

A Complex Systems Approach to the Drug War in Mexico



Resources, Violence and Order



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WICI Occasional
Paper no. 1

January 2012

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Author's Biography

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Acknowledgements

This occasional paper is an adaptation of Michael Lawrence's Major Research Paper for his M.A. in Global Governance from the Balsillie School of International Affairs at the University of Waterloo based on research conducted prior to September 2011. The author wishes to thank his supervisors, Professors Thomas Homer-Dixon and Kathryn Hochstetler, for their helpful comments on earlier drafts. He also wishes to thank Professor Sonny Lo for his feedback on an earlier iteration of section three. The author remains solely responsible for the ideas and views expressed herein.

Cover Photo

Special Forces in the state of Michoacán. As Mexican drug trafficking organizations boost their capacity for violence, the Mexican government increasingly deploys specialized military forces to confront them in sophisticated operations. The drug war entails greater state expenditure on security institutions, but defection provides a key source of recruits to drug gangs, while rampant corruption enables the drug trade to divert government investments. Photo by Diego Fernández, courtesy of Wikimedia Commons.

Executive Summary

This paper develops a complex systems analysis of the drug war in Mexico. While other accounts stress the chaotic turmoil of the conflict, this approach begins by examining the relationship between the violence and the formation of order. It explains the drug war as an integral part of the Mexican state's incomplete governance transition from decades of patronage and authoritarianism towards free market democracy and the rule of law. It also argues that Mexico's drug trafficking organizations (DTOs) are constructing nascent patterns of criminal order spanning multiple spheres of social relations. Framed this way, the paper analyzes the drug war in Mexico as a conflict between two different systems of resource extraction struggling to construct rival patterns of social order. It then draws on thermodynamics and the complex adaptive systems literature to compare the abilities of the drug trade and the Mexican state to convert available resources into favourable patterns of social organization. The paper outlines the ways in which the different natures of their respective resource bases favour distinct 'styles' of social order creation, with different levels of adaptability and resilience. Rather than focus on particular DTOs or kingpins, it then adopts a system-level analysis to explore the ways in which these different characteristics affect the dynamics of the violence today. The paper ultimately argues that the differing natures of the state and the drug trade as systems of resource extraction constrain their respective abilities to create organization, and that these differences advantage the drug trade. The conclusion considers the implications of this approach for policy and for the development of a new 'security as resilience' paradigm.

Abbreviations

AFO	Arellano Felix Organization (aka the Tijuana DTO)
ATF	United States Bureau of Alcohol, Tobacco, Firearms and Explosives
BLO	Beltran Leyva Organization (DTO)
CAS	Complex Adaptive System
CIDA	Independent Cartel of Acapulco (<i>Cartel Independiente de Acapulco</i> – DTO)
DEA	United States Drug Enforcement Administration
DFS	Federal Security Directorate (<i>Dirección Federal de Seguridad</i>)
DTO	Drug Trafficking Organization
ELN	<i>Ejército de Liberación Nacional</i> (National Liberation Army – Colombian guerrilla group)
EROI	Energy Return on Investment
FARC	<i>Fuerzas Armadas Revolucionarias de Colombia</i> (Revolutionary Armed Forces of Colombia)
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IED	Improvised Explosive Device
INTERPOL	International Criminal Police Organization
LFM	La Familia Michoacana (DTO)
NAFTA	North American Free Trade Agreement
OECD	Organization for Economic Cooperation and Development
PEMEX	<i>Petroleos Mexicanos</i> (state-owned petroleum company)
PGR	Office of the Attorney General (<i>Procurador General de la República</i>)
PJF	Federal Judicial Police (<i>Policia Judicial Federal</i>)

- PRI** Institutional Revolution Party (*Partido Revolucionario Institucional*)
- VCF** Vincente Carillo Fuentes DTO (aka the Juárez DTO)

Introduction

Upon taking office in December 2006, Mexican President Felipe Calderón launched a counternarcotics campaign on a scale unprecedented in Mexican history.¹ With 50 000 troops and an estimated 30 000 Federal Officers deployed to confront Mexico's major Drug Trafficking Organizations (DTOs),² the offensive has borne impressive results. During the first four years of the campaign, Mexican authorities seized approximately \$11.2 billion in drugs, over \$420 million in cash, confiscated 93 000 guns, arrested tens of thousands of people and extradited 400 suspects to other countries.³ In 2010, the government captured or killed 10 of its 24 most wanted drug figures.⁴ At the same time, state institutions conducted and continue to conduct extensive reform efforts to root out pervasive drug corruption.

Mexico's war on drugs, however, has also generated considerable 'perverse effects'. There is widespread agreement that the government offensive has escalated the violence precipitously. As the Stratfor intelligence agency recently commented,

¹ As Rubén Aguilar and Jorge Castañeda explain, the Calderón administration launched "a frontal attack against narcotrafficking, in all the territory, with all the force in its reach, all the time." Although previous governments mounted numerous counternarcotics campaigns over Mexico's history, "never has an administration set a goal and opened so many simultaneous fronts against narcotrafficking like Calderón." Rubén Aguilar V. and Jorge G. Castañeda, *El Narco: La Guerra Fallida* (Mexico DF: Punto de Lectura, 2009), 11-12, translated by author.

² Tracy Wilkinson and Ken Ellingwood, "Mexico Army's Failures Hamper Drug War," *The Los Angeles Times* (29 December 2010). Mexico's large scale DTOs are often referred to as 'cartels' but this label is misleading: there is no indication that these organizations restrict production, fix prices or exercise a monopoly on the drug trade. I thus use the more accurate term 'drug trafficking organization' although some of the sources and quotations in this paper use the term 'cartel' to refer to the same groups. For more on this issue, see: Michael Kenney, "The Architecture of Drug Trafficking: Network Forms of Organisation in the Colombian Cocaine trade," *Global Crime* vol. 8 no. 3 (August 2007), 233-5.

³ CNN Wire Staff, "Mexican Drug War Deaths Surpass 30,100," *CNN.com* (17 December 2010); Steve Kingstone, "Mexico's Drug War: Made in the US," *BBC News* (17 December 2010). All monetary figures in this paper are presented in U.S. dollars.

⁴ "A Pax Narcotica?" *The Economist* (7 January 2011). For a list of prominent DTO leaders captured or killed during 2010, see: Stratfor Global Intelligence, *Mexican Drug Wars: Bloodiest Year to Date* Cartel Report 2010 (December 2010), 14. More recently, Mexican authorities captured Jesus 'El Chango' Mendez, a prominent leader of the La Familia Michoacana DTO in June 2011. See: Tracy Wilkinson, "Leading Mexico Drug Gang Suspect Arrested," *The Los Angeles Times* (22 June 2011).

[government] operations have succeeded in eliminating several very dangerous people and disrupting their organizations, [but] such disruptions have also served to further upset the balance of power among Mexico's criminal organizations and increase the volatility of the Mexican security environment. In effect, the imbalance has created a sort of vicious feeding frenzy among the various organizations as they seek to preserve their own turf or seize territory from rival organizations.⁵

In the five years between Calderón's inauguration and September 2011, drug violence has killed over 47 000 people in Mexico including many civilians with no known criminal ties.⁶ The annual death toll has risen exponentially from 2275 in 2007 to over 11 000 in 2010.⁷ As the violence continues to escalate, former Mexican Foreign Minister Jorge Castañeda captures a growing pessimism about the last five years of "Calderón's Iraq"⁸:

The overall levels of violence have increased; the supposed jump in the price of drugs on the street in the US has either been minor or short lived; and the state's territorial control is, at best, similar to what it was back in 2006. No area of the country has been truly recovered by the state, and those few examples of partial success (Tijuana is perhaps the most notable one) last as long as the troops remain there. But the Mexican army is clearly over-extended: Of its 100,000 combat and patrol troops, 96,000 are on constant duty; desertions are growing; and the equivalent of a stop-loss policy is becoming indispensable.⁹

The mixture of spiralling violence and unprecedented government achievements presents several paradoxes for any analysis of the drug war in Mexico. First, a concerted government campaign to reduce violent criminality has so far only escalated it. Second, the rising violence is interpreted just as plausibly to indicate government failure as to presage its coming victory.¹⁰ Finally, a conflict ostensibly

⁵ Stratfor, *Mexican Drug Wars*, 2.

⁶ "Mexico Drug War Deaths over Five Years Now Total 47,515," *BBC News* (12 January 2012); Tim Johnson, "Mexicans Vent Anger over Toll of Drug Violence," *McClatchy Tribune* (5 May 2011).

⁷ Stratfor, *Mexican Drug Wars*, 15, based on statistics from *Reforma* (Mexican News Periodical).

⁸ This term is used by the popular Mexican periodical *Proceso*.

⁹ Jorge Castañeda, "De-Narcotize US-Mexican Relations," *New Perspectives Quarterly* vol. 27 Iss. 3 (Summer 2010), 55.

