes in water quality, destruction of native vegetation and biodiversity, and the effects of agrochemicals on humans, plants and other animals. Critics of this model of production argue that these costs of agriculture are externalized under a “productionist paradigm,” in which efficiency is paramount and producers are unable, unwilling, or otherwise expected to

⁴⁴³ Himley, "Geographies of Environmental Governance; The Nexus and Nature of Neoliberalism," 445.

not take into account such environmental costs.⁴⁴⁴ This highly structural view of agriculture fails to account for non-economic motivations of farmers, including their ethics or the importance of personal experiences, or even alternate economic motivators. Alongside the productionist paradigm, after all, exists another, older agricultural paradigm – that of land stewardship.

An older agrarian paradigm of land stewardship may be conceptualized as an environmentalist ethic which values “prudence” in the use of resources.⁴⁴⁵ It is reproduced at the farm level as work tasks are passed on directly to the farmers’ children, who have a role on the farm from an early age and quickly learn the direct relationship between the survival of their community and their way of life, and the continued availability of natural resources in their surroundings.⁴⁴⁶ Far from being the unaware and unethical resource abusers of environmentalists’ ire, Thompson notes that, in fact,

farmers develop an interest-based notion of stewardship deserving of our respect in virtue of its ecological sophistication...[because, after all] life on the farm can more readily engender knowledge of ecosystem cycling than does environmental activism.⁴⁴⁷

⁴⁴⁴ Thompson, *The Spirit of the Soil: Agriculture and Environmental Ethics*: 27, 47.

⁴⁴⁵ *Ibid.*, 77-81.

⁴⁴⁶ *Ibid.*, 80-81; Berry, *The art of the commonplace: The agrarian essays of Wendell Berry*: 202-03.

⁴⁴⁷ Thompson, *The Spirit of the Soil: Agriculture and Environmental Ethics*: 76-77.

Indeed, depending on the land for one's livelihood is highly conducive to one learning to understand it and learning to conserve it.

Productionism (or productivism as it is alternately called) is its own sort of agricultural ethos, which in the West, is closely tied to Judeo-Christian beliefs. As Lowe and Ward note, it resonates with

a Protestant work ethic which sees sloth rather than greed as sinful and links virtue and industriousness and sees greater wealth as the just reward for hard work. In this sense, *productive* farmers are seen as *better* farmers, with greater yields displaying the virtuousness of hard work.⁴⁴⁸

It emerged "slowly and painfully from a process of trial and error" in farming systems around the world, though it has not always been applied evenly by all farmers; and it inherently advocates sustainable use in place of opposing use of natural resources.⁴⁴⁹

This productionist paradigm need not be in conflict with a paradigm of land stewardship, though. Because farmers are dependent on such environmental inputs as

⁴⁴⁸ Philip Lowe and Neil Ward, "Field-Level Bureaucrats and the Making of New Moral Discourses in Agri-Environmental Controversies," in *Globalising Food: Agrarian Questions and Global Restructuring*, ed. David Goodman and Michael Watts (London: Routledge, 1997), 262-63., italics in original. Though Brazil is a Catholic country and most farmers in Lucas are Catholic, the notion of the Protestant work ethic applies in this case. Many land-owning and producer families in Lucas are of German-, Italian-, or Polish decent and carefully maintain their ties to their European ancestral homes in daily practices such as cuisine, dance, dress and language, and are influenced by such ideas often associated with Northern Europe. While this is certainly not to say that non-European families work less hard than families of European decent in Lucas or elsewhere, but just that to the extent that there exists a Protestant, agrarian work ethic, it is influential for farmers in Lucas.

⁴⁴⁹ Thompson, *The Spirit of the Soil: Agriculture and Environmental Ethics*: 74-77.

soil and continued access to water from streams and rainfall, for example, agrarian stewardship is, for Thompson, “an ecologically based duty that is entirely consistent with the farmer’s interest in producing food and fiber commodities,”⁴⁵⁰ for use and for financial gain. The conflict between agriculture and the environment, then, is manufactured – not by farmers, but by other agricultural actors whose reliance on environmental inputs is less direct and whose access to financial gain from the commodification of agricultural products and inputs is more direct.

Rational use of natural resources by indigenous and other “traditional” farmers has been extensively documented, particularly in Political Ecology literature,⁴⁵¹ but the value of rational resource use, however minimized or obscured by the drive for greater production, continues in some form even in commercial or industrial agriculture. Instead of seeking to reemphasize this paradigm in these landscapes, though, the rise of an urban-based environmental movement has had the somewhat perverse effect of “eclipsing” agriculture as society’s “major source of natural values and...[a] key mediator of natural morality.”⁴⁵² In Thompson’s words:

Farmers’ understanding of self-interest has been confined to visible consequences. While they have been reasonably attuned to environmental consequences that are visible on their own farms, they

⁴⁵⁰ And, increasingly, fuel and other industrial commodities. *Ibid.*, 77.

⁴⁵¹ Peter D. Little and Michael M. Horowitz, "Introduction: Social science perspectives on land, ecology, and development," in *Lands at risk in the third world: Local-level perspectives*, ed. Peter D. Little, Michael M. Horowitz, and A. Endre Nyerges (Boulder: Westview, 1987), 3-4.

⁴⁵² Lowe and Ward, "Field-Level Bureaucrats and the Making of New Moral Discourses in Agri-Environmental Controversies," 256.

have been oblivious to the accumulative effects of many farms. Little in the traditional stewardship ethic would have directed them to the ecosystem consequences of production practices employed by many individual decision makers. What is more, stewardship has seldom taught farmers to love nature in its natural state.⁴⁵³

The paradigm of land stewardship provides a starting point for a comprehensive agri-environmental ethic, but it, alone, is insufficient.

This conflict will only be resolved when farmers, as well as those who benefit from the farmers' activities, accept a broader definition of economy that requires that they bear (closer to) the true costs of their activities.⁴⁵⁴ If environmentalism is conceived of solely as preservation and a wholesale rejection of altering natural areas at all, any kind of agriculture will always be in conflict with it; likewise, an agricultural stewardship based solely on rational use of resources on each farm will eventually become unsustainable, as well. A combination of these views, a balance of values in this regard, should be the mutual goal of farmers and environmentalists.⁴⁵⁵ Reconciling the ethic of agricultural stewardship with the productionist paradigm fostered by neoliberal capitalist expansion and increased dependence on technology in agriculture, though, is more difficult.

⁴⁵³ Thompson, *The Spirit of the Soil: Agriculture and Environmental Ethics*: 88.

⁴⁵⁴ *Ibid.*, 91-93.

⁴⁵⁵ *Ibid.*, 86-93.

For Thompson, the emergence of the technocratic productionist paradigm of industrial agriculture has weakened, though not destroyed the influence of stewardship on agriculture. As noted above, industrialization of agriculture has, at least to some extent, “shift[ed] farmers’ economic livelihood away from dependence on soil, water and genetic resources and toward dependence on finance.”⁴⁵⁶ It has also, for some, led to a hopeful reliance on agricultural science to “compensate for declining soil fertility, water quality [and] genetic variability.”⁴⁵⁷ The problem, in sum, is that, “[t]raditional agrarian stewardship is [now] conceived as a duty ethically subservient to production; hence when stewardship would entail constraints on production, duties to nature seldom prevail over the productionist ethic.”⁴⁵⁸ For Berry, the only answer is a rejection of ever-accelerating technological change and the fostering of community instead of competition among farmers,⁴⁵⁹ unlikely given the integration of productionism in highly entrenched capitalist systems.

The case of Lucas Legal offers up a challenge to this rather dire assessment. It is a case in which industrial agriculture actors have apparently embraced the “imposition by government of various controls on agriculture to restrain the excesses of agricultural productivism,”⁴⁶⁰ without abandoning, in any way, the actual productivist approach to agriculture. The question is, why and how have they done

⁴⁵⁶ "Agricultural Sustainability: What It Is and What It Is Not," *International Journal of Agricultural Sustainability* 5, no. 1 (2007): 14.

⁴⁵⁷ *Ibid.*, 13.

⁴⁵⁸ *The Spirit of the Soil: Agriculture and Environmental Ethics*: 72.

⁴⁵⁹ Berry, *The art of the commonplace: The agrarian essays of Wendell Berry*: 210-11.

⁴⁶⁰ Lowe and Ward, "Field-Level Bureaucrats and the Making of New Moral Discourses in Agri-Environmental Controversies," 257.

this? Have “environmental subjects” been made or remade?⁴⁶¹ Or are agriculture actors simply “colluding” to paint Lucas green and attract more growth without actually changing substantially their agriculture practices?⁴⁶²

The genesis of Lucas do Rio Verde Legal

The Lucas Legal project was implemented in response to the economic, environmental and socio-political uncertainty that had increasingly become more apparent in the agriculture industry of the Brazilian Amazon in the early 2000s.⁴⁶³ Local leaders saw that to ensure the continued investment of national and multi-national companies in their growing municipality and achieve their vertical integration goals in this climate, they would need to reduce risks for the companies investing there, including reducing environmental enforcement risks. In fact, Lucas Legal was not the first of their efforts. When Sadia decided to invest R\$800,000 in an enormous new slaughterhouse in Lucas, they did so with the assurance from local leaders that they would have a “guarantee of sustainable growth.”⁴⁶⁴ This guarantee included the usual guarantees of attractive tax arrangements, access to essential resources such as water, and the availability of labor, but it also included assurances

⁴⁶¹ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 16.

⁴⁶² Andrew E.G. Jonas and David Wilson, "The City as a Growth Machine: Critical Reflections Two Decades Later," in *The Urban Growth Machine: Critical Perspectives Two Decades Later*, ed. Andrew E.G. Jonas and David Wilson (London: Routledge, 1999), 6.

⁴⁶³ "Embargos ambientais podem inviabilizar agricultura," *Folha Verde*, 20 May 2008.

⁴⁶⁴ Gilberto Tomazoni in Angela Pimenta, "Crecimento Chinês e Ambientalismo Nórdico," *Exame*, 20 March 2008.

that profits would not be threatened by legal and market embargoes due to wanton local disregard for environmental regulations.

Also, crucially, Lucas was located just below the famed ‘13th parallel’, an apparent misappropriation of the definition of the Legal Amazon in the states of Goiás and Tocantins from an amendment (Medida Provisoria 1511/96) to the Forest Code. Though Mato Grosso has been included in its entirety in the boundaries Legal Amazon since its dismemberment from Mato Grosso do Sul in 1977, there remains a considerable amount of confusion about this. In other words, though the 13th parallel has never had any legal meaning concerning the Forest Code in Mato Grosso, considerable apprehension has existed around it, and this apprehension has actually had an effect on major business decisions in the region.⁴⁶⁵ Even today, producers in Lucas continue to believe that Forest Code requirements are less stringent and so they have some sort of advantage for being “below parallel 13,”⁴⁶⁶ though this is actually entirely irrelevant.

The exact genesis of the idea for the Lucas Legal project is unclear. The current mayor of Lucas takes, and is generally given, credit for the idea; at least two American businessmen with investments in Mato Grosso also claim that the idea was theirs. According to one of the businessmen, KD, neither the TNC nor any other large ENGO was working to address environmental issues associated with agriculture in the Amazon until he bought land there, became aware of environmental issues first-

⁴⁶⁵ Tania Pitombo de Oliveira, "Acima do Paralelo 13: Uma Discursividade em Questão" (Unicamp, 2001).

⁴⁶⁶ Interview with KR, 1 November 2011.

hand, and used his personal connections to reach out to ENGOs like TNC. KD currently runs his own environmental agriculture non-profit in another region of the Amazon, though he claims the idea for working with producers in the Amazon to improve their conservation ethic was his idea from the beginning. According to KD,

The TNC stole the idea of working with producers...conservationists were busy saying the soils [in the Amazon] were bad and farming was unviable in the Amazon and trying to stop people that way. When I started [my] project, the TNC wasn't even working in the Amazon. They were buying up swamp in the Pantanal and desert in the Northeast. I don't want to talk about that because it's in the past, but look and see who was working with producers in 2004. Nobody! They stole the idea.⁴⁶⁷

In fact, environmentalists, including international ENGOs, have been working in the Amazon for since at least the early 1990s,⁴⁶⁸ but KD is correct that working with commercial-scale producers is new for environmentalists acting in the Amazon.

Another businessman with more direct ties to agri-business in Lucas and the surrounding regions, SS, claims the idea for the local agriculture industry to engage with environmentalists was his. He claims that he and his business partners in Lucas got nervous about protests in Santarém, Pará, coordinated with David Cleary of the

⁴⁶⁷ Author interview, 29 September 2011.

⁴⁶⁸ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 129.

TNC (who he claims is a personal friend of his), and submitted the proposal for what would become Lucas Legal to the mayor. Once Franz travelled to Europe and saw news stories about Greenpeace protests in the Amazon, he put the project into action.⁴⁶⁹

And finally, as mentioned above, the current mayor of Lucas is generally given credit for the idea for Lucas Legal, credit which he also claims for himself. When asked how he developed the idea for the project, he says:

Actually, in 2005 I took a trip to Europe. I saw a Greenpeace campaign, really powerful, against products from Mato Grosso. For example, not to eat McDonalds because McDonalds was buying beef from Mato Grosso and people were buying soy for cattle feed, so it was really shocking. So I saw that what we are doing here doesn't have anything to do with what's going on up there [in Pará where Greenpeace had been protesting]. The world has the idea that here there are only thieves and bandits that knock down trees. So I came back to Lucas, called Luciane Copetti, who was the municipal Secretary of Environment back then, and brought TNC in, and we talked and came up with an idea that could be the project that could

⁴⁶⁹ Field notes, April 2011.

create an image, and we called the businesses to finance the project, and that's how it was started.⁴⁷⁰

When asked about the initial contact with TNC, the mayor corroborated SS's story. He said, "I have a business that has an American who works with me and was friends with the president of TNC Brasil. The NGOs, normally we have an aversion to them, or apprehension about them. So this was important."⁴⁷¹ Other producers confirm the mayor's story, though it is unclear if this is because they have simply heard the mayor's story retold frequently in the media.⁴⁷²

These interviews clearly illustrate that, whoever came up with the idea for Lucas Legal, they were heavily influenced by pressures being placed on the agriculture industry even in places as distant as Santarém. Hochstetler and Keck have characterized changes in environmental politics over time capable of being affected by "random or contingent events."⁴⁷³ Indeed, given the differences outlined in other chapters between the situation for agriculture in the Cerrado versus the Amazon forest, and efforts on the part of people in Lucas to separate themselves from producers in the Amazon biome (calling them thieves and bandits), it is curious that they would undertake significant efforts based on events occurring deep in the Amazon. And yet, in spite of discursive efforts to separate themselves from the goings-on of agriculture in the Amazon, the fact is agriculture in Lucas is closely tied

⁴⁷⁰ Interview, 6 September 2011.

⁴⁷¹ Interview, 6 September 2011.

⁴⁷² Pimenta, "Crecimento Chinês e Ambientalismo Nórdico."

⁴⁷³ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 223.

to agriculture in other parts of the Amazon, particularly further north on BR-163 due to road networks and teleconnections that link supply chains, farmer networks, and migration patterns.⁴⁷⁴ Pavement of BR-163 will only increase this dependence.⁴⁷⁵

Local elites in Lucas, of course, were not the only powerful actors competing for influence in the region. Certainly, powerful national and transnational companies have been flocking to the region,⁴⁷⁶ but so too have been ENGOs. As mentioned above, until relatively recently, the Cerrado was seen as a “wasteland,”⁴⁷⁷ unsuitable for farming and “seen as essentially uninteresting from a biologic standpoint, and widely modified by human action, especially fire” by environmentalists and scientists.⁴⁷⁸ They recognized their mistake by the late 1990s and early 2000s. After massive conversion of Cerrado to pasture and croplands was well underway and had been for two decades, wider recognition of the highly-diverse and high-biomass Cerrado and associated transitional ecosystems began to be more widely known,⁴⁷⁹ and the race to preserve the Cerrado along with the Amazon’s humid forests was

⁴⁷⁴ Daniel C. Nepstad, "Governing the World's Forests," *Conserving Biodiversity* (2005): 37.

⁴⁷⁵ Fearnside, "Brazil's Cuiabá-Santarém (BR-163) Highway: The Environmental Cost of Paving a Soybean Corridor Through the Amazon," 601; Soares-Filho et al., "Simulating the response of land-cover changes to road paving and governance along a major Amazon highway: the Santarém-Cuiabá corridor," 746-47.

⁴⁷⁶ Geraldo Barros, "Brazil: The challenges in becoming an agricultural superpower" (paper presented at the Brazil as an economic superpower? Understanding Brazil's changing role in the global economy, Washington, DC, 2009), 2.

⁴⁷⁷ Wendy Wolford, "Environmental Justice and the Construction of Scale in Brazilian Agriculture," *Society and Natural Resources* 21, no. 7 (2008): 642; Warnken, *The Development and Growth of the Soybean Industry in Brazil*.

⁴⁷⁸ Hecht, "Soybeans, Development and Conservation on the Amazon Frontier," 397.

⁴⁷⁹ Roberto B. Cavalcanti and Carlos A. Joly, "Biodiversity and Conservation Priorities in the Cerrado Region," in *The Cerrados of Brazil*, ed. Paulo S. Oliveira and Robert J. Marquis (New York: Columbia University Press, 2002); Klink and Machado, "A conservação do Cerrado brasileiro."; Paulo S. Oliveira and Robert J. Marquis, eds., *The Cerrados of Brazil* (New York: Columbia University Press, 2002); J.A. Ratter, José Felipe Ribeiro, and S. Bridgewater, "The Brazilian Cerrado Vegetation and Threats to its Biodiversity," *Annals of Botany* 80(1997).

underway.⁴⁸⁰ When the plans for Lucas Legal were being made in 2006, International NGOs were just beginning to start programs in the Cerrado.⁴⁸¹ Indeed, simply staking a claim in the Cerrado seems to have been a motivating factor in TNCs decision to participate in Lucas Legal.⁴⁸² This is consistent with the “direct competition with [other NGOs] in terms of campaign profiles, sponsorship, membership base, media attention and identity” observed by other scholars.⁴⁸³

Implementation of Lucas Legal

The goals established for the new project were to achieve total compliance with socio-environmental laws in the agricultural and livestock sectors of the municipality, including compliance with the Forest Code, labor laws, and sanitation laws. Once the mayor and TNC had agreed to be partners in this endeavor, they brought on the mayor’s own company, Fiagril, a regional distributor of soy and other agricultural products; Sadia (now part of BrasilFoods SA); and the Swiss company, Syngenta, a multinational manufacturer and distributor of chemical agricultural defensives as sponsors of the project, with each of these companies pledging an initial

⁴⁸⁰ Mario Ramón Fariñas García, "Agricultural activities, management, and conservation of natural resources of Central and South American Savannas" (paper presented at the IX National Symposium on Cerrado/II International Symposium on Tropical Savannah, Brasilia, Brazil, 2008), 273-74.

⁴⁸¹ Ibid., 273.

⁴⁸² The Nature Conservancy (TNC), "Responsible Sourcing of Agricultural Commodities: the way ahead in Brazil," ed. The Nature Conservancy (2010).

⁴⁸³ Iosif Botetzagias, Prue Robinson, and Lily Venizelos, "Accounting for difficulties faced in materializing a transnational ENGO conservation network: A case-study from the Mediterranean," *Global Environmental Politics* 10, no. 1 (2010): 118.

R\$115,000 reais (about \$51,000 USD at 2006 exchange rate).⁴⁸⁴ The total initial budget for the project was R\$450,000 reais. About 20 professionals from the municipal government, the rural producers' union, the *Ministério Público* (Public Attorney's Office, or MP), and TNC were charged with carrying out the project. SEMA was also brought on board to provide legal cover for the project, which could be risky for farmers as outside groups like TNC were brought in to essentially document farmers' environmental crimes.

The project was to be carried out in two phases. Phase one would entail "registering" all of the municipality's rural producers and georeferencing and mapping the entire municipality. Initially, registration with the project was envisioned as separate from any legal title or registration. Indeed, all properties in Lucas were "registered" with the project and mapped without any action on the part of the landowner besides allowing members of the georeferencing team onto their properties, allowing the project to claim 100 percent participation in the project as soon as the maps were ready in 2007.⁴⁸⁵ Later, a supplementary goal of licensing all properties with the state would be added (described more fully below). Phase two would entail the actual reforestation of APPs and RLs under the requirements set forth by the Forest Code and as identified by the mapping process. Compliance with labor and sanitation laws appeared to hang in the background of the project, sometimes

⁴⁸⁴ Pimenta, "Crecimento Chinês e Ambientalismo Nórdico."

⁴⁸⁵ The Nature Conservancy (TNC), "Agronegócio sustentável no Brasil: Gigante pela própria natureza," (2011); "II fórum municipal do meio ambiente discute uso de defensivos agrícolas," *Folha Verde*, 31 May 2007; Bettina Barros to Blog do Elisson Prieto, 2008.

referenced by staff but apparently pursued in a less public manner than the goals related to Forest Code compliance.

Project leaders recognized from the beginning that proven compliance with the Forest Code by landowners would be the public centerpiece of the project. After all, the idea for the project had grown from anxiety threats to agricultural activities by environmental groups pressuring firms and government agencies to take actions to limit deforestation. As described in chapter 4, Brazil's environmental laws are rather progressive. The centerpiece of this legislation, the long-standing Forest Code, for example, requires that farmers in Lucas leave more than a third of their properties under native forest cover, in addition to certain amounts of vegetation along streams, springs, and lakes. Enforcement of the Forest Code at the property level, though, requires that producers have their properties correctly surveyed and adequately titled, conditions that cannot be taken for granted in the Amazon, which was settled under somewhat tumultuous circumstance and where land tenure arrangements have been notoriously rife with fraud.

At times, though, a tumultuous beginning of a settlement can lead to a well-defined tenure regime in the location. Because Lucas was settled by three different groups – private settlers associated with a cooperative, INCRA-sponsored settlers, and posseiros – most title disputes or irregularities had been resolved by the 2000s due to significant attrition on the part of some settlers and the dedication of those who were able to stay to resolving title insecurities to avoid repeated future conflict.⁴⁸⁶

⁴⁸⁶ Munhak, "O Processo Migratório para Lucas do Rio Verde."

Most of the INCRA settlers moved on, and in resolving early conflicts with INCRA over the lands, the posseiros had negotiated official recognition of their land claims. Settlers associated with the cooperative negotiated for their titles through the cooperative.⁴⁸⁷ This situation of uncontested land tenure is somewhat unique to Lucas and has eluded claimants to land in many other parts of the frontier.⁴⁸⁸ Wendy Jepson has noted that access to a secure title was one of the “valued good[s]” offered by cooperatives and private firms, which could easily reduce the risks faced by settlers in the inherently risky proposition of moving to a frontier area.⁴⁸⁹ Secure titles increase the value of the land, as well as making it less risky for a farmer to make the necessary investments to improve and maintain the productivity of farmland. Thus, Lucas’ history of conflictive and competitive settlement, perhaps unexpectedly, led to secure titling for most property owners. Without this land security, it is unlikely that producers would have any incentive to undertake long-term improvement projects on their properties, including preservation of forested reserves.

Early achievement of secure land tenure, though, meant that most properties had not been surveyed since the 1980s or so. TNC staff report that in other parts of the state, errors regarding property size and extent on titles and deeds can be

⁴⁸⁷ Huber, *Tempestade no Cerrado*: 126.

⁴⁸⁸ *Posseiros* typically report that they received a considerably smaller parcel of land than they had originally claimed in their negotiations with INCRA, but it was worth it because they got official documentation. As the INCRA settlers quickly moved on, the less-destitute *posseiros* were able to buy lands from the INCRA settlers on the cheap and quickly build their land-holdings back up, fully titled.

⁴⁸⁹ Jepson, "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil," 304.

considerable and likely associated with purposeful deceit,⁴⁹⁰ though in Lucas errors are less egregious and can mainly be attributed to error in mapping methods. Even so, discrepancies among cadastral maps held by the city, the state, and property owners were not insignificant and presented challenges to some property owners as they undertook licensing.

In order to assess land use, coverage and the quality of the existing cadastral records of rural properties in Lucas, in early 2007, each property in Lucas was georeferenced by a team of TNC employees. TNC also purchased and mosaicked 10m resolution SPOT4 satellite images (all captured in 2005) to provide complete coverage of Lucas plus a 5 km buffer on the outside of the municipal boundary.⁴⁹¹ Satellite images were prepared using standard image equalization techniques such as LUT (Look-Up Table) and Histogram Matching, and a program called Agrogeo which was developed by a contracted data processing team. They were then analyzed using both automated and visual interpretation to generate polygons classified according to the Brazilian System of Vegetation Classification, IBGE publications, previous scientific studies on the phytophysionomy of the Cerrado, and the RADAM project (Figure 21).⁴⁹² The results showed that of the total land area 68.73 percent of

⁴⁹⁰ One staff member recounted having to tell a property owner who thought he had purchased 100ha that he only owned about 80ha, for example (Field notes, 17 October 2011)

⁴⁹¹ The Nature Conservancy (TNC), "Atualização Cartográfica e Mapeamento do Uso do Solo do Município de Lucas do Rio Verde - MT," (Brasília: Programa de Conservação das Savanas Centrais, 2006), 11-15.

⁴⁹² *Ibid.*, 26-35.

the municipality is deforested and 31.02 percent remained forested.⁴⁹³ A deficit of 12 percent was found for the municipality's RLs.⁴⁹⁴

Table 3. Land cover in Lucas do Rio Verde, 2006

Land Use/Description	Area (ha)	Percent of Total
Annual Agriculture	237,242.63	65.32
Irrigated Agriculture	1,833.73	0.50
Permanent Agriculture	293.32	0.08
Cerrado – Scrubby Savanna	9,736.12	2.68
Cerrado – Woody/Grassy Savanna	1,627.23	0.45
Cerradão – Closed Savanna	46,144.42	12.71
Water Bodies	494.41	0.14
Riparian Areas	55,115.69	15.18
Pasture	9,173.07	2.53
Urban or Constructed Areas	1,408	0.39
TOTAL	522,273.69	100

Source: TNC, 2006

While property owners are allowed to determine for themselves where on their property (or, possibly, off their property) their RL will be located, APP locations are by definition determined by the law and the location of water bodies, and thus,

⁴⁹³ Or under Cerrado cover, which is typically referred to as “forested” for the sake of simplicity.

⁴⁹⁴ Samuel Ribeiro Giordano, Silvia Morales de Queiroz Caleman, and Cláudio Antonio Pinheiro Machado Filho, "Environmental conservation and coordination aspects: The Nature Conservancy (TNC) case study in Brazil," in *IAMA Seminar* (PENSA - Agribusiness Knowledge Center, n.d.).

their presence, absence, and adequateness can be easily determined with satellite images and GIS software. It is for this reason that the project initially focused only on APPs.

To demarcate the APPs in Lucas, GIS technicians simply applied buffers of the appropriate sizes to rivers, springs, and lakes according to the requirements of Supplementary Law 38 (21 November 1995). For example, streams with a width of 50 m or less require an APP of 50 m on each side; streams with a width of 50 to 200 m require an APP of 100 m on each side; streams with a width of 220-600 m require an APP of 200 m on each side; streams with a width larger than 600 m requires an APP of 500 m on each side; and other water bodies such as springs, lakes and reservoirs require an APP of 100 m on all sides.⁴⁹⁵ A new layer was created for the hydrography of the municipality with buffers of the appropriate width around each water body. Further analysis revealed that there were 4,873 ha of “degraded APP area,” or area that should be forested in APP but is not, totaling 1.3 percent of the municipality’s total area.⁴⁹⁶

RL areas cannot be mapped without the participation of the property owner due to their potential for variation in location, though most property owners, in practice, compensate their RLs by adding additional width to their APPs. A later step in the licensing process involves demarcating and recovering degraded RLs; this will be discussed in the next chapter.

⁴⁹⁵ Of course, there is some question as to how and at what time of the year to measure the width of a stream, an especially pertinent question in a region such as the Cerrado with drastic fluctuations in rainfall from the rainy season to the dry season. The Nature Conservancy (TNC), "Atualização Cartográfica e Mapeamento do Uso do Solo do Município de Lucas do Rio Verde - MT," 35-6.

⁴⁹⁶ Personal communication, April 2011.

After georeferencing the boundaries of every property in the municipality and comparing these results with cadastral records held by the municipal government and SEMA, TNC found that SEMA had less than 1 percent (0.7%) of polygon perimeters correctly defined which was not unexpected given the challenges SEMA has faced in compiling its environmental database. The municipality's database had 8.7 percent correctly defined (Table 4).⁴⁹⁷ Most of the offsets discovered by TNC were slight (Figure 20), but because in agriculture, space (land) is directly related to income generated, it is important to producers that the boundaries be correct. Some producers commented in interviews about how important the process of having their properties georeferenced and correcting errors in their own understandings of where their property boundaries and water bodies was to them.⁴⁹⁸

⁴⁹⁷ The Nature Conservancy (TNC), "Atualização Cartográfica e Mapeamento do Uso do Solo do Município de Lucas do Rio Verde - MT," 28.

⁴⁹⁸ "The map corrected the river, we thought it was one thing, but really, it was different. Now, the river is right where it is [on the map]." (Interview with GR, 29 October 2012)

Table 4. Comparison between SEMA and municipal cadastral records for Lucas do Rio Verde

Inconsistency	Percent of Perimeters – SEMA	Percent of Perimeters - Municipal
Perimeter OK	0.7	8.7
Perimeter offset on hydrography	0.7	12.7
Perimeter offset on hydrography and access road	66.9	61.3
Perimeter offset on hydrography and access road/duplicate polygon	2.6	0
Perimeter offset on hydrography and access road/overlaps adjacent	15.2	0
Perimeter offset on access road	6.0	17.2
Perimeter offset on access road/duplicate polygon	2.6	0
Perimeter offset on access road and overlapping adjacent	2.6	0
Perimeter overlaps adjacent	2.0	0
Not evaluated	0.7	0.1
TOTAL	100	100

Source: TNC, 2006

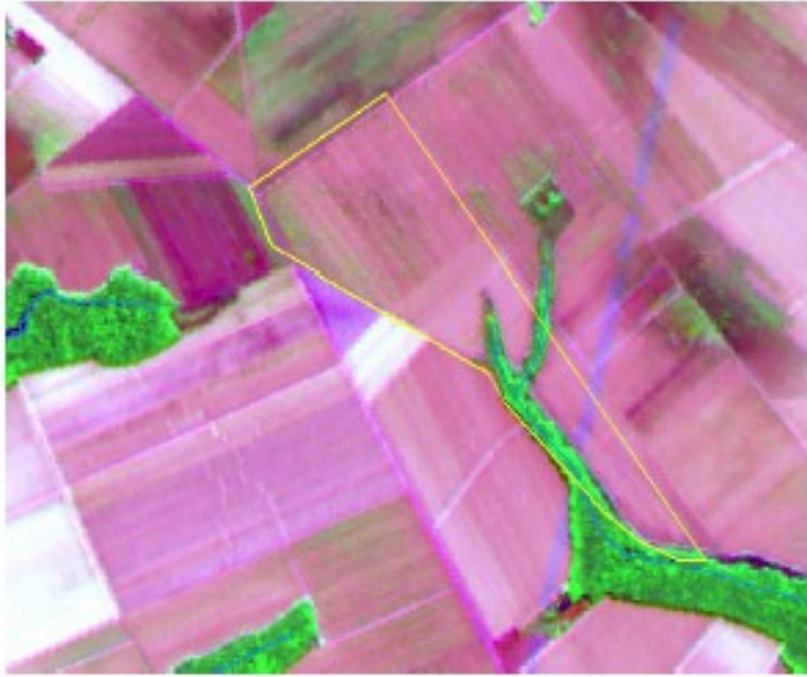


Figure 20. Example of perimeter offset on waterway and access road, Source: TNC, 2006

Local agriculture elite places trust in an international ENGO

To understand the curious circumstances that led the agricultural elite of Lucas to ally with TNC, one must keep in mind the vast amount of distrust of and dissatisfaction with the state and federal environmental authorities among agricultural actors in Lucas. As described in previous chapters, by 2006, when Lucas Legal was first proposed, this distrust was firmly rooted among farmers and municipal leaders based on decades of their mistreatment by authorities from state and federal agencies

and by failures on the part of these agencies to meet even a basic standard of preparedness—technological and otherwise—to do their jobs adequately.

It is first worth commenting on the relatively poor quality of the state SEMA records and maps, which is particularly instructive as to the alliance among agricultural elites in Lucas and TNC. In 2000, the state of Mato Grosso, through SEMA's predecessor agency, FEMA, launched the first deforestation control system in Brazil that relied explicitly on satellite imagery of individual properties to license these properties.⁴⁹⁹ The system, called SLAPR was quickly and optimistically touted as having "a significant effect" on clearing and as proof that deforestation in Amazonia is controllable for relatively little financial outlay.⁵⁰⁰ The efficacy of this system, though, soon came under scrutiny as FEMA officials were busted for participation in an illegal logging ring in 2005 (Operation Curupiri, discussed in greater detail in chapter 4) after having already been accused of falsifying images and maps in order to issue fraudulent environmental licenses in 2003.⁵⁰¹ Indeed, a 2005 study carried out by a Brazilian ENGO showed that in 2003-2004, illegal or non-permitted deforestation rates on RLs of properties licensed under SLAPR was barely different than rates on properties with no environmental license, and was six times

⁴⁹⁹ Kenneth M. Chomitz and Piet Buys, *At loggerheads?: Agricultural expansion, poverty reduction, and environment in the tropical forests* (Washington, DC: World Bank, 2007). 22.

⁵⁰⁰ Fearnside and Barbosa, "Avoided deforestation in Amazonia as a global warming mitigation measure: The case of Mato Grosso," 352.

⁵⁰¹ Chomitz and Buys, *At loggerheads?: Agricultural expansion, poverty reduction, and environment in the tropical forests*: 23.

higher than the rate on public lands in Conservation Units and on Indigenous Lands.⁵⁰²

In other words, the reputation of FEMA/SEMA at the time Lucas Legal began in late 2006/early 2007 was poor. The reputation of SEMA (and the federal environmental monitoring agency, IBAMA) among farmers is summed up by this small holder producer, KWM, who has adequate APP and RL on his small property: “I think that IBAMA and SEMA are very bad agencies. Very lazy, very slow, very unwilling to do certain things.”⁵⁰³

The scandal-ridden history of state and federal environmental agencies and their poor regard among farmers does raise the question of how a state system with a history of systemic fraud and incompetence with regard to satellite-image-based monitoring and licensing of properties could be expected to move forward in on their own. This also helps illuminate one answer to an obvious question of why leaders in Lucas turned to an International ENGO (TNC) rather than simply turning to the state, which already had a monitoring and licensing system in place, when they determined that they desired achieving legitimate environmental licensing throughout the municipality. TNC’s analysis seems to only confirm what leaders in Lucas seem to have suspected – that the state environmental agency was not competent or trustworthy enough to license properties on its own.⁵⁰⁴

⁵⁰² Lima and Rolla, "Mato Grosso, Amazônia (i)Legal," 14.

⁵⁰³ Interview, 18 October 2011.

⁵⁰⁴ Chomitz and Buys, *At loggerheads?: Agricultural expansion, poverty reduction, and environment in the tropical forests*: 22.

Another, more cynical explanation for local leaders reaching out, past the state and its SLAPR system to TNC in order to put their plan into action lies in the importance of legalizing future deforestation (permitted deforestation after licensing) under SLAPR. In a very comprehensive study for her dissertation, Andrea Aguiar Azevedo has shown that:

[o]ne important characteristic of the System [SLAPR] is to identify the types of deforestation in terms of legality, as outside of the System, this was not possible, when all deforestation was illegal, even that which would be possible to be legalized inside of individual properties. In this way, one of the objectives of SLAPR was specifically the legalization of “legalizable” deforestation and the punishment of illegal deforestation (basically in RL).⁵⁰⁵

Legalization of “legalizable” future deforestation outside of RLs was not likely an important objective for farmers in Lucas. Because of the early adoption and success of industrial agriculture in Lucas, there was very little “legalizable” land for deforestation outside of RLs left in Lucas by 2006. Instead, leaders in Lucas were interested in achieving licensing that absolved local producers of any obligation for previous allowable deforestation and providing landowners an opportunity to redress excessive deforestation inside of RLs and APPs without paying fines and risking

⁵⁰⁵ Azevedo, "Legitimação da sustentabilidade? Análise do Sistema de Licenciamento Ambiental de Propriedades Rurais - SLAPR (Mato Grosso)," 200.

imprisonment. Applying for a license under the SLAPR system and the licensing system that followed it exposed landowners to the possibility of expensive fines for previous deforestation, even if this was not in excess of the 35 percent plus APPs that land owners were responsible for maintaining under native cover in Lucas. Thus, it was rational for leaders in Lucas to look for support in their licensing initiative beyond the state system which would have offered them very little.

The alliance that formed between local leaders in Lucas and TNC at the beginning of the Lucas Legal project is consistent with the “boomerang pattern” of advocacy network formation toward policy change described by Keck and Sikkink.⁵⁰⁶ In the boomerang, local or domestic groups that are ignored, blocked, or otherwise discouraged by the state may, according to Keck and Sikkink,

bypass their state and directly search out international allies to try to bring pressure on their states from outside...Linkages are important for both sides: for the less powerful third world actors, networks provide access, leverage, and information (and often money) they could not expect to have on their own; for northern groups, they make credible the assertion that they are struggling with, and not only for, their southern partners.⁵⁰⁷

⁵⁰⁶ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*: 12-13.

⁵⁰⁷ Ibid.

Of course, the “third world” status of Brazil was already in question by the mid-2000s and, in any case, large-scale land owners and political elites in a commercial-agriculture boom town like Lucas can hardly be thought of as disenfranchised in the way that many of Keck and Sikkink’s examples of indigenous groups, rubber tappers, and political dissidents are. However, elites in Lucas, while able to generate and manage a very profitable local agriculture industry with strong ties to the global market still faced obstacles to achieving continued local growth and success over the long term, which they attributed to a threat to market access due to increasing global emphasis on conservation and lack of support (manifested in different ways) from the (non-local) government.

When the situation is viewed in this way, it is clear that elites and other agricultural actors in Lucas had strong reasons to select for working with an international group as opposed to a state agency like SEMA. First, working with TNC, though initially viewed with apprehension, quickly began to resonate with the project leaders-to-be and producers. Although TNC is an American ENGO of the type popularly vilified by many in the Brazilian Amazon,⁵⁰⁸ the fact is that international ENGOs also have access to substantial financial, knowledge, and political resources. It is impossible to know but reasonable to expect that if there had not been personal connections between Lucas elites and TNC that such a partnership would not have arisen. This is consistent with the work of Keck and Sikkink on

⁵⁰⁸ Cf. Executive Intelligence Review, *A Máfia Verde : O Ambientalismo a serviço do Governo Municipal*, 4th ed. (Rio de Janeiro: EIR, 2002).

environmental network formation in other geographical and social spaces in the Amazon, for which they also say that “personal connections were crucial.”⁵⁰⁹

Second, until the mid-2000s and continuing today, confidence in the competence of the state government of Mato Grosso and the Brazilian government is rather low in Lucas. From the outside, it is easy to see how certain state policies have been kind to Lucas, especially the agriculture industry, such as the construction of Highway BR-163 and tax and finance benefits accrued by producers over the last 30 years. At the same time, there is near universal agreement among stakeholders of every kind in the agriculture sector in Lucas that the state (other than the local state) has done very little to contribute to their successes. In fact, as discussed more extensively in Chapter 5, there is a real sense in Lucas that they have risen above the obstacles set for them by the state to become the successful agricultural commodity exporter that they are today.⁵¹⁰ When asked about the government’s role in protecting the environment in the context of the agriculture industry, DD, a producer, captured this view by saying “Really, they don’t do anything. Who does it is the producers and everyone in agriculture.”⁵¹¹ Another producer, RG, noted:

I don’t think it’s an obligation, it’s more of a compliance thing, huh?...You know, the law is there, sometimes someone knows what

⁵⁰⁹ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*: 145.

⁵¹⁰ Stories abound in Lucas about their self-reliance from the very beginning, including the creation of a community association in 1983, before Lucas had even grown large enough to be considered a District, which installed the first water lines, generators, and took on the fight to be granted municipality status. José Dario Munhak, "Associação Comunitária," (Municipal Archive - Lucas do Rio Verde, n.d.).

⁵¹¹ Interview, 7 November 2011.

the law is and can't comply because the public agencies don't work. They are slow, they are ineffective...for people who do work that involves forest and things like that, it's complicated – it involves SEMA. If it involves animals, it's a question of LO, (*licença de operação*, or Operating License) and it's a bit easier. There is monitoring and if you are o.k., a few days later [the permit] is issued. But if it involves forest and the involvement of the state, and all of these things, it takes a long time. So, the government should be more agile, much more agile.⁵¹²

This view, though, is not universal. Some producers, such as TU, a producer and posseiro, note that the government did support some early settlers whose arrival predated the official settlement: “We received a title from INCRA. And later we went buying more land from those who were given it and couldn't make it, and we bought for more than nothing.”⁵¹³

Lack of confidence in the competence of the state to manage rural areas is something that environmentalists and ruralists, often seen as opposing sides in the battle over rural land use and management, have in common in Brazil. Hochstetler and Keck have summed up the reasons for ineffective rural management in Brazil as being threefold: the “public authority” over matters environmental is not unified, the federal government lacks the authority it needs to enforce environmental laws, and

⁵¹² Interview, 8 September 2011.

⁵¹³ Interview, 25 October 2011.

the northern and northeastern states, where environmental regulations on deforestation have the most potential to limit economic growth, have disproportionate representational strength in Congress.⁵¹⁴

Indeed, it is this perception of incompetency of state and federal officials that compelled municipal leaders to turn to TNC for support. TNC responded favorably because they, too, recognized the need for an improved reputation to continue to work effectively in the region. After all, as one producer, KQ, put it “[TNC] gained credibility here for developing this project, and I think if it depended just on people from here, it would have taken a long time. They [TNC] know how to do it, to organize it. It’s not easy. If we just did it with people here in house, there would be lots of personal interests [at play].”⁵¹⁵ In other words, the boomerang was mutually beneficial for TNC and local elites – each gained credibility and accountability.

Property diagnostics

Once the GIS had been completed, environmental diagnostic documents were created for each property and presented to property owners (Figure 21). These documents were meant to provide landowners with an “x-ray” of their properties, including a map, the total size of existing reserves, and the location (in the case of APPs) and sizes of reserve deficits.⁵¹⁶

⁵¹⁴ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 147.

⁵¹⁵ Interview, 1 November 2011.

⁵¹⁶ Field notes from public presentation by TNC staff member, 11 October 2011.

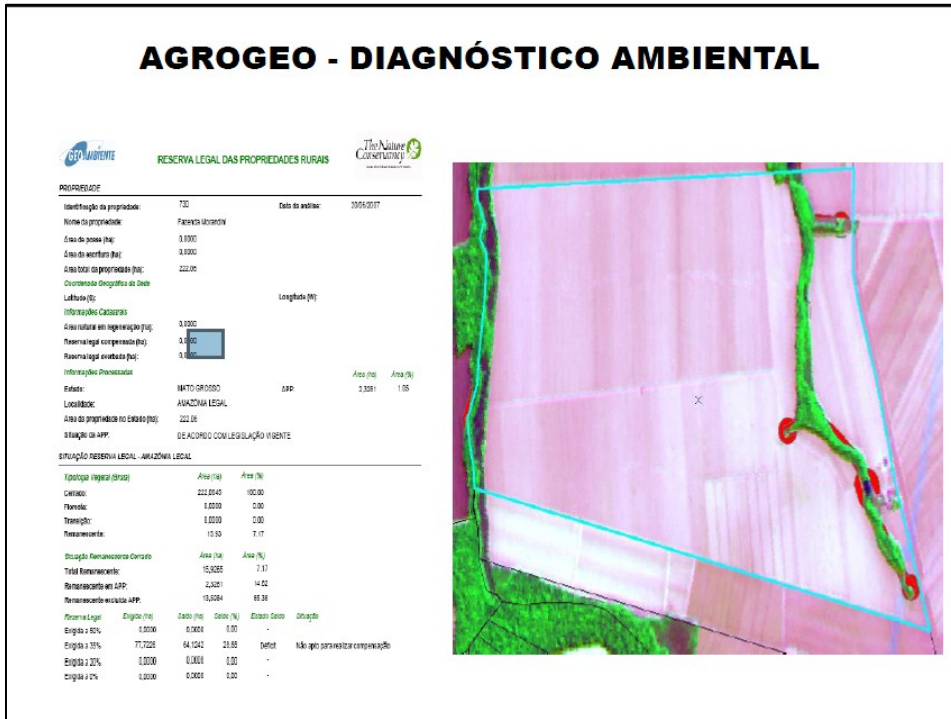


Figure 21. Example of a diagnostic document from Lucas Legal, Source: TNC, 2011

The value of these diagnostic documents to TNC was that they showed producers where they needed to replant vegetation that had been unlawfully cleared. After all, for TNC, as a conservation organization, is ultimately interested in trees being replanted, with mapping and licensing as a means to this end.⁵¹⁷ They believed

⁵¹⁷ Fieldnotes, interview with TNC staff member, 17 October 2011.

that providing clear information about legal requirements and the actual situation of producers' properties would remove obstacles and help motivate landowners to reforest. One reason frequently cited by farmers, politicians, and other individuals familiar with the situation for the lack of compliance with the Forest Code is that it is unclear and that farmers do not know what their obligations are. Farmers and others explain this issue in many ways; some of the most common of these are: that the Forest Code has changed over time; that the government and enforcement of the Forest Code are too unwieldy; and that farmers get their information from suspect sources.

A common complaint from farmers about environmental laws is that they have changed over time and that the new requirements are often retroactive. The Forest Code has, indeed, changed a few times since Lucas was first settled. For example, as detailed in Chapter 3, when Lucas was settled, farmers were not only allowed to deforest 80 percent of their property, they were expected and sometimes required to do so.⁵¹⁸ In 1995, this amount was reduced to 50 percent as the state of Mato Grosso designated Lucas and surrounding regions as "transition" vegetation (Lei Estadual Complementar 38/1995), though, the state's transition vegetation designation was later struck down by the federal government, and most of Lucas was classified as Cerrado and given the 35 percent RL plus APPs obligation. APP requirements have also changed through time. Furthermore, the Forest Code has gone from being largely present only on paper at the time of settlement in the 1970s to

⁵¹⁸ Interview with DD, 7 November 2011.

being more strictly enforced (if unevenly so) today. These changes in requirements have created room for confusion and doubt. In the words of one producer, RG:

You could deforest back then and you can't now. It's complicated. Because there are lots of situations, lots of differences. The law was never very clear. And it changed! It changed many times, not just one time.⁵¹⁹

Another farmer and business owner, GR, agrees:

Before, we didn't think, today you have to think about conservation, leaving forest close to water, you know? You have to leave forest, but before we didn't have this. Before it was knock down everything, you could do it and you did. Today you can't.⁵²⁰

Another farmer, TV, who arrived as a posseiro, and has owned land there since before the INCRA settlement, described his confusion about changing APP requirements and the legal problems he is facing as a result.

I was fined because [the law] changed so many times. At one point it was 100 meters [APP] along the river, later it was 50, and now it's 30.

⁵¹⁹ Interview 8 September 2011.

⁵²⁰ Interview, 29 October 2011.

So when it was 100 meters, they marked off a part for me to do [reforest], and then, I closed it in, but because I have cattle, the cattle passed over the dam. I didn't do anything about it and now they come to fine me. I had stopped [doing anything about that area] because they couldn't decide if it was 50 or if it was 30 meters, but either way, I wasn't planting crops there. And now they are fining me and I'm defending myself. So now I am going to plant there. I am going to leave about 50 meters...I have to reforest a little piece in that area. But I was fined so I am making mounting a defense to not have to pay the R\$15,000⁵²¹ they fined me because I don't think it is right. There are so many things that, you know how it is with the government agencies – the agencies don't know, one does one thing, the other does another thing, and then you have IBAMA...⁵²²

In other words, TV and the other farmers explicitly frame their lack of compliance as an information gap issue stemming from changes in requirements (and level of enforcement) over time. The quotes presented above illustrate how detrimental this uncertainty about requirements is for compliance prospects among farmers; not only do they not know what they should be doing, but they express a sense of hopelessness that they can achieve compliance in a scenario with shifting requirements. This frustration can lead producers to figure that they have little to lose

⁵²¹ About \$10,000 dollars.

⁵²² Interview, 25 October 2011.

by returning to plant on land that they had previously set aside in an effort to comply with requirements. TV, for example, had stopped planting 100 meters from the edge of the stream on his land, but eventually found himself to be so frustrated by fines (and his own failure to fully exclude cattle from his APP areas) and confused that he reverted to planting on land that he had previously set aside.

Another set of issues is the unwieldy bureaucracy, the lack of a united front among government agencies, and the lack of honesty that can exist in such a situation. According to one influential producer, KD, “there are 16,000 rules. One agency created its rules, another created its rules, you have SEMA, you have another agency enforcing rules – it makes it impossible to comply.”⁵²³ TV also hinted at this in the quote presented above. Another producer, GR, summed his frustration with this issue:

It’s not fair...This guy over here can cut down so much, and this guy over here can cut trees, and this guy over here can’t, and no one knows which is the right Code. It has to be made more transparent. If you can’t, you can’t. Everywhere. Not in some places you can, in others you can’t, one can, one can’t. If you can’t [cut trees] for so many meters [from a stream], then you can’t.⁵²⁴

When government agencies, and indeed, individual officials and employees of agencies do not interpret or apply the law evenly, producers not only do not

⁵²³ Interview, 4 November 2011.

⁵²⁴ Interview, 29 October 2011.

understand which interpretation of the law is correct, but they also do not have much incentive to comply with the law. Indeed, at a different place in our interview, GR described how well connected or more financially well-off producers can bribe their way out of fines at a going rate of about 10 percent under the table on the cost of the fine.⁵²⁵ The diagnostic documents for each property created by an outside group (US-based TNC) go a long way in closing the space in which this kind of uncertainty and dishonesty exists.

Finally, clearly presented information about a property's accomplishments and deficits in complying with the forest code, such as those on TNCs property diagnostics, was a crucial first step in Lucas Legal due to the staggering amount of misinformation that exists among producers about environmental regulations, changes in laws over time notwithstanding. Far from there being perfect information transfer from regulation-setting bodies in Brasília and Cuiabá, it is common for farmers to get information from other farmers (their neighbors, family members), through the media, or from employees of agricultural supply companies with which they interact. Cuiabá is 340 km away from Lucas, and neither SEMA nor IBAMA have a satellite office in Lucas, so direct access to information about regulations is difficult. Few farmers have internet access on their farms and most farmers in Lucas live on their properties. Thus, farmers are somewhat isolated from their governing agencies and turn to 3rd party sources for information, so the possibility for misinformation is high. Indeed, of the 20 producers I interviewed, 8 reported getting

⁵²⁵ Interview, 29 October 2011.

their information solely from either the media or friends and neighbors. The producers who reported getting information directly from government sources or from well-organized producers' groups typically were more elite farmers with close ties to these groups.

Another value of TNCs diagnostic documents was that they provided relatively rapid and definitive evidence of progress. As the reputation of agriculture in Lucas was a clear motivating factor for local elites to lead the project and for industry groups to fund the project, the quick achievement of demonstrable results was highly desirable for these groups. It only took the TNC and their contractors about a year to do the analysis and produce the property diagnostics. As alluded to above, once the diagnostics completed, project leaders could boast of "100 percent participation" in the project, even if they had no evidence that a single tree had yet been planted as the result of it.⁵²⁶ Indeed, this has been effective as various national and foreign media outlets have anointed Lucas "the epicenter of what could become an environmental revolution,"⁵²⁷ based only on what are really relatively minimal environmental achievements.

⁵²⁶ Globo Rural, "Projeto ajuda agricultor a se adequar à legislação ambiental em MT," *GI Economia: Agronegócios*, 27 March 2011.

⁵²⁷ Juan Forero, "In one Brazilian farm town, reviving the forest," *NPR*(2009), <http://www.npr.org/templates/story/story.php?storyId=121095308>. also, cf.: Pimenta, "Crecimento Chinês e Ambientalismo Nórdico."; Barros Title of Weblog; Pat Joseph, "Soy in the Amazon," *Virginia Quarterly Review* 2009.

The creation of the Rural Environmental Registry (CAR)

As described earlier in this chapter, the first step taken by project leaders of Lucas Legal was to sign all of the landowners up for the program by mapping their properties and documenting their titles. This created a registry of properties in the municipality thereby providing necessary information such as property location, dimensions, and features for the diagnostic portion of the process. Though initially not a key feature of the project, this registry came to be recognized as one of the most innovative features of Lucas Legal. Through the registry and with the associated geographic information, the extent of the properties and APPs (or lack of) on the property were well-documented, along with other basic information about the property and the owner, which facilitated outreach on the part of the project to improve compliance and give project leaders a sense of their starting point in Lucas. This process easily viewed through the lens of governmentality; it was impossible to discipline (or correct) the landowners prior to the survey and registry. Greater control over farmers and properties occurred not with more enforcement, but with more information. Upon collecting information about each property, properties could be classified based on their attributes (e.g., compliant/non-compliant), improvement (or regression) could be tracked, and, crucially, defining compliance as normal (and, so, non-compliance as abnormal), thereby creating social pressure to conform.⁵²⁸

⁵²⁸ Ian Hacking, "How should we do the history of statistics?," in *The Foucault effect: Studies in governmentality*, ed. Graham Burchell, Colin Gordon, and Peter Miller (Chicago: U of Chicago P, 1999), 183.

However, for farmers, the immediate value of the registry and the diagnostic document provided by the project for their properties was not immediately clear. On the one hand, it gave the farmer a sense of what lie ahead of him in order to comply with the Forest Code. On the other hand, participation in Lucas Legal alone does not provide producers with any kind of license; for that, they had to and still have to work with SEMA to eventually get a LAU. Producers in Lucas became painfully aware of this in September of 2008, shortly after Lucas Legal was launched, when IBAMA suddenly fined 15 producers in Lucas, an action that enraged project leaders in Lucas.⁵²⁹ This was devastating to project leaders, who hoped that the federal government would respect the temporary reprieve from prosecutions informally agreed to by the state government, but it also pushed Lucas Legal leaders to improve their project

Soon after the raid by IBAMA, Lucas Legal project leaders and other influential persons in Mato Grosso, including staff of TNC and at SEMA and the SAMA in Lucas, won approval with state law makers for a Provisional Law (Lei Complementar 343/2008) that officially created the provisional license CAR (*Cadastro Ambiental Rural*/Rural Environmental Registry) at the state level in Mato Grosso. CAR, modeled on Lucas Legal, is an innovative proto-license that breaks down the process of compliance with the Forest Code into more manageable steps and grants the land-owner a certain period in which to comply with certain steps toward full compliance without fear of being fined in the process. Whereas,

⁵²⁹ "Ibama notifica produtores no municipio," *Folha Verde*, 18 September 2008.

previously, farmers only applied for the LAU, now there is a legal, step-wise process for licensing. In this case, more licensing (and bureaucracy) was beneficial to many farmers. After all, it takes time and money to plant and regrow large amounts of native vegetation. In the meantime, if a producer is fearful of paying large fines or of even going to jail while he tries to bring his property into compliance, and also risks losing access to funding until his property is in compliance and he has LAU in hand, he cannot really win. In the words of producer RE, “when you do CAR, you are opening your heart. I did this wrong. You showed your crime and you could be fined. So this pact [MT Legal/insertion of CAR in the process prior to applying for LAU] fixes what was wrong with it and I think it was a good idea. I’m happy that this idea came.”⁵³⁰

The creation and institutionalization of CAR at the state level was certainly beneficial to producers, but the Lucas Legal diagnostic document was only useful, in the end, in terms of the pressure it put on the state to create CAR. The CAR issued by SEMA requires that a licensed environmental engineer (not TNC staff) complete the paperwork and file for the license online. For this, the hard-copy, TNC-issued diagnostic document can function as a guide, at best.

⁵³⁰ Interview, 4 November 2011.

Conclusion: Environmentalism beyond carrots and sticks?

The establishment of Lucas as a municipality during the broader process of territorialization of the Amazon during the 1970s and 1980s was a crucial part of the process of extending regulatory power and neoliberal capitalist influence over resource extraction throughout the region.⁵³¹ The individuals who settled in Lucas, though, were not content to simply participate in this without participating on their own terms, which led to conflict and dissatisfaction with the state. With Lucas Legal, this dissatisfaction was a factor in locals (elites) looking not to the state, but to international and national business and civil society groups to administer what was most clearly a state-policy issue, and what eventually came around to be resolved by the state, in the end. The state was brought in out of necessity, as the ultimate goal of the project was to mitigate the transgressions of environmental law in order to add stability to the local environmental sector. However, the state solution, building on the successes of Lucas Legal, was naturally heavily influenced by the solutions to licensing and compliance issues devised by the local elite of Lucas, in partnership with TNC.

The last chapter described the successes of the local, global-agriculture industry, as well as the period of turmoil in environmental governing in the Amazon against which Lucas Legal emerged. During the 2000s, the state was extending its control in some ways and withdrawing its influence in others, leaving plenty of

⁵³¹ Alves Sobrinho, "Dinâmica territorial, agronegócio e re-territorialização: O Município de Diamantino/MT."

regulatory room for local agencies to maneuver. Meanwhile, messages of environmental (and economic) vulnerability of agricultural systems in the Amazon were being delivered by non-state forces. This chapter has explored the organizational unfolding of Lucas Legal on the ground for the various stakeholders in the project. The next chapter will explore the invention and reinventions of the Lucas Legal project have given Luquenses a prop with which to consider, define, and enact their own environmentality.

CHAPTER VII – ASSESSING LUCAS LEGAL

I will tell you, with Lucas, it's really impressive when you walk into Fiagril and the other companies; they are really on board with the forest code compliance. Their frustration is with the amount of time it's taking them to get the Forest Code straightened out. Nobody talks about how they don't want to preserve. Lucas is really the proof on the ground of how Forest Code compliance works. It's frustrating for them that they can't show how strong their forest code compliance is since we still don't know what that means. – David Cleary, TNC.

The final judgment on whether or not Lucas Legal “succeeded” depends ultimately on the criteria on which it is judged. Which criteria are most appropriate for assessing environmental governance projects, though, remains an open question among policy makers and scholars of environmental governance, and few studies seem to have attempted to holistically assess the outcomes of these projects as successful or not.⁵³² The lack of agreement on assessment criteria (and, indeed, what is even to be considered an environmental governance project) has likely hampered efforts to assess these projects, and, likewise, the lack of assessment attempts has likely impeded the creation of assessment criteria. Moreover, the inherently site-specific and also multi-scalar nature of these scenarios of decentralized management

⁵³² Though studies abound on the outcomes of particular projects on particular stakeholder groups.

of nature/natural resources makes them difficult (but surely not impossible!) to compare among cases. This chapter will outline a set of potential criteria for evaluating environmental governance projects by exploring the evolution and outcomes of Lucas Legal.

Since at least the mid-1980s, a shift toward substantive decentralization has become a major characteristic of environmental governance.⁵³³ For Müller, this decentralization has created “fragmented institutional landscapes,” on which scholarship has yielded “minimal empirical evidence either supporting or refuting the advantages and disadvantages,”⁵³⁴ apparently because of the dearth of holistic studies. Maria Carmen Lemos and Arun Agrawal have suggested three features of “successful” decentralized governance: a change in how lower-level decision makers related to those further up the hierarchy; a change in how lower-level decision makers relate to their constituents; and a change in the subjectivity of constituents.⁵³⁵ It is this last criterion that Lemos and Agrawal stress distinguishes contemporary forms of environmental governance from previous, colonial-esque attempts to rule from afar, and in short, they find that decentralized governance is, in fact, more effective at regulating the behavior of individuals with regard to a given issue than highly centralized government was.

Moreover, there is the question of the utility of assessing projects of environmental governance. If we assume the successful projects will be scaled up

⁵³³ Lemos and Agrawal, "Environmental Governance," 305.

⁵³⁴ K Müller, "A Framework for Assessing Environmental Governance Structures," *Journal of Public Administration* 42, no. 1 (2007): 19-20.

⁵³⁵ Lemos and Agrawal, "Environmental Governance," 304.

and/or adopted elsewhere from where they first emerged, we must also remember that such policy models

reveal their character as relational constructions; they do not simply travel, intact, from sites of invention to sites of emulation, like some superior export product. Instead, through their very movement they (re)make connections between these sites, evolving in form and effect as they go.⁵³⁶

A shifting and highly-contingent policy landscape makes both single-case and cross-case assessment challenging indeed. That these types of projects are difficult to assess, due to the need to account for the experiences of various stakeholder groups, their multi-scalar nature, or any other reason that poses a methodological challenge should serve as, if nothing else, a call for geographers and other scholars to attempt to study them.⁵³⁷

With these challenges in defining and evaluating project success in mind, as well as the increasing importance of decentralized governance of the environment and market incentives for improved environmental outcomes in the Brazilian Amazon and elsewhere,⁵³⁸ this chapter pursues the task started by Lemos and Agrawal to define criteria against which Lucas Legal and other projects of environmental governance

⁵³⁶ Peck, "Follow the policy: a distended case approach," 23.

⁵³⁷ Liverman, "Who Governs, at What Scale and at What Price? Geography, Environmental Governance, and the Commodification of Nature," 737.

⁵³⁸ Nepstad et al., "The End of Deforestation in the Amazon," 1350.

may be assessed. Their criteria of 1) transformation of relationships among individuals up and down the existing governing hierarchy, 2) the transformation of the relationship between lower-level decision makers and their constituents, and 3) the facilitation of subject-making among constituents (and even lower-level decision makers) outline important functions of a successful project with the individual (policy maker, constituent, etc.) and relationships among individuals as the basic unit of analysis. Missing from their analysis, I argue, is an assessment of the appropriateness and effectiveness of the institutions generated or transformed by the project (including their scale), and the flexibility of the project itself to changes in local resource availability, stakeholder demands, and other local circumstances, as well as in terms of its ability to be transferred to other locales or implemented at a larger or smaller scale. For the purposes of this study, the better a project meets all five of the criteria described above (and shown in Table 5), the more “successful” it may be considered.