¹⁰ Paul Rexton Kan and Phil Williams, "Afterword: Criminal Violence in Mexico – A Dissenting Analysis," *Small Wars & Insurgencies* vol. 21 no. 1 (March 2010), 219. Indeed, Mexican authorities claim success both when violence is high, as a sign of destabilization amongst DTOs, and when it is low, as a sign of

driven by narrow economic incentives (drug profits) is taking on increasingly *political* dimensions as the Mexican state attempts to take control of its territory and the DTOs actively undermine and even supplant its authority.¹¹

“...the differing nature of the state and the drug trade as systems of resource extraction constrains their respective abilities to create organization in ways that favour the drug trade”

Amidst these puzzling features, the drug war in Mexico remains remarkably fluid, opaque and uncertain. Detailed accounts of the present conflict are accordingly scarce; those that do exist largely adopt the individual or group level of analysis by focusing on the arrest of particular drug leaders and the balance of power between DTOs.¹² While authors frequently emphasize the adaptive quality of the drug trade, they make scant effort to pursue this type of analysis. Typical accounts stress the chaotic turmoil of the violence, and sometimes even raise the spectre of state failure.¹³

Given such a complicated situation, what can the complexity literature contribute to the analysis? This paper uses concepts from complexity science to provide a systems-level account of the drug war based on the relationship between resources, violence, and social order. It analyzes the conflict between the Mexican government and the drug trade by comparing them as different systems of resource extraction constructing rival patterns of social order.¹⁴ Using thermodynamics and complex adaptive systems theory, this paper examines how the nature of resource bases affects the creation of patterns of social organization, comparing the adaptability and resilience of the conflicting state- and drug-based orders. I ultimately argue that the divergent natures of the state and the drug trade as systems of resource extraction constrain

government control. See: Randal C. Archibold, “Marijuana Bonfire Celebrates a Fragile Calm,” *The New York Times* (21 October 2010).

¹¹ Joaquín Villalobos, a key drug war advisor to President Calderón, asserts that the present conflict represents a violence with the greatest political impact since the Mexican revolution in 1910. He argues that “Narcotrafficking creates a challenge that supersedes political order, [and] constitutes a threat to the state’s sovereignty”. Joaquín Villalobos, “Doce Mitos de la Guerra Contra el Narco,” *Nexos en Línea* (1 January 2010), translated by author.

¹² For example, see the Stratfor reports cited throughout this paper.

¹³ For example: George Grayson, *Mexico: Drug War and a Failed State?* (New Brunswick, US and London: Transaction Publishers, 2010). Most media accounts, including the many articles referenced in this paper, also tend to emphasize at least the first two features. The issue of state failure became a major concern after a 2008 US Joint Forces Command report proposed that “In terms of worst-case scenarios for the Joint Force and indeed the world, two large and important states bear consideration for a rapid and sudden collapse: Pakistan and Mexico.” United States Joint Forces Command, “The Joint Operating Environment 2008: Challenges and Implications for the Future Joint Force,” (25 November 2008): 36.

¹⁴ Importantly, the drug war in Mexico comprises two sets of conflicts: violent competition between DTOs over market share, and violent conflict between the state and the DTOs to impose/evade drug enforcement. This paper focuses largely on the latter set of conflicts, though the former likely accounts for the majority of casualties. The two sets, of course, intersect at many points and remain difficult to separate in practice.

their respective abilities to create organization, and the differences advantage the drug trade. Though information is scarce and the situation remains murky, this paper offers a preliminary account of some of the system-level dynamics that *can* be discerned amidst the melee.

A complexity approach centres on the formation of order. The present certainly represents a period of violent change; but where others highlight the drug war's apparent disorder and turmoil, this paper emphasizes its relationship to the *creation of order*. The first section thus explains the present violence not as a process of destruction but as a contest between the state and the drug trade to construct and consolidate rival patterns of social order to facilitate their continued resource extraction. While the debate on the drug war is often narrowed to the prospect of state failure in Mexico, this paper places the conflict within a much broader and multifaceted picture of the evolution of governance in Mexico. With the conflict framed in relation to order, the second section draws upon the work of Joseph Tainter to compare the organizational features of the state and the drug trade that arise from the different natures of their resource bases. The third section analyzes how these different characteristics affect the violent contest between the drug trade and the state amidst Calderón's military offensive. It uses the different order-making characteristics of the state versus the drug trade to explain why the military offensive has generated such perverse effects, the scale of the challenge it faces, and the ways in which it could potentially succeed.¹⁵

This paper demonstrates several ways in which complexity science concepts can be productively applied to an urgent security issue. By focusing on the resource foundations of the conflict, it provides a systems-level account that identifies the structural causes of Mexico's drug problem that will likely fuel its persistence even if the drug leaders of today are captured or killed. While the problem has no 'silver-bullet' solution, understanding the system-level challenges of the present military strategy can serve as a starting point for better strategy and policy-making.

¹⁵ This paper thus argues against the following 'null hypotheses': 1) the present violence represents the absence of order; 2) we can understand the drug trade solely in reference to particular actors (organizations and leaders) without a systems-level analysis that incorporates resources; 3) the drug trade is a simple issue of criminality that can be dealt with within an established system of governance, and thus not about the formation of governance; and 4) outcomes are limited to state victory or state failure.

Section 1: The Drug War and the Creation of Social Order

Complexity science does not offer a coherent theory but rather a loose set of concepts that elucidate how simple dynamics can produce complicated patterns of order and structure.¹⁶ Integrating across disciplines as diverse as physics, ecology and social sciences, the complexity literature investigates how order can emerge without central planning or direction.¹⁷ The application of such tools to the drug war thus centres on its relationship to the creation of order. But how can we speak of order amidst the apparent turmoil of Mexico's drug violence?

While the relationship remains counter-intuitive, the following three subsections elucidate the connections between the violence and the construction of order. The first subsection explores the theoretical linkages between resources, violence and social order by drawing upon the political economy of war and global governance literatures. It presents strands of these disciplines that provide promising entry-points through which the complexity literature can advance the social sciences. The second subsection situates the drug trade within an incomplete transformation of Mexico's political economy in which state authorities aspire to construct the rule of law as the basic fundament of social order. The third subsection explores the ways in which the Mexican DTOs create competing patterns of social order and even governance outside of state structures. These first three sections demonstrate that the present violence comprises a struggle over the character of social order that will prevail in Mexico.

¹⁶ For an introduction to this literature, see: M. Mitchell Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos* (New York: Simon & Schuster, 1992).

¹⁷ Eric D. Schneider and James J. Kay, "Complexity and Thermodynamics: Towards a New Ecology," *Futures* vol. 26 no. 6 (1994), 629.

I-i Theoretical Context: Resources, Violence and Social Order

Amid the volatile turmoil and brutal violence of the war on drugs in Mexico, why examine its relationship to order? This section provides the theoretical basis for this counter-intuitive inquiry by drawing upon the political economy of civil war and global governance literatures to make four points. First, resources are central to both organized violence and social order. Second, violent conflict is often simultaneously order-breaking *and* order-making, not solely the former. Third, a shifting context of global governance promotes new forms of non-state social order. And finally, to these theoretical entry points complexity science provides useful conceptual tools for understanding the transformation of resources into order. These theoretical foundations justify an investigation of the formation of order amidst Mexico's drug war; they also provide a framework with which to analyse the drug trade and the state as competing systems of resource extraction violently competing to consolidate rival patterns of social order.

Perhaps the most important insight of recent work on the political economy of civil war is the centrality of resources to its causation. In this context, a 'resource' is a lucrative and easily marketable commodity that requires relatively little processing and thus creates incentives for predation and taxation.¹⁸ Against a theoretical tradition emphasizing identity and political grievance, the pioneering work of Paul Collier and Anke Hoeffler identifies economic opportunities for predation as the "true cause of much civil war" because they create both the incentive for violence and the means to sustain it.¹⁹ Their resource perspective has elicited great criticism

¹⁸ Paul Collier focuses on 'primary commodity exports' which are "the most heavily taxed component of the GDP in developing countries, and the reason for this is that they are the most easily taxed component. Primary commodity production does not depend upon complex and delicate networks of information and transactions, as with manufacturing. It can also be highly profitable because it is based on the exploitation of idiosyncratic natural endowments rather than the level playing fields of manufacturing. Thus, production can survive predatory taxation. Yet for export it is dependent upon long trade routes, usually originating from rural locations. This makes it easy for an organized military force to impose predatory taxation by targeting the trade routes. These factors apply equally to rebel organizations as to governments." Paul Collier, "Doing Well out of War: An Economic Perspective," in Mats Berdal and David Malone, eds. *Greed and Grievance: Economic Agendas in Civil Wars* (Boulder, CO: Lynne Rienner Publishers and the International Development Research Council, 2000), 93. Richard Snyder uses the term 'lootable wealth' "defined as lucrative, easy-to-transport resources, such as gems, tropical timber, and illicit drugs" or "high-value goods with low economic barriers to entry". Richard Snyder, "Does Lootable Wealth Breed Disorder? A Political Economy of Extraction Framework," *Comparative Political Studies* vol. 39 no. 8 (October 2006), 943-4, 946.