Table 5. Criteria for assessing a project of environmental governance

Criteria	Target
Changes in relationships up and down the hierarchy of government*	Individual
Changes in the relationship between decision makers and their constituents*	
Facilitation of subject-making among constituents*	
Appropriateness and effectiveness of institutions generated or transformed by the project	Institutions
Flexibility of the project itself to changing circumstances/its ability to be transferred or re-scaled	Project

Source: after Lemos and Agrawal, 2006.

However, in the messy world of environmental governance, it should be noted that “success” is not an absolute or an endpoint; successful environmental governance is an ongoing process. As crops are planted each year, as forests and species adapt to changes in and around themselves, as technology changes, and as power continues to circulate through relationships,⁵³⁹ the “environment-related incentives, knowledge, institutions, decision making, and behaviors” of various actors must and should also evolve. And yet, the criteria defined here should remain appropriate, if differently

⁵³⁹ Rutherford, "Green governmentality: insights and opportunities in the study of nature's rule," 305.

met as scenarios change: flexibility and appropriateness in scale and institutions, the promotion of inclusiveness, and cross-scale linkages among actors.

Lucas as a shifting policy landscape

The official and original objectives of Lucas Legal, according to TNC documents, were to “regularize all rural properties in the municipality from the point of view of the Forest Code and end labor violations and the incorrect use of agrochemicals.”⁵⁴⁰ Regularizing rural properties was and remains the touchstone of the project, and this was to be achieved using the same kind of satellite technology that the state was using to enforce the Forest Code. By mapping all properties at the beginning of the project, the project was supposed to give local landowners spatial information about their farms and their gaps in compliance with federal laws, and shield them from fines while they addressed the gaps and secured environmental licenses for their properties. The project, which began in 2006, was originally supposed to be completed between 2012 and 2014.⁵⁴¹

The objectives of the project, though, have undergone shifts as challenges to the project as well as new, previously unseen pathways to the achievement of objectives were revealed. In this way, Lucas Legal conformed to the expectations of the policy mobility/mutation criteria from the outset in which “policy designs,

⁵⁴⁰ Ariane Cristina de Almeida and Daniel H. Saavedra Alvarado, "Atualização cartográfica e mapeamento do uso do solo do município de Lucas do Rio Verde - MT," (Brasília: Programa de Conservação das Savanas Centrais, TNC, 2006).

⁵⁴¹ TNC Presentation, Lucas do Rio Verde, 11 October 2011.

technologies, and frames are [...] considered as complex and evolving social constructions rather than as concretely fixed objects.”⁵⁴² Indeed, at different points in the same interview, David Cleary, who was the director of the Amazon program for TNC at the time of the project’s formation, explained that the original objectives of the project for various stakeholders were to “get some market advantage out of [satellite monitoring of deforestation],” to create a presence for TNC in the Legal Amazon in a place that was more accessible to foreign visitors than, for example, TNC’s other projects in Santarém, Pará, and to “create a state level rural property license with an environmental component.”⁵⁴³ That a project has multiple objectives is not necessarily problematic, but it does complicate the task of assessing the project’s success(es) and failures. The evolution of the project in response to its social and political context is instructive about the future of environmental licensing in the Amazon (and its role in reducing deforestation associated with agriculture). Project leaders quickly realized that the gaping void between objectives and reality in the existing governance regime in the region involved not only a lack of economic incentives for farmers and a lack of adequate maps for licensing under existing laws, but also flexibility of institutions and local leadership willing and able to implement a licensing initiatives in any meaningful way.

⁵⁴² Peck, "Follow the policy: a distended case approach," 23.

⁵⁴³ Interview with David Cleary, TNC, 14 May 2012.

Defining success for Lucas Legal

In the sections that follow, several outcomes of Lucas Legal will be explored using the results from a previously unanalyzed pre-project survey of local producers conducted by TNC in 2006 and municipal staff and interviews with farmers and project leaders conducted in 2011. The challenges still faced by the project will also be examined. The following successful outcomes of Lucas Legal will be explored in the context of the framework outlined in Table 5: reframing local environmental issues as farming issues and the mediation of a more positive relationship between the government and farmers, facilitating the process of environmental subject making in Lucas; effective scaling-up of the project to solve problems at the most appropriate scale; and the incorporation of a wide diversity of participants and environmental activities to build on positive reception of the project.

Framing environmental issues as farming issues

Current political ecological thought, tracing its roots as far back as Foucault and even Immanuel Kant, calls on us to question dominant understandings and discourses about the environment.⁵⁴⁴ As described in the previous chapter, there was a time, not so long ago, that farmers were seen as stewards of nature,⁵⁴⁵ more recently, and especially in the Amazon, agriculture has come to be implicated as an important

⁵⁴⁴ Paul Robbins, *Political Ecology* (Malden, MA: Blackwell Publishing, 2004). 109.

⁵⁴⁵ Thompson, *The Spirit of the Soil: Agriculture and Environmental Ethics*.

driver of deforestation and perpetrator of other environmental ills.⁵⁴⁶ The key issue is not whether agricultural expansion in the Amazon has had transformative effects on the natural landscape of the Amazon; it certainly has. The critical political ecological issues, instead, are whether or not these transformations must continue, and how discursive, political and scientific constructions of these transformations have contributed to agriculturally driven deforestation. By describing deforestation in primarily spatio-ecological terms,⁵⁴⁷ and with technologies undergirded by the assumption that a given location in a given time can have but one land use (i.e., nature or agriculture), policy makers have naturalized the supposed absolute opposition of “nature” and “agriculture.”

This either/or dichotomy can be seen clearly in the many national-, biome-, and state-scale maps produced to show the advancing agricultural frontier replacing forest pixel by pixel. There are at least two problems with this approach, though: 1) the spatial and temporal resolutions at which these maps are produced are often incongruent with the scale at which most activities in the Amazon are taking place,⁵⁴⁸ and 2) the binary opposition of nature/agriculture is misleading, incomplete, and unnecessarily essentialist in nature. In fact, complex, individual-level decision

⁵⁴⁶ William F. Laurance et al., "Deforestation in Amazonia," *Science* 304(2004); Fearnside, "The Roles and Movements of Actors in the Deforestation of Brazilian Amazonia."

⁵⁴⁷ "The Roles and Movements of Actors in the Deforestation of Brazilian Amazonia," 24; Laurance et al., "Deforestation in Amazonia."

⁵⁴⁸ Niall Hayes and Raoni Rajão, "Competing Institutional Logics and Sustainable Development: The Case of Geographic Information Systems in Brazil's Amazon Region," *Information Technology for Development* 17, no. 1 (2011): 12., although improving technology and increased attention to human-scale factors affecting land use change in the Amazon are beginning to filter into satellite analyses of the Amazon, as in Isabel M.D. Rosa, Carlos Souza Jr., and Robert M. Ewers, "Changes in Size of Deforested Patches in the Brazilian Amazon," *Conservation Biology* in press(2012).

making based on cultural, historical, economic, and other values create what, when aggregated and viewed through certain lenses, appears to be a battle between “agriculture” and the “environment.” Leaders of Lucas Legal recognized this and successfully threw out the implied opposition between these two landscape types, framed deforestation avoidance and environmental licensing as agricultural issues, and did so at the property level where individual decision making takes place.

For example, even before Lucas Legal began farmers in Lucas were as concerned about the way some environmental issues, especially the weather/climate (15.96 percent of respondents mentioned this as a problem) can affect their livelihoods as they were about other issues like the exchange rate, financing issues, and the general lack of dedicated agricultural politics and policy (See Table 6). This is unsurprising given the excessive rains that had hit the region in January 2005 not long before the survey was conducted (Figure 22), and the resultant near total loss of the corn harvest that year. These survey results are also consistent with my field observations in 2011, especially with regard to weather and climate changes. It was not uncommon for me to hear farmers allude directly or indirectly to changes in the local climate and weather systems. Farmers reported shorter rainy seasons, more powerful rainstorms, stronger cold fronts, and rains coming from “all directions” when previously they mainly came from the north.⁵⁴⁹

⁵⁴⁹ Field research, 2011.



Figure 22. Tractors sink in a flooded field during the corn harvest, January 2005, Source: Municipal archive, Lucas do Rio Verde

Striking in this regard, however, is the apparent low concern with more land-based environmental problems, including erosion (mentioned by only 2 respondents), and the absence of any mention of the importance of protecting streams and springs in 2006. By the time of my fieldwork in 2011, after Lucas Legal had been active for about 5 years, all of the farmers with whom I conducted interviews mentioned how important it is to protect

waterways and riparian zones, suggesting that Lucas Legal successfully raised awareness of this issue among farmers.⁵⁵⁰

Returning to the issue of the expressed lack of a *política agrícola* (agricultural policy/politics), it is worth discussing the documented but little discussed persistence of generally weak governance in the Amazon/Cerrado. Settlers and farmers in the Lucas region have consistently attempted to call attention to the lack of resources made available to them and the extraordinarily high costs they incurred to settle in Mato Grosso. As more fully discussed in Chapter 3, the first decade or so of settlement in Lucas was one of considerable hardship, isolation, and even violence, even for the more affluent settlers. It is for this reason that those who managed to survive in Lucas from the beginning are now extraordinarily proud of their success in building a successful agricultural sector and a growing economy in Lucas, and they credit little of this achievement to the federal and state governments. In the 2006 survey (Table 6), 13.62 percent of respondents cited a lack of agricultural policy as a major problem, noting, for example, the “few resources” available for farmers, the need for subsidized agricultural insurance, the charge that national economic plans are “unfavorable” for the agricultural sector, that there is a “lack of representation and political will,” and, more simply, blaming then President “Lula” for it all.⁵⁵¹

⁵⁵⁰ Field research, 2011.

⁵⁵¹ TNC/municipal survey, 2006.

Table 6. Sources of dissatisfaction among agricultural producers in Lucas do Rio Verde, Mato Grosso, 2006 (N = 213)

Problems/Demands		Number of Respondents	Percentage (number of respondents/total surveyed (n=213))
Political	Lack of agricultural policy/politics or simply “the government”	29	13.62%
	General lack of incentives for producers	4	1.88%
Financial/ Economic	Taxes are too high	10	4.69%
	Commodity prices are too low	40	18.78%
	Exchange rate is poor or fluctuating	15	7.04%
	High cost of production (including inputs)	77	36.15%
	Issues related to financing (high interest rates, short repayment periods, unjustness in creating payment plans)	27	13.68%
Logistics	Poor condition or a lack of roads and highways	61	28.64%
	Lack of adequate silos or other infrastructure	7	3.29%
	Difficulty security property title	1	0.47%
	Lack of (reliable) electricity in rural areas	8	3.76%
	General difficulty with logistics or a lack of technical assistance	25	11.74%
Environmental	Weather/climate*	34	15.96%
	Environmental problems including erosion	2	0.94%
	Disease and other plagues on crops	28	13.15%
	Presence of jaguars	1	0.47%
	The lack of a “green seal”	1	0.47%
Other	“everything”	1	0.47%

Source: From a survey conducted by TNC and municipal staff in approx. 2006, data from survey compiled by the author, 2011, 2012. *Note:* This survey was conducted in anticipation of Lucas Legal and was intended to be a type of baseline data source, but to the knowledge of the author, nothing was ever done with these data. They were reportedly entered into an electronic spreadsheet at some point, but the computer holding the spreadsheet was stolen. The open ended questions “What are your problems in agriculture?” and “What are your main demands?” provided the answers to these questions, to which some producers responded with many answers, some with a few, and some with no answers. *The author would see these as different kinds of complaints, but the words for ‘weather’ and ‘climate’ are the same word (*clima*) in Portuguese, so it is unclear from the survey documents about which each farmer was referring, thus, they were grouped together.

This point is particularly salient when compared with the (much shorter) catalogue of positive aspects of farming in Lucas documented by the same 2006 survey (see Table 7). There were overall many fewer responses to the question asking “what are the strong (positive) points about agriculture here?”, and of these, only two of the responses were about politics or governance. The overwhelming majority of positive responses were related to the scale, quality, or efficiency of production in the region (29.11 percent of respondents mentioned this), or the technology available (15.49 percent mentioned this). Nearly 10 percent of respondents mentioned that the natural characteristics (climate or topography) of the area were a positive aspect, including some who had also mentioned *clima* as a problem. For 17 respondents, there were no positive aspects to agriculture in Lucas at the time of the survey, though this apparent pessimism should be regarded cautiously; a snapshot of agriculture in Lucas in 2006 likely captures a disproportionate amount of pessimism given the acute confluence of challenges to the industry in 2005 (See chapter 5).

Table 7. Sources of Satisfaction among Agricultural Producers in Lucas do Rio Verde, Mato Grosso, 2006 (N = 213)

Positive Aspects		Number of Respondents	Percentage (number of respondents/total surveyed (n=213))
Political/ Governance	The power of producers	1	0.47%
	Producers' "good attitudes"	1	0.47%
Financial/ Economic	Scale, quality or efficiency of production	62	29.11%
	Rapid return on investments/ready market for products	2	0.94%
	Stability	2	0.94%
	Commodity prices	1	0.47%
	Good bundles from companies	1	0.47%
Logistics	Technology	33	15.49%
	Farm management system, including proximity of Sadia and other industry	3	1.41%
	Availability of energy	1	0.47%
Environmental	Natural characteristics of the area (climate or topography)	20	9.39%
Other	"Right now there are none"	17	7.98%

Source: Survey conducted by TNC and municipal staff in approx. 2006, data from survey compiled by the author, 2011, 2012

Note: This survey was conducted in anticipation of Lucas Legal and was intended to be a type of baseline data source, but to the knowledge of the author, nothing was ever done with these data. They were reportedly entered into an electronic spreadsheet at some point, but the computer holding the spreadsheet was stolen. The open ended question "What are the strong points of agriculture in Lucas?" provided the answers to these questions, to which some producers responded with many answers, some with a few, and some with no answers.

Attention to the motivations of individual actors may improve environmental outcomes at the local level, but such binaries of nature/agriculture continue to exist further up the governance scale. Elites and upper-level state officials have grappled with strong pressures to create policies that promote economic development in the

Amazon, and more recently, to also create policies that promote conservation of the Amazonian environment. Through their positions of power, these elite actors have created institutions, including monitoring systems based on satellite-based remote sensing and GIS, that, when referenced uncritically as they usually are, reflect this compartmentalization of reality into agriculture/economic development in necessary opposition to the environment.

However, since the 1970s, state-instigated decentralization processes and the strengthening of interest-based networks outside of the state have greatly diversified both positions and process.⁵⁵² The government has long promoted “contradictory” policies simultaneously (most notoriously, the Forest Code and the Land Statute); and has, accordingly, been accused of being both ineffective and too effective in promoting both pro-development and pro-environmental policies. For example, environmentalists and others concerned about the rate of deforestation in the Amazon have long pointed to laws and policies, like tax exemptions and land allocation policies and procedures that favor development and agricultural activities in the Amazon at the expense of forests.⁵⁵³ Emily Boyd clearly states this position:

Government failure to protect Amazonia has at the core been its development policy over the past 40 years. The primary policy objective has been to integrate Amazonia into the national economy.

⁵⁵² Lemos and Roberts, "Environmental policy-making networks and the future of the Amazon," 1897-98.

⁵⁵³ Hans P. Binswanger, "Brazilian policies that encourage deforestation in the Amazon," *World Development* 19, no. 7 (1991).

This has led to widespread and intensive logging, large-scale mechanized soya bean production, credit subsidies for large and small farmers (although the former is in decline), transportation investments and rapidly growing urban areas.⁵⁵⁴

Indeed, from even before the March to the West to the present and as the government pushes to pave the Cuiabá-Santarém Highway, Brazil's federal (and state) governments have unquestionably promoted environmentally transformative economic activities.⁵⁵⁵

And yet, farmers in the Amazon also complain that their needs are not being met. While there is no question that the agricultural activities of farmers have changed the natural environment in the Amazon/Cerrado region, this does not mean that the transition has been efficient or accompanied by good governance, or that the environmental problems in the region are simply the result of greed on the part of the farmers. Of particular import are the poor quality and scarcity of social and rural services in the region, the complex land-titling system, and the high level of land concentration/uneven land distribution and the correspondingly uneven rural policies.⁵⁵⁶ Corporate tax incentives have supported very large landholdings (typically

⁵⁵⁴ Boyd, "Navigating Amazonia under uncertainty: past, present and future environmental governance," 1912.

⁵⁵⁵ Soares-Filho et al., "Simulating the response of land-cover changes to road paving and governance along a major Amazon highway: the Santarém-Cuiabá corridor."

⁵⁵⁶ Martinelli et al., "Agriculture in Brazil: impacts, costs, and opportunities for a sustainable future," 433 & 37.

considered 2,500ha or more),⁵⁵⁷ and small-holder policies have supported small farms, usually under 200ha in most of the Amazon.⁵⁵⁸ These policies simply do not reflect the reality of much of Amazonian agriculture; for example, the average landholding size in Lucas is around 750ha, and over half of the properties in the municipality are between 200 and 2,500ha.

Indeed, just as policies of environmental protection have been notoriously decoupled from on-the-ground situations in the Amazon, so too have been policies of economic development. Roads have been built, sufficient to promote and accelerate deforestation but insufficient to safely and economically transport residents and commodities. Environmental licensing has been legislated, but fails to either comprehensively address environmental issues on farms or be accessible to the many farmers in the region with title irregularities on their land. One reason for this decoupling with regard to economic and agricultural policies is the diversity of the needs they must address due to the very heterogeneity of “producers” as a group as referenced above. Table 6 and Table 7 clearly illustrate this heterogeneity further, as well as the wide variety of issues that concern producers, even within one municipality (Lucas). Sources of dissatisfaction for farmers in Lucas include political,

⁵⁵⁷ Binswanger, "Brazilian policies that encourage deforestation in the Amazon," 824; Luiz A. Martinelli et al., "A falsa dicotomia entre a preservação natural e a produção agropecuária," *Biota Neotropica* 10, no. 4 (2010).

⁵⁵⁸ Brazilian agricultural policies, including taxation rates, are typically based on what are known as *modulos fiscais*, fiscal units or minimum property unit sizes, defined differently for each municipality, depending on the size, nature, and location of the municipality in which the property is located. These units can be as small as 5 hectares in more densely populated areas outside of the Amazon to up to 110 hectares in some parts of the Amazon. Unfortunately, this makes it difficult to make meaningful comparisons about landholdings across municipalities.

financial and economic, logistical and environmental issues (or in the case of one respondent, “everything”).

As illustrated in Chapter 3, the settlement and development of the region for agriculture was less fully- and well-managed by the state than previously thought.⁵⁵⁹ Settlers were enticed to the region and, for those who actually stayed on the land to farm instead of clearing the land for tax breaks and other such rent-seeking behaviors, they were offered very little assistance from the government after the first year or two, if at all. In other words, many of the farmers living and working in agriculture in the Amazon/Cerrado today are neither the highly impoverished formerly landless settlers exemplified by members of the well-known MST (*Movimento dos trabalhadores Sem Terra* /Landless Workers’ Movement) nor are they exceedingly wealthy landowners who inefficiently clear large tracts of land for tax and speculative purposes. Instead, they are businessmen for who washed out roads and fluctuations in the exchange rate can make the difference between making it and breaking it in a given year.

It is against this backdrop that the first of the successes of Lucas Legal can be seen – the reframing of local agri-environmental issues as *both* agricultural and environmental, leading to a shift in how lower-level decision makers relate to constituents (Table 5). Scholars have pointed to the ways in which “the environment”

⁵⁵⁹ Jepson, "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil," 857-58.

is socially constructed⁵⁶⁰ and context specific, and have questioned the voices commonly deemed legitimate in defining and defending it and the binary oppositions often created by dominant voices.⁵⁶¹ The above outline of debates surrounding agri-environmental issues is a clear example of the false dichotomy between, for example, conservation of nature and resource extraction (agriculture) that is often perpetuated, if not set up, by environmentalists.⁵⁶² Thus, in the cooperation between TNC and various agricultural actor groups and the rejection of discourses that separated the agricultural from the environmental in the storylines produced by the project and project leaders, Lucas Legal proved to be highly innovative, as well as effective, in better matching the framing of environmental issues to the experiences of local farmers. In doing so, farmers and local environmental managers were given the discursive tools to play on the same team in resolving licensing and forest restoration issues: now local environmental officials could help farmers protect their lands and get the licensing they deserved rather than enforcing restrictions dictated by outsiders on their land use.

⁵⁶⁰ Timothy Luke, "On environmentalism: Geo-power and eco-knowledge in the discourses of contemporary environmentalism," *Cultural Critique* 31, no. The Politics of Systems and Environments, Part II (1995): 67.

⁵⁶¹ Juanita Sundberg, "Strategies for authenticity and space in the maya biosphere reserve, Petén, Guatemala," in *Political ecology: An integrative approach to geography and environment-development studies*, ed. Karl S. Zimmerer and Thomas J. Bassett (New York: Guilford 2003), 57-58.

⁵⁶² *Ibid.*, 58.

Evolving views of the environment :Subjects made?

Another key outcome when an environmental project has “worked” is that individuals who previously did not consider the environment in their decision making, or did not consider it much, begin to consider it (Table 5).⁵⁶³ This concept, which Agrawal treats more fully in his book *Environmentalism*, is careful in defining the concept of “the making of environmental subjects” that takes place alongside the decentralization of environmental rule and the necessary redefinition of state-society relations.⁵⁶⁴

Projects like Lucas Legal are easy to dismiss as greenwashing, as environmentalists and other outsiders may find it difficult to believe that individuals who so recently participated in massive deforestation events and who continue to apply copious amounts of agrochemicals to their fields each season could care about the environment or even take the environment into account in decision making as environmental subjects. Additionally, it is easy to be skeptical of the motives of corporations like many of the partners in Lucas Legal, and to imagine that because environmental protection is generally seen to be diametrically opposed to their profit-making activities, that their participation in the project is some form of passing off of environmental responsibility to farmers or a devious attempt to influence regulatory processes so as to minimize their responsibilities.⁵⁶⁵ Furthermore, skepticism about

⁵⁶³ Lemos and Agrawal, "Environmental Governance," 504.

⁵⁶⁴ Agrawal, *Environmentalism: Technologies of government and the making of subjects*: 14-15.

⁵⁶⁵ Such as in the case of the Soy Moratorium Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," 361.

cooperation among ENGOs and corporations extends to ENGOs, who may be seen as abandoning their ideals and succumbing to money grabbing instead.⁵⁶⁶

While these concerns are certainly not unfounded, data from Lucas suggest a different reality, consistent with Agrawal's findings in India. In his meticulous detailing of the transformation among the Kumaon people after forest governance was decentralized and local forest councils were granted real (not just nominal) power over local forests, Agrawal comes to the conclusion that a real change had occurred in the viewpoints and subjectivities of *some* local people.⁵⁶⁷ This change in subjectivity to include the environment is significant, even if it is not universal and even if it does not bring the individuals concerned exactly in line with the dominant global environmental movement. In Agrawal's words:

I use the term *environmental subjects* to nominate those who thus care about the environment. More precisely, the environment for them constitutes a conceptual category that organizes some of their thinking; it is also a domain in conscious relation to which they perform some of their actions. The practices and thoughts of environmental subjects, as I define the term, may not always lead to environmental conservation. But they are often undertaken in relation to the environment. I draw on evidence related to forests as an example of an environmental resource. Further, in considering an actor as an environmental subject I

⁵⁶⁶ Interview with David Cleary, TNC, 14 May 2012.

⁵⁶⁷ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 165.

do not demand a purist's version of the environment: something necessarily separate from and independent of concerns about material interests and everyday practices. A desire to protect commonly owned or managed trees and forests, even with the recognition that such protection could enhance one's material self-interest, subscribes to environmental subjectivities.⁵⁶⁸

In other words, for Agrawal, interest in the environment because you believe it will benefit you in some way does not in any way diminish your environmental subjectivity. This consequentialist view of environmentalism opens the door for individuals to participate in environmental governance without questioning their motives, a perfectly rational position given that the environment, unlike an individual, is not concerned with *why* you protected it.⁵⁶⁹

Was there a change in the environmental subjectivity among farmers in Lucas from before the implementation of Lucas Legal to five years afterward? The evidence tentatively suggests that there was, though more research is needed in this regard. Prior to the implementation of Lucas Legal, responses to the few questions directly related to environmental behaviors showed that *in practice* far fewer farmers were taking on environment-positive activities such as reforestation and obtaining licenses than were not (Table 8). These data should be taken with a grain of salt, though.

⁵⁶⁸ Ibid., 164-65.

⁵⁶⁹ Daniel Holbrook, "The consequentialist side of environmental ethics," in *The environmental responsibility reader*, ed. Martin Reynolds, Chris Blackmore, and Mark J. Smith (London: Zed Books, 2009), 55-57.

Responses regarding reforestation or letting forest grow back were not accompanied by data about forest reserve deficits (or excesses), as survey data from TNC's project were still forthcoming. Thus, it is impossible to determine the relative amount of harm in each case of a farmer not undertaking any recent reforestation projects, though based on more recent figures related to land use in the municipality, these data are plausible.⁵⁷⁰ The question about the LAU is also incomplete because it does not capture who may have applied for a LAU at the time of the survey but had not received it yet due, for example, to delays in emitting licenses on the part of SEMA. These data are further corroborated by relatively low levels of concern (both positive – 9.39 percent, Table 7 and negative – maximum 15.96 percent, Table 6) with environmental issues in the open-ended questions of the survey.

⁵⁷⁰ Lucas do Rio Verde Legal, "Lucas do Rio Verde Legal: Produção e meio ambiente: Grandes conquistas," (2011).

Table 8. Farmer environment-positive activities, 2006

Responses in 2006 survey (N = 212)	Have you reforested in the last 5 years?		Have you let forest come back in the last 5 years?		Do you have a LAU?	
	<i>Count</i>	<i>Percentage</i>	<i>Count</i>	<i>Percentage</i>	<i>Count</i>	<i>Percentage</i>
Yes	15	7.1%	44	20.8%	21	9.9%
No	149	70.3%	121	57.1%	69	32.5%
No Answer	48	22.6%	47	22.2%	122	57.5%

Source: TNC/SAMA 2006

At the time of my fieldwork in 2011, environmental issues were present at nearly every turn, even though there remained some disagreement about what priorities should be set, how issues should be addressed, and who had the right to address them. When asked about their environmental views, every farmer interviewed said it was important to protect the environment. Admittedly, these data must be interpreted with caution, as it is unlikely that a farmer in the Amazon who agreed to be interviewed by an American researcher would express ambivalence about environmental outcomes, even with the promise of confidentiality. And yet, taken together with other data, there is reason to believe that the majority of farmers in Lucas do consider the environment *in some way*. I received a typical response from KR:

In my view, production does not exist without conservation. To open up the land, we had to destroy [forest]. But I think that it was destroyed conscientiously and very little was destroyed without conscientiousness. But today, we understand that you have to conserve and have this harmony between the environment and production. But you have to conserve in practice, not just in theory. And also, I think that conservation of the environment is not just not deforesting. I think it is also the way you work and the way you deal with herbicides, fungicides, and how you work with your employees.⁵⁷¹

GR offers a similar, typical response to the question “What is your view of the environment of conservation?”

Before, we didn’t think about it, but today you have to think about conservation and leaving [forest] close to water, you know? You have to leave forest, but before you didn’t. Before it was chop down everything – you could do it and you did. But not anymore.⁵⁷²

With regard to how this consideration of the environment came to be, fewer people reported that they had always cared about protecting the environment; more

⁵⁷¹ Interview with KR, 1 November 2011.

⁵⁷² Interview with GR, 29 October 2011.

reported that their views had evolved to this point over time, though this evolution was not usually attributed specifically credited to Lucas Legal.⁵⁷³ Of respondents who said that their environmental views had changed, the catalysts for this change varied from observed changes in the local climate, personal maturity, increased awareness of national and international concern about the environment, a desire to have water available for agriculture in the future, and the fact that they had the opportunity to set aside reserves due to the size and newness of their farms.⁵⁷⁴

When asked specifically about Lucas Legal, some farmers credited the program with giving them a “better vision” of the environment,⁵⁷⁵ and with improving market prospects for local products, whether in terms of a future “green seal” with price differentiation or in terms of reducing apprehension on the part of buyers or businesses looking to install crushers or make other investments in the municipality,⁵⁷⁶ though no such thing has been known yet to have occurred due to Lucas Legal.

A common assumption is that farmers will only protect the environment if it is financially beneficial to them, because, after all, a typical farmer’s livelihood is in direct competition with the forest. Where there is forest there cannot be (most) crops. The data from Lucas suggest that potential financial benefit is insufficient in explaining farmer views on environmental protection. To date, no financial benefits in terms of price differentials or improved market access have actually accrued to

⁵⁷³ 2 interviewees reported to have always felt the same about the environment, while at least 7 admitted that their views had evolved. I did not ask this question of all respondents.

⁵⁷⁴ Field work, 2011.

⁵⁷⁵ Interview with BR, 7 November 2011.

⁵⁷⁶ Interview with GR, 29 October 2011.

Lucas Legal participants or holders of LAU. Some farmers hold out hope that this may someday be the case, but most are circumspect in this regard, as in the words of BR: “It would be good if they paid us more.”⁵⁷⁷ Other farmers, like JS, responded with a flat “no” when asked if they thought they would ever see a financial benefit for their participation.⁵⁷⁸ Producer TU offers two possible explanations for the change, beyond expanding worldviews and deepening consciences: technology and scale.

If someone has a thousand hectares, it doesn't matter if he loses area. No way. Why fight over 10 by 20 hectares with regard to what you have to reforest or stop planting? What difference does it make if you have technology, if you plant a thousand hectares and lose 20? If you use more technology you will get about the same. And it's that, and your conscience.⁵⁷⁹

In other words, the farmers of Lucas are certainly in favor of receiving monetary remuneration for their efforts, like most people who reside and do business in modern economies. It should not be radical, though, to suggest that these individuals, like all individuals, may consider many factors in decision making, and that their calculus may change over time, or as technology improves.

⁵⁷⁷ Interview with BR, 7 November 2011.

⁵⁷⁸ Interview with JS, 8 November 2011.

⁵⁷⁹ Interview with TU, 25 October 2011.

CAR :Lucas Legal scales up

An important test for Lucas Legal led to what are perhaps its most significant successes— CAR and MT Legal. Prior to Lucas Legal, the state of Mato Grosso was already responsible for issuing environmental licenses. The environmental license for rural properties in Mato Grosso, LAU, had existed since 1995, but with poor enforcement and considerable technical difficulties on the part of the state with regard to generating them. One of the main obstacles to effective implementation of a licensing and monitoring program in Mato Grosso has been the inadequate temporal and spatial resolutions of available satellite and GIS data and a lack of technologically capable staff in the state agency. These issues are explained in detail in Chapter 4. Thus, for Lucas Legal to achieve 100 percent licensing of rural properties, this problem had to be rectified with a groundbreaking and detailed survey that would allow for accurate mapping of the municipality’s rural areas.

By 2007, only a year after the start of the project, the technical team for Lucas Legal had completed their work, generating mosaics of SPOT4 imagery for the municipality and the production of maps of each property (referred to in the project as the “GEO”), including property lines, a satellite image, and degraded APPs and deficiencies in RL noted. However, translating this information to licenses would prove to be challenging. Although SEMA was a partner in the project and although farmers were guaranteed temporary immunity as they pursued compliance on their

properties in Lucas, this immunity from prosecution could not, at first, be guaranteed at the state and federal level. The notification of 15 producers in Lucas for Forest Code violations in 2008 further underscored this issue. Thus, it became clear that the project could not continue on the local scale: it had to be scaled up. Institutional innovations are effective but they must correspond in scale with the level at which surveillance and monitoring of compliance take place.

Mato Grosso's LAU is a comprehensive environmental license, designed to minimize the amount of paperwork required for licensing. In Brazil, notorious for its bureaucracy, this is not an insignificant feature. And yet, for farmers facing complex and time consuming alterations to their properties in order to comply with the law, the simplicity posed a different problem: most farmers could not or would not undertake all of the measures needed to make their properties fully compliant with the law before applying for the license. In fact, applying for the license was one of the only ways to know exactly what measures needed to be undertaken on one's property to be compliant with the law, but in doing so, one was also declaring his or her environmental crimes directly to state officials and, in essence, asking to be fined.⁵⁸⁰ TNC and the municipal government of Lucas had hoped that a partnership with SEMA would allow them to promise farmers that participation in Lucas Legal would come with temporary "amnesty" as they pursued compliance, but they found 1) that they could not provide farmers protection from prosecution by state and federal governments without institutionalizing the pre-license at the state level, and 2) that

⁵⁸⁰ Interview with OE, 4 November 2011.

some farmers were resistant to licensing for various reasons (lack of property title, a desire to make a political point about laws, a sense of being above the law), but that these resistances to licensing were not necessarily related to how the individual treated the environment.

Fortunately for project leaders, Otaviano Pivetta, the former mayor of Lucas and personal friend of the current mayor and Lucas Legal sponsor, Marino Franz, was a state legislator, who proposed and got passed a bill creating a state program modeled after Lucas Legal, to be called MT Legal.⁵⁸¹ The state program created a state-level CAR prior to the application for the full LAU and created a period, at first a year, and later extended to two years, in which farmers could apply for CAR and receive the same kind of temporary amnesty that leaders in Lucas had attempted to promise under Lucas Legal. The creation of MT Legal was a major victory for the leaders of Lucas Legal in that it legitimized the promise of temporary amnesty under Lucas Legal at a more meaningful level – the state – which was ultimately responsible for granting licenses and making decisions regarding whether to prosecute for environmental violations or not. Secondly, this “scaling-up” of the project placed the “Legal program” concept in an even larger forum than it had been before, framing Lucas as an environmental leader among agriculture-oriented municipalities. The municipality began to attract positive, national attention for Lucas Legal and continued local economic growth,⁵⁸² and the successes of CAR, Lucas

⁵⁸¹ Soraia Ferreira, "Otaviano apresenta MT Legal em Lucas do Rio Verde," *Reporter News.com.br*, 16 June 2008.

⁵⁸² Pimenta, "Crecimento Chinês e Ambientalismo Nórdico."

Legal, and MT Legal reportedly influenced the revisions to the Forest Code passed by the Brazilian Senate in 2011, which called for the creation of a federal CAR.⁵⁸³

From project to program

Yet another way in which the project succeeded was its evolution from being a project to being a more inclusive program in Lucas. As stated previously, the original and main objective of Lucas Legal was to achieve 100 percent licensing of rural properties in Lucas to enable satellite monitoring of the local agriculture industry. The project has had mixed success in this regard (discussed more fully below). However, the overall positive response to the project has acted as a catalyst for environmentalism and conservation-oriented activities in the municipality and off the farm, including in schools. As an example, agricultural companies now partner with the municipality, especially the school system, to plant trees along roads and along areas particularly vulnerable to erosion, under the banner of Lucas Legal (Figure 23). There is no indication that these projects are specifically sanctioned or sponsored by the Lucas Legal sponsors as a group, although the Secretary of Agriculture and Environment claims that they fall under the banner of Lucas Legal.⁵⁸⁴ The notion, though, that ongoing environmental activities in the municipality could be considered under the umbrella of Lucas Legal is, in some ways, consistent with the

⁵⁸³ Marcos Coutinho, "Programa MT Legal Respaldou Código Florestal em Sete Pontos," *Olhar Direto*, 08 December 2011.

⁵⁸⁴ Interview with Secretary of Agriculture and Environment, 18 November 2011.

positions of TNC and sponsors. TNC’s David Cleary also refers to Lucas Legal as “not so much a project but a process” and points out that “it’s sort of accepted by people that this [FC compliance, environmental stuff] is a good thing. You have groups of kids touring the *bosque*, etc. It just seems like this cultural shift has really happened.”⁵⁸⁵



Figure 23. John Deere employees in Lucas plant trees with school children as part of Lucas Legal, 2011. Source Author.

⁵⁸⁵ Interview with David Cleary, TNC, 14 May 2012.

And, in fact, there appears to be a substantial amount of what might be called mission creep in the municipal administration and even into organizations favored by local elites due to their considerable overlap in terms of leadership with the municipality. Take, for example, the municipality's soccer team, Luverdense Esporte Club (LEC). Since 2011, LEC has dedicated itself to being the first "zero-emissions" soccer club and in pursuit of this goal, the club has vowed to plant (or to have school children plant, rather) 100 saplings for each game, based on calculations that an average of 2,500 fans attend each home game, generating a total of 35,000 kg of CO₂ per game (Figure 24).⁵⁸⁶ The LEC project, called *Projeto Time Verde*, or the Green Team Project, is in partnership with the current municipal Secretary of Agriculture and Environment, who is also a founder of the team and has been serving as the team's secretary, as well. It should also be noted that a major sponsor of the team is Fiagril, the agricultural trading company, owned by Lucas' mayor and his family, and which is also a sponsor of Lucas Legal. The LEC project is explicitly linked to Lucas Legal on the team's website, where fans are informed that

the planting of the saplings will be done by children from the municipal school system just like farmers in the recuperation of degraded areas of the Lucas do Rio Verde Legal project, which was

⁵⁸⁶ Luverdense Esporte Clube [LEC], "Time Verde," <http://www.luverdense.com.br/timeverde.html>.

developed by the municipal government of Lucas do Rio Verde and is highlighted globally as a model for other countries.⁵⁸⁷



Figure 24: LEC members plant saplings as part of the Time Verde project, Source: LEC website, <http://www.luverdense.com.br/timeverde.html>

Given the personal, business, and political relationships among the leaders of LEC/Time Verde, Lucas Legal, the municipal government, and Fiagril, for example, clearly, key commodities in environmental conservation efforts in Lucas are access to elite networks and personal contacts in influential local organizations. Not to diminish the efforts of these elites in improving both the behavior and the reputation of the municipality and its influential organizations and actors, but these efforts stand in contrast to the absence of organized pro-environment activities in Lucas that are not

⁵⁸⁷ Ibid.

linked to local elites. It is unclear if environmental awareness exists but remains unseen outside of the elite networks, or if the elite networks are indeed the principle drivers of environmentally-oriented activities in Lucas.

In fact, the importance of elites, whether political, economic, or scientific, in successfully organizing environmental conservation efforts is well documented at global and national scales,⁵⁸⁸ and the situation in Lucas lends support to the notion that this tendency is both equally true and equally in need of fair but critical investigation at the local scale as well. Elites have the cultural, political, and economic capital to make conservation happen if, indeed, that is their wish, for economic reasons or due to personal conviction. Informed critiques of these efforts, though, are important. As Holmes points out, elites with the best of intentions and sufficient resources may ultimately fail to address problems at their roots, because they are typically uncritical of capitalist activities that often contribute directly to the very the environmental harms that they are trying to correct because they are, by definition, deeply enmeshed in the sectors that are the most problematic. Because of this, they tend to focus on convenient environmental issues that attract either big money or media attention, instead of the ones most in need of attention.⁵⁸⁹ Lucas may well be a prime example of this. Convincing relatively wealthy farmers to plant a few trees may prove to be the easiest environmental challenge to overcome in the region.

⁵⁸⁸ George Holmes, "The rich, the powerful, and the endangered: Conservation elites, networks and the Dominican Republic," *Antipode* 42, no. 3 (2010): 641.

⁵⁸⁹ *Ibid.*

It would likely be more difficult, for example, to place greater restrictions on the amount and type of pesticides farmers could use.

For example, an argument can easily be made that in Lucas, where industrial agriculture is well entrenched and deforestation of most of the municipality has long passed, reducing the quantity of agricultural toxins applied to crops would be of even greater benefit to local people than replanting a certain amount of forest. According to a 2007 study, in 2005 8.5kg of agrottoxins (including herbicides, insecticides, fungicides, and others) were applied to each hectare of crops in the municipality, amounting to an annual exposure of 102kg per year per habitant, six times the state average.⁵⁹⁰ Unfortunately, in spite of efforts to improve handling of these chemicals and considerable success in achieving a near-100% recycling rate for agrottoxin containers in the municipality,⁵⁹¹ these exposure rates are more than theoretical. In 2006 in a widely reported “major rural accident,” a mistake by a crop duster led to the aerial spraying of the urban center of the municipality with agricultural pesticides.⁵⁹² In a study published in 2011, a researcher found 10 agrottoxins in the breast milk of 100 percent of nursing mothers tested in Lucas (n = 62).⁵⁹³ The results of this study, in particular, were vehemently rejected by the municipal government, citing local efforts to reduce pesticide use and criticizing the study for not taking into account the

⁵⁹⁰ Wanderlei Antonio Pignati, Jorge M.H. Machado, and James F. Cabral, "Acidente rural ampliado: o caso das "chuvas" de agrotóxicos sobre a cidades de Lucas do Rio Verde - MT," *Ciencia & Saude Coletiva* 12, no. 1 (2007): 109.

⁵⁹¹ Interview with recycling center (CPE) manager, 26 October 2011.

⁵⁹² Pignati, Machado, and Cabral, "Acidente rural ampliado: o caso das "chuvas" de agrotóxicos sobre a cidades de Lucas do Rio Verde - MT," 106.

⁵⁹³ Danielly Cristina de Andrade Palma, "Agrotóxicos em leite humano de mães residentes em Lucas do Rio Verde - MT" (Universidade Federal de Mato Grosso, 2011), 9.

sales of pesticides within the municipality that are applied in neighboring municipalities and the role of the three annual growing seasons in inflating figures for local pesticide use.⁵⁹⁴

Another important criticism raised against elite-led and other non-democratic environmental programs is the lack of outside review of metrics for measuring the success of projects..⁵⁹⁵ In the case of the municipality's flagship environmental project and the focus of this study, Lucas Legal, the problem of elites setting (and also being able to change) the metrics against which one's project will be evaluated is present: the project's main and oft-repeated goal of 100 percent licensing of rural properties has quietly shifted from meaning 100 percent of properties with LAU to 100 percent of properties "licensed" by the project, i.e., 100 percent of properties mapped, which technically requires no affirmative action on the part of the landowner (more on this below).

These shortcomings notwithstanding, project leaders have been highly motivated to promote the project as a model not just for Lucas but for other places, as well. Lucas Legal has scaled-up via so-called spin-off projects in other municipalities in Mato Grosso (7 municipalities) and in Pará (5 municipalities), the state just to the north of Mato Grosso. The spin-offs are being run solely by TNC, without partnership with local government and business unlike in Lucas. For these projects, the funding comes mainly from the Brazilian Development Bank (BNDES), via their Amazon

⁵⁹⁴ Marcello Paulino, "Prefeitura de Lucas do Rio Verde questiona pesquisa da UFMT sobre a presença de agrotóxicos no leite materno," *Viomundo*, 27 March 2011.

⁵⁹⁵ Holmes, "The rich, the powerful, and the endangered: Conservation elites, networks and the Dominican Republic," 641.

Fund. These projects, modeled after Lucas Legal, share with Lucas Legal the goal of creating a cartographic database of each municipality. Unlike Lucas Legal, these spin-off projects have so far only set licensing goals for each property at the CAR level – the first of the two levels included in Lucas Legal.⁵⁹⁶

These projects began in 2010, when the Norwegian government donated \$100 million to the BNDES to be earmarked for environmental projects in order to offset emissions from Norwegian oil production activities.⁵⁹⁷ BNDES put out a call for proposals for this money, with no ceiling on the funding level, which, according to David Cleary, is “unheard of” in the conservation world and had TNC and other conservation organizations “salivating.”⁵⁹⁸ Their proposal to build on the success of Lucas Legal was approved, but there were conditions put on the money. The Amazon Fund provided \$9,100,000 and TNC has contributed \$3,200,000 to these 12 projects. Once the projects began, TNC had 36 months, or until the end of 2011 in Pará and mid-2012 in Mato Grosso to get at least 50 percent of the properties of each municipality in the project registered with a CAR, or else the money has to be returned to the Amazon Fund.⁵⁹⁹

In practice, these spin-off projects are a lesson in the importance of the nature and source of institutions for the outcome of conservation projects and the difficulties inherent in “transferring” any project from one place to another. CAR in Mato Grosso

⁵⁹⁶ The REDD desk, "TNC Project (Brazil)," The REDD desk, http://www.theredddesk.org/countries/brazil/info/activity/tnc_project_brazil.

⁵⁹⁷ Interview with David Cleary, 14 May 2012.

⁵⁹⁸ Ibid.

⁵⁹⁹ Field notes, 17 October 2011.

is based on the “pre-license” originally designed by TNC as an incentive to farmers in Lucas. It is based on the existence of a secure title to the property and a desire to ultimately undertake real conservation-oriented activities on the ground, including restoring forests, characteristics of Lucas Legal that built on the existing situation in Lucas. Nearly every property owner in Lucas already holds a legitimate title to his or her property, TNC and the other sponsors of Lucas Legal have demonstrated that they have a sincere interest in seeing at least some forest replanted, and farmers in Lucas are relatively wealthy enough, if not willing, to bear the cost of replanting and the loss of some of their crop land.

Thus, obtaining a CAR in Mato Grosso, while less rigorous than LAU, remains a somewhat rigorous process that requires a property owner dedicate at least some resources to it, and assumes that, eventually, he or she will and will be able to do so. Because CAR, like LAU, is based on the application of the Forest Code to the property, the property must be accurately mapped and the applicant for the license must legally own the property for the licensing process to move forward. In many municipalities, though, secure title is the exception, not the rule. For example, in Juruena - MT, one of the municipalities with a Lucas Legal spin-off project, a recent INCRA project settled 1000 people, of which only 400 remain.⁶⁰⁰ This is a common enough occurrence with settlement projects in the region, but it means that up to 600 properties in the municipality are “irregular” and unable to be registered with CAR because the official owners are absent from the land. Furthermore, licensing and

⁶⁰⁰ Interview with Luciane Copetti, 7 November 2011.

restoration of APPs can be expensive, running easily into the thousands or even tens of thousands of reals,⁶⁰¹ not to mention the cost of restoring the forest, which carries its own real (including purchasing saplings and building fences to keep animals out) costs and opportunity costs (lost farming area). These costs can be formidable for land owners in less affluent areas than Lucas, as well as being somewhat unpredictable. And once one begins the licensing process, there is no exit if, for instance, at some point in the process, the farmer cannot afford to move forward, which is another source of reticence to licensing.⁶⁰² As such, CAR has proven to be less simple than originally imagined in much of Mato Grosso, where land titles are not as secure as in Lucas and where social, political, and economic situations may not predispose landowners to receptiveness to conservation measures in the same way and to the same degree as in Lucas.

On the other side of the coin, CAR in Pará has perhaps been oversimplified. The acronym CAR stands for Rural Environmental Register in Portuguese and, in Pará, this is exactly what it is. Whereas obtaining CAR in Mato Grosso in fact means a legal commitment on the part of the property owner to replant APPs where they are lacking on his or her property, in Pará, the process requires no such legal and environmental commitment, and no environmental engineer has to prepare and sign off the on the application. It is simply a declaration of legal ownership of the property on the part of the registrant. TNC staffers can submit the application directly to the State of Pará on behalf of the landowner. Thus, TNC has found it to be easier to meet

⁶⁰¹ Interview with Luciane Copetti, 7 November 2011.

⁶⁰² Interview with Luciane Copetti, 7 November 2011.

BNDES-mandated goals of 50% CAR registration in the project's Pará municipalities than the project's Mato Grosso municipalities, despite Pará comparatively worse environmental reputation.⁶⁰³ CAR in Pará, though, is considerably less meaningful than CAR in Mato Grosso, though they are treated as the same thing under the TNC/BNDES project. As one of the leaders of Lucas Legal from the beginning, Luciane Copetti, who now works for TNC on the spin-off projects in Mato Grosso, laments this:

Once the registration is done, the government and the funding agencies feel their job is done, but because TNC is a conservation organization, they want to see trees planted and APPs recuperated.⁶⁰⁴

Who (appears to) regulate and how this matter

It is commonly held that farmers in the Amazon prefer less environmental restrictions on their activities.⁶⁰⁵ The data from Lucas problematizes this notion, and the Lucas Legal project may have capitalized on this insight to achieve its successes. In the pre-Lucas Legal survey, it is striking that not a single respondent mentioned excessive regulations. Instead, common complaints alluded to the inadequacy of

⁶⁰³ Márcio Sales and Carlos Souza Jr., "Risco de desmatamento, agosto de 2012 a julho de 2013," (Imazon, 2012), 1.

⁶⁰⁴ Interview with Luciane Copetti, 17 October 2011.

⁶⁰⁵ Sparovek et al., "Brazilian Agriculture and Environmental Legislation: Status and Future Challenges," 6047.

regulation in terms of *meeting their needs*. Frequent responses such as “lack of política agrícola” to questions about problems or demands in the sector indicate dissatisfaction with the type of policies and possibly regulations, but not necessarily the amount of regulation. Only one response was likely a complaint about overregulation, the respondent who answered simple “Lula” (this response was grouped with the “lack of political policy/politics” category in Table 6). Other complaints related to the type of economic policies being perused (again, not the amount) and some farmers even expressed concern about environmental degradation (erosion) and diseases, issues that have important impacts on their livelihoods and that are commonly addressed by *more* regulation.

The results of my fieldwork in 2011 offer even more compelling evidence that farmers are amenable to regulations on their behaviors when these regulations are accompanied by policies that address their immediate needs. Only one farmer suggested that he thought agriculture was overregulated in terms of environmental obligations or otherwise (“This government demands a lot of farmers and ranchers, which is why revisions to the Forest Code are being discussed”⁶⁰⁶); instead, some claimed that their activities were *underregulated* or simply inadequately or inconsistently regulated (Figure 25).

⁶⁰⁶ Interview with KD, 4 November 2011.

Figure 25: Quotes from producers in Lucas calling for more regulation or greater or more consistent enforcement of existing regulation in agriculture

“I see preserving a minimum area as of fundamental importance so that there is not [environmental] degradation [here] like everywhere else. In my properties, I have a larger reserve than required.” – PN

“Our properties are compliant with regulations. Actually, we have more [reserves] than we need to. So there isn’t any way to attack us.” – RG

“I think [the Forest Code] is just because, when I came to Mato Grosso years ago to visit, it was sad to see so many trucks with wood leaving and today, this is prohibited. If there weren’t a Forest Code like we have, they would have destroyed so much forest already. I am in favor of stopping the destruction of forest.” – KWM

“I think the government could do better. Both the state government and the federal government, on average. If they could set aside their passions, both environmentalist and non-environmentalist, if the government would be a mediator, and the example is what happened with the local government in Lucas. It could be the mentor for the negotiation of all interests and bring everyone to the same table to discuss a realistic manner for how and where to work best.” – PN

“I am a guy in favor of preserving water, preserving springs. We need to produce, but we can, and also do this legal part [comply with APP requirements], no problem” – JS

“The vision the people have here about the environment was created in Lucas. This was the first place [to take the environment seriously]. I see this clearly, this is good for all generations, and today even children are learning about the environment, to not damage, to try to conserve, and I completely agree with this project of not deforesting along rivers, conserving springs – it’s something that should have been done years ago.” – TV

“The government has to enforce and not sell itself, you know? Now if you go enforce the laws, whoever has enough money can pay you to be quiet, right? Now, I want whoever deforests, cuts, burns or ruins – I want them to be fined a lot.” – GR

“It’s the government’s responsibility [to enforce laws]. And, to tell you the truth, they are very lax in this regard, and now they are seeing the results of the environmental impact.” – HF

“You have to preserve [forests along] the river, I think this is very important. And I think that you should have to preserve 20% at least, and not only along the river.” – BR

Source: Field research, 2011

Others simply wanted benefits to accompany the regulation in kind. This view harkens back to the demands of producers during the agricultural crisis of 2005, detailed further in chapter 5. One producer, JS, compared his position on enforcement of environmental laws to the negotiations of the farmers with the state of Mato Grosso over the new FETAB tax:

The state of Mato Grosso, some years back, the government created various taxes. We got a tax --FETAB – a tax on the farmer. You pay the tax on what you produce. The only place in Brazil that was affected was us. We argued against this at the time, because I was a city councilman at the time, and we had people go to the State, arguing because the tax was really high. And it did no good. The government instituted it, and advertised it, and the legislature approved it and it actually helped. Today, the state of Mato Grosso has quite a bit of pavement. Years back, Mato Grosso didn't have any paved roads except for the federal highway. With the change in governors, my God, just for you to have an idea, just in the government of Blairo Maggi, he constructed Mato Grosso. 2650 KM of asphalt just on the state roads. This was huge, and the majority of the discussion was in cooperation with the state government and the farmers. When we wanted to construct highway 449 [a toll road connecting the federal highway with some of Lucas' rural areas], it was the first state

highway done as a cooperation among the farmer and the state, right here in Lucas do Rio Verde. And, from then on, 2650km of pavement were spread out over the state, due to cooperation between the state and farmers. And the tax that we pay on our production? Thirty cents per sack of soy, we pay in taxes. This is a high tax. It's just that, for us and for the state it was really good, because today, you can go to my farm and there are paved roads [along the way].⁶⁰⁷

In other words, because the farmers got something they wanted in exchange for complying with an unwanted requirement, according to JS, they were able to see that the requirement was good for them in the long run. A tax is not the same thing as a new or more restrictive regulation on activities, of course, but JS's comparison can be drawn because Lucas' farmers consider any requirement from the state or federal government to be imposed on them, because, on the whole, they do not feel adequately represented by governments above the local level.

The events detailed in Chapters 3 and 5 help explain why Lucas' farmers view their state and federal governments as so unrepresentative of their interests. As agriculture in the Amazon of the scale of that in Lucas is only about a generation old, only recently are appropriate policies and institutions emerging to address the needs for and costs of these activities. Moreover, political representation of farmers in the Amazon at state and federal levels has been a long time coming. At the state level,

⁶⁰⁷ Interview with JS, 8 November 2011

politics was until the mid-2000s dominated by politicians and their concerns relevant primarily to Cuiabá and other longer-established areas in the south of the state.

Producers reported that the state environmental agency, SEMA, has been plagued by corruption and, in any case, doing business with them is time consuming because SEMA employees are frequently on strike.⁶⁰⁸ Indeed, SEMA employees went on strike for several weeks during my fieldwork.

At the federal level, farmers in the Amazon have struggled to call attention to what they would like to be recognized as their unique experiences as farmers in Brazil. These include farming new lands, which are considerably larger and with more technologically advanced methods than those they left behind in the South, and in new ecosystems, being faced with considerable transport costs, and, the rapidly increasing (if inconsistent) scrutiny on their activities in terms of environmental outcomes. Producer RE put it this way:

It's no good if you have the state of Santa Catarina, for example – we here in Mato Grosso don't know much about Santa Catarina. And Santa Catarina doesn't have much familiarity with our region here. So you can't have a rule at the federal level for everyone. We have to have the federal in the general sense, but then, leave some decisions to

⁶⁰⁸ Field notes, 14 October 2011.

each state, because Rio Grande do Sul is different than Mato Grosso, and Santa Catarina is different than Bahia – Santa Catarina is hilly!⁶⁰⁹

KR was even more forceful:

We have many problems [with governmental overreach]. The federal laws are so old, and now the reality is different. So you have the same thing, you go to apply the law because the law is federal, but why do the other states not have to apply the law? Because they deforested before APPs were required.⁶¹⁰

DD was brief, but blunt:

Really, they don't do anything. Who does it is the producers and everyone in agriculture.⁶¹¹

And finally, NG:

In reality, the municipalities observe a lot of corruption in the state government and the federal government is very distant. Brazil is very

⁶⁰⁹ Interview with RE, 4 November 2011.

⁶¹⁰ Interview with KR, 1 November 2011.

⁶¹¹ Interview with DD, 7 November 2011.

large, and the federal government is far away...[In Brazil, there are] large municipalities, and sometimes the federal law doesn't consider the situation of each municipality. This is normal, and it's not always possible to discuss [each municipality]...but the biggest difficulty is that the federal government doesn't come here and the state and municipal governments have to do everything.⁶¹²

At first glance, this mild hostility to laws, policies, and enforcement of these on the part of state and federal government officials might seem to indicate that farmers are disagreeable to any type of constraint on their behavior. In juxtaposition with the commentary presented above regarding the importance of environmental regulations, though, it becomes clear that farmers are simply concerned about the source of regulations and the process by which they are implemented.

This insight seems to have been a key factor in the acceptance of Lucas Legal, as well as one of its main successes. It has long been established that the Brazilian state is highly fragmented, and scholars have struggled to reconcile the weak institutions of Brazil with its many (if insufficient and incomplete) successes in highly state-dependent economic development, with recent work pointing to the previously unappreciated importance of personal relationships among actors in different state agencies and among state actors and private actors⁶¹³ This view is

⁶¹² Interview with NG, 6 September 2011.

⁶¹³ Eduardo Marques, "State institutions, power, and social networks in Brazilian urban policies," *Latin American Research Review* 47, no. 2 (2012): 28 -29.

consistent with the scenario in Lucas, in which there are few personal relationships between local actors and state and federal actors, and so state agencies and actors are viewed as corrupt or unavailable and federal agencies and actors are viewed as too distant to understand local issues. Local leaders and agency employees, on the other hand, are also community members; they understand local issues and also can more easily be held accountable for their failures.

Farmers are sometimes resistant to state and federal regulation and enforcement, but overall, voice support for Lucas Legal. Lucas Legal and other local efforts to “regularize” properties by consistently enforcing environmental laws and encouraging licensing do not in any way let farmers off the hook on regulations that have always existed and have sometimes been enforced. And yet, farmers express a sense of pride in Lucas Legal and its influence in *more effective* monitoring and enforcement of environmental regulations. Producer JT put it this way:

Look, it’s not a benefit, but when Lucas started with this MT Legal/Lucas Legal, people looked at us differently. Let’s do it because Lucas is doing it right. So the agencies, SEMA and such, also decided to have legislation like Lucas Legal. It’s because we took the lead that the state moved forward.⁶¹⁴

⁶¹⁴ Interview with JT, 8 November 2011.

Former Secretary of Agriculture and the Environment in Lucas, and current TNC employee, Luciane Copetti, confirmed this based on her work for TNC in implementing Lucas Legal spin-off projects throughout Mato Grosso – for her, the involvement of the local government is “crucial for licensing.”⁶¹⁵ In fact, in Lucas, having local leaders like Copetti championing Lucas Legal was likely a crucial factor in its acceptance. In the words of producer KWM, “Lots of foreigners came to visit here and I went along with them. There was a speech with Lucaine, and she explained everything to us, and she was a huge proponent of the program.”⁶¹⁶

A positive view of Lucas Legal and of the role of local leaders in promoting good environmental governance was not, however, universal among respondents. A couple of farmers were more cynical about the project, like OE, though even OE seems to have been ultimately pleased with the outcome:

Everyone is doing this CAR, LAU to comply so they don't get fined. If you say the producer wants to do the CAR, no one wants to do it. MT Legal was a pact that the state made. So I bring you my problem and you help me solve the problem without fining me. Because when you do CAR, you are opening your heart. You showed your crime and are being fined. So this pact that they made, to fix the mistakes, I think it was a really good idea. I'm happy that this idea came along.

⁶¹⁵ Field notes, 14 October 2011.

⁶¹⁶ Interview with KWM, 18 October 2011.

Other producers pointed out the costs that came with the project. As producer KD put it, “to tell the truth, I think that at first, [Lucas Legal] didn’t have any benefit at all. We became targets for enforcement,” though he also eventually came around: “Actually, [now] there is an [environmental] consciousness that you don’t measure just with the financial question. It’s something you feel directly.”⁶¹⁷

In fact, though, there were costs in terms of the reputation of the local industry, if not financial, at the beginning of the project. As mentioned in Chapter 6, in September 2008, just days before Lucas Legal was to be codified at the state level as MT Legal, federal environmental agency IBAMA “notified” 15 producers in Lucas.⁶¹⁸ Copetti, then Secretary of Agriculture and Environment in Lucas, was furious that IBAMA would go over the head of the agreement between Lucas and the state and vowed to fight the charges. This incident was a sobering reminder to project leaders that no matter how much success they achieved locally, the project was only as good as its scale, so to speak.

But if local leadership was so important to the projects’ acceptance among farmers, how, then, can the unquestionable influence of the international NGO, TNC, be explained? First, it should be understood that local and national environmental organizations in Brazil have frequently formed alliances with foreign or international organizations since the beginning of the democratic period in the 1980s.⁶¹⁹ In fact, cooperation among local actors and international organizations is so common that

⁶¹⁷ Interview with KD, 4 November 2011.

⁶¹⁸ Ibama notifica produtores no município, *Folha Verde*, 18 Sept. 2008, np.

⁶¹⁹ Hochstetler and Keck, *Greening Brazil: Environmental Activism in State and Society*: 230.

Keck and Sikkink have named this pattern the “boomerang pattern,” in which local groups are frustrated in their attempts to change institutions at the state or federal level and reach further up scale, essentially going above the heads of the unmovable agencies, to enact change.⁶²⁰ The Lucas Legal case is something of a modified boomerang, in which, as opposed to farmers working through TNC to pressure the United States government to pressure Brazil to enforce its laws more fairly but effectively or some such scenario, farmers worked with TNC to “enforce” environmental laws more fairly but effectively themselves. Policy change at the state and federal levels came with positive public and media attention to the project. Still, the benefits for the local group (local politicians/municipality) and the international group (TNC) were consistent with the conventional boomerang: access to resources, leverage, and information for the local politicians and improved credibility in the locale for TNC (Figure 26).⁶²¹

⁶²⁰ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*: 12-13.

⁶²¹ Ibid.