¹⁹ Collier, 91-111, quote from p. 101. According to Collier, the "combination of large exports of primary commodities, low education, a high proportion of young men, and economic decline drastically increases risks" of war (110). See also: Paul Collier and Anke Hoeffler, "On Economic Causes of Civil War," *Oxford Economic Papers* 50 (1998), 563-73.

and the present synthesis on the causation of civil war emphasizes the interaction of 'need, creed and greed'.²⁰ The 'greed' approach, however, remains central to the literature because it offers a system-level perspective on the opportunities that make organized violence possible, rather than focusing on particular armed actors and their political agendas.

In an important step forward, Richard Snyder problematizes any simple relationship between resources and armed conflict, noting that of 42 countries that possess 'lootable' resources, 24 (57%) did not suffer civil war during the 1960-99 period and many of those that did also experienced periods of durable political stability.²¹ He develops a political-economy framework focused on institutions of extraction in order to explain why lucrative resources generate violent conflict in some cases and political order in others. When rulers can access the proceeds of such resources from either a *public* monopoly or with a *joint* extraction regime (in which the government shares revenues with private actors through taxation or protection rackets), such resources produce political order by financing the ability to govern. In cases of *private* extraction, non-state actors have exclusive and untaxed control of resource revenues, limiting the state's fiscal capacity while enabling private actors to challenge it. To escape this outcome, states may enforce a situation of *no extraction* (see figure 1*²²).

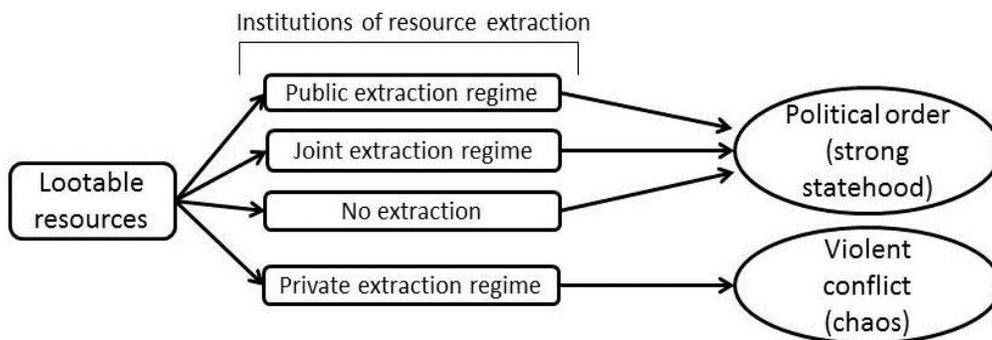


Figure 1: Richard Snyder's Resource Extraction Framework

***Note:** In this and the following diagram the ellipses represent outcomes.

²⁰ See, for example: Cynthia J. Arnson and I. William Zartman, eds. *Rethinking the Economics of War: The Intersection of Need, Creed, and Greed* (Washington DC and Baltimore: The Woodrow Wilson Center Press and the Johns Hopkins University Press, 2005).

²¹ Snyder, 944.

²² *Ibid.*, 948.

“...resources are foundational to both political order and armed conflict”

Snyder’s framework thus places resources at the foundation of both political order and armed conflict. Although a multitude of variables mediate between a resource base and the outcome it generates,²³ he suggests that we can learn a lot about patterns of violence and order by focusing on their resource foundations. In a subsequent article, Snyder and

Angelica Duran-Martinez use this framework to explain the present violence in Mexico as the breakdown of a joint extraction regime based on state-sponsored protection to DTOs and the consequent development of a heavily armed private extraction regime.²⁴

While Snyder’s model finds considerable traction, it has two key limitations. First, it constructs ‘violent conflict’ and ‘political order’ as exclusive outcomes, assuming that violence represents “chaos,” “anarchy,” and the absence of order. Second, it conflates ‘political order’ with strong statehood, ignoring the possibility of social order provided by non-state actors. Other theorists challenge these ideas by suggesting that violence can be order-forming and that globalization promotes new informal (non-state) governance arrangements. I explore these two points in turn.

Against the first presumption, David Keen argues that “Part of the problem with much existing analysis is that conflict continues to be regarded as simply a breakdown in a particular system rather than as the emergence of an alternative system of profit, power, and even protection.”²⁵ Similarly, Mark Duffield proposes that within the insecure regions of the global south, there exist “new patterns of actual development and political authority – that is, alternative and non-liberal forms of protection, legitimacy and social regulation... While their economic and political logic can find violent and disruptive expression, in many cases such complexes are the only forms of existing or actual authority that have the powers to police stability.”²⁶ These accounts suggest that resource-based conflict, along with its violent *destruction*, may simultaneously *construct* alternative (non-state)

²³ These outcomes, of course, only represent tendencies or potentialities. Snyder acknowledges there are many intervening variables between resource extraction and either political order or armed insurgency (948).

²⁴ Richard Snyder and Angelica Duran-Martinez “Does Illegality Breed Violence? Drug Trafficking and State-Sponsored Protection Rackets,” *Crime, Law and Social Change* vol. 52 (2009), 262-7.

²⁵ David Keen, “Incentives and Disincentives for Violence,” in Mats Berdal and David Malone, eds. *Greed and Grievance: Economic Agendas in Civil Wars* (Boulder, CO: Lynne Rienner Publishers and the International Development Research Council, 2000), 19-41, quote from p. 22.

²⁶ Mark Duffield, *Global Governance and the New Wars: The Merging of Development and Security* (London and New York: Zed Books, 2001), 9, 14-15. Instead of ‘complex political emergencies’ Duffield speaks of “emerging political complexes” – non-state forms of political, economic and social arrangements flourishing in the interstices of state sovereignty.

social systems. In this sense, Snyder's categories of 'violence' and 'political order' may overlap so that setting them in opposition to each other overlooks an important dynamic.

The underlying issue is that order and disorder do not constitute a simple binary but a continuum spanning various degrees. I define social order as enduring patterns that structure social, political and economic relationships.²⁷ In this sense, 'social order' closely resembles Samuel Huntington's definition of institutions as "stable, valued, recurring patterns of behaviour"²⁸ and Francis Fukuyama's elaboration: "institutions are rules or repeated patterns of behaviour that survive the particular individuals who operate them at any one time."²⁹ Disorder – the absence of order – is the likelihood that relationships will be spontaneously reconfigured into a fundamentally new pattern in a series of random re-arrangements. Adopting a qualitative approach, we can (to some extent) measure and compare degrees of order by considering their *breadth* – the extent of the relationships they regulate, whether just a few or many – and their *stability* – whether a pattern persists over time or collapses to be replaced by a new one. With this definition, this paper argues that the drug war in Mexico comprises not so much disorder as the development and contestation of two competing systems of social order – the state and the drug trade.

More than merely order-breaking, violent conflict may be order-making in two senses. In some cases, protracted conflict enables both sides to benefit (economically or politically) so that neither has an interest in peace, and war itself represents a stable system. In other cases, organized violence may be part of the formation and consolidation of social order. (Historically, this relationship between violence and social order is no surprise given Charles Tilly's account of state formation in which "war made the state and the state made war").³⁰ The latter scenario best characterizes Mexico today where the mounting violence is politically costly to the government and a strain on the drug business, which generally prefers

²⁷ The 'social' part of 'social order' thus refers broadly to the collective interactions of humans, encompassing politics and economics.

²⁸ Samuel Huntington, *Political Order in Changing Societies* (New Haven and London: Yale University Press, 1968), 12. In line with its resource focus, this paper largely interprets the "valued" component of Huntington's definition as 'materially valued' but patterns of interaction may also be valued in a non-material way for their legitimacy, which contributes to their depth and stability. This second meaning may be relevant to the dynamics of social order in Mexico and offers an important direction for subsequent research, but remains outside the resource focus of this paper.

²⁹ Francis Fukuyama, *The Origins of Political Order: From Prehuman Times to the French Revolution* (New York: Farrar, Straus and Giroux, 2011), 451.

³⁰ Charles Tilly, *Coercion, Capital, and European States: AD 990-1992* (Cambridge MA and Oxford UK: Blackwell, 1992).

a stable state-based order in which to flourish.³¹ Much of the present violence is not an inherent part of either system of resource extraction but rather a bid by each to extend and consolidate patterns of social order favourable to its continued resource extraction. As the historical background section argues, the drug war represents an effort of the state to extend the rule of law and of the DTOs to create illicit patterns of order conducive to their business.

The second problem with Snyder's resource extraction framework is that it conflates political order with strong statehood. Contrary to this assumption, the global governance literature suggests that as globalization creates new opportunities for wealth creation and power, it is driving fundamental change to the nature of the state while promoting alternative forms of governance. For the purposes of this paper, 'governance' is a type of social order encompassing "modes of coordinating action in human society" in the particular functional spheres of security, political authority and rule-making and welfare provision.³² While these functions are normally associated with the state, Richard Falk argues that "territorial sovereignty is being diminished on a spectrum of issues in such a serious manner as to subvert the capacity of states to control and protect the internal life of society, and non-state actors hold an increasing proportion of power and influence in the shaping of world order."³³

Whether in decline or transformation, the changing nature of statehood produces a more complex and heterarchical governance picture in which states and non-state actors – from multinational corporations to transnational civil society – link the local

³¹ William Reno, "Shadow States and the Political Economy of Civil Wars," in Mats Berdal and David Malone, eds. *Greed and Grievance: Economic Agendas in Civil Wars* (Boulder, CO: Lynne Rienner Publishers and the International Development Research Council, 2000), 55. Vanda Felbab-Brown, "Rules and Regulations in Ungoverned Spaces: Illicit Economies, Criminals, and Belligerents," in Anne L. Clunan and Harold A. Trinkunas, eds. *Ungoverned Spaces: Alternatives to State Authority in an Era of Softened Sovereignty* (Stanford: Stanford Security Studies, 2010), 187.