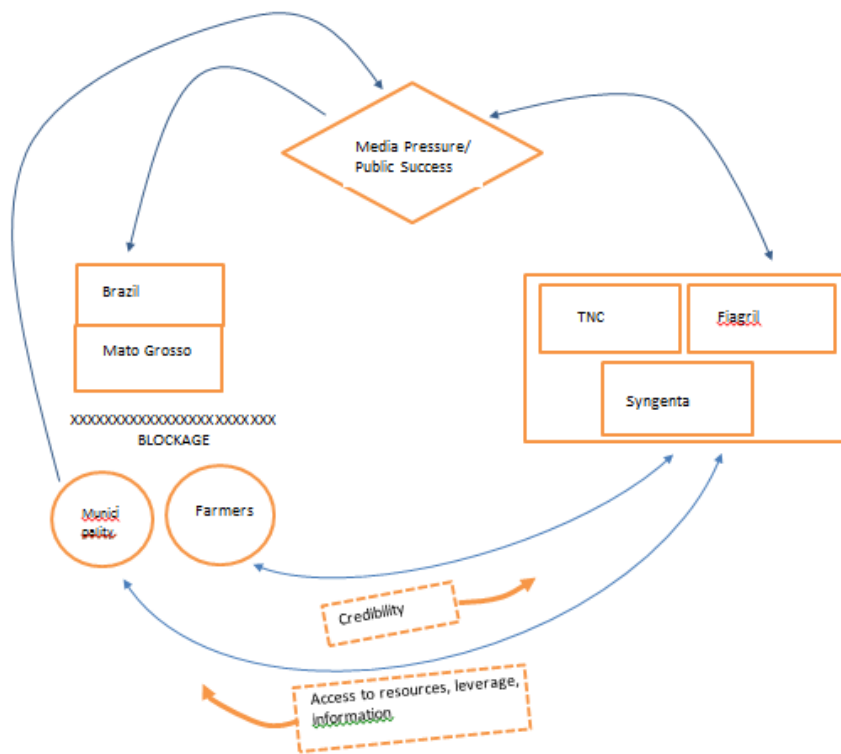


Figure 26. Modified boomerang pattern of influence of Lucas Legal, Source: Author, after Keck and Sikkink, 1998

NGOs, including TNC, were already well accustomed to working with local groups to accomplish their goals;⁶²² what was unusual about Lucas Legal was that the local nodes in the network that would develop and implement Lucas Legal were politicians and business owners in a highly-agricultural municipality. The decision to

⁶²² Ibid., 144-45.

take on this project and a precursor project which partnered TNC with Cargill in Santarém, Pará was not taken lightly by TNC leaders. Says David Cleary,

At the time we were doing this [project] with Cargill, we were having internal conversations, with upper and middle level staff, about “should we be doing this? We will get a lot of flack for this.” I said, “this is something that needs to happen and if we stick our heads out over it this will make it easier for national NGOs.” And that has proven to be true.⁶²³

Entering into the partnership that planned, funded and implemented Lucas Legal was not only risky for TNC, it was also risky for the politicians and other agricultural interests involved. After all, ENGOs and especially American ENGOs have a poor reputation in much of the Amazon due to their perceived overreach and impinging upon Brazilian sovereign rights to do what it wishes with its natural resources. And in fact, initial reactions to the involvement of TNC were mixed among farmers. Most came around to accept, even enthusiastically, the involvement of TNC:

I wasn't apprehensive about the involvement of TNC] because since the beginning of the discussion, TNC was pushing this discussion and assuring us that things would happen the way they did. We already

⁶²³ Interview with David Clary, TNC, 14 May 2012.

knew about TNC, and they seemed different, too. You know that there are those radical NGOs, extremists. And we already were familiar with the actions of TNC, always looking for an objective solution for problems and not seeking out media attention. Actually, it was a gamble, but I think one of the factors of the success was having TNC as the manager of the project...There wasn't any resistance because it was the municipality that presented TNC to the producers. The mayor, in the name of the municipality, made the presentation and some other examples of projects that TNC had done. The municipality testified that it was a good project. This was important.⁶²⁴

Look, at first I thought that TNC was here to mess things up. But, over time, we talked with them a lot, they respected us, and they really wanted to know the participants, and today we have an excellent coexistence and certainly I think TNC is good because they developed this project, and if it depended just on us here, it would have taken more time. Because they know how to work hard and organize. It's not easy. Having just local people do it, there would be a lot of hidden agendas.⁶²⁵

⁶²⁴ Interview with PN, 10 November 2011.

⁶²⁵ Interview with KR, 1 November 2011

Other producers, typically those who were less enthusiastic about Lucas Legal in general, like OE, maintained a poor opinion of ENGOs after Lucas Legal: “These NGOs being in our country is complicated, because we don’t know how they live in the country they came from.”⁶²⁶ Positive views of TNC in Lucas are likely also related to the fact that locals, including the land-owning, former-secretary-of-SAMA Copetti, were hired by TNC after the start of Lucas Legal to help coordinate the project, which symbolically and literally helped TNC move “down” to the local scale. Also crucial, according to the mayor, was that the project relied completely on private funds from TNC and the sponsoring companies and the fact that it was passed into law so that all farmers were expected to participate.⁶²⁷

Project shortcomings

Conservation projects run by elite environmental NGOs have many advantages that can propel them to success, including access to technology, information, powerful individuals who can act as agents of change, and funding as a consequence of the involvement of these NGOs.⁶²⁸ These advantages, however, far from assure “success”, however it is defined. For one thing, what is considered “success” for these projects is usually determined by the NGOs, or their elite allies themselves, who are able to “set the terms of debate in a way that serves their own

⁶²⁶ Interview with RE, 4 November 2011.

⁶²⁷ Interview, 6 September 2011.

⁶²⁸ Holmes, "The rich, the powerful, and the endangered: Conservation elites, networks and the Dominican Republic," 627-28.

interests and reinforces their status,” freeing them from answering uncomfortable questions about ways in which or parties for whom they were unsuccessful.⁶²⁹ In any case, ENGOs have a strong incentive to report only successes and to spin any partial success to look as positive as possible, as funding from big and small donors depends on continuous reports of success, whatever the situation on the ground.⁶³⁰

Lucas Legal has, as outline above, been quite a successful project in many ways, and is, apparently, contributing to improved environmental scenarios and outlooks on the environment. It has also capitalized heavily on frequent media attention, including from prestigious national and international outlets, to maintain high morale among leaders and participants as it pursues its objectives. But has it achieved its original goal of 100 percent mapping and licensing of the municipalities rural areas within its self-defined timeline? In a word, no.

As of November, 2011, TNCs self-reported goal of full CAR licensing for the municipality, only 23 out of 709 properties had the full LAU license and only 209 of 709 had CAR, leaving over half of the properties in the municipality, or 477 properties, unlicensed (Figure 27). One major obstacle the project has faced has been resistance or lack of cooperation from SEMA (in spite of its co-sponsorship of the project), and frequent striking on the part of the agency’s employees. All licenses must be issued by the central SEMA office in Cuiabá, but the paperwork is frequently delayed. One recent development in the Forest Code governance arena has been the

⁶²⁹ Ibid., 628.

⁶³⁰ Kent H. Redford and Andrew Taber, "Writing the wrongs: Developing a safe-fail culture in conservation," *Conservation Biology* 14, no. 6 (2000): 1567-68.

move toward requiring environmental licenses for loans to be issued for agricultural purposes, so many farmers have been doubly frustrated by delays in receiving their licenses. As a result, municipal staff, producers and environmental engineers contracted by producers often have to drive the 10 hour round trip to the SEMA office to pick up licenses. Reportedly, licenses will eventually be processed online and be printable from an online database. Yet another deterrent for farmers to seek licensing is a misinformation campaign by proponents of drastic relaxing of the Forest Code, which has some farmers convinced that if they begin the licensing process before the Forest Code is revised, they will be subject to more restrictive requirements than if they wait. Regardless of the reasons, though, failure to achieve 100% licensing has not stopped project leaders and media from either blatantly but falsely declaring the project the “first Brazilian municipality with no environmental transgressions,”⁶³¹ or cunningly modifying the discourse to say the project is “100% mapped”⁶³² (not licensed) or that 100 percent of farmers “participated” or “were touched”⁶³³ by the project.

Another complication for measuring the success of Lucas Legal has been a concurrent increase in enforcement of licensing requirements by the state and by banks and other agricultural service providers. Most farmers in Lucas rely on bank or company financing for their crops, and these organizations are increasingly requiring

⁶³¹ Pimenta, "Crecimento Chinês e Ambientalismo Nórdico."; The Nature Conservancy (TNC), "Agronegócio sustentável no Brasil: Gigante pela própria natureza."

⁶³² Lucas do Rio Verde Legal, "Lucas do Rio Verde Legal: Produção e meio ambiente: Grandes conquistas."

⁶³³ Syngenta, "Projeto Lucas do Rio Verde Legal," <http://www.syngenta.com/country/br/pt/responsabilidade/projetos/Pages/projetolucasdoriorverdelegal.html>.

proof of environmental licensing for their services.⁶³⁴ Indeed, some of the licensing success that has been achieved in Lucas may not even be due to Lucas Legal at all. In terms of achieving conservation objectives, this point is moot, but in terms of refining and promoting the Lucas Legal model, this point is particularly problematic.

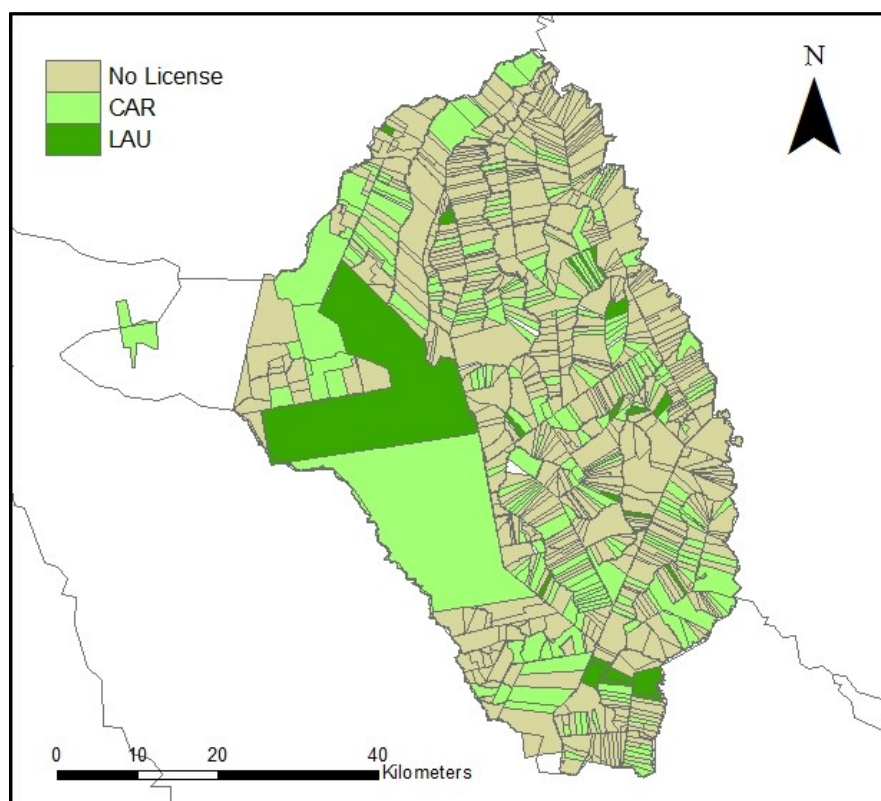


Figure 27. Environmental licensing status of properties in Lucas, November 2011, Data Source: SAMA/TNC

⁶³⁴ TNC/SAMA survey, 2007.

These inconsistencies regarding how successful the project has been are, in fact, echoed throughout official communication about the project, such that it is easy to get the idea that, for whatever reason, the leaders of the project are seriously lacking in data on the project. For example, an official 2011 information sheet about the project includes discourse about how successful the project has been at mapping, identifying, and facilitating the replanting of APPs and other conservation areas, but gives the same land use figures, shown in Table 9, that were originally measured in the 2008 TNC survey. When asked about this, a SAMA staff member with agency responsibility for overseeing environmental licensing issues and who has worked closely with the Lucas Legal project explained that the project has looked more to numbers of properties licensed than the amount of area restored to native vegetation, and that progress for the project can be measured based on the fact that when it started, CAR did not exist and only one property in town had LAU.⁶³⁵ It is certainly not reasonable to expect complete message consistency in a long-term project with several lead organizations; it is, perhaps, curious the amount of emphasis that has been placed on using licenses issued as a metric for measuring success and not conducting ongoing surveys of the native vegetation recuperated in the municipality given the prominent role of TNC, a conservation organization, in the project.

⁶³⁵ Field notes, 25 May 2011.

Table 9. Land use in Lucas, 2008

Land Use Category	Area (ha)	Percentage of Total
Agriculture	239,269	65.88%
Pasture	9,189	2.53%
Regenerating Forest	109	0.03%
Cerrado – <i>savanna arborizada</i>	9,733	2.68%
Cerrado – <i>savanna gramíneo</i>	1,634	0.45%
Cerrado – <i>savanna floresta</i>	46,161	12.71%
Riparian Forest	54,842	15.18%
Bodies of Water	545	0.15%
Urban Areas	1,416	0.39%
TOTAL	363,189	100%

Data source: TNC/SAMA, compiled by author.

Other challenges faced by project staff relate to the technical nature of the licensing and monitoring process compared with the technical capacity of the on-the-ground staff. The state may monitor and enforce environmental laws and licenses, but most of this work on a day-to-day basis is done by local agencies at the municipal level. The municipal environmental secretariat in Lucas has a handful of well-educated, well-embedded, trustworthy staff for this purpose. They currently rely on tip lines alone for monitoring, as they do not have a centralized and up-to-date geo-database to allow them to methodically track deforestation or other transgressions of

the law. Indeed, getting access to frequently updated, high-resolution satellite images would likely be cost prohibitive anyway.

The municipality and TNC have a few ArcGIS licenses in the office, but the staff does not really know how to operate the software or manage or analyze the data they do have. At the end of my stay in Lucas in 2011, a dedicated staff member created a database by downloading information about each property from the SEMA website (in PDF form) and cross-referencing it manually with the geo-database from the TNCs survey. However, the database is presumably already out of date because there is no system in place to automatically update it; SEMA does not privilege municipalities by giving them access to data beyond what is publicly available on the website (you cannot select multiple properties and download a spreadsheet), and the staff member who did this work left the secretariat for another job.

Conclusion

There is more than one way to assess the success of a conservation project, particularly a long-term project with various stakeholders. Ultimately, Lucas Legal has evolved to meet many of the challenges it has faced and, in doing so, has achieved some of its original objectives as well as other important outcomes. At the same time, it has failed to accomplish some of its most fundamental goals. What, then, do these complex outcomes teach us about conservation, environmental licensing, and multi-stakeholder projects in the Amazon?

Perhaps most importantly, Lucas Legal complicates assumptions that farmers are uninterested in complying with environmental regulations and highlights how historically and socially contextual attitudes about this are. The complexity, yet general receptiveness to conservation of farmer viewpoints about the environment evident in farmers' discourse about regulations and the project, and the unproblematic nature of TNCs presence in Lucas. The Lucas Legal experience also suggests that positions and performances of agricultural actors are changeable, but that involvement in the process and the availability of multiple incentives may promote better licensing rates and conservation outcomes, and they need not be purely financial in nature. For example, for farmers in Lucas with secure land tenure, relief from the threat of punitive actions and access to credit might be a good incentive. For other actors, fast-tracking legalization of property might be an incentive, in other words (flipping the role of INCRA from the time of SLAPR on its head). Overall, farmers' opinions have changed over time about the importance of limits on their activities. This does not make them pure environmentalists, but it does show that they have come to consider their environment and have become, in every sense, environmental subjects. The question is open if this is a direct influence of Lucas Legal, but it is certainly related to the types of change that allow Lucas Legal to exist and thrive. Now every farmer in Lucas says he is in favor of some regulations.

One lesson that might be taken home from the Lucas Legal experience is that the project is "successful" even though it has not had the licensing rates hoped for because it evolved to meet the needs of stakeholders and incorporate other

environmental-oriented projects; because its leaders capitalized on publicity as positive reinforcement for participation even while financial incentives have not been forthcoming; and because it created institutions that were flexible and multi-scalar.

Another take-away is the potential for disappointment and loss of legitimacy if ambitious goals are not met. Project leaders have projected that they would have the municipality fully licensed with CAR by the end of 2011 and with LAU by the end of 2014, but this looks unlikely. This is problematic for project leaders who have variously staked the reputation of local agriculture industry or continued funding for spin-off projects on the outcomes of the project; these project leaders have gone to great lengths to continue their media campaign for the project and obscure or de-emphasize the goals that have not been met. This, in particular, is unfortunate, as this fear of failure makes it difficult for persons who do not have access to top-level discussions about the project to learn from the projects mistakes as well as its strong and innovative aspects, and it constrains the behavior of leaders primarily devoted to conservation results. It also speaks to the challenges for licensing prospects for municipalities that do not have any sort of focused effort on the part of local leaders.

CHAPTER VIII – CONCLUSIONS

In the preceding chapters, a multi-stranded narrative has been woven, describing the settlement and subsequent economic development of Lucas and its agriculture industry, the creation and evolution of institutions fit for organizing and controlling various elements of the settlement and development, variable resistance to these institutions by different and emergent stakeholder groups. The most recent manifestation of these processes is the creation and outcomes of a multi-stakeholder environmental governance project called Lucas Legal and the incorporation of parts of it into state and federal laws. The relatively deep histories of projects and processes of settlement in the region, the evolution of environmental laws and policies, and the development of a highly profitable agriculture industry over the past approximately thirty years were presented in order to contextualize, in terms of institutional, political, and social milieu, the complex scenario out of which Lucas Legal emerged. This has been necessary in order to answer the questions guiding this project: How can Lucas Legal be best characterized? What were the specific conditions that led to the emergence of Lucas Legal? And, how has Lucas Legal been successful, or rather, what have been the key outcomes of Lucas Legal and how has the project evolved to better address its shortcomings and evolving objectives? The ultimate objective of such inquiry into the case of Lucas Legal is to be able to place it in the context of a

broader phenomenon of shifting patterns of governance in agri-environmental arenas in a rapidly globalizing environment, in which agricultural actors seem to be simultaneously more accountable to more and different observers for their actions than ever before, but also have more resources available to them to meet these obligations.

Earlier, I offered three “theoretical frameworks” through which to examine these questions. The first of the frameworks is the quite eclectic literature that falls under the umbrella term of “governance,” which, in general, asserts that non-governmental actors are important social steerers and institutional crafters, and may work toward determined objectives in concert with the state, in the absence of the state, or even in defiance of the state. In any case, a rather monolithic view of the state is common (though not necessary) in this approach (i.e., state v. non-state). Its tendency to oversimplify its treatment of the state notwithstanding, the literature is valuable for its decidedly inclusionary approach to the field of rule-making actors in general. The governance literature is apt for this research because it considers the different contributions of state, market, and civil society actors to agenda setting and rule making.

The second framework presented is the governmentality/environmentality framework which explores the evolving technologies of the government, that is, the different ways in which the state extends and streamlines the reach of its power. This framework is built upon the writings of Foucault on the nature of power and, especially, his writings on the way in which his diffuse and non-material concept of

power changes the way that the efforts and outcomes of governing are to be viewed. Some writers, but most notably Arun Agrawal in his writings on the empowerment of forest councils in the Kumaon forests of India, have explored the different techniques and strategies, successfully and unsuccessfully deployed by governments to create subjects who internalize the goals of the state as their own, however imperfectly. This literature is apt for this project because of its attention to how rules are enforced or otherwise come to be followed in pursuit of certain goals.

The final framework explores coalitions – discourse coalitions and advocacy coalitions – which would look at the emergence and nature of Lucas Legal in a more pragmatic way from the points of view of the various stakeholders – is the apparent cooperation of various diverse stakeholder groups in Lucas Legal an alliance of like-minded actors or simply a discursive alliance based on mutual convenience? In this literature, changes in the essences of the actors and actor groups are not implied or explored, nor is the manner of rule enforcement or adoption; rather, the focus of the coalitions literatures is on the (development of) strategies – crafting of storylines or forging relationships – to achieve certain goals, which are assumed in the analysis to be relatively static. The governmentality/environmentality literature explores the crafting of societal behavior by exploring government-induced shifts in individual behavior through power networks that ultimately lead back to each person's membership in a community ruled by some sovereign; aggregated, these individual shifts create societal change. In contrast, the coalitions literature looks at how groups (mainly outside of the government, and with no inherent authority), such as civil

society groups, can collaborate to affect certain changes based on messaging and framing of an issue, adopting, in fact, some of the same techniques used by modern governments.

Each of these frameworks offers useful tools for understanding the events in and around Lucas which have, in a sense, culminated in the creation and reception of Lucas Legal. Below, a summary of Lucas Legal and the context from which it emerged will be presented along with insights from each of these frameworks for the elements that each is best suited to explain. The discussion will refer back to the table of main ideas from each of these literatures, first presented in Chapter 2 and reprinted below (Table 10).

Table 10. Key literatures and their main ideas

Literature	Key Ideas	Key Question	Importance of: Government	Markets	Civil Society
Governance	Actions happen due to more diffuse 'rules in use' stemming from predominantly elite markets or government	Are non-state actors stepping in to manage the environment for the state?	Often important	Often important	Often important
Governmentality/ Environmentalty	Technologies of government extend the reach of the state, compel people to act (and even think?) in certain ways	Has the state extended its control via decentralization and technology sufficient to persuade individuals to act in accordance with its environmental goals?	important	Not important	Important
Discourse Coalition	Discourse, or 'storylines' are powerful enough to enact change without requiring true collaboration	Are the various stakeholder groups working together toward a shared goal, or do they maintain divergent goals but share in utilizing a discourse of environmental sustainability in pursuit of those goals?	Not important	Not important	Important
Coalitions	Shared knowledge and collaboration are effective means of achieving goals				

The analysis presented in this dissertation is guided by these three literatures, which speak to different elements of an emerging and broader phenomenon of farmers, NGOs, corporations, and governments working together to address certain issues, of which Lucas Legal is an example. Certainly, these groups also continue to work against each other and parallel to each other in certain arenas, but their present cooperation in Lucas is notable given the important environmental and social outcomes at stake.

Perhaps their cooperation is unavoidable given the various new issues that have come to the forefront of the discussion and action surrounding the environment and agriculture interface in the last twenty years. One of these issues is growing concern about possible food and energy crises so far unseen in our modern age. Other issues relate to shifts in population and land tenure characteristics as global populations become more urban and farms become larger, technology and climate shifts lead to changes in the locations of the world's most important bread-baskets, from Europe and the US to the Amazon and Africa. Still other issues are related to the very nature of modern agriculture and commodity markets – the global reach of these, the ever increasing genetic modifications to crops, and the ever increasing reliance on ever fewer species, for example – and the very material way in which these factors link us all together. Indeed, the world's agriculture is more intimately linked from one location to another than ever before, so agricultural actors as diverse as governments, farmers, ENGOs working in highly agricultural areas, and agricultural corporations

are beginning to realize the extent to which they, too, are linked and to act accordingly.

In other words, important changes are afoot and the old approaches to managing agriculture and the environment are no longer sufficient. It is in this spirit of recognizing this that this dissertation sets out to ask and suggest answers to difficult questions about the way in which the rules in law and the rules in use are being set and challenged over time. The three literatures presented in this dissertation each offer important insights into the changes occurring in Lucas, which can also be applied to other cases and to understanding this phenomenon of cooperation more broadly. These literatures have not been developed to address Lucas Legal, projects like it, or the broader phenomenon of the increasing interdependence of different agricultural actors, but they deserve to be put into dialogue with one another to begin to create a framework for understanding the changes described above.

The road to decentralization of rule in the Cerrado-Amazon

Among the important questions that remain unsettled about accelerated globalization, the spread of neo-liberalism, and the changing role of the state is: will the cumulative effects of these processes lead to more or less effective governance of the environment and natural resources, whether in specific instances, at specific locations, or overall? The case of Lucas Legal, presented here, has offered a case study into one, fairly optimistic answer to this question. In this case, these processes

have combined to create a scenario in which a decentralized, but still strong, state operates in tandem with elements of civil society and the global marketplace to create a sense of order and accountability for the environmental outcomes of agricultural activities.

The first aspect of this multifaceted situation that must be considered is that, perhaps unexpectedly, the decentralization of rule of environmental issues in the Amazon has led to the increasing of the legitimacy and effectiveness of the state in the region. This, however, was only possible after failed efforts on the part of the state to rule the region from afar. These interventionist efforts on the part of the Brazilian state essentially took three forms, as discussed in greater detail in preceding chapters: the incentivizing of settlement of the region; the implementation of environmental laws and policies; and the promotion of development of an agricultural economy that exploits some of the region's most valuable natural resources, i.e.: land or soil, water, and sunlight. Settlement of the region was attempted in many spurts, all with slightly differing goals, but all of the various efforts had in common the objective of extending the influence of the state and establishing control over the vast and unknown region via land titling, the establishment of settlements, and the naming of places and natural features. The punch line is that these transformative actions on the landscape from afar necessarily created a new set of stakeholders to the region. These stakeholders (such as the settlers) were initially charged with carrying out the efforts of the state, but by virtue of being present in the region (whereas the state, largely, was not), began to experience a shift in their allegiance and their identity. They

became not agents of the state, but instead, Luquenses, Matogrossenses, and Southern Amazonians, whose interests no longer aligned with the interests of the state, but instead, aligned with the interests of one other and they began to unexpectedly assert themselves in ways that were *not necessarily in concert with the state's objectives*. In other words, people who were initially part of government efforts to settle the Amazon were installed upon the land, but soon developed new identities as residents of the region, which changed their goals and objectives as the landscape was being transformed and territorialized under them and by them. Moreover, there were people already on the frontier who resisted some of the state's reterritorialization efforts from the beginning.

At first, settlers like those who settled and persist in Lucas were essentially objects on which the government acted out its desire to exert control over the sparsely settled and, practically speaking –autonomous, regions of the southern Amazon. It was not long, though, before these individuals ceased to be settlers and became residents. Their relationship to the government necessarily changed and they became not simply extensions of state power or bodies on which the government could act, but they also began to act in accordance with their own needs and wants, which were not always the same as the government's objectives. Farmers in Lucas sometimes explain this shift by citing the schizophrenic nature of the government's objectives, for example: “now they want us to conserve [forests] but they used to make us chop it down.”⁶³⁶

⁶³⁶ Interview with GR, 29 October 2011.

The governmentality literature is particularly apt to provide an interpretation of this change in the settlers of Lucas. An important innovation that Foucault made in the analysis of power was to view it as not just negative, but as productive as well. As the agencies of the Brazilian (and Mato Grossense) government discovered, power is more than just a limiting force that constrains the behavior of individuals and populations. Instead, Foucault posits, by placing certain limits on certain behaviors, power also opens up channels for other, acceptable conduct that give agency and freedom to individuals to behave in acceptable ways, or in other words, to become subjects who behave appropriately of their own accord – not just because of some perception of imminent punishment for any inappropriate behavior. The making of subjects has alternately been called a process of “quiescence” to what appears inevitable or a process that has led to considerable resistance to power by less powerful groups in different situations.⁶³⁷ Resistance to what are seen as unjust regulations or constraints on certain behaviors are also possible once individuals become subjects. Under a purely punitive regime, resistance must be harshly punished; under a more sophisticated power regime that includes leaders and their subjects, subjects possess a certain amount of agency and both subversion and negotiation become possible.

This process is evident in Lucas, where different issues and different moments were seen by locals as opportunities for compliance or opportunities for resistance. For example, dramatic protests in 2005 were certainly an example of resistance to

⁶³⁷ *Environmentality: Technologies of government and the making of subjects*: 169-71.

various government policies and failures that were unpopular with farmers, but licensing and satellite monitoring of their farms has become an opportunity for them to authenticate their virtuous behavior and a safety net for their future livelihoods.⁶³⁸ In both of these representative examples, Foucault's point appears born out: the constraining efforts of the state sometimes resisted, but are also internalized and reflected back (in different ways) by individuals – subject formation, indeed. The government (itself represented by individuals with their own power and their own interpretations of regulations) used techniques of law, monitoring, and enforcement to attempt to constrain the behavior of individuals, but the constraining force of power is not uniform nor is it absolute. Individuals can always decide if they will take on the constraints or attempt to subvert them in some way.

By the 1990s, it had become clear that centralized rule from afar was generally ineffective in terms of creating consistent or predictable environmental and developmental outcomes in the Amazon. Moreover, the Brazilian government was beginning to understand the extent of the problem of deforestation in the Amazon, and eventually, the costs of this in terms of international pressure and threats to natural resources due to the very real effects of policies on landscapes. The upper levels of government tried to double down on enforcement, but found that it was ineffective and alienated landowners. At the same time, the technologies of government began to evolve – the Amazon was no longer viewed as inexhaustible. Study of the region using satellite imagery, soil typology, and an interest in

⁶³⁸ Interview with BR, 7 November 2011.

environmental licensing took on renewed importance in state interventions in the Amazon. This created further space between the state and the denizens of the southern Amazon, creating a tension that needed to be resolved due to the costs to both sides to continued opposition.

Environmental regulation in Brazil has slowly become more decentralized, but not evenly so. Monitoring and licensing still occur at the state, national, biome levels, but greater responsibility is being granted at the local level, especially to those municipalities that show a willingness to participate. Whereas for Agrawal's Kumaon, decentralization led to a diffusing of power away from the central authority over the forests that had been originally set up by the British,⁶³⁹ for farmers in Lucas, the effect was quite the opposite. Previously, the distance to the nearest physical location of government agencies and Brazil's notoriously byzantine bureaucracy made compliance with environmental laws and recourse for unjust applications of the law difficult, if not impossible; decentralization has, in some ways, had the effect of simplifying the "sequential logic of control,"⁶⁴⁰ decreasing the physical distance between the monitored and the monitors, and, consequentially, increasing the state's control of environmental matters in the Amazon. If, on the other hand, in some instances environmental management and enforcement was actually made more complex, this was in the eventual legitimization of certain "outside" groups like TNC, and, to an extent, the *tradings* and corporations who supported Lucas Legal. Indeed, the lack of obligation of groups like this to maintain transparency in their operations

⁶³⁹ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 90.

⁶⁴⁰ *Ibid.*, 91.

is a common critique of the increased involvement of these types of groups in environmental governance.

Community regulation in Lucas

This dissertation has asked how best to explain a shift from ineffective and uneven, but centralized, government-rule to an apparently more effective regime that features both the highly legitimate authority of the local government, which in turn leads legitimately to higher scales of government, and, at least indirectly, an international ENGO and corporations operating at various scales. Ultimately, was there a shift in power away from the central government to other entities (state or non-state), or was there merely a shift in the way in which the state operationalizes its power in the agri-environmental arena in Lucas? Here, both the governmentality and the governance literatures can provide insight.

A conventional reading, from the governance perspective, would be that the influence of the centralized government of Brazil has waned as NGOs like TNC and economic actors like the various corporations that bankrolled Lucas Legal has increased. In other words, the success of a project like Lucas Legal is proof that the power of the state over such matters as environmental licensing and monitoring has decreased, while the power of these extra-state actors has increased. Here, the governmentality literature offers a contrasting view. In this view, the state, for its part, has not “lost” any power (and indeed, power is not even something one can

possess, as such, to begin with); instead, the tactics of the government changed to incorporate civil society in the governing process.⁶⁴¹ Which view, then, best describes what happened in Lucas?

Lucas Legal is a case where local elites (political and economic), and non-state actors with varying degrees of local ties collaborated to, in a sense, step in for the federal and state governments in promoting better compliance with environmental laws. This was possible, in part, because of the space left at the local level by the higher levels of the state for such maneuvers. There had long been a physical scarcity of (non-local) state presence in Lucas and surrounding area. Since the 1990s, the space has been transformed from a both *defacto* and physical space to a *dejure* space, even as the physical isolation of the region from state office became lessened.

The history of Lucas is the history of settlers trying to eke out a living in an unfamiliar location, enduring conflict with their neighbors and with the government, eventually becoming a community and developing shared identity, and struggling with federal and state officials to recognize this shift. At some point, settlers ceased to be simply agents of settlement and exploitation of a strange landscape and its natural resources. They began to sometimes clash with the government over issues like the lack of resources and public services, and also began to forge their own way, creating their own local government, earning their own municipal designation, and sometimes jumping scale over the state and federal governments and asserting their

⁶⁴¹ Ole Jacob Sending and Iver B. Neumann, "Governance to governmentality: Analyzing NGOs, States, and Power," *International Studies Quarterly* 50(2006): 652.

independence by teaming up with multinational corporations and NGOs, as in the case of Lucas Legal.

At the same time, government technologies and goals continued to evolve. International attention and advances in science and technology, such as for monitoring changes in ecosystems, combined to define a new landscape in the Amazon – one of environmental destruction, resource depletion, and scarcity. This roughly coincided with the increasing demands being placed on the government by farmers in the Amazon who became the perfect scapegoats for the destruction of the environment. Tensions between farmers and state and federal governments grew, and the 1990s and 2000s saw major changes in the socio-political context of the region. The Grito de Ipiranga protests, the election of Mato Grosso's first soybean-farming governor, and the advances in environmental licensing and monitoring programs, discussed in greater detail in earlier chapters, were all outcomes of confrontations between the new citizenry of Mato Grosso's north and the state and federal governments, but this did not drastically change the directionality of rule; it continued to ultimately move from the top down.

In a sense, though, the central government did relinquish some of its power over the time period leading up to the creation of Lucas Legal. Decentralization prior to Lucas Legal was effected because the state was unable to effectively govern the region from afar. The ungovernability of the region, though, was not due to the strong influence in the region of corporations, organized civil society groups, or global market pressures – at least, not at first, because these did not become influential in

Lucas until the late 1990s. Decentralization, though, does not necessarily, or even usually, mean the weakening of the central government; in fact, the diffuse nature of a decentralized government can require greater management from the central government than prior to decentralization.⁶⁴² Thus, decentralization of government is often an effective way to extend and better entrench state power in further-flung regions, creating opportunities for self-regulation on the part of the community but *according to standards set by the sovereign state*, a pattern that I argue played out in Lucas. Locals' lack of confidence in and respect for distant government agencies and their projects undermined their effectiveness in the region, historically. Passing responsibility "down" to more local authorities (from mainly the federal, down to the state and the municipal levels) represented effective deployment of a governing technique that strengthened, not weakened, state presence in these municipalities.

As the influence of global, non-state actors, such as corporations consolidated in Lucas from the mid- to late-1990s and onward, culminating, ultimately, with the founding and implementation of Lucas Legal, the pathways of power became more difficult to trace. Certain of these non-government actors were able to foresee and begin to resolve a potential conflict between the local agriculture industry and the global market over environmental standards, because they had the technical and financial resources as well as the flexibility and the perspective, to do so. Literature on environmental governance is often critical of such situations, because, as

⁶⁴² Larson and Soto, "Decentralization of Natural Resource Governance Regimes," 217; Judith Tendler, *Good Government in the Tropics*, ed. Vernon W. Ruttan and T. Paul Schultz, The Johns Hopkins Studies in Development (Baltimore: Johns Hopkins UP, 1997). 145.

troublesome as states can be in terms of producing desirable socio-environmental outcomes, the involvement of non-state actors can be even worse. The lack of commitment to transparency and the established commitment of these groups, even NGOs, to profit-making or fundraising often precludes these groups from having any interest in making true improvements to the environment.⁶⁴³ The voluntary nature of most activities by these types of groups, furthermore, often makes it difficult to place any great reliance on the projects of these groups.

The case of Lucas Legal, though, offers a challenge to these critical reservations. Unlike similar, contemporary projects to reduce the environmental impacts of industrial agriculture in the Amazon, the non-state stakeholders in Lucas Legal worked *with* the government (eventually at all levels) to codify and make legally enforceable the improvements they made to environmental regulations and enforcement processes. The involvement of non-state actors in the governance of agri-environmental issues in Lucas, in fact, led to a strengthening of *government* legitimacy and authority in the arena, in Lucas and at broader scales. Of utmost importance in this process were the close personal relationships among individuals in stakeholder groups, which transcended the government/non-government divide, a scenario more common than frequently noted.⁶⁴⁴ The importance of personal relationships among, for example, scientists and environmentalists has been

⁶⁴³ Liverman, "Who Governs, at What Scale and at What Price? Geography, Environmental Governance, and the Commodification of Nature," 736.

⁶⁴⁴ Tendler, *Good Government in the Tropics*: 146.

documented before.⁶⁴⁵ There is still ample room in both the governance and the governmentality literatures to better address how the remarkable amount of overlap among *local* state and political actors, economic elites, and other members of civil society affects decentralization and shifts toward the strengthening of local government.

Authority, expertise, and surveillance

The context in Lucas out of which Lucas Legal emerged was marked by an increase in the authority of local, community-member regulators and other representatives of civil society, but not completely at the expense of more centralized rule, particularly of the permanent regulatory gaze variety. Conventional strategies of the central government for environmental management in the Amazon and the Cerrado have been punitive in nature, yet also highly erratic. These command-and-control strategies for enforcing compliance with environmental laws, which were characterized by periodic and conflicting directives from a central government and interspersed with long periods of relative inattention to the southern Amazon region in which Lucas is located, seemed to have more or less been sufficient for the various actors affected until around the 1990s.

Even before Lucas Legal emerged, it was clear that a strict command-and-control approach to environmental regulation in the Amazon was not working, as

⁶⁴⁵ Keck and Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics*.

deforestation was still rampant and farmer resentment about the unpredictability of regulations and sanctions was growing. By the 1990s, settlers in the region began to form communities that were better equipped to demand more from the government than highly uneven enforcement of regulations that were poorly understood and viewed by most farmers to be at least a nuisance, if not unjust. Wealthy landowners, in particular, were undeterred by the fines, which they viewed as the cost of doing business,⁶⁴⁶ and less capitalized farmers felt persecuted and misled by changing and ever-more unattainable set-aside requirements. Brazil needed to reign in destruction of the Amazon but also needs its farmers to produce and produce well. The government began to decentralize (further) and reassess its strategy in the region. In this reshuffle, other groups (corporations and TNC, for example) saw space to influence the creation of new institutions, policy, and practice, or implementation. Strangely, one of the most important outcomes of this process is that surveillance – in the form of satellite monitoring, principally – by central government agencies became even more important and *accepted* in the region, as did influence of powerful non-local and non-democratic actors as experts and authorities. Satellite monitoring is done so now with the open support of local actors who have steered regulation in a way that “touch[es] the lives of their targets far more lightly, regularly, intimately, and in proportion to their activities.”⁶⁴⁷ What led to these fundamental changes in the

⁶⁴⁶ Stickler and Almeida, "Harnessing International Finance to Manage the Amazon Agro-Industrial Explosion? The Case of International Finance Corporation Loans to Grupo Maggi," 62.

⁶⁴⁷ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 90.

reputation of the surveillance regime and the legitimacy of outside experts in the region?

Long faced with the ineffectiveness of the command-and-control enforcement regime because of its weak legitimacy among farmers in the Amazon, the federal government began to comply with pressure to decentralize enforcement of environmental regulations in 1995, when Mato Grosso instituted the first state-level (as opposed to federal-level) environmental license. State-level management of environmental issues has continued to complement federal regulations and the work of federal agencies in Mato Grosso since that time, though the state has been plagued by many of the same deficiencies often complained about regarding the federal level - namely, corruption and inefficiency (see chapter 4). More local (municipal) level environmental regulation has always had the possibility to exist, if the municipality takes an interest in it, but this could only supplement, not diminish the jurisdiction for monitoring and sanctioning by the state and federal bodies.

Today, in Lucas, ground-level environmental monitoring, regulation, and enforcement are handled almost exclusively by local authorities and staff, all of whom are community members and many of whom have family ties to the agriculture industry. The institutional bridges formed by the Lucas Legal project and the reputation of the municipality for effective management, including of the environment, that emerged from undertaking the project did not win the municipality any official autonomy in the environmental regulation of its territory, but it did win the municipality some unofficial, de facto autonomy. Licensing of rural properties

remains under the purview of the state agency, SEMA-MT. State and federal authorities continue to monitor properties for deforestation using satellite images and they have the authority to intervene and sanction rule-breakers if they choose to do so. In practice, they defer to the local authorities, issuing directives through the local SAMA.⁶⁴⁸ In other words, decentralization appears to have taken place, but how has the nature of rule and regulation changed and not changed from before Lucas Legal was instituted to afterwards?

Lucas is geographically, politically, and, to a certain extent, economically isolated from the main population centers of Brazil, and even of Mato Grosso. Lucas is located over 300 km from the state capital of Cuiabá, over 1,200km from Brasília, and nearly 1,900km from São Paulo. There is an overwhelming view among residents in Lucas that their interests are not adequately represented in the federal-, and to a lesser extent, state governments (see chapter 5), and that they alone are responsible for their successes, given their abandonment by the state and federal governments. The local economy based on industrial agriculture is arguably as tied to international markets as it is to domestic ones.

Lucas Legal began, in part, because of all of these factors. Local farmers and leaders were increasingly frustrated by the unpredictability of environmental regulation, but they recognized a growing demand from international markets for guarantees that their product was environmentally defensible.⁶⁴⁹ Personal ties within

⁶⁴⁸ Field notes, 12 September 2011.

⁶⁴⁹ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance," 360.

the business community were directly responsible for most of the partnerships that formed to plan, implement, and finance Lucas Legal, though this would not have been possible without the appropriate political and institutional context. These local-international ties exist in part because of the geographic isolation of the municipality: highly-capitalized firms, often international firms, were best equipped to operate in the region in the absence of much public infrastructure and quickly became influential, especially in the relative absence of the state and federal government. Thus, a combination of international business standards for good governance, a strong sense of local accountability, and international pressure from environmentalists created both a sense of imperativeness and empowerment about improving regulation of the environment at the local level through the Lucas Legal program.

One of the most important elements of Lucas Legal its role in the seeming embrace of local farmers of the increased monitoring the project has prescribed; this alone signals an important shift. Farmers know that they are being watched and have been for quite some time – but most of them, particularly the ones who believe they are doing the right thing, welcome the monitoring to prove their compliance and help discipline the deviants. The increase in power of local authorities improves the likelihood of violations being reported, the appropriateness and productiveness of punishment (to remedy the problem, not just to extract a fine) and the sense that this is an issue that matters to the community – not just to some authority far away that only show up in Lucas periodically in helicopters.

The primary benefits to local leaders who agree to take on the burden of enforcement and licensing is local-level discretion based on intimate knowledge, autonomy. The primary benefits of cooperating with private international organizations, like TNC and Syngenta, for these local leaders are possible market/material advantages, and personal gains (the mayor and various officials have received awards and been invited to the United States, the former Secretary of SAMA was hired by TNC), and more symmetrical local knowledge access. Access to state records is notoriously difficult, though it is supposed to be improving – TNC mapping local properties provides local governments with something they never had before – easy access to spatial data. It remains to be seen, though, if the scenario in Lucas will lead to any improved environmental outcomes.

In Agrawal's study of the Kumaon, the "coercive institution" and the "punitive city," both manifestations of Foucault's disciplinary power, were found to be irrelevant to the community environmental governance in the Kumaon forests. Instead, community-based monitoring and regulating were much more effective, such that more conventional and punitive regulation from a more centralized authority was largely unnecessary.⁶⁵⁰ Agrawal, drawing on Foucault, suggests that there is an evolution in the nature of power relations as they mature and as technologies of government improve, all of which ultimately leads to a form of efficient governmental extension to the far reaches of a territory based on the illusion of local

⁶⁵⁰ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 93.

regulatory autonomy.⁶⁵¹ The more oppressive forms of rule, such as the punitive city and the panopticon, are rendered less necessary and can be left behind. The experience of Lucas, though, calls into question the teleological nature of this theory. Even as local leaders take on a greater role in environmental regulation, satellite monitoring (the ultimate modern panopticon) is increasing in importance in Brazil. A move to community based rule, as epitomized in Lucas, then, does not diminish the importance of satellite monitoring but encourages it. If anything, local community leaders just wish they had access to the satellite data as well. It is only the punitive city model that is being rendered obsolete in this case.

Of course, all of this depends on having a legitimate and willing local authority to conduct such monitoring and enforcement of laws – which in Lucas seems to have emerged based on international standards of good business governance and is closely related to the strong ties of this ‘remote’ place to the international business community and markets. Lucas Legal did not create good governance in Lucas, but built upon it by playing up the empowerment of locals and local authorities to improve the local situation without waiting for punishment to be meted out and reducing the knowledge barrier between the local and the higher up levels of government.

The widely-recognized responsible nature of local government officials can, and often is, attributed to some intrinsic honesty of the particular individuals leading Lucas for the past 30 years. Indeed, there is a strong sense of moral exceptionalism

⁶⁵¹ Ibid., 197.

among much of the leading class in Lucas, at least some of which can be attributed to self-righteousness after feeling ignored by higher authorities for so long, and at least some of which can be attributed to the influence of the Catholic faith among local elites. Without discounting the importance of these factors to the quality of leadership among local political elites, it must also be observed that the reduction in the isolation of the region, physical and otherwise, has greatly increased the degree to which the activities taking place in the municipality are being observed. The panopticon is real for leaders in Lucas, and they are aware of this because they played an active role in building it. This panopticon, however, not only hosts the central government as its observant guards; it now also hosts global market actors, the media, and TNC as observers as well.

Indeed, the federal and state governments have not ceased surveillance and data gathering of the region, but are increasing them in concert with some decentralization of monitoring and licensing and increasing coordination with and responsiveness to local demands. What with satellite monitoring continuing and improving, the panopticon-type gaze is certainly present but it remains insufficient in terms of all types of deforestation, timeliness, and the ability of the government to actually reach the places where deforestation is detected, not to mention this issues of errors related to the technique and the cost of capturing and processing images at a spatial and temporal scale sufficient to see what happens on a 200 hectare plot over the course of three months, for example. Increasing reliance on local authorities *may* increase the effectiveness of conservation regulations due to the fact that it is more

efficient, even given the imperfect gaze that an authority figure has from the ground. In other words, you can have all the satellites and helicopters in the world, but you will only catch some of the people some of the time. The municipality, though, is run by officials who have it in their own interests to run the town well and be accountable to constituents, because are part of the community, and to international investors.

Thus, in Lucas and increasingly throughout Mato Grosso, techniques of environmental regulation are multiplying and appear to be undergoing some of the same transformations described by Agrawal. Agrawal found that the more conventional techniques described by Foucault as the “punitive city” that dissuades deviance by making known the highly distasteful punishments for certain acts for which one is guaranteed to be caught due to the totality of the government’s gaze over citizens;⁶⁵² and the panopticon,⁶⁵³ or guarantee of total surveillance of deviants once discovered, to be inadequate to describe community rule, which is instead based on only a probable discovery of deviance and continued, unproblematic community membership to ensure compliance with rules. “Regulatory rule” by members of the community, on the other hand, is marked by a gradually fostered personal investment in the rules, the sanctions, and the problem with violating them.⁶⁵⁴ It may even be rather unlikely that a single or small infraction would be punished or punished harshly, but people will tend to comply because compliance with the rules is seen to be good for the community and a condition of full membership in the community.

⁶⁵² Ibid., 161.

⁶⁵³ After Jeremy Bentham.

⁶⁵⁴ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 163.

Thus, in terms of punitiveness, community-based regulation may seem less effective than so-called rule from the top, otherwise known as the command-and-control approach⁶⁵⁵ - but it is ultimately both more efficient and more “humane.”⁶⁵⁶

Another important issue is that the important elements of environmental regulation in Mato Grosso - licensing and monitoring and enforcement - were able to be somewhat open to interpretation due to the fact that they did not take into account, for example, the gap between discovery and compliance that is necessary for any property licensing, the issue of *compensação* (compensation) of forest set-asides off property, and the fate of forest reserves as properties are bought and sold. This created space for the industrious leaders in Lucas, along with their partners in TNC, Syngenta, and Fiagril to make interpretations and decisions to inform the further evolution of those regulations even as they invited the gaze of the state in. The Lucas Legal project actually involved the private purchase of higher resolution images for licensing purposes than the state currently has available for monitoring. In any case, the temporal resolution of available satellite imagery is far from being sufficient for

⁶⁵⁵ These criticisms, when directed at the government, are frequently referred to as the “race-to-the-bottom” problem: when states (or lower levels of government) are in charge of their own environmental regulation, they will progressively lower their standards in order to attract or maintain industry, because they are in direct competition with other (nearby) states, David E. Adelman and Kirsten H. Engel, "Adaptive federalism: The case against reallocating environmental regulatory authority," in *Arizona Legal Studies* (The University of Arizona James E. Rogers College of Law, 2007), 10.. When decentralization of regulation involves voluntary regulation or self-regulation, or even participation in rule setting by corporations and NGOs, criticism can get even sharper, as many people are cynical about the trustworthiness of these groups to do the right thing Stickler and Almeida, "Harnessing International Finance to Manage the Amazon Agro-Industrial Explosion? The Case of International Finance Corporation Loans to Grupo Maggi," 79.. Particularly pertinent to the case at hand, there has been considerable hand-wringing on the part of environmentalists over ongoing revisions to Brazil's Forest Code, one provision of which involves granting greater decision making authority to the states (as opposed to the federal government), the assumption being that states like Mato Grosso that are heavily dependent on the agriculture industry will adopt lax standards, starting the race to the bottom. Jeff Tollefson, "Brazil set to cut forest protection," *Nature - news*, 1 May 2012.

⁶⁵⁶ Agrawal, *Environmentality: Technologies of government and the making of subjects*: 93.

stopping deforestation events before they get out of hand, and normally for even catching deforesters at all.

Local, ground based monitoring based on what Agrawal refers to throughout his book as “intimate knowledge,” however, is highly effective – in Lucas everyone knows one another, there is a tip line set up for anonymous reporting of environmental infractions, and there is a very real sense among authorities one bad apple can spoil the whole bunch. There is considerable peer pressure to comply with environmental regulations – individually so as not to lose access to financing and to avoid fines, and as a group to maintain the good reputation of the municipality. At least one farmer did mention that his well-connected neighbor was getting away with something, but generally speaking, Lucas is regarded as relatively environmentally compliant and any assertions to the contrary are met with indignity by officials and most people associated with the local agriculture industry. Of course, agriculture in Lucas is well established and it is not clear that these observations would hold true in a more recently settled area.

If there is an infraction, an individual may, in theory, be charged at all three levels of enforcement in the government – federal, state, and local. Typically, though, agencies avoid inflicting double or triple jeopardy. The local enforcement officers have some leeway concerning what punishment they assign – typically they are given a warning and a certain period of time to correct the problem. If they do not correct the problem within the time given, they are fined and still have to correct the problem, and so on, with the punishments escalating to losing their license, crop

confiscation, or even imprisonment for refusal to comply. These extreme cases are unheard of in Lucas.

It is probably a fair assumption that things are not so rosy everywhere and local authorities would not always be so effective. Local authorities, who are understaffed, underfunded, or in municipalities with a highly stratified rural population (for instance, some place with an MST settlement and lots of large ranches) may not have such legitimacy and authority over landowners. The ability to work with higher level government officials is also key. In fact, clashes with government officials even when they are working with others from the *same agency* have been a major challenge for Lucas Legal. Yet, it is important to note that (even if they act as if it is so), local officials have not replaced SEMA and IBAMA – they work as extensions of them and in cooperation with them. Their techniques are different, and more precise,⁶⁵⁷ but their goals are the same.

Environmental subject making in Lucas

The previous section explored the effects of Lucas Legal on the local regulatory milieu. There are also important questions to ask, though, about the transformative effects of Lucas Legal on individuals. At a basic level, we can ask: Are environmental subject being made in Lucas, and if so, what are the main avenues for this transformation? Lucas Legal and the changes it has brought to environmental

⁶⁵⁷ Ibid., 159.

regulation in Lucas have altered the fundamental way in which discipline and power works there. It has shifted the “object of regulation” from simply limiting farmers’ activities in an inconsistent attempt at forest protection to creating opportunities for farmers to prove they are compliant and even “green.” The project also plays a part in ensuring farmers’ subsistence, as they have discovered (or have been taught) that riparian forests are important for their continued livelihoods. But are farmers more compliant and considerate of the environment in both discourse and practice because of the empowerment of local authority or because of the expansion of the panopticon to include both better equipped state agencies and non-state agencies like financial lenders? While there is no way to know for certain, it appears likely that both of these technologies are responsible.

Based on my fieldwork, it appears that behaviors and attitudes about the environment are changing in Lucas, if slowly and unevenly. It is difficult to tease out the reasons for these changes, though. In Chapter 7, I provided evidence that the environment had moved to the forefront of peoples’ concerns, though not at the (significant) expense of profitability of the agriculture sector or development of the region. But is this newfound environmentalism on the part of farmers in Lucas simply an act, put on by them to appease the media, investors, or the government? Or is it a true change of heart? And does this even matter?

Environmental and anti-agriculture groups want to say that this environmental subjectivity on the part of farmers is a cynical and profit-driven ploy, and not a true shift toward *caring* about the environment. Scarcities, negative media

accounts, and “processes related to the governmentalization of the environment” have much to do with the way people frame their interests and act.⁶⁵⁸ It is impossible to know a person’s true intentions, but for the purposes of Lucas Legal, this probably does not matter. The project, like most successful environmental conservation stories in the Amazon, takes an instrumentalist view of the environment. So-called true belief in environmental causes is not necessary for more sustainable outcomes to be generated. Further, performance of an environmental activity may actually lead to belief or partial belief in the importance of conservation. Whereas it is typically assumed that beliefs must inspire action, action may inspire belief.

Moreover, a person may be simultaneously interested in protecting his reputation and his bottom line, and also interested in environmental conservation. For example, as viewed through a lens of environmentalism, farmers may care about the environment, but with qualifications, and still be environmental subjects. It is inescapable that the type of livelihood of the farmers and the type of environmental protection advocated for by those generally nominated “environmentalists” are to a large extent mutually incompatible. However, the making of farmers into environmental subjects lessens the gap just a bit, because “depending on the degree to which individuals care about the environment, the ease with which they will agree to contribute to environmental protection may be greater and the *costs of enforcing new environmental regulations may be lower.*”⁶⁵⁹

⁶⁵⁸ Ibid., 98.

⁶⁵⁹ Ibid., 166.

In his work, Agrawal suggests that “beliefs and thoughts are formulated in response to experiences and outcomes over many of which consciously formulated strategies by a single agent have little control.”⁶⁶⁰ Put differently, “people often first come to act in response to what they see as compulsion or in their short-term interest and only later develop beliefs that defend short-term actions on other grounds as well.”⁶⁶¹ It is clear in the discourse and ground-up governance projects emerging from the Amazon today that the representational regime of scientific and ecological data being generated by the government with regard to the Amazon forest, Cerrado, and agricultural landscapes are becoming internalized, even if not uniformly, by farmers. In fact, two of the most resounding themes to my fieldwork were description of the supposed wasteland of the Cerrado that settlers first encountered when they arrived in Lucas and of the beauty, vitality, and importance of their forest reserves today.

How can this discrepancy in the local view of the natural vegetation over time be explained? Certainly, there had been a transformation of the landscape in the approximately thirty years that had passed between settlement and 2011, but the primary markers of this transformation are the vast fields of soybeans and corn, not in the remnant forests left in on the landscape. It is possible, though unconfirmed by scholarship, that the installation of industrialized agriculture on nearly 80 percent of the municipality’s land area has contributed to the suppression of fires in the remaining vegetation, leading to a more forest-like (and conventionally attractive)

⁶⁶⁰ Ibid.

⁶⁶¹ I take “traditional” here to mean anything from shifting cultivation to the type of proto-industrial agriculture practiced by farmers in Europe, North America, and other places before the use of chemical inputs became widespread. Ibid.

appearance in these remnants, though fires remain common enough on the landscape that it is unlikely that this physical explanation could be sufficient on its own. The most likely explanation based on the available information is tied to the evolving characteristics and nature of environmental regulation and the formation of Lucas' farmers into environmental subjects in the intervening years. Agrawal suggests that peoples' beliefs tend to align with their practices;⁶⁶² as compliance with environmental laws has increased, so too has the positive regard of local people for their nature reserves.

The discursive power of ecological classifications and narratives about environmental issues more generally should not go without comment. The Cerrado has long been shorthand among farmers for "wasteland" or "not important vegetation," as conservation of the humid forest receives considerably more popular, media, and scientific attention.⁶⁶³ Moreover, frequent changes in the classification of the vegetation in Lucas has led to very real confusion about forest reserve requirements as these change with the floral classification, which is in turn cited by political and business leaders as proof that their activities in the municipality are not damaging any vegetation of value; in other words, "If they cannot even decide what this is, how much can it really be worth?"⁶⁶⁴

Perhaps one of the most important legacies of Lucas Legal will be the way in which it fundamentally changed the discourse in Lucas about the environment. Lucas

⁶⁶² Ibid., 189.

⁶⁶³ Hecht, "Soybeans, Development and Conservation on the Amazon Frontier," 397.

⁶⁶⁴ Field notes, 9 September 2011.

is a place where almost all economic activity is related to the agriculture industry. Prior to Lucas Legal, the majority of the environment-positive discourse that filtered into Lucas took direct aim at agriculture, painting as a villain the only source of many local people's livelihoods. Given the prevalence of this black-and-white, either-or environmental discourse, it was taken for granted locally that because they were farmers, there was no way that locals could care for the environment. This changed with Lucas Legal, particularly because of the involvement of TNC, a famous international ENGO, with the project. Moreover, all of the project sponsors, including industrial agriculture firms like Sadia and Syngenta, publicly began to "talk the talk" as well as "walking the walk," so to speak, and requested that their customers and suppliers – the farmers – join them in creating forest reserves, appropriately cleaning and recycling agro-chemical containers, and other activities. What cynics may call artifacts of corporate greenwashing – the shiny pamphlets proclaiming the environmental virtues of agro-chemical companies and of the farmers who buy their projects, for example – may deserve a more serious look due to the transformative power of the discourses they present.

According to Maarten Hajer, discourse is not simply a passive tool, but instead, is an active one in the advancement of an actor or a group of actors' positions. In other words, shared belief in a position need not precede the use of discourse proclaiming that position; instead, discourse proclaiming a position may be

used to *produce* a shared belief!⁶⁶⁵ This helps explain the key, but so far unappreciated, importance of Lucas Legal as an environmental project. It produced a simultaneously pro-environment and pro-agriculture discourse that farmers, agricultural firms, and local government officials could employ, as well as visually striking artifacts such as pamphlets and websites containing this discourse.

With this in mind, the switch in everyday discourse about nature reserves on farms in Lucas from Cerrado to forest belies a very real, if intermittent, shift in thinking among farmers about the natural landscape. Calling their reserves ‘forests,’ as all local farmers do today, whatever the vegetation actually in them, implies that they have accepted the importance and value of native vegetation. Farmers now show off their reserves to visitors and echo the same rhetoric used by municipal and project leaders in media interviews when discussing them.

Assessing Lucas Legal: Environmental and human outcomes

This dissertation has sought to explore the changing nature of human relations to the environment in Lucas, with special attention being paid to the changing nature of institutions of government and of governance. These explorations have led up to an examination of the emergence a project of environmental governance supported by stakeholders from private, government, and civil society arenas. The project has been

⁶⁶⁵ Shiela Jasanoff, "Heaven and Earth: The Politics of Environmental Images," in *Earthly Politics: Local and Global in Environmental Governance*, ed. Shiela Jasanoff and Marybeth Long Martello (Cambridge, MA: MIT Press, 2004), 34.

characterized based on existing literature of environmental governance and of governmentality, or technologies of changing and expanding government. The outcomes of the project and the associated processes of change in the structure of environmental regulation and management in Lucas have been examined through the lenses of governmentality and Hajer's work on the power of discourse. The remaining questions that must be resolved are – why would these diverse stakeholder groups cooperate in this project? and, Has the project been successful? I will explore the answers to these questions together.

Agriculture in Lucas is highly emblematic of the contradictions at the heart of both concepts of neoliberal capitalism and sustainable development. It is highly dependent on what has been determined to be “natural resources” – in particular, land, soil, and water. It at once relies on and also destroys these resources. A typical response by proponents of capitalist development to critiques based on these issues is an appeal to the “reform-oriented *inclusionary* discourse” of sustainable development,⁶⁶⁶ which insists that development will become (or even must become) sustainable in time, perhaps after certain obstacles related to the early phases of growth are overcome.

While certainly a comforting view of the future, scholars and other interested parties have raised many important questions about the truthfulness of these claims and the self-serving and self-perpetuating nature of this discourse. In this regard, Hajer and Fischer have pointed out that “the dominant discourse that shaped up

⁶⁶⁶ Hajer and Fischer, "Beyond Global Discourse: The Rediscovery of Culture in Environmental Politics," 4., italics in original.

around the notion of sustainable development was one that suggested that the major institutions could learn, had learned and would be able to reinvent themselves so as to become co-producers of a new sort of development that would be more environmentally sustainable.”⁶⁶⁷ The popularity of discourse is related to its inclusionary nature, but, Hajer and Jamison argue, instead of inciting true environmentally sound reforms, it has simply ‘greenstamped’ or legitimized business-as-usual and hindered or constrained the calls for radical change and “more temporally and spatially focused attempts to reconstruct institutional routines and socio-natural relationships.”⁶⁶⁸

This literature predicts that groups initially ally with palatable global sustainability or environmental discourses so as to *not* stand out (as an environmental villain, for example) and to more integrate with mainstream “progress.” In the case of a discourse coalition like this, if the narrative of the coalition is challenged, the coalition may or may not break up. According to Hajer, “diverse political actors, characterized by different interests and belief in different sets of ‘facts’ related to public matters, can come together in discourse coalitions to influence decision making around policy.”⁶⁶⁹ This is a key way that a discourse coalition is distinct from an advocacy coalition. In an advocacy coalition, such as the more active sectors of the environmentalist movement, collaboration based on truly shared common objectives

⁶⁶⁷ Ibid.

⁶⁶⁸ Ibid., 4-5.

⁶⁶⁹ Elgert, "Certified Discourse? The Politics of Developing Soy Certification Standards," 397.

goes beyond a shared storyline to some kind of binding exchanges among members, such as information, for example.