³² This is the definition and set of functions used by the SBF 700 Research Project on 'Governance in Areas of Limited Statehood' at the Free University of Berlin, based on the work of Renate Mayntz. See: Thomas Risse and Ursula Lehmkuhl, "Governance in Areas of Limited Statehood – New Modes of Governance?" SBF-Governance Working Paper Series no.1 (December 2006). Within this project, Anke Draude defines security provision as "maintaining internal order and protecting independence from external threats"; political authority and rule-making as "creating security of expectations... [and] the establishment of collectively binding decisions"; and welfare provision as "economic stability, infrastructure, basic social insurance, public health, education and securing natural living conditions". Anke Draude, "How to Capture Non-Western Forms of Governance," SBF-Governance Working Paper Series no. 2 (January 2007), 10-11.

³³ Richard Falk, "State of Siege: Will Globalization Win Out?" *International Affairs* vol. 73 no. 1 (1997), 125. Similarly, Saskia Sassen argues that social, economic and political issues that were once national concerns are increasingly shaped by new global forces so that the role of the state is shifting from traditional regulatory functions in these spheres to become a facilitator of globalization. Saskia Sassen, *A Sociology of Globalization* (New York: W. W. Norton, 2007), 45-96.

to the global in the formation of social order.³⁴ Organized crime and violent actors, often referred to as the 'dark side of globalization,' may be part of this broader context of alternative governance formations.³⁵ While many of the most threatening parts of the world are the 'ungoverned spaces' devoid of state control, new analysis, instead, understands such spaces as 'differently governed' by 'alternative authorities' providing forms of order that belie the visible spectrum of state-centric optics.³⁶ As Phil Williams argues, the "old adage that nature abhors a vacuum can be modified to suggest that nature abhors gaps of whatever kind. Consequently, when the state does not fill these gaps, other entities will attempt to do so."³⁷ In such cases it is not the absence of governance but the clash of different systems that generates violence,³⁸ as the historical background section explains in the case of Mexico. The global governance literature thus suggests that now more than ever our analysis should look beyond the state for new forms of governance and social order in spaces that are both territorial and functional. Conflating order with the

³⁴ See, for example: John Ruggie, "Reconstituting the Global Public Domain," *European Journal of International Relations* vol. 10 no. 4 (2004), 499-531; Klaus Dingwerth, "Private Transnational Governance and the Developing World," *International Studies Quarterly* vol. 52 no. 3 (2008), 607-34. Philip Cerny adapts Hendrik Spruyt's account of the transition from feudalism to the nation-state in Europe and applies it to contemporary globalization as a comparable process of structural change in forms of governance. He points out that the "process of structuration today is a complex one in which different kinds of existing—and transformed—structures and institutions interact with an expanding and increasingly diverse set of actors seeking to pursue their interests and values." Philip G. Cerny, *Rethinking World Politics: A Theory of Transnational Neopluralism* (Oxford and New York: Oxford University Press, 2010), 91-8, quote from 97-8.

³⁵ Mark Duffield in particular links the 'emerging political complexes' of the south to northern driven processes of globalization. Mark Duffield, "Globalization, Transborder Trade, and War Economies," in Mats Berdal and David Malone, eds. *Greed and Grievance: Economic Agendas in Civil Wars* (Boulder, CO: Lynne Rienner Publishers and the International Development Research Council, 2000), 72. See also: Duffield, *Global Governance and the New Wars*.

³⁶ Anne L. Clunan and Harold A. Trinkunas, "Conceptualizing Ungoverned Spaces: Territorial Statehood, Contested Authority, and Softened Sovereignty," in Anne L. Clunan and Harold A. Trinkunas, eds., *Ungoverned Spaces: Alternatives to State Authority in an Era of Softened Sovereignty* (Stanford, CA: Stanford University Press, 2010), 17-33. Risse and Lehmkuhl point out that there are many areas of the world—from collapsed states to transitional societies—where the governance capacity of the state is limited or non-existent, and yet other forms of governance and social order nonetheless exist. They stipulate: "One must, however, make the critical point that in many cases of state collapse it is not anarchy and violence that take over, rather hybrid modes of governance emerge." (11).

³⁷ Phil Williams, "Here be Dragons: Dangerous Spaces and International Security," in Anne L. Clunan and Harold A. Trinkunas, eds., *Ungoverned Spaces: Alternatives to State Authority in an Era of Softened Sovereignty* (Stanford, CA: Stanford University Press, 2010), 37-8. Williams continues: "In some cases, competing forms of governance emerge as non-state entities seek to become surrogates for the state. The other response is simply to exploit the room for maneuver and the opportunities the gaps provide. Where there are gaps in social control mechanisms, for example, organized crime will act with a degree of impunity that would otherwise not be possible." (38).

³⁸ Clunan and Trinkunas.

state may overlook emerging new forms of non-state governance, even amidst the apparent turmoil of the drug war in Mexico.

In sum, this combination of the political-economy of war and global governance literatures suggests that resources fuel the capacity to create both social order and to mount organized violence, that these two functions may coincide, and that the present global context enables novel forms of governance. Figure 2 (below) arranges these insights into a theoretical framework for this paper. Depending on their nature, resources will enter either the economy taxed by the state or the illicit/informal economy in which they support non-state actors. State taxes fuel state-based patterns of social order, while the illicit economy fuels non-state patterns of social order (generally illiberal and violent), and both are tailored to facilitate continued extraction from their respective resource bases.

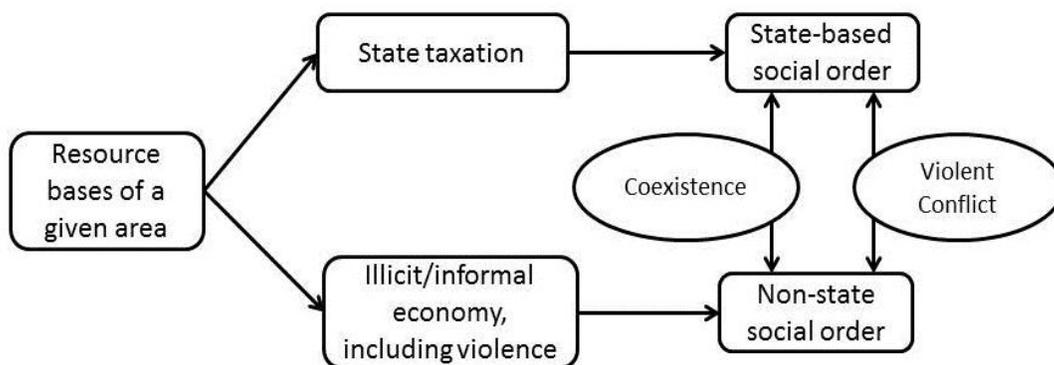


Figure 2: Resources and Competing Orders

The interaction of these two systems of resource extraction may be marked by coexistence or violent conflict depending on their characteristics. For example, the state may have no interest in imposing its authority in peripheral areas such as ghettos or tribal zones and therefore tolerate alternative patterns of social order. Conversely, the incongruence of different orders may generate violent conflict between them, as this paper characterizes the situation in Mexico today. While the illicit economy can generate disorder, the literature cited above suggests that this outcome may be much more exceptional than presumed, and thus this outcome is not represented in the diagram. Although the apparent disorder emanating from the violence looms large in Mexico, these theoretical foundations suggest it is important to investigate the formation and contestation of order – whether enduring or nascent – amid the drug war.

This framework provides two entry-points through which complexity science can enhance the analysis. Two strains of the complexity literature are particularly useful. Thermodynamics – the study of energy flows – provides tools for understanding how the nature of a resource influences the character of the organization it fuels. Indeed, Snyder highlights the relationship between the characteristics of resources and their associated violence or political order as an important direction for future research.³⁹ Energy analysis allows us to examine how the different systems of resource extraction influence the respective abilities of the state and the drug trade to create social order.

Second, complex adaptive systems theory includes a variety of concepts (resilience, critical thresholds, self-organization and emergence) that elucidate a system's ability to adapt and change. I will further develop these complexity tools in the second and third sections where they will explain the differing capacities of the state and the drug trade to create rival patterns of social order in terms of their extractive foundations, as well as their respective abilities to adapt amidst the violent competition of the drug war. First, the historical background of the drug war and a closer examination of the Mexican DTOs outline the ways in which the drug war relates to order formation in Mexico.

I-ii Historical Background: Mexico's Incomplete Governance Transition

How does the drug war relate to the social order and resource extraction of the Mexican state? This section places the war on drugs in the context of a fundamental transition of governance in Mexico. First, it argues that drug resources have historically bolstered the state's governance capacity. Second, it draws upon Richard Snyder's resource extraction framework to explain the origins of the present violence as the breakdown of a joint extraction regime. Finally, this section argues that the incomplete shift to free market democracy compels the state to combat the drug trade as a major obstacle to the rule of law as the foundation of a social order suited to new dynamics of resource extraction. The governance background thus situates the drug war within a broader yet still developing process of order-making by the Mexican state.

³⁹ Snyder, 963.

From 1929 until the 1990s, the Mexican state arbitrated a highly centralized form of governance based on the one-party rule of the *Partido Revolucionario Institucional* (PRI). The state planned and managed an economy based on restricted trade and investment, state-owned enterprise, government intervention and special privileges for rent-seeking coalitions. Political power was concentrated in the office of the President and exercised through an extensive network of informal patron-client relationships that kept states and municipalities in a centralized orbit through economic favours and the selective implementation of rights and public policy.⁴⁰

Although Mexico officially supported international drug prohibition, the above governance arrangements included a *joint extraction regime* in which the state, from a position of relative strength, taxed and regulated a subordinated drug trade. The 1947 creation of the Federal Security Directorate (DFS) fashioned a centralized system of rules for the illicit economy in which the DFS and the Federal Judicial Police (PJF) taxed traffickers in exchange for protection, distributed and regulated 'plazas' (trade routes), mediated disputes, kept criminality within largely non-violent limits and actively prevented DTOs from translating their profits into political power.⁴¹ Both federal and local authorities used resources extracted from the drug trade to supplement salaries and institutional budgets.⁴² Selective enforcement measures notwithstanding, the state ultimately lacked the capacity to implement prohibition;⁴³ but by constructing a joint extraction regime it channelled the resources and operations of the drug trade in support of stable governance.⁴⁴

⁴⁰ For a good political-economic history of Mexico, see: the Mexico chapter in Charles H. Blake, *Politics in Latin America: The Quests for Development, Liberty and Governance* (Boston and New York: Houghton Mifflin Company, 2005), 327-68; Stephen Haber et al., *Mexico Since 1980* (Cambridge: Cambridge University Press, 2008); Russell Crandall, Guadalupe Paz and Riordan Roett, eds., *Mexico's Democracy at Work: Political and Economic Dynamics* (Boulder CO: Lynne Rienner Publishers, 2005). This overview draws particularly on these sources.

⁴¹ Luis Astorga, "Mexico: Drugs and Politics," in Menno Vellinga, ed., *The Political Economy of the Drug Industry: Latin America and the International System* (Gainesville, FL: University Press of Florida, 2004), 88; Mónica Serrano, "México: Narcotráfico y gobernabilidad," *Pensamiento Iberoamericano* no. 1 (2007), 264-6.

⁴² Serrano, 263.

⁴³ *Ibid.*, 258, 260, 262, 264, 266.

⁴⁴ As Mónica Serrano writes: "The result was an order that rested on more or less solid foundations, many of them braced by pacts and agreements – some formal, others informal – in which negotiation and reciprocal compromises were always a fundamental part. As a consequence, it is no surprise that the PRI order also contributed to the stabilization of the criminal sphere." (265, translation by author). Due to its clandestine nature, it is impossible to gauge the relative importance of drug revenues within the system of governance, but the sums paid by traffickers were significant. By one account, the Arellano Felix Organization was doling out over \$2 million in bribes each week during the nineties. Luis Astorga and David A. Shirk, "Drug Trafficking Organizations and Counter-Drug Strategies in the U.S.-

For decades the PRI fostered economic growth and social stability, but several challenges in the 1970s and 1980s overwhelmed the rigidities of its system of governance.⁴⁵ A series of currency crises, unmanageable foreign debt, economic turmoil and rising demands for political openness prompted the collapse of longstanding arrangements and initiated a governance transition so fundamental that some refer to it as the “second Mexican revolution”.⁴⁶ Between 1988 and 2000 the PRI lost its hegemony over the state and the shift to multi-party democracy included efforts to replace clientelism with formal rules and procedures. A series of neoliberal economic reforms culminating in the 1994 North American Free Trade Agreement (NAFTA) shifted the state away from development planning and toward the facilitation of a globally-integrated market economy based on private investment and international trade.⁴⁷ In these ways Mexico shifted towards the decentralized problem-solving of the market and democratic decision-making as a more flexible and adaptable form of governance in order to overcome the rigidities of the preceding authoritarianism.

“A key part of the transition to democracy and free trade was to radically change the relationship between the drug trade and the state in Mexico.”

A key part of the transition to democracy and free trade was to radically change the relationship between the drug trade and the state in Mexico.⁴⁸ On the one hand, the breakup of PRI hegemony eroded the state’s capacity to protect and regulate the drug trade.⁴⁹ At the same time, the U.S. government stepped up its diplomatic pressure on key drug-producing and drug-transit countries to intensify the war on drugs.⁵⁰ The Mexican government thus disbanded the DFS in 1985 while the attorney general’s office (PGR) restructured its unit offices, rotated its officials, fired corrupt employees and in 1996 redrew its jurisdictional geography against the grain

Mexican Context,” Center for U.S.-Mexican Studies, Woodrow Wilson Center, El Colegio de la Frontera Norte and El Colegio de México Working Paper (January 2010), 12.

⁴⁵ For a good discussion of these rigidities, see: Haber et al., 8-19.

⁴⁶ *Ibid.*, 1-19.

⁴⁷ See: Gary Gereffi and Martha A. Martínez, “Mexico’s Economic Transformation Under NAFTA,” in Russell Crandall, Guadalupe Paz and Riordan Roett, eds. *Mexico’s Democracy at Work: Political and Economic Dynamics* (Boulder CO: Lynne Rienner Publishers, 2005), 119-50.

⁴⁸ Jorge Chabat describes the importance of improved Mexican drug enforcement to the negotiation of NAFTA with the U.S. Jorge Chabat, “Mexico: The Security Challenge,” in Jordi Díez, ed. *Canadian and Mexican Security in the New North America* (Montreal and Kingston: McGill-Queen’s University Press, 2006), 57-8.

⁴⁹ Snyder and Duran-Martínez, 263.

⁵⁰ President Reagan’s National Security Decision Directive 221 of April 1986 classified drug trafficking as a threat to national security and escalated the involvement of the Department of Defense in increasingly militarized counter-narcotics efforts that continued in subsequent administrations. All Mexican Presidents since Miguel de la Madrid (1982-88) have adopted this basic framework. See: Astorga, 93, 98.

of trafficking routes, all of which deliberately impeded systematic cooperation with the drug trade.⁵¹ Although drug corruption remains rampant today, it is much more ad hoc than institutional because the political-economy of Mexico's democratic transition is based on enforcing prohibition rather than collaborating with DTOs.⁵²

Just as state regulation weakened, the DTOs gained strength. In the late 80s and early 90s, American aerial and maritime interdiction efforts closed the predominant smuggling routes through the Caribbean, leaving Mexico the primary entry-point to the U.S. drug market. As a result, Colombian cocaine producers became increasingly dependent upon Mexican DTOs which in turn expanded their wealth and power.⁵³ With the erosion of the state's capacity for coercion and control of the drug trade,⁵⁴ this market expansion further enabled the DTOs to increase their autonomy. No longer able to rely on state institutions for protection, the DTOs developed private means of coercion to meet their expanding enforcement needs.⁵⁵ Within Snyder's framework, the drug trade went from a *joint extraction* regime to a *private extraction* regime, while the state began to pursue a *no extraction* regime.⁵⁶ The result is two inter-related sets of violent conflict. In place of state regulation, the DTOs use escalating levels of violence to compete with each other for market share while the state's military offensive targets all of them simultaneously.

Overall, the present period represents a period of fundamental reorganization of Mexico's governance arrangements. The collapse of authoritarianism today mixes longstanding institutions (of the state) with new actors (new state institutions, political parties, transnational capital, civil society, guerilla movements and strengthened DTOs) as relationships and power structures are rearticulated and

⁵¹ Snyder and Duran-Martínez, 263-5.

⁵² Serrano points out that parts of the former system persist, but in a fragmented and complicated manner. See: 268-9.

⁵³ June S. Biettel, "Mexico's Drug Trafficking Organizations: Source and Scope of the Rising Violence," Congressional Research Service Report R41576 (7 January 2011), 5; George W. Grayson, *Mexico's Struggle with 'Drugs and Thugs'* (New York: Foreign Policy Association, 2009), 29; Vanda Felbab-Brown, "The Violent Drug Market in Mexico and Lessons from Colombia," *Brookings Institution Policy Paper* no. 12 (March 2009), 3; Serrano, 268-9; Snyder and Duran-Martínez, 265.

⁵⁴ Serrano writes that "From the beginning of the 1980s, not just control but negotiation and centralized administration of the drug market became an impossible task." Serrano, 268, translated by author.

⁵⁵ *Ibid.*, 255, 267. As Snyder and Duran-Martínez point out, "Instead of being an episodic response by traffickers to failed transactions, violence thus became the dominant strategy of survival." (265).