From the outside, it appears unlikely that the key stakeholders in Lucas Legal – TNC, Syngenta, Fiagril, the municipal government of Lucas, SEMA-MT, and the farmers – share in any substantial way common objectives outside of those of Lucas Legal, which would seem to preclude them forming an advocacy coalition, though at the same time, would not guarantee their membership in a discourse coalition, either. The municipal government of Lucas and SEMA-MT have in common a directive and obligation to protect natural resources, but in Lucas these directives are very clearly balanced and intertwined with similar obligations to protecting agriculture. Indeed, the environmental organ in Lucas – the Secretary of Agriculture and the Environment - is also in charge of managing agricultural issues. This balancing act is particularly delicate because frequently what is good for one is bad for the other. TNC, for its part, has pledged to work more closely with corporations to address environmental threats,⁶⁷⁰ though its principal mission to protect the environment frequently puts it at odds with the Brazilian government and corporations and international funding agencies.⁶⁷¹ Syngenta and Fiagril have pledged to support socio-environmental programs, but their main business continues to be one with irrefutable negative effects on the environment.

Above and in other chapters, I have explained how the context in which Lucas Legal was born developed over time as various government technologies evolved

⁶⁷⁰ Interview with David Cleary, 14 May 2012.

⁶⁷¹ Field notes, 17 October 2011.

along with local acceptance and resistance to these technologies. Each of the stakeholder groups involved in the project came into the project with a shared goal – seeking to prove that licensing was possible and to improve the licensing process – but there is no evidence that they drastically changed their main missions in pursuit of this goal. A shared discourse around a shared project seems to have united the project’s sponsors. Moreover, a sharing of individuals (in terms of changes of employment from one group to another, in terms of spouses or other close family members working in different of these groups, and in terms of individuals who are simultaneously invested in, say, a business and serving as a local official) must certainly have strengthened these stakeholders’ cooperation. Did this discourse bring these groups together? Or did close working relationships among the groups involved in the project allow them to craft and employ a shared discourse? Because these groups generally enjoyed considerable overlap even before Lucas Legal, it appears that the actual, if informal, linkages among the groups likely facilitated their quick adoption of the narrative crafted for Lucas Legal, but that the mutual interest in the symbolic power of Lucas Legal to improve outcomes of diverse projects was the main outcome. The true transformation in practice occurred among the farmers, who had to reforest to pursue compliance with the law to receive their licenses.

What, then, of the outcomes of the project? Chapter7 illustrated that the stated objectives of 100 percent licensing of rural properties in Lucas had not been met, though nearly half of the properties had been licensed. Thus, in one important way, the project is not yet a success. There have, however, been real and unexpected

achievements associated with the project. One real success for the project appears to be the change in the perception of environmental licensing and conservation among farmers. As described in Chapter 7, a major shift appears to have occurred in the attitudes of Lucas' farmers from just before Lucas Legal to 2011, after the project had been running for about five years. Today, most farmers admit that environmental protection is something they consider to be important. Another important outcome has been the influence of the project on policy and implementation of policy at state and federal levels, where the project's main innovation – the CAR proto-license – has been adopted into law.

In terms of translating this concern for the environment to action on the ground, things are more complex. Local environmental authorities in Lucas, as well as farmers, continue to occupy a middle ground between being part of state efforts to license their properties and better monitor the protection of forest reserves, and resisting it. They continue to decry SEMA-MT and IBAMA as being inefficient, unfair, and draconian, and at the same time they dutifully undertake the very tasks that these higher level government agencies would have them undertake, even going beyond what is required at times. There is even talk that local environmental regulations will remain more stringent than those at the national and state levels when changes to these laws are eventually settled.⁶⁷² The alliance of the municipal government with TNC, Syngenta, and Fiagril bolsters the image of local authority of sticking it to the state – by working to achieve the simple task of licensing – while in

⁶⁷² Field notes, 17 October 2011.

fact the municipal government is acting as an extension of the state and doing exactly what they are expected to do by higher levels of government – licensing and monitoring activities on rural properties.

It should also be noted that the relationship between licensing of rural properties and reforestation and avoided deforestation is still unclear. Also unknown is whether recent licensing in Lucas can be contributed to the efforts of the Lucas Legal project. As this project was scaled up it also trickled down, so even if the Secretary of Agriculture and the Environment in Lucas was personally signing people up for project, it is not clear if it was Lucas Legal, Mato Grosso Legal, changes in the law at the national level, or something else entirely that convinced them to participate. Respondents in my interviews nearly universally reported an “improvement” in their environmental outlook; though they do not attribute this to a specific event or program, they do note that the positive attention being paid to Lucas Legal by the media and the public is also positive for them. It is easy to see that the project corresponds to shifts in environmental outlook on the part of farmers, but it is difficult to make definite causal connections – only correlations.

Conclusion and directions for future research

A significant finding of this dissertation is that, contrary to conventional understandings of regional issues as defined by such dualisms as agriculture/nature and development/environment, agricultural actors in the Amazon are in fact

motivated by environmental concerns and consider the environment in their decision making, and that this consideration of the environment has evolved over time.

Through interviews with farmers who had arrived in the region at the beginning of local settlement, some thirty years ago, coupled with archival research, I was able to show that the understanding and consideration of the environment by farmer-landowners has changed over time in both thought and practice; that this complex environmental subjectivity has not been adequately addressed in policy debates and decisions; that agricultural actors' decisions are influenced by economic considerations but not solely so; and that environmental considerations vary considerably among the farmer-landowner population. My research also contributes to the ongoing discussion about the importance of scalar fit, or creating institutions at the most appropriate scales, for creating effective agri-environmental institutions. Finally, my research has also contributed to ongoing efforts to create a framework for cross-case comparisons of "soft governance."⁶⁷³

The grounded, ethnographic approach of my dissertation research helps fill an important gap in research on this topic; few other studies of environmental governance in the Amazon have been in-depth enough to explore the settlement history of the region, the importance of inter-personal relationships, and local politics to environmental and developmental outcomes, and link these issues to outcomes of projects of environmental governance or local perceptions of environmental conservation. Understanding the diverse motivations of agricultural and non-

⁶⁷³ Brannstrom et al., "Compliance and market exclusion in Brazilian agriculture: Analysis and implications for "soft" governance."

agricultural actors in the Amazon is crucial to ensuring sustainable environmental outcomes as well as sustainable economic development.

Questions raised but unresolved by this dissertation include: what factors most influence farmer decision making with regard to the environment? In what ways does farmer decision making vary in time and in space, or in other words, are changes rapid or slow, and are they more likely in regions with certain physical, social, or cultural characteristics than others? The findings of this project also point to the importance of further research on the nature and outcomes on conservation of public-private partnerships with stakeholders from multiple sectors. Does farmer regard for the environment truly correlate with more conservation-oriented practices?

Lucas Legal is an innovative project that has achieved many successes, while illuminating the considerable amount of work that remains to be done to achieve environmental licensing of all properties, even in a municipality highly equipped to promote such a thing. Basic questions about the goals of Lucas Legal and its spin-off projects remain, including: Does licensing really translate to improved environmental outcomes like reforestation or avoided deforestation? Also unclear is the importance of the involvement of sponsoring corporations in the project, as well as their motivations. It seems clear that TNC has played a large role in securing funding for the project, organizing farmer outreach, and lending credibility to the project. In fact, the Lucas Legal spin-off projects do not involve corporate sponsorship, but instead, earned funding from multi-national sources through a development bank. This raises

important questions about the effects of sources of funding for environmental outcomes of projects.

Based on my conversations with one Lucas Legal project leader, there is reason to predict that projects with corporate funding from businesses with a presence in the location of the project might lead to *better* sustainability outcomes than the projects funded by the development bank, which is an “outsider” with no presence in Lucas. Recent research in the area of Corporate Social Responsibility appears to support this conclusion, as employees increasingly take an interest in the impacts of their employers on their communities and environments.⁶⁷⁴ Also unresolved is the importance of project participation leading to true changes in the missions of private companies. Does it matter if the company only sponsors an environmental project to improve its reputation, especially if the project ends up having a positive impact on environmental conservation? Is engagement with discourses of sustainability enough to make a company a “good environmental citizen” if its storylines incite real action on the part of others? Further investigations into the motivations and roles of private companies in environmental conservation could inform the organization of future projects to ensure better environmental outcomes.

Another set of questions this project has raised, but which require further investigation is the role of scale in environmental governance. Lucas Legal as originally conceived of was faced with the challenge of attempting to instigate compliance with state and federal laws, but at the municipal scale, with municipal-

⁶⁷⁴ C.B. Battacharya, Sankar Sen, and Daniel Korschun, "Using corporate social responsibility to win the war for talent," *MIT Sloan Management Review* 49, no. 2 (2008).

level legal protections, and without the full commitment of state officials. This scalar mismatch between objective and institutions apparently would have doomed the project had project leaders not leveraged their reputations and personal relationships to increase the commitment of state officials and repair the scalar mismatch by successfully promoting a similar two-license, temporary amnesty project at the state level. Murkier yet is what, if any, effect the various scales at which the sponsoring stakeholder groups operate had on the project outcomes. TNC and Syngenta are multinational, Sadia is national, SEMA-MT is state, and Fiagril and the municipal government are local. How did the scale at which each stakeholder operates affect its participation in the project? The specific discursive devices and action employed by each stakeholder deserve further attention.

Finally, all of these questions need to be asked in the context of multi-site comparisons among the Lucas Legal spin-off projects, other projects in Brazil, and other projects in other countries, particularly countries with large and expanding economies of industrial agriculture. More in-depth studies of farmer attitudes and behaviors with regard to the environment and in the context of licensing or other types of conservation projects are needed. The findings of this dissertation could also be used to design a large-n, multi-site survey of farmer attitudes and behaviors with respect to the environment and observed changes in land use and vegetative cover.

APPENDIX A – INTERVIEW INSTRUMENT

Levantamento

Entrevista # _____

Dados pessoais:

Nome:

Idade:

Tamanho da sua propriedade (ha):

Período de tempo em agricultura em Lucas:

Fora de Lucas:

Outras ocupações?:

Posso gravar a entrevista? (Seu nome não será associada com os resultados de jeito nenhum) S / N

Perguntas:

Papel da conservação ambiental na agricultura

Qual é a relação do Senhor com o meio ambiente/visão do conservação?

Teve uma evolução nisto al longo dos tempos/desde chegou aqui?

Qual é a obrigação da indústria agrícola com o meio ambiente? Por exemplo, incentivar os produtores conservar?

Qual é a obrigação do governo com o meio ambiente? Deveria fiscalizar mais?

Qual é sua principal fonte de informação para leis e regras ambientais?

Visões sobre as capacidade e confiabilidade dos governos municipais, estaduais e federais para administrar questões ambientais no Mato Grosso

Em sua opinião, o Código Florestal é justo?

--APPs

--Reservas Legais

O Senhor tem conhecimento de algum conflito ou sobreposição entre os governos municipal, estadual e federal na fiscalização das leis ambientais?

Esse conflito causa insegurança ao Senhor? Como?

A propriedade do Senhor é enquadrada como cerrado ou floresta?

O Senhor acha essa classificação justa?

Eficácia do Lucas Legal na promoção das práticas agroecológicas

O Senhor conhece o projeto Lucas Legal?

Como é que soube do programa Lucas Legal?

Como foi o processo de participar no Lucas Legal? Pelo seu entendimento, que mais tem que fazer como participante no projeto?

Foi uma palestra? Os funcionários foram?

O processo de participar pareceu justo ao Senhor?

Já fez licenciamento CAR?

O projeto Lucas Legal motivou o programa MT Legal e quando o Senhor vai fazer licenciamento voluntariamente, o Senhor não será multado pelo passivo ambiental. Isso facilitou que o Senhor participe no programa?

Descreva-me como o Lucas Legal beneficia o Senhor e os produtores em geral? (ou o município se não for agricultor)

Qual o seu entendimento sobre a eficácia do programa Lucas Legal em realizar seus objetivos?

--em termos de objetivos para desenvolvimento económico

--em termos de objetivos ambientais

LITERATURE CITED

- Adelman, David E., and Kirsten H. Engel. "Adaptive Federalism: The Case against Reallocating Environmental Regulatory Authority." In *Arizona Legal Studies*, 56: The University of Arizona James E. Rogers College of Law, 2007.
- Adelman, Irma, Cynthia Taft Morris, Habib Fetini, and Elise Golan-Hardy. "Institutional Change, Economic Development, and the Environment." *Ambio* 21, no. 1 (1992): 106-11.
- Adger, W. Neil, and Andrew Jordan. "Sustainability: Exploring the Processes and Outcomes of Governance." Chap. 1 In *Governing Sustainability*, edited by W. Neil Adger and Andrew Jordan. 3-31. Cambridge, UK: Cambridge, 2009.
- Agrawal, Arun. *Environmentality: Technologies of Government and the Making of Subjects*. New Ecologies for the Twenty-First Century. edited by Arturo Escobar and Diane Rocheleau Durham, NC: Duke UP, 2005.
- Aldrich, Stephen, Robert Walker, Cynthia Simmons, Marcellus Caldas, and Stephen Perz. "Contentious Land Change in the Amazon's Arc of Deforestation." *Annals of the Association of American Geographers* 102, no. 1 (2012): 103-28.
- Alves Jr., Gilberto Torres. "O Planejamento Governamental E Seus Reflexos Na Estrutura Fundiária De Mato Grosso." *Caminhos de Geografia* 4, no. 9 (2003): 17-30.
- Alves Sobrinho, Rosângela. "Dinâmica Territorial, Agronegócio E Re-Territorialização: O Município De Diamantino/Mt." In *Novas Territorialidades Nas Cidades Mato-Grossenses*, edited by Sônia Regina Romancini. 155-74. Cuiabá, Brazil: edUFMT, 2009.
- Anonymous. "Estão Vendendo Terras Em Mato Grosso." *O Estado de Mato Grosso*, 21 November 1954 1954, 1.
- Arima, Eugenio Y, Peter Richards, Robert Walker, and Marcellus M Caldas. "Statistical Confirmation of Indirect Land Use Change in the Brazilian Amazon." *Environmental Research Letters*, no. 6 (2011).
- Azevedo, Andréa Aguiar. "Legitimação Da Sustentabilidade? Análise Do Sistema De Licenciamento Ambiental De Propriedades Rurais - Slapr (Mato Grosso)." Universidade de Brasilia, 2009.
- Bakker, Karen. "Commons Versus Commodities: Political Ecologies of Water Privatization." Chap. 16 In *Global Political Ecology*, edited by Richard Peet, Paul Robbins and Michael Watts. 347-70. London: Routledge, 2011.
- . "The "Commons" Versus the "Commodity": Alter-Globalization, Anti-Privatization and the Human Right to Water in the Global South." *Antipode* (2007): 430-55.

- Banerjee, Onil, Alexander J. Macpherson, and Janaki Alavalapati. "Toward a Policy of Sustainable Forest Management in Brazil: A Historical Analysis." *The Journal of Environment and Development* 18, no. 2 (2009): 130-53.
- Barros, Bettina. "Lucas Do Rio Verde, O Único Município 100% Mapeado." In *Blog do Elisson Prieto*, edited by Elisson Prieto, 2008.
- Barros, Geraldo. "Brazil: The Challenges in Becoming an Agricultural Superpower." Paper presented at the Brazil as an economic superpower? Understanding Brazil's changing role in the global economy, Washington, DC, 2009.
- Barrozo, João Carlos. "Políticas De Colonização: As Políticas Públicas Para a Amazônia E O Centro-Oeste." In *Mato Grosso: Do Sonho À Utopia Da Terra*, edited by João Carlos Barrozo. 15-26. Cuiabá: EdUFMT, 2008.
- Bastos, Yandra, Laurent Micol, and João Andrade. "Transparência Florestal Mato Grosso: Análises Do Desmatamento E Da Gestão Florestal." Cuiabá, Mato Grosso: Instituto Centro de Vida [ICV], 2011.
- Battacharya, C.B., Sankar Sen, and Daniel Korschun. "Using Corporate Social Responsibility to Win the War for Talent." *MIT Sloan Management Review* 49, no. 2 (2008): 36-44.
- Becker, Bertha K. "Brazil's Frontier Experience and Sustainable Development: A Geopolitical Approach." In *Frontiers in Regional Development*, edited by Y. Gradus and Harvey Lithwick. 73-? Lanham, MD: Rowman & Littlefield, 1996.
- Berry, Wendell. *The Art of the Commonplace: The Agrarian Essays of Wendell Berry*. edited by Norman Wirzba Berkeley: Counterpoint, 2002.
- Binswanger, Hans P. "Brazilian Policies That Encourage Deforestation in the Amazon." *World Development* 19, no. 7 (1991): 821-29.
- Botetzagias, Iosif, Prue Robinson, and Lily Venizelos. "Accounting for Difficulties Faced in Materializing a Transnational Engo Conservation Network: A Case-Study from the Mediterranean." *Global Environmental Politics* 10, no. 1 (2010): 115-51.
- Bowen, Glenn A. "Preparing a Qualitative Research-Based Dissertation: Lessons Learned." *The Qualitative Report* 10, no. 2 (2005): 208-22.
- Boyd, Emily. "Navigating Amazonia under Uncertainty: Past, Present and Future Environmental Governance." *Phil Trans R. Soc. B*, no. 363 (2008): 1911-16.
- Brannstrom, Christian. "A Q-Method Analysis of Environmental Governance Discourses in Brazil's Northeastern Soy Frontier." *The Professional Geographer* 63, no. 4 (2011): 531-49.
- . "South America's Neoliberal Agricultural Frontiers: Places of Environmental Sacrifice or Conservation Opportunity?". *Ambio* 38, no. 3 (2009): 141-49.
- Brannstrom, Christian, Lisa Rausch, J. Christopher Brown, Renata Marson Teixeira de Andrade, and Andrew Miccolis. "Compliance and Market Exclusion in Brazilian Agriculture: Analysis and Implications for "Soft" Governance." *Land Use Policy* 29, no. 2 (2012): 357-66.

- Browder, John O., and Brian J. Godfrey. *Rainforest Cities: Urbanization, Development, and Globalization of the Brazilian Amazon*. Columbia UP: New York, 1997.
- Browder, John O., Marcos A. Pedlowski, Robert Walker, Randolph H. Wynne, Percy M. Summers, Ana Abad, Nancy Becerra-Cordoba, and Joao Mil-Homens. "Revisiting Theories of Frontier Expansion in the Brazilian Amazon: A Survey of the Colonist Farming Population in Rondônia's Post-Frontier, 1992-2002." *World Development* 36, no. 8 (2008): 1469-92.
- Brown, J. Christopher, and Mark Purcell. "There's Nothing Inherent About Scale: Political Ecology, the Local Trap, and the Politics of Development in the Brazilian Amazon." *Geoforum* 36, no. 5 (2005): 607-24.
- Butler, Rhett A. and Laurance, William F. "New Strategies for Conserving Tropical Forests." *Trends in Ecology and Evolution* 23, no. 9 (2008): 469-72.
- CaféPoint. "Dívidas Serão Refinanciadas Com Recursos Do Fat." <http://www.cafepoint.com.br/cadeia-produtiva/giro-de-noticias/dividas-serao-refinanciadas-com-recursos-do-fat-33369n.aspx>.
- Caldas, Marcellus, Robert Walker, Eugenio Arima, Stephen Perz, Stephen Aldrich, and Cynthia Simmons. "Theorizing Land Cover and Land Use Change: The Peasant Economy of Amazonian Deforestation." *Annals of the Association of American Geographers* 97, no. 1 (2007): 86-110.
- Caputo, John, and Mark Yount. "Institutions, Normalization, and Power." In *Foucault and the Critique of Institutions*, edited by John Caputo and Mark Yount. 3-23. University Park, PA: Pennsylvania State UP, 1993.
- Cardille, Jeffrey A., and Jonathan A. Foley. "Agricultural Land-Use Change in Brazilian Amazonia between 1980 and 1995: Evidence from Integrated Census Data." *Remote Sensing of Environment* 87 (2003): 551-62.
- Carr, David. "Population and Deforestation: Why Rural Migration Matters." *Progress in Human Geography* 33, no. 3 (2009): 355-78.
- Carter, Miguel. "The Landless Rural Workers Movement and Democracy in Brazil." In *International Peasant Day*, 52, 2009.
- Carvalho, David J. "Papel Do Estado No Processo De Diferenciação Camponesa." In *Série Seminários e Debates*. Belém: NAEA, 1982.
- Castro, Sueli Pereira, João Carlos Barrozo, Marinete Covezzi, and Oreste Preti. *A Colinzação Oficial Em Mato Grosso : "A Nata E a Borra Da Sociedade"*. Cuiabá, Mato Grosso, Brazil: Editora Universitária da Universidade Federal de Mato Grosso (UDUFMT), 1994.
- Cattaneo, Andrea. "Deforestation in the Brazilian Amazon: Comparing the Impacts of Macroeconomic Shocks, Land Tenure, and Technological Change." *Land Economics* 77, no. 2 (2001): 219-40.
- Cavalcanti, Roberto B., and Carlos A. Joly. "Biodiversity and Conservation Priorities in the Cerrado Region." Chap. 18 In *The Cerrados of Brazil*, edited by Paulo S. Oliveira and Robert J. Marquis. 351-67. New York: Columbia University Press, 2002.

- Chomitz, Kenneth M., and Piet Buys. *At Loggerheads?: Agricultural Expansion, Poverty Reduction, and Environment in the Tropical Forests*. Washington, DC: World Bank, 2007.
- Cleary, David. "After the Frontier: Problems with Political Economy in the Modern Brazilian Amazon." *Journal of Latin American Studies* 25, no. 2 (1993): 331-49.
- . "When Is a Rainforest Not a Rainforest?" In *CoolGreenScience: The Nature Conservancy*, 2009.
- Companhia Nacional de Abastecimento [CONAB]. "Milho Total (1a E 2a Safra) - Brazil; Série Histórica De Área Plantada." 2010.
- . "Soja-Brasil, Série Histórica De Área Plantada." 2012.
- Connor, David J., Robert S. Loomis, and Kenneth G. Cassman. *Crop Ecology: Productivity and Management in Agricultural Systems*. Cambridge: Cambridge UP, 2011.
- Coutinho, Marcos. "Programa Mt Legal Respaldou Código Florestal Em Sete Pontos." *Olhar Direto*, 08 December 2011.
- D'Antona, Álvaro O., Leah K. VanWey, and Corey M. Hayashi. "Property Size and Land Cover Change in the Brazilian Amazon." *Popul Environ* 27 (2006): 373-96.
- da Silva, Aldina Cássia Fernandes. "O Fetiche Das Terras: Dos Sonhos E Desejos À Nova Vida." In *Mato Grosso: Do Sonho À Utopia Da Terra*, edited by João Carlos Barrozo. 141-64. Cuiabá: EdUFMT, 2008.
- Da Silva, Fernanda Celina Nicoli. "A História Do Cotidiano De Lucas Do Rio Verde Do Início De Sua Colonização À Sua Emancipação." Universidade Regional do Noroeste do Estado do Rio Grande do Sul, 2011.
- Darier, Éric. "Foucault and the Environment: An Introduction." Chap. 1 In *Discourses of the Environment*, edited by Éric Darier. 1-33. Oxford: Blackwell, 1991.
- de Almeida, Ariane Cristina, and Daniel H. Saavedra Alvarado. "Atualização Cartográfica E Mapeamento Do Uso Do Solo Do Município De Lucas Do Rio Verde - Mt." 87. Brasília: Programa de Conservação das Savanas Centrais, TNC, 2006.
- de Arruda, Zuleika Alves. "As 'Agrocidades' E as Interfaces Entre Mundo Rural E Urbano: Repercussões Sociospaciais Do Agronegócio No Território Mato-Grossense." In *Novas Territorialidades Nas Cidades Mato-Grossenses*, edited by Sônia Regina Romancini. 175-98. Cuiabá, Brazil: edUFMT, 2009.
- de Oliveira, Tania Pitombo. "Acima Do Paralelo 13: Uma Discursividade Em Questão." Unicamp, 2001.
- de Souza, Daniel Borges, and Rosana Lia Ravache. "Estruturação Do Espaço Urbano-Regional Do Centro-Norte Mato-Grossense: Sinop, Sorriso E Lucas Do Rio Verde." In *Novas Territorialidades Nas Cidades Mato-Grossense*, edited by Sônia Regina Romancini. 199-220. Cuiabá, Brazil: edUFMT, 2009.
- Deadman, Peter, Derek Robinson, Emilio Moran, and Eduardo Brondizio. "Colonist Household Decisionmaking and Land-Use Change in the Amazon Rainforest:

- An Agent-Based Simulation ". *Environment and Planning B: Planning and Design* 31 (2004): 693-709.
- Desconsi, Cristiano. *A Marcha Dos Pequenos Proprietários Rurais: Trajetórias De Migrantes Do Sul Do Brasil Para O Mato Grosso*. edited by Sociedade e Economia do Agronegócio. Vol. 1, Rio de Janeiro: E-papers Serviços Editoriais, 2011.
- dos Santos, José Vicente Tavares. "Programma De Colonização Terranova." In *Mato Grosso Do Sonho À Utopia Da Terra*, edited by João Carlos Barrozo. 97-140. Cuiabá: EdUFMT/Carlini & Caniato Editorial, 2008.
- Elgert, Laureen. "Certified Discourse? The Politics of Developing Soy Certification Standards." *Geoforum* 43, no. 2 (2012): 295-304.
- "Embargos Ambientais Podem Inviabilizar Agricultura." *Folha Verde*, 20 May 2008, 4.
- Ewers, Robert M., William F. Laurance, and Carlos M. Souza Jr. "Temporal Fluctuations in Amazonian Deforestation Rates." *Environmental Conservation* 35, no. 4 (2008): 303-10.
- Executive Intelligence Review. *A Máfia Verde : O Ambientalismo a Serviço Do Governo Munidal*. 4th ed. Rio de Janeiro: EIR, 2002.
- Fargione, Joseph, Jason Hill, David Tilman, Stephen Polasky, and Peter Hawthorne. "Land Clearing and the Biofuel Carbon Debt." *Science* 319, no. 1235 (2008): 1235-38.
- Fearnside, Philip M. "Brazil's Cuiabá-Santarém (Br-163) Highway: The Environmental Cost of Paving a Soybean Corridor through the Amazon." *Environ Manage* 39 (2007): 601-14.
- . "Deforestation Control in Mato Grosso: A New Model for Slowing the Loss of Brazil's Amazon Forest." *Ambio* 32, no. 5 (2008): 343-45.
- . "The Roles and Movements of Actors in the Deforestation of Brazilian Amazonia." *Ecology and Society* 13, no. 1 (2008): 23.
- Fearnside, Philip M., and Reinaldo Imbrozio Barbosa. "Avoided Deforestation in Amazonia as a Global Warming Mitigation Measure: The Case of Mato Grosso." *World Resource Review* 15, no. 3 (2003): 352-61.
- Ferreira, Igor Nicolau Richwin. "Parcerias Para O Gestão Ambiental Em Propriedades Rurais: O Caso De Lucas Do Rio Verde - Mt." Universidade de Brasília, 2010.
- Ferreira, Soraia. "Otaviano Apresenta Mt Legal Em Lucas Do Rio Verde." *Reporter News.com.br*, 16 June 2008.
- Food and Agriculture Organization of the United Nations [FAO]. "Brazil." In *Monitoring progress towards hunger reduction targets of the World Food Summit (WFS) and the Millenium Development Goals (MDG)*: Food and Agriculture Organization of the United Nations, Statistics Division, 2008.
- Foreign Agriculture Service [FAS] United States Department of Agriculture [USDA]. "Brazil: 2005/06 Soybean Area Projected to Decline." edited by Michael J. Shean: USDA, 2005.

- Forero, Juan. "In One Brazilian Farm Town, Reviving the Forest." In, *NPR* (2009).
Published electronically 15 December.
<http://www.npr.org/templates/story/story.php?storyId=121095308>.
- Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. New York: Pantheon Books, 1975.
- . "Governmentality." Chap. 4 In *The Foucault Effect: Studies in Governmentality*, edited by Graham Burchell, Colin Gordon and Peter Miller. 87-104. Chicago: U of Chicago P, 1999 [1978].
- . *Power/Knowledge: Selected Interviews and Other Writings, 1972-77*. edited by Colin Gordon New York: Pantheon, 1977.
- . "Theories of the Political: History, Power, and the Law." In *Politics, Philosophy, Culture: Interviews and Other Writings of Michel Foucault, 1977-1984*. 57-85. New York: Routledge, 1990 [1979].
- Frank, Zephyr Lake. "Elite Families and Oligarchic Politics on the Brazilian Frontier: Mato Grosso, 1889-1937." *Latin American Studies Association* 36, no. 1 (2001): 49-74.
- Fundação Meridional. "Governadores Se Reúnem Com Lula Dia 16 E Cobram Soluções Para Crise No Agronegócio." *Fundação Meridional*, 2005.
- Fundação Rio Verde. "Nossa História."
<http://www.fundacaorioverde.com.br/secao.php?secao=historia>.
- García, Mario Ramón Fariñas. "Agricultural Activities, Management, and Conservation of Natural Resources of Central and South American Savannas." Paper presented at the IX National Symposium on Cerrado/II International Symposium on Tropical Savannah, Brasília, Brazil, 2008.
- Garcia, Ricardo Alexandrino, Britaldo Soares-Filho, and Diana Oya Sawyer. "Socioeconomic Dimensions, Migration, and Deforestation: An Integrated Model of Territorial Organization for the Brazilian Amazon." *Ecological Indicators* 7 (2007): 719-30.
- Garfield, Seth. *Indigenous Struggle at the Heart of Brazil: State Policy, Frontier Expansion, and the Xavante Indians, 1937-1988*. Durham, N.C.: Duke UP, 2001.
- Garner, Andrew. "Uncivil Society: Local Stakeholders and Environmental Protection in Jamaica." Chap. 6 In *Virtualism, Governance and Practice*, edited by James G. Carrier and Paige West. 134-54. New York: Berghahn Books, 2009.
- Giordano, Samuel Ribeiro, Silvia Morales de Queiroz Caleman, and Cláudio Antonio Pinheiro Machado Filho. "Environmental Conservation and Coordination Aspects: The Nature Conservancy (Tnc) Case Study in Brazil." In *IAMA Seminar: PENSA - Agribusiness Knowledge Center*, n.d.
- Globo Rural. "Projeto Ajuda Agricultor a Se Adequar À Legislação Ambiental Em Mt." *GI Economia: Agronegócios*, 27 March 2011.
- Greenpeace. "Eating up the Amazon." Amsterdam: Greenpeace International, 2006.
- Greenpeace UK. "Come Together." In *Forests*, 2006.
- Habermas, Jürgen. *Toward a Rational Society: Student Protest, Science, and Politics*. Translated by Jeremy J. Shapiro. Boston: Beacon, 1970.