⁵⁶ Snyder. No extraction denotes a scenario in which the state prevents any extraction of a loatable resource and in this way prevents it from funding violence. This account indeed supports Snyder and Duran-Martínez's argument: "Where state-sponsored institutions of protection exist, levels of violence will likely be low. Conversely the breakdown of state-sponsored protection rackets, which may result from well-meaning reforms intended to strengthen and improve law enforcement, can ironically lead to large increases in violence." (254).

reconfigured in the transition to the political-economy of free market democracy. It is a period of destruction and creation, crisis and opportunity, novelty and experimentation in which enduring structures of governance have yet to be consolidated.⁵⁷ Accordingly, Mexican security expert Jorge Chabat places the drug trade in the context of a “political transition... in which the old rules no longer work and the new rules are still in the process of creation.”⁵⁸

In this context, the transformation of the Mexican state to a free market democracy remains far from complete and hardly assured.⁵⁹ At the crux of the governance transition is the state’s struggle to replace the informal patronage and corruption of the PRI period with a formal, transparent, accountable and pervasive rule of law as the basic parameter of a decentralized and more self-organizing system based on markets and democracy.⁶⁰ The first of five axes in the Calderón administration’s six-year development plan is to establish a state of law and security on the premise

⁵⁷ The present situation corresponds well to the reorganization phase of the adaptive cycle as a period of high variety and potential for novelty and weak control within a circular process in which the growth, exploitation and specialization of a system creates rigidities that give way to innovation, restructuring and renewal. See: C. S. Holling, “Understanding the Complexity of Economic, Ecological, and Social Systems,” *Ecosystems* vol. 4 no. 5 (August 2001), 393-6.

⁵⁸ Chabat, 51. Similarly, Haber et al. argue, “Mexico is in the midst of a process of experimentation that may well establish a consolidated, liberal democracy.” (204).

⁵⁹ Haber et al., 3; José Luis Velasco argues that “Mexico’s democratic transition is real—but it is also partial, weak, contradictory, and superficial.” José Luis Velasco, *Insurgency, Authoritarianism and Drug Trafficking in Mexico’s “Democratization”* (New York and London: Routledge, 2005), 10. Russell Crandall points out that after transferring power from the PRI and mounting economic reform, Mexico is now in the second, consolidation, phase of its democratic transition, but a long list of problems “will place tremendous pressure on the country’s still fragile democratic institutions and relatively untested economic strategies.” Russell Crandall, “Introduction: The Challenges of Democratic Change in Mexico,” in Crandall, Russell, Guadalupe Paz and Riordan Roett, eds., *Mexico’s Democracy at Work: Political and Economic Dynamics* (Boulder CO: Lynne Rienner Publishers, 2005), 3-4. As President Calderón posits in his administration’s six-year development plan: “Mexico is immersed in a process of transformation that cannot and should not stop. The democratic consolidation of the country is opening the way to a new era of modernity in diverse areas of our economic, political and social life. Like never before, the destiny of our nation will depend on what Mexicans do or don’t do. We face national and global challenges that demand immediate and effective responses. We cannot postpone our attention to challenges of an integrated society, global competitiveness, global warming, organized crime and gender equality.” Message from President Calderón in: Government of Mexico, Office of the President, *Plan Nacional de Desarrollo, 2007-2012* [National Development Plan, 2007-2012] (Mexico, DF: 2007), 12, translated by author.

⁶⁰ Haber et al., 201-16. In the general sense, democratic theorist Guillermo O’Donnell explains that the ‘rule of law’ means “that whatever law exists is written down and publicly promulgated by an appropriate authority before the events meant to be regulated by it, and is fairly applied by relevant state institutions”. Guillermo O’Donnell, “Why the Rule of Law Matters,” *Journal of Democracy* vol. 15 no. 4 (October 2004), 33. Within legal philosophy, the concept of the ‘rule of law’ primarily concerns whether the exercise of power by state and legal institutions is constrained by rules to which they are held accountable so that nobody is above the law. This paper’s use of the concept encompasses this focus and a more sociological dimension: whether laws as formally promulgated actually regulate human relationships in accordance with their writ. See also: Haber et al, 202.

that “The progress of the entire nation is founded on effective justice under the rule of law. No democratic state can be achieved without the full enforcement of the law.”⁶¹ The rule of law entails transparent, rule-bound and accountable government free from corruption to facilitate democratic decision-making, stable property rights and enforcement of contracts to attract investment and promote free-market growth. It also ensures the predictability and security within social life provided by rules and procedures that “effectively regulate all spheres of national life”.⁶² Constructing the rule of law as the foundation of social order thus nurtures a globally-oriented free market economy from which the state extracts its revenues (via taxation). The rule of law comprises a key but underdeveloped condition of the state’s system of resource extraction.⁶³

The DTOs, whose operations are inherently inimical to the rule of law, represent a major obstacle to the state’s ability to establish the law as a foundation of social order.⁶⁴ Calderón came to office determined to “take back the country from criminals”,⁶⁵ declaring that “It’s either the narcos, or the state.”⁶⁶ As former Mexican Foreign Minister Jorge Castañeda explains, Calderón felt he had “to declare a war on drugs because the drug cartels had reached a level of power, wealth, violence, and penetration of the state that made the situation untenable.”⁶⁷ A key objective for national development is thus “to recover the strength of the state and the security of social coexistence through the frontal and effective combatting of narcotrafficking and other expressions of organized crime.”⁶⁸ Calderón continued the efforts of his predecessor, President Vicente Fox (2000-6), to uproot official corruption, improve state transparency, accountability and enforcement capacity, and actively combat the drug trade.⁶⁹ In this context, the state’s war against the

⁶¹ Government of Mexico, 43, translated by author.

⁶² Ibid.

⁶³ According to Haber et al, “Mexico is now an electoral democracy, but it is not yet governed by the rule of law” which entails the stable and universal guarantee and enforcement of formalized rights and rules (202).

⁶⁴ Former US Drug Czar Gen. Barry McCaffrey, after meeting Mexican leaders, explains that the DTOs represent a “mortal threat to the rule of law across Mexico.” Gen. Barry McCaffrey, “After Action Report—General Barry R McCaffrey USA (Ret): VISIT MEXICO – 5-7 DECEMBER 2008,” (29 December 2008), 3. Mexico’s National Development Plan indeed stipulates that “narcotrafficking challenges the state and [represents] a strong threat to national security.” (58, translated by author). Much of the state of law and security section of the plan focuses on the drug trade.

⁶⁵ Quoted in: Grayson, *Mexico’s Struggle with ‘Drugs and Thugs’*, 50-1.

⁶⁶ Quoted in: David Luhnow and Joel Millman, “Mexican Leader Prepares for Bloodier Drug Wars,” *The Wall Street Journal* (28 February 2009); See also: Biettel, 3.

⁶⁷ Jorge Castañeda, “Mexico’s Failed Drug War,” *CATO Institute Economic Development Bulletin* no. 13 (6 May 2010), 1.

⁶⁸ Government of Mexico, 59, translated by author.

⁶⁹ See Chabat, 62 for an overview of the security reforms of the Fox administration.

DTOs is simultaneously an attempt to construct the rule of law, assert central authority, consolidate new modes of economic production and democratic rule, and recover its basic territorial sovereignty. Within Mexico's broader governance transition, the state and the drug trade are embroiled in a zero-sum struggle over the character of social order that prevails, whether premised on the systematic rule of law or its pervasive violation.

This historical background thus demonstrates that the war on drugs in Mexico is not a simple matter of criminal enforcement but rather part of a broader transition in Mexico's governance arrangements and a struggle over the character of social order that will emerge from this formative period of reorganization. Although previous governance arrangements included cooperation between the drug trade and the state, the features of Mexico's new political economy are diametrically opposed to the criminality of the newly empowered DTOs. At the crux of the conflict is the state's effort to construct the rule of law as the foundation of social order, and the efforts of the DTOs to expand patterns of organization that undermine the state's legal authority, the subject of the next subsection.

I-iii DTOs and Social Order

The previous section explored the relationship between the DTOs and social order in a *negative* sense by focusing on their ability to prevent the state from establishing its preferred governance arrangements in a time of profound transition. As José Luis Velasco points out, "Illegal violence, the existence of armed apparatuses outside the control of the state, corruption, and 'cooperation' between drug traffickers and law-enforcement officials create an important economic and political area that is beyond democratic control."⁷⁰ But to what extent do the DTOs construct social order within this space? This section focuses on their *positive* ability to create alternative patterns of order in the territorial and functional spaces they maintain outside of state control.

This inquiry remains counter-intuitive because, unlike Colombia's drug-fuelled insurgents (FARC and ELN) and paramilitaries, the Mexican DTOs do not have political or social agendas.⁷¹ Motivated by narrow profit incentives, the DTOs have

⁷⁰ Velasco, 9. See also: 103-9.

⁷¹ The possible exception is the La Familia DTO, which has a pseudo-religious ideology that may be considered a social agenda.

no interest in unnecessary burdens of social order and governance.⁷² Yet present conditions in Mexico lead them to construct patterns of social order well outside their core business activities. In some cases, the DTOs even supplant the state and provide functions of governance. Although the details remain murky, this section explores such DTO order-making in three ways. First, it surveys the wide *breadth* of social order provided by the DTOs, spanning from economics into politics, society and culture. Second, it argues that in many cases violence does not represent the absence of order but rather a feature of its regulation. Finally, this section assesses the *stability* of these patterns of social order, explaining how they might expand and endure.

In the economic sphere, the very title 'drug trafficking organization' implies organizational structures and patterns of behaviour that (at a minimum) facilitate the core business of the drug trade. As is typical of organized crime in general, the use or threat of violence replaces state laws in order to fulfil several regulatory functions: assuring property rights, enforcing agreements, disciplining employees, determining leadership succession, protecting illicit flows and competing for market share.⁷³ Though the present violence is atypically intense and signals the dissolution of the previous (state-arbitrated) rules of the game, the violence also represents a core feature of a new system of market regulation, unstable as it may be.⁷⁴ For example, there is a 'semiotics of murder' in which decapitations, messages left on victims, and videos posted on the internet comprise a form of communication between the DTOs.⁷⁵

The norms and patterns that comprise this illegal economic space extend over the approximately 450 000 individuals believed to be employed in drug trafficking and

⁷² Bruce Bagley, Chair of International Studies at the University of Miami, notes that "The drug lords don't want to take over. They want to be left alone. They want a state that's pliable and porous." Quoted in: Ken Ellingwood, "Why Mexico is not the New Colombia when it Comes to Drug Cartels," *The Los Angeles Times* (25 September 2010).

⁷³ Felbab-Brown, "Rules and Regulations in Ungoverned Spaces," 179; Biettel, 2, 12-13; Tony Payan, *The Three U.S.-Mexico Border Wars: Drugs, Immigration, and Homeland Security* (Westport CT and London: Praeger Security International, 2006), 41-5.

⁷⁴ In reference to this internal regulation, Vanda Felbab-Brown points out, "The 'wild' space is rarely fully wild; in the case of illicit economies, it is only differently governed." *Ibid.*, 179. In reference to Mexico, she explains that some of the violence may represent DTO loss of control and weakening restraints on violence, while some is "strategic savagery" meant to intimidate rival DTOs, the state, and the population while keeping employees in line. Felbab-Brown, "The Violent Drug Market in Mexico," 5.

⁷⁵ Kan and Williams, 225. Signs placed on often mutilated bodies are also known as 'corpse messaging' and include notes such as "Talked too much," "So that they learn respect," and "You get what you deserve". William Finnegan, "Silver or Lead," *The New Yorker* (31 May 2010). A corpse with a severed finger stuffed in its mouth was likely an informant; a corpse with gunshot wounds in its palms likely stole drugs or money. Payan, 46.

cultivation (one-third in the former and two-thirds in the latter).⁷⁶ Multiplied by the average family size (4.5), over 2 million of Mexico's 112.5 million inhabitants depend upon black market economic practices for their livelihood (and likely many more through indirect linkages).⁷⁷ In Sinaloa state, for example, an estimated twenty percent of all economic activity relates to drugs, including real estate, restaurants, durables and non-durables.⁷⁸

While the Mexican state was once able to suppress any political influence from the drug trade, DTOs presently use a strategy of corruption and intimidation (*plata o plomo* – silver or lead) to determine who holds office and what they are permitted to do.⁷⁹ An August 2010 report to a committee of the Mexican Senate found that 195 municipalities (8%) are completely under the control of organized crime while another 1536 (63%) are "infiltrated".⁸⁰ Importantly, the violence of the drug war is increasingly political in character insofar as the state attempts to assert its authority in its most basic functions (security) while the DTOs actively challenge the state to guard their impunity and undermine public support for the war.⁸¹ The U.S. State Department comments that "Trafficking organizations have also been effective at utilizing violence as a psychological weapon, intimidating political leaders, rival groups, and the general public."⁸² Military expert Max Manwarring argues that the irregular warfare of Los Zetas, for example, "is not intended to

⁷⁶ Marc Lacey, "In Drug War, Mexico Fights Cartel and Itself," *New York Times* (30 March 2009). The employees that comprise the economic chain are increasingly specialized, including professionals in business, transportation, communication and private coercion, as well as pilots, captains, lawyers, secretaries, accountants, financial engineers, vigilantes and assassins. See: Serrano, 271.

⁷⁷ Robert J. Bunker and John P. Sullivan, "Cartel Evolution Revisited: Third Phase Cartel Potentials and Alternative Futures in Mexico," *Small Wars & Insurgencies* vol. 21, no. 1 (March 2010), 41.

⁷⁸ Felbab-Brown, "The Violent Drug Market in Mexico," 14.

⁷⁹ Hundreds of politicians considered undesirable to DTOs have been assassinated while threats, kidnapping and other violence against politicians and their families are used to shape local politics. Max G. Manwarring, *A "New" Dynamic in the Western Hemisphere Security Environment: The Mexican Zetas and Other Private Armies* (Carlisle, PA: Strategic Studies Institute, US Army War College, 2009), 7. For example, in February 2009 DTO members in Ciudad Juárez announced that they would kill a police officer every 48 hours until recently appointed Police Chief Roberto Orduña left office. He fled his post and the city on February 20, 2009, after six authorities were killed. Marc Lacey, "With Force, Mexican Drug Cartels Get Their Way," *The New York Times* (1 March 2009); Between January and October 2010, 12 sitting mayors and one gubernatorial candidate were executed, presumably for refusing to cooperate with the DTOs. Biettel, 1.

⁸⁰ Biettel, 26. The report is titled "Municipal Government and Organized Crime".

⁸¹ Kan and Williams, 224.

⁸² Quoted in: Chris Hawley, "Bold New Cartels Emerging in Mexico," *The Arizona Republic* (30 August 2009). Similarly, Mexican security expert Jorge Fernández Menéndez comments: "The violence of cartels has acquired another dimension: now executions are public..., their messages are no longer coded but are also open to generate doubt and fear." Quoted in Grayson, *Mexico's Struggle with 'Drugs and Thugs'*, 8.

destroy an enemy military force, but to capture the imaginations of people and the will of their leaders."⁸³

In the social sphere, the DTOs are known to make investments in churches, infrastructure, and community programs in an attempt to build local support.⁸⁴ The La Familia Michoacana DTO appears to be the most advanced in this strategy, reportedly making donations of food, medical care (including drug rehabilitation), schools and parties in poor communities in order to cultivate its 'Robin Hood' image.⁸⁵ As one 12-year-old toting a toy gun explained to a researcher in Michoacán: "Here the narcos enjoy respect because they help the people and have a great deal of power. Not even mayors help as much when someone dies or doesn't have a job."⁸⁶

"While that state aspires to construct a 'culture of legality,' the drug trade fosters a counter-cultural identity that appeals to marginalized youth"

Finally, the DTOs are also producing patterns of social order in the realm of popular culture. While the state aspires to construct a 'culture of legality,' the drug trade fosters a counter-cultural identity that appeals to marginalized youth through videos, songs venerating drug criminals (known as 'narco-corridos') and public banners (known as 'narcomantas').⁸⁷ Some DTOs (especially La Familia Michoacana, but also the Sinaloa

Federation and Los Zetas) have created pseudo-religious ideologies including saints, iconography, and ritualized violence that resonate with the broader significance of death within Mexican culture.⁸⁸ In 2009 the Mexican government even began a campaign to destroy shrines to Santa Muerte, a saint affiliated with the Zetas, Gulf, and possibly Vicente Carrillo Fuentes (VCF) DTOs.⁸⁹ Further, the DTOs also use violence against journalists to censor public reporting. At least 30 journalists have

⁸³ Manwarring, ix.

⁸⁴ Vanda Felbab-Brown, "The Violent Drug Market in Mexico and Lessons from Colombia," 14. These investments are likely not as extensive as those of Pablo Escobar and the Medellín DTO in Colombia.

⁸⁵ Biettel, 12. In a paid advertisement in two statewide papers, La Familia Michoacana answered the question "who are we?" explaining "Workers from the Tierra Caliente region in the state of Michoacán, organized by the need to end the oppression, the humiliation to which we have constantly been subjected by people who have always had power." Quoted in: Finnegan.

⁸⁶ Quoted in: Grayson, *Mexico's Struggle with 'Drugs and Thugs'*, 40.

⁸⁷ Kan and Williams, 222.

⁸⁸ Pamela L. Bunker, Lisa J. Campbell and Robert J. Bunker, "Torture, Beheadings, and Narcocultivos," *Small Wars and Insurgencies* vol. 21 no. 1 (March 2010), 160-71. La Familia Michoacana first gained notoriety in September 2006 when five severed heads were rolled onto a dance floor in Uruapan, Michoacán, with a note: "La Familia doesn't kill for money, it doesn't kill women, it doesn't kill innocent people—only those who deserve to die. Everyone should know: this is divine justice." 'Divine justice' is a recurring phrase in such notes. Finnegan.

⁸⁹ Bunker and Sullivan, 46.

been disappeared or killed by DTOs during the Calderón administration.⁹⁰ After the death of two of its reporters, the Juárez newspaper *El Diario* published an open letter to the DTOs recognizing them as the “de facto authorities of this city”, asking for clarification on what can and cannot be published, and pleading for a truce.⁹¹

In some areas, patterns of social order created in these spheres coincide with DTO territorial control. The Mexican government admits the existence of 233 ‘zones of impunity’ (down from a previous figure of 2204) in which the DTOs operate a state within a state by levying taxes, setting up roadblocks and enforcing their own codes of behaviour.⁹² DTOs are known to control large swaths of territory in the states of Michoacán, Tamaulipas, Durango and Chihuahua despite the government offensive.⁹³ In such areas the DTOs even perform functions of governance. As President Calderón explains, the “criminal behaviour is what has changed, and has become a challenge to the state, an attempt to replace the state.”⁹⁴

The La Familia Michoacana DTO is the most advanced in this regard. The group originated in part from local self-defence vigilante groups and was reputedly able to stop extortion, kidnapping and abuses by other DTOs in areas under its control. In addition to its public security function, the DTO also plays a role as a political authority, in rule-making, as well as providing social welfare.⁹⁵ The phenomenon extends to other DTOs as well. In remote areas of drug cultivation, José Luis Velasco proposes that “drug criminals are not just predatory agents. They sometimes take over typical state functions, delivering social services, building

⁹⁰ Biettel, 22.

⁹¹ “¿Qué Quiernen de Nosotros?” *El Diario* (18 September 2010).

⁹² Marc Lacey, “In Drug War, Mexico Fights Cartel and Itself”.

⁹³ Tracy Wilkinson, “Mexico Arrest may do Little to Change the Drug Cartel Equation,” *The Los Angeles Times* (23 June 2011). Further, organized crime expert Edgardo Buscaglia argues that “in Reynosa [a major city in Tamaulipas state], we have a complete absence of the state. So when you go to Reynosa, for all practical purposes, it is like being in the middle of Afghanistan or Pakistan.” “Point Person: Our QandA with Edgardo Buscaglia,” *The Dallas Morning News* (9 April 2010).

⁹⁴ Quoted in: Tracy Wilkinson and Ken Ellingwood, “Cartels Thrive Despite Calderon’s Offensive,” *The Los Angeles Times* (7 August 2010).

⁹⁵ Finnegan. As one schoolteacher in Zitácuaro, Michoacán, explains of La Familia: “They’re a second law. Maybe the first law. If you need to collect a debt, you go to them. They’ll charge you a fee, but you’ll get your money. The police work for them. When they arrest people, they don’t take them to police headquarters but to La Familia.” Quoted in Finnegan. Importantly, the social peace provided by La Familia has been disrupted by the government offensive.

some public infrastructure, and acting as 'law enforcers'. Indeed, in some Mexican regions, drug strongmen are above local elected officials."⁹⁶

While the governance role of Mexican DTOs may be surprising, it is not wholly uncommon in the region. Throughout Latin America, areas of weak or absent statehood do not represent voids of social order (as Snyder would suggest) but the presence of alternative, and often criminal, structures of governance.⁹⁷ In Mexico, however, areas of DTO territorial control and governance remain highly fluid and without clearly defined boundaries.⁹⁸ Given the narrowly *economic* interests of DTOs, a key question remains: what degree of *stability* do these patterns of DTO social order and governance possess?

It remains too early to gauge the stability of these patterns. They may prove ephemeral, they may be transitory steps to more or less broad patterns of social order, or they could persist as facilitating features of the drug trade. There are, however, several ways in which DTO social order and governance may endure and even expand.

Charles Tilly's account of European state formation provides a helpful precedent. According to Tilly, European powerholders' narrow interest in war-making placed them in sustained negotiation with their subject populations in order to extract the money, men and materials necessary for war, which gradually produced the protections, rights, welfare provision and other public goods that mark modern

⁹⁶ Velasco, 109. Vanda Felbab-Brown similarly points out that the DTOs make community investments in churches and social programs in order to buy political capital. "The Violent Drug Market in Mexico," 14.

⁹⁷ As Ivan Brisco explains with reference to conflict in Latin America, "there is remarkable agreement on the fact that non-state actors have taken advantage of the roll-back of the state in the developing world since the 1980s to establish novel, extra-legal and sectarian control over trading zones and trafficking channels, creating in the process new forms of non-state authority and new models of citizenship." Ivan Briscoe, "Trouble on the Borders: Latin America's New Conflict Zones," *Fundación para las Relaciones Internacionales y el Diálogo Exterior Comment* (July 2008), 6. Similarly, Enrique Desmond Arias argues that the literature on Latin America is misleading when it suggests that violence and crime signal "an absence of effective institutions rather than the presence of an alternative system of order." In areas of weak statehood "Criminals play roles in governing space, negotiating political alliances, delivering political support, and enabling the illegal markets on which many in the informal sector depend for a living. As such, armed actors work with state, social, and economic actors to build synthetic forms of governance; at certain times and places they resolve disputes and administer certain types of interactions. ... This leads to a constantly shifting structure that appears from the outside to be disorder or a lack of governance but, when looked at closely, reflects a changing system of network-based governance embedded in a social, political, and economic system." Enrique Desmond Arias, "Understanding Criminal Networks, Political Order, and Politics in Latin America," in Anne L. Clunan and Harold A. Trinkunas, eds., *Ungoverned Spaces: Alternatives to State Authority in an Era of Softened Sovereignty* (Stanford, CA: Stanford University Press, 2010), 126.

⁹⁸ Ken Ellingwood, "Why Mexico is not the New Colombia when it Comes to Drug Cartels,"

statehood.⁹⁹ Similarly, Vanda Felbab-Brown notes that when the state is unable to provide for the economic and security needs of broad parts of the population, DTOs can gain political capital and public support by performing these functions.¹⁰⁰ When their illegal activities employ large numbers of impoverished people (as in the case of coca and poppy cultivation, which employs hundreds of thousands), DTOs enjoy public support while state enforcement efforts prove politically costly; but when illegal activity brings only limited economic benefit to the population (as in the case of trafficking, which employs thousands), the public is more supportive of state enforcement and less sympathetic to DTOs.¹⁰¹ These two accounts suggest that the more DTOs depend upon and negotiate with communities in order to perform their core business, the more likely they are to perform expanding functions of governance. As a result, two factors could see them expand into the construction of much broader and durable patterns of social order.¹⁰²

First, increasing pressure from the state and heightened competition from rivals could prompt DTOs to rely upon local communities to hide and support their drug crimes in exchange for public goods. There are already indications that the DTOs are increasingly concerned with their public image. For example, public narcomantas often constitute a propaganda war between DTOs.¹⁰³ When an uncharacteristically indiscriminate grenade attack killed eight innocent people and injured over one hundred more during a public celebration of Mexico's Independence Day in Morelia, Michoacán on September 15, 2008, the Gulf DTO blamed LFM and offered a five million dollar reward for information on the culprits, while LFM publicly disavowed the attacks and hung banners blaming Los Zetas.¹⁰⁴ Similarly, the DTOs reputedly sponsor public protests against the war on drugs in order to deflect criticism of escalating drug violence towards the government. In

⁹⁹ Tilly, *Coercion, Capital and European States*.

¹⁰⁰ Felbab Brown, "Rules and Regulations in Ungoverned Spaces," 178; See also: Vanda Felbab-Brown, *Shooting Up: Counterinsurgency and the War on Drugs* (Washington DC: Brookings Institution Press, 2010).

¹⁰¹ Vanda Felbab-Brown, "The Violent Drug Market in Mexico," 14.

¹⁰² In a similar vein, Paul Rexton Kan and Phil Williams, noting that less than five percent of crimes in Mexico are solved, comment: "Without punishment for criminality on the one side and the celebration of a criminal lifestyle on the other, community support for drug trafficking organizations is facilitated. The danger is the emergence of grassroots populism in support of drug trafficking organizations, further thwarting Mexican state authority and policy approaches designed to constrain the violence. There are troubling signs of this already." (228-9).

¹⁰³ Sam Quinones, "State of War," *Foreign Policy* iss. 171 (March-April 2009), 77.

¹⁰⁴ Grayson, *Mexico's Struggle with 'Drugs and Thugs'*, 61; Marc Lacey, "Grenade Attack in Mexico Breaks from Deadly Script," *The New York Times* (28 September 2008). One La Familia banner read "Coward is the word for those who attack the country's peace and tranquillity". Importantly, this incident of the indiscriminate targeting of civilians remains an anomaly.

2010, one 'march for peace' in an area of LFM influence reputedly shifted into a rally of support for the DTO.¹⁰⁵

Second, if the DTOs diversify their activity into the broad provision of protection (whether against other DTOs and criminals, the state, rival businesses, or others), they may also enter into popular negotiation and service provision. Access to arms facilitates an easy transition into the protection market that could see DTOs expand their role in governance by providing protection and developing organizational structures of taxation.¹⁰⁶ As section three details, there exist today indications of such a diversification of criminality.

While these two conditions could cause the expansion of DTO order-making and governance, legitimacy constitutes a countervailing limitation on such

"... the social order provided by DTOs, on the other hand, is probably only preferable to disorder and turmoil"

developments. The state as an institution tends to develop