- Hacking, Ian. "The Archeology of Foucault." In *Foucault: A Critical Reader*, edited by David Couzens Hoy. 27-40. Oxford: Basil Blackwell, 1986.
- . "How Should We Do the History of Statistics?". In *The Foucault Effect: Studies in Governmentality*, edited by Graham Burchell, Colin Gordon and Peter Miller. 181-96. Chicago: U of Chicago P, 1999.
- Hajer, Maarten. *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process*. Oxford: Oxford UP, 1995.
- Hajer, Maarten, and Frank Fischer. "Beyond Global Discourse: The Rediscovery of Culture in Environmental Politics." Chap. Introduction In *Living with Nature: Environmental Politics as Cultural Discourse*, edited by Frank Fischer and Maarten Hajer. 1-20. Oxford: Oxford UP, 1999.
- Haque, M. Shamsul. "The Fate of Sustainable Development under Neo-Liberal Regimes in Developing Countries." *International Political Science Review* 20, no. 2 (1999): 197-218.
- Hargrove, Eugene C. *Foundations of Environmental Ethics*. Edgewood Cliffs, NJ: Prentice Hall, 1989.
- Harper, Krista. "Environment as Master Narrative: Discourse and Identity in Environmental Conflicts (Special Issue Introduction)." *Anthropolgy Department Faculty Publication Series Paper 75* (2001).
- Harvey, David. *Spaces of Global Capital*. London: Verso, 2006.
- Hasse, Geraldo. *O Brasil Da Soja: Abrindo Fronteiras, Semando Cidades*. Porto Alegre, Brazil: CEVAL, 1996.
- Hathaway, Michael J. "Global Environmental Encounters in Southwest China: Fleeting Intersections and 'Transnational Work'." *The Journal of Asian Studies* 69, no. 2 (2010): 1-25.
- Hayes, Niall, and Raoni Rajão. "Competing Institutional Logics and Sustainable Development: The Case of Geographic Information Systems in Brazil's Amazon Region." *Information Technology for Development* 17, no. 1 (January 2011): 4-23.
- Hecht, Susanna B. "Soybeans, Development and Conservation on the Amazon Frontier." *Development and Change* 36, no. 2 (2005): 375-404.
- Hecht, Susanna B., and Alexander Cockburn. *The Fate of the Forest: Developers, Destroyers and Defenders of the Amazon*. London: Verso, 1989.
- Heckenberger, Michael J., Afukaka Kuikuro, Urisspá Tabata Kuikuro, J. Christian Russel, Morgan Schmidt, Carlos Fausto, and Bruna Franchetto. "Amazonia 1492: Pristine Forest or Cultural Parkland." *Science* 301 (2003): 1710-14.
- Heinst, Andréia de Cássia. "Mato Grosso E a Comercialização Dos Seus "Espaços Vazios" Durante as Décadas De 1950 E 1960." In *Mato Grosso: Do Sonho À Utopia Das Terras*, edited by João Carlos Barrozo. 77-93. Cuiabá: EdUFMT, 2008.
- Higgins, Vaughan, Jacqui Dibden, and Chris Cocklin. "Neoliberalism and Natural Resource Management: Agri-Environmental Standards and the Governing of Farming Practices." *Geoforum* 39 (2008): 1176-785.

- Himley, Matthew. "Geographies of Environmental Governance; the Nexus and Nature of Neoliberalism." *Geography Compass* 2, no. 2 (2008): 433-51.
- Hochstetler, Katheryn, and Margaret E. Keck. *Greening Brazil: Environmental Activism in State and Society*. Durham, N.C.: Duke UP, 2007.
- Holbrook, Daniel. "The Consequentialist Side of Environmental Ethics." Chap. 5 In *The Environmental Responsibility Reader*, edited by Martin Reynolds, Chris Blackmore and Mark J. Smith. 52-59. London: Zed Books, 2009.
- Holmes, George. "The Rich, the Powerful, and the Endangered: Conservation Elites, Networks and the Dominican Republic." *Antipode* 42, no. 3 (2010): 624-46.
- Hook, Derek. *Foucault, Psychology, and the Analytics of Power*. Critical Theory and Practice in Psychology and the Human Sciences. Hampshire, Great Britain: Palgrave, 2007.
- Huber, Anton. *Tempestade No Cerrado*. Cuiabá, MT: Carlini & Caniato, 2010.
- "IBAMA Notifica Produtores No Município." *Folha Verde*, 18 September 2008, n.p.
- "Ii Fórum Municipal Do Meio Ambiente Discute Uso De Defensivos Agrícolas." *Folha Verde*, 31 May 2007, 5.
- Instituto Brasileiro de Geografia e Estatística [IBGE]. "Censo Demográfico." Brasília, Brazil, 2010.
- . "Estabelecimentos Agropecuários, Censo Agropecuário 1920/2006." Rio de Janeiro, 2007.
- . "Produção Agrícola Municipal." Brasília, Brazil, 2010.
- . "Sidra (Sistema Ibge De Recuperação Automática). Censo Agropecuário (Agricultural Census) 1996 and 2006.": Available from <http://www.sidra.ibge.gov.br/>, last viewed January 20, 2012, 2012.
- Jasanoff, Shiela. "Heaven and Earth: The Politics of Environmental Images." Chap. 1 In *Earthly Politics: Local and Global in Environmental Governance*, edited by Shiela Jasanoff and Marybeth Long Martello. 31-52. Cambridge, MA: MIT Press, 2004.
- Jepson, Wendy. "Private Agricultural Colonization on a Brazilian Frontier, 1970-1980." *Journal of Historical Geography* 32 (2006): 839-63.
- . "Producing a Modern Agricultural Frontier: Firms and Cooperatives in Eastern Mato Grosso, Brazil." *Economic Geography* 82, no. 3 (2006): 289-316.
- Jepson, Wendy, Christian Brannstrom, and Anthony Filippi. "Access Regimes and Regional Land Change in the Brazilian Cerrado, 1972 - 2002." *Annals of the Association of American Geographers* 100, no. 1 (2010): 87-111.
- Jessop, Bob. "Narrating the Future of the National Economy and the National State: Remarks on Remapping Regulation and Reinventing Governance." Chap. 12 In *State/Culture: State-Formation after the Cultural Turn*, edited by George Steinmetz. 378-406. Ithica, NY: Cornell UP, 1999.
- . "The Regulation Approach, Governance and Post-Fordism: Alternative Perspectives on Economic and Political Change?." *Economy and Society* 24 (1995): 307-33.

- Jessop, Bob, Jamie Peck, and Adam Tickell. "Retooling the Machine: Economic Crisis, State Restructuring, and Urban Politics." Chap. 9 In *The Urban Growth Machine: Critical Perspectives Two Decades Later*, edited by Andrew E.G. Jonas and David Wilson. 141-59. Albany: State University of New York P, 1999.
- Jonas, Andrew E.G., and David Wilson. "The City as a Growth Machine: Critical Reflections Two Decades Later." Chap. 1 In *The Urban Growth Machine: Critical Perspectives Two Decades Later*, edited by Andrew E.G. Jonas and David Wilson. 3-18. London: Routledge, 1999.
- Jordan, Andrew. "The Governance of Sustainable Development: Taking Stock and Looking Forwards." *Environment and Planning C: Government and Policy* 26 (2008): 17-33.
- Joseph, Pat. "Soy in the Amazon." *Virginia Quarterly Review*, 2009, 107-29.
- Keck, Margaret E., and Kathryn Sikkink. *Activists Beyond Borders: Advocacy Networks in International Politics*. Ithica, NY: Cornell UP, 1998.
- Klink, Carlos A., and Ricardo B. Machado. "A Conservação Do Cerrado Brasileiro." *Megadiversidade* 1, no. 1 (2005): 147-53.
- Klink, Carlos Augusto, Henrique Garcia dos Santos, João Santo Campari Jr., Marcelo Hiromiti Matsumoto, Glauco Kimura de Freitas, and Leandro Baumgarten. "Conservação Dos Recursos Naturais Em Terras Privadas; O Papel Das Reservas Legais No Arranjo Funcional Das Paisagens Produtivas Do Bioma Cerrado." Chap. 14 In *Cerrado: Ecologia E Flora*, edited by Sueli Matiko Sano, Semíramis Pedrosa de Almeida and José Felipe Ribeiro. 400-06. Brasília: EMBRAPA Informação Tecnológica, 2008.
- Kritzman, Lawrence D. "Introduction: Foucault and the Politics of Experience." In *Politics, Philosophy, Culture: Interviews and Other Writings of Michel Foucault, 1977-1984*. ix-xxv, 1990.
- Larson, Anne M., and Fernanda Soto. "Decentralization of Natural Resource Governance Regimes." *Annual Review of Environment and Resources* 33 (2008): 213-39.
- Laurance, William F., Ana K. M. Albernaz, Philip M. Fearnside, Heraldo L. Vasconcelos, and Leandro V. Ferreira. "Deforestation in Amazonia." *Science* 304 (21 May 2004 2004): 1109.
- Lauria, Mickey. "Reconstructing Urban Regime Theory: Regulation Theory and Institutional Arrangements." Chap. 8 In *The Urban Growth Machine: Critical Perspectives Two Decades Later*, edited by Andrew E.G. Jonas and David Wilson. 125-39. Albany: State University of New York P, 1999.
- Leite, José Carlos. "Posse E Conflito Pela Terra Em Jauru - Mt: 1980-1990." In *Mato Grosso: Do Sonho À Utópia Da Terra*, edited by João Carlos Barrozo. 231-58. Cuiabá: EdUFMT, 2008.
- Lemos, Maria Carmen, and Arun Agrawal. "Environmental Governance." *Annu. Rv. Environ. Resour.* 31 (2006): 297-325.

- Lemos, Maria Carmen, and J. Timmons Roberts. "Environmental Policy-Making Networks and the Future of the Amazon." *Phil. Trans. R. Soc. B* 363 (2008): 1897-902.
- Lima, André, and Alicia Rolla. "Mato Grosso, Amazônia (I)Legal." Brasília: Instituto Socioambiental, 2005.
- Little, Peter D., and Michael M. Horowitz. "Introduction: Social Science Perspectives on Land, Ecology, and Development." In *Lands at Risk in the Third World: Local-Level Perspectives*, edited by Peter D. Little, Michael M. Horowitz and A. Endre Nyerges. 1-16. Boulder: Westview, 1987.
- Liverman, Diana. "Who Governs, at What Scale and at What Price? Geography, Environmental Governance, and the Commodification of Nature." *Annals of the Association of American Geographers* 94, no. 4 (2004): 734-38.
- Lofland, John, and Lyn H. Lofland. *Analyzing Social Settings: A Guide to Qualitative Observation and Analysis*. 2nd ed. Belmont, CA: Wadsworth Publishing Company, 1995.
- Lowe, Philip, and Neil Ward. "Field-Level Bureaucrats and the Making of New Moral Discourses in Agri-Environmental Controversies." Chap. 10 In *Globalising Food: Agrarian Questions and Global Restructuring*, edited by David Goodman and Michael Watts. 256-72. London: Routledge, 1997.
- Lucas do Rio Verde Legal. "Lucas Do Rio Verde Legal: Produção E Meio Ambiente: Grandes Conquistas." 2011.
- Luke, Timothy. "Eco-Managerialism: Environmental Studies as a Power/Knowledge Formation." In *Living with Nature: Environmental Politics as Cultural Discourse*, edited by Frank Fischer and Maarten Hajer. 103-20. Oxford: Oxford UP, 1999.
- . "On Environmentality: Geo-Power and Eco-Knowledge in the Discourses of Contemporary Environmentalism." *Cultural Critique* 31, no. The Politics of Systems and Environments, Part II (Autumn 1995): 57-81.
- Luverdense Esporte Clube [LEC]. "Time Verde." <http://www.luverdense.com.br/timeverde.html>.
- Maia, João Marcelo E. "Ideas and State Action: The Case of Central Brazil Foundation." In *European Social Science History Conference, Historical Ethnographies of Latin American States I: State Imaginings*, 22 pgs. Ghent, Belgium, 2010.
- Malhi, Yadvinder, Timmons Roberts, Richard A. Betts, Timothy J. Kileen, Wenhong Li, and Carlos A. Nobre. "Climate Change, Deforestation, and the Fate of the Amazon." *Science* 319 (2008): 169-72.
- Marcon, Telmo. *Acampamento Natalino: História Da Luta Pela Reforma Agrária*. Passo Fundo, Brazil: EDIUPF, 1997.
- Margolis, Joseph. "Redeeming Foucault." In *Foucault and the Critique of Institutions*, edited by John Caputo and Mark Yount. 41-59. University Park, PA: Pennsylvania State UP, 1993.
- Marques, Eduardo. "State Institutions, Power, and Social Networks in Brazilian Urban Policies." *Latin American Research Review* 47, no. 2 (2012): 27-50.

- Martinelli, Luiz A., Carlos A. Joly, Carlos Afonso Nobre, and Gerd Sparovek. "A Falsa Dicotomia Entre a Preservação Natural E a Produção Agropecuária." *Biota Neotropica* 10, no. 4 (2010): online.
- Martinelli, Luiz A., Rosamond Naylor, Peter M. Vitousek, and Paulo Moutinho. "Agriculture in Brazil: Impacts, Costs, and Opportunities for a Sustainable Future." *Current Opinion in Environmental Sustainability* 2 (2010): 431-38.
- Martins, José de Souza. *Capitalismo E Tradicionalismo*. São Paulo: Pioneira, 1975.
- McAllister, Lesley K. *Making Law Matter: Environmental Protection and Legal Institutions in Brazil*. Stanford: Stanford UP, 2008.
- . "Sustainable Consumption Governance in the Amazon." *Environmental Law Reporter* 38 (2008): 10873-81.
- McCarthy, James. "Privatizing Conditions of Production: Trade Agreements as Neoliberal Environmental Governance." *Geoforum* 35 (2004): 327-241.
- Mello, Patrícia Campos. "Produtores De Soja Devem Ter Perdas De Us\$1,1 Bi." In, *OESP, Economia* (2006): B12. Published electronically 14 May 2006.
- Menezes, Juliana. "Homero Pereira Diz Que Grito Do Ipiranga Vai Extrapolar Fronteiras De Mt." *Portal do Agronegócio*, 5 February 2006 2006.
- Morton, Douglas C., Ruth S. DeFries, Yosio E. Shimabukuro, Llana O. Anderson, Egidio Arai, Fernando del Bon Espirito-Santo, Ramon Freitas, and Jeff Morisette. "Cropland Expansion Changes Deforestation Dynamics in the Southern Brazilian Amazon." *Proceedings of the National Academy of Sciences* 103, no. 39 (26 September 2006 2006): 14637-41.
- Mossberger, Karen, and Gerry Stoker. "The Evolution of Urban Regime Theory: The Challenge of Conceptualization." *Urban Affairs Review* 36, no. 6 (2001): 810-35.
- Mueller, Charles Curt. "Expansion and Modernization of Agriculture in the *Cerrado* - the Case of Soybeans in Brazil's Center-West." In *Textos para Discussão*. Brasília: Universidade de Brasília - Departamento de Economia, 2003.
- Müller, K. "A Framework for Assessing Environmental Governance Structures." *Journal of Public Administration* 42, no. 1 (2007): 18-32.
- Munhak, José Dario. "Associação Comunitária." Municipal Archive - Lucas do Rio Verde, n.d.
- . "O Processo Migratório Para Lucas Do Rio Verde." 18: Museu Histórico de Lucas do Rio Verde, 2011.
- Munhak, José Dario, and Luiz Dziúba Junior. "Lucas Do Rio Verde: Um Resgate Sócio-Histórico-Econômico." Universidades Unidas de Várzea Grande, 2001.
- Navarro, Zander. "Expropriating Land in Brazil." In *Agricultural Land Redistribution: Toward Greater Consensus*, edited by Hans P. Binswanger-Mkhize, Camille Bourguignon and Rogerius Johannes Euger den Brink. 267-90. Washington DC: World Bank Publications, 2009.
- Nepstad, Daniel C. "Governing the World's Forests." *Conserving Biodiversity* (2005): 37-52.

- Nepstad, Daniel Curtis, Britaldo Silveira Soares-Filho, Frank Merry, André Lima, Paulo Moutinho, John Carter, Maria Bowman, *et al.* "The End of Deforestation in the Amazon." *Science* 326 (2009): 1350-51.
- Nepstad, Daniel, David G. McGrath, Ane Alencar, A.C. Barros, G. Carvalho, M. Santilli, and Maria Del Carmen Vera Diaz. "Frontier Governance in Amazonia." *Science* 295 (25 January 2002): 629-30.
- Nepstad, Daniel, Claudia M. Stickler, and Oriana T. Almeida. "Globalization of the Amazon Soy and Beef Industries: Opportunities for Conservation." *Conservation Biology* 20, no. 6 (2006): 1595-603.
- Neto, Vitale Joanoni. *Fronteiras Da Crença: Ocupação Do Norte De Mato Grosso Após 1970*. Cuiabá, MT: Carlini & Caniato Editorial; EdUFMT, 2007.
- Oliveira, Paulo S., and Robert J. Marquis, eds. *The Cerrados of Brazil*. New York: Columbia University Press, 2002.
- Osava, Mario. "Agricultura-Brasil: Soya, Expansión Y Polémicas." *Noticias en Español*, March 28, 2005 2005.
- Ozorio de Almeida, Anna Luiza. *The Colonization of the Amazon*. Translations from Latin America Series. Austin: University of Texas Press, 1992.
- Painter, Joe. "Regulation, Regime, and Practice in Urban Politics." In *Rconstructing Urban Regime Theory: Regulating Urban Politics in a Global Economy*, edited by Mickey Lauria. 122-43. London: Sage, 1997.
- Palma, Danielly Cristina de Andrade. "Agrotóxicos Em Leite Humano De Mães Residentes Em Lucas Do Rio Verde - Mt." Universidade Federal de Mato Grosso, 2011.
- Panosso Netto, Alexandre. *Vera, a Princesinha Do Nortão : Uma Contribuição Ao Estudo Da Ocupação Da Amazônia Mato-Grossense* Campo Grande, MS, Brazil: A. Panosso Netto, 2000.
- Paulino, Marcello. "Prefeitura De Lucas Do Rio Verde Questiona Pesquisa Da Ufmt Sobre a Presença De Agrotóxicos No Leite Materno." *Viomundo*, 27 March 2011.
- Peck, Jamie. "Follow the Policy: A Distended Case Approach." *Environment and Planning A* 44 (2012): 21-30.
- Peck, Jamie, and Adam Tickell. "Neoliberalizing Space." *Antipode* 34, no. 3 (2002): 380-404.
- Picoli, Fiorelo. *O Capital E a Devastação Da Amazônia*. São Paulo: Editora Expressão Popular, 2006.
- Pignati, Wanderlei Antonio, Jorge M.H. Machado, and James F. Cabral. "Acidente Rural Ampliado: O Caso Das "Chuvas" De Agrotóxicos Sobre a Cidades De Lucas Do Rio Verde - Mt." *Ciencia & Saude Coletiva* 12, no. 1 (2007): 105-14.
- Pimenta, Angela. "Crecimento Chinês E Ambientalismo Nórdico." *Exame*, 20 March 2008.
- Pivello, Vânia R. "The Use of Fire in the Cerrado and Amazonian Rainforests of Brazil: Past and Present." *Fire Ecology* 7, no. 1 (2011): 24-39.

- Prefeitura de Lucas do Rio Verde. "Economia Fortalecida." <http://www.lucasdoriorverde.mt.gov.br/economia.asp>.
- Prefeitura Municipal de Lucas do Rio Verde. "Lucas Do Rio Verde: Cenário De Oportunidades." edited by Prefeitura Municipal de Lucas do Rio Verde. Lucas do Rio Verde, 2010?
- . "Plano Diretor Do Município De Lucas Do Rio Verde - Mt: Reavaliação E Atualização." 301: Prefeitura Municipal de Lucas do Rio Verde, 2007.
- PRODES, and Instituto Nacional de Pesquisas Espaciais [INPE]. "Taxas Annuais Do Desmatamento - 1988 Até 2011." Brasília, Brazil, 2011.
- Programa de Nações Unidas para o Desenvolvimento [PNUD]. "Índice De Desenvolvimento Humano - Municipal, 1991 E 2000, Todos Os Municípios Do Brasil." Brasília, Brazil, 2000.
- Ratter, J.A., José Felipe Ribeiro, and S. Bridgewater. "The Brazilian Cerrado Vegetation and Threats to Its Biodiversity." *Annals of Botany* 80 (1997): 223-30.
- Rauber, Tania. "Agriculturoes Preparam Bloqueio, Declaram Moratória E Fecharão Bancos Em Mt." *Reporter News*, 21 April 2006 2006.
- Redford, Kent H., and Andrew Taber. "Writing the Wrongs: Developing a Safe-Fail Culture in Conservation." *Conservation Biology* 14, no. 6 (2000): 1567-68.
- Robbins, Paul. *Political Ecology*. Malden, MA: Blackwell Publishing, 2004.
- Robertson, Morgan M. "The Neoliberalization of Ecosystem Services: Wetland Mitigation Banking and Problems in Environmental Governance." *Geoforum* 35 (2004): 361-73.
- Rocha, Betty Nogueira. "'A Trama Do Drama': A Trama Das Fronteiras E O Drama Dos Migrantes Nas Configurações Do Desenvolvimento De Lucas Do Rio Verde - Mt." Universidade Federal do Rio de Janeiro, 2010.
- Rosa, Isabel M.D., Carlos Souza Jr., and Robert M. Ewers. "Changes in Size of Deforested Patches in the Brazilian Amazon." *Conservation Biology* in press (2012).
- Rose-Redwood, Reuben S. "Governmentality, Geography, and the Geo-Coded World." *Progress in Human Geography* 30, no. 4 (2006): 469-86.
- Rose, Nikolas. *Powers of Freedom: Reframing Political Thought*. Cambridge: Cambridge UP, 1999.
- Rouse, Joseph. "Foucault and the Natural Sciences." In *Foucault and the Critique of Institutions*, edited by John Caputo and Mark Yount. 137-62. University Park, PA: Pennsylvania State UP, 1993.
- Rutherford, Paul. "The Entry of Life into History." Chap. 2 In *Discourses of the Environment*, edited by Éric Darier. 37-62. Oxford: Blackwell, 1991.
- Rutherford, Stephanie. "Green Governmentality: Insights and Opportunities in the Study of Nature's Rule." *Progress in Human Geography* 31, no. 3 (2007): 291-307.
- Sales, Márcio, and Carlos Souza Jr. "Risco De Desmatamento, Agosto De 2012 a Julho De 2013." 8: Imazon, 2012.

- Samora, Roberto. "Insatisfeito, Agricultor Avalia Protesto E Redução De Plantio " In, *International Business Times Brasil* (2006). Published electronically 27 May 2006. <http://br.ibtimes.com/articles/568/20060528/protesto.htm>.
- Sanders, John H., and Frederick L. Bein. "Agriclutural Development on the Brazilian Frontier: Southern Mato Grosso." *Economic Development and Cultural Change* 24, no. 3 (1976): 593-610.
- Sawyer, Donald. "Climate Change, Biofuels and Eco-Social Impacts in the Brazilian Amazon and Cerrado." *Phil. Trans. R. Soc. B*, no. 363 (2008): 1747-52.
- Schlesinger, Sergio. "O Grão Que Cresceu Demais: A Soja E Seus Impactos Sobre a Sociedade E O Meio Ambiental." FASE, 2006.
- Schmink, Marianne, and Charles H. Wood. *Constested Frontiers in Amazonia*. New York: Columbia University Press, 1992.
- Sending, Ole Jacob, and Iver B. Neumann. "Governance to Governmentality: Analyzing Ngos, States, and Power." *International Studies Quarterly* 50 (2006): 651-72.
- Simmons, Cynthia S., Stephen G. Perz, Marcos A. Pedlowski, and Luiz Guilherme Teixeira Silva. "The Changing Dynamics of Land Conflict in the Brazilian Amazon: The Rural-Urban Complex and Its Environmental Implications." *Urban Ecosystems*, no. 6 (2002): 99-121.
- Simon, Marcelo Fragomeni, and Fernando Luis Gargorry. "The Expansion of Agriculture in the Brazilian Amazon." *Environmental Conservation* 32, no. 3 (2005): 203-12.
- Smart, Barry. "The Politics of Truth and the Problem of Hegemony." In *Foucault: A Critical Reader*, edited by David Couzens Hoy. 157-73. Oxford: Basil Blackwell, 1986.
- Só Notícias. "Lucas R. Verde: Esmagadora De Soja Operará Em Maio." *Noticias*, 25 October 2008.
- Soares-Filho, Britaldo, Ane Alencar, Daniel Nepstad, Gustavo Cerqueira, Maria Del Carmen Vera Diaz, Sérgio Rivero, and Luis Solórzano,
- Voll, Eliane. "Simulating the Response of Land-Cover Changes to Road Paving and Governance Along a Major Amazon Highway: The Santarém-Cuiabá Corridor." *Global Change Biology* 10 (2004): 745-64.
- Soares-Filho, Britaldo Silveira, Daniel Curtis Nepstad, Lisa M. Curran, Gustavo Coutinho Cerqueira, Ricardo Alexandrino Garcia, Claudia Azevedo Ramos, Eliane Voll, *et al.* "Modelling Conservation in the Amzaon Bazin." *Nature* 440, no. 23 (2006): 520-23.
- Sonnenfeld, David A., and Arthur P.J. Mol. "Globalization and the Transformation of Environmental Governance." *American Behavioral Scientist* 45, no. 9 (2002): 1318-39.
- Soskin, Anthony B. *Non-Traditional Agriculture and Economic Development: The Brazilian Soybean Expansion, 1964-1982*. New York: Praeger, 1988.
- Sparke, Matthew. "Political Geography: Political Geographies of Globalization (2) - Governance." *Progress in Human Geography* 30, no. 2 (2006): 1-16.

- Sparovek, Gerd, Goran Berndes, Israel L.F. Klug, and Alberto G.O.P. Barretto. "Brazilian Agriculture and Environmental Legislation: Status and Future Challenges." *Environmental Science & Technology* 44, no. 16 (2010): 6046-53.
- Sternberg, Rolf. "Brazilian Amazonia: A Metamorphosis in Progress." *Revista Geográfica*, no. 125 (1999): 5-47.
- Steward, Corrina. "From Colonization to "Environmental Soy": A Case Study of Environmental and Socio-Economic Valuation in the Amazon Soy Frontier." *Agriculture and Human Values* 24 (2007): 107-22.
- Stewart Jr., Charles T. "The Urban-Rural Dichotomy: Concepts and Uses." *American Journal of Sociology* 64, no. 2 (1958): 152-58.
- Stickler, Claudia M., and Oriana T. Almeida. "Harnessing International Finance to Manage the Amazon Agro-Industrial Explosion? The Case of International Finance Corporation Loans to Grupo Maggi." *Journal of Sustainable Forestry* 27, no. 1-2 (2008): 57-86.
- Sundberg, Juanita. "Strategies for Authenticity and Space in the Maya Biosphere Reserve, Petén, Guatemala." Chap. 3 In *Political Ecology: An Integrative Approach to Geography and Environment-Development Studies*, edited by Karl S. Zimmerer and Thomas J. Bassett. 50-69. New York: Guilford 2003.
- Syngenta. "Projeto Lucas Do Rio Verde Legal." <http://www.syngenta.com/country/br/pt/responsabilidade/projetos/Pages/projetolucasdoriorverdelegal.html>.
- Tendler, Judith. *Good Government in the Tropics*. The Johns Hopkins Studies in Development. edited by Vernon W. Ruttan and T. Paul Schultz Baltimore: Johns Hopkins UP, 1997.
- The Nature Conservancy (TNC). "Agronegócio Sustentável No Brasil: Gigante Pela Própria Natureza." 2011.
- . "Atualização Cartográfica E Mapeamento Do Uso Do Solo Do Município De Lucas Do Rio Verde - Mt." 87. Brasília: Programa de Conservação das Savanas Centrais, 2006.
- . "Responsible Sourcing of Agricultural Commodities: The Way Ahead in Brazil." edited by The Nature Conservancy, 2010.
- The REDD desk. "Tnc Project (Brazil)." The REDD desk, http://www.theredddesk.org/countries/brazil/info/activity/tnc_project_brazil.
- Thompson, Michael. "Security and Solidarity: An Anti-Reductionist Analysis of Environmental Policy." In *Living with Nature: Environmental Politics as Cultural Discourse*, edited by Frank Fischer and Maarten Hajer Oxford: Oxford UP, 1999.
- Thompson, Paul B. "Agricultural Sustainability: What It Is and What It Is Not." *International Journal of Agricultural Sustainability* 5, no. 1 (2007): 5-16.
- . *The Spirit of the Soil: Agriculture and Environmental Ethics*. London: Psychology Press, 1995.
- Tollefson, Jeff. "Brazil Set to Cut Forest Protection." *Nature - news*, 1 May 2012, online.

- "Um Sonho Feito De Dificuldades, Trabalho, Superação E Esperança." *Folha Verde*, 1 August 2008, n.p.
- van der Horst, Dan. "Incentive Based Environmental Policies and Collective Response Trends; Spatio-Temporal Patterns of Land Managers' Adoption of Agri-Environmental Measures." In *Handbook of Environmental Policy*, edited by Johannes Meijer and Arjan der Berg. 301-20. New York: Nova Science Publishers, 2010.
- Wagner, F.E., and John O. Ward. "Urbanization and Migration in Brazil." *American Journal of Economics and Sociology* 39, no. 3 (1980): 249-59.
- Warnken, Philip F. *The Development and Growth of the Soybean Industry in Brazil*. Ames: Iowa State University Press, 1999.
- Watts, Michael. "Development and Governmentality." *Singapore Journal of Tropical Geography* 24, no. 1 (2003): 6-34.
- Werth, David, and Roni Avissar. "The Local and Global Effects of Amazon Deforestation." *Journal of Geophysical Research* 107, no. D20 (2002): 8087-95.
- Wertz-Kanounnikoff, Sheila Avelina. "Forest Policy Enforcement at the Amazon Frontier: The Case of Mato Grosso, Brazil." Ruprecht-Karls-Universität, 2005.
- Wilcox, Robert. "'The Law of the Least Effort': Cattle Ranching and the Environment in the Savanna of Mato Grosso, Brazil, 1900-1980." *Environmental History* 4, no. 3 (July 1999): 338-68.
- Wolford, Wendy. "Environmental Justice and the Construction of Scale in Brazilian Agriculture." *Society and Natural Resources* 21, no. 7 (2008): 641-55.
- World Bank. "Social Accountability & Demand for Good Governance." The World Bank Group, <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTGOVANTICORR/0,,contentMDK:22675075~menuPK:7430607~pagePK:210058~piPK:210062~theSitePK:3035864,00.html>.
- Wright, Angus Lindsay, and Wendy Wolford. *To Inherit the Earth: The Landless Movement and the Struggle for a New Brazil*. Food First Books, 2003.
- Zart, Laudemir Luiz. "Desencanto Na Nova Terra. Assentamento No Município De Lucas Do Rio Verde-Mt Na Década De 80." Universidade Federal de Santa Catarina, 1998.
- . "Lucas Do Rio Verde: As Vozes Dos Parceleiros No Processo De Construção De Um Novo Espaço Social." In *Mato Grosso Do Sonho À Utopia Da Terra*, edited by João Carlos Barrozo. 261-96. Cuiabá: EdUFMT/Carlini & Caniato Ed., 2008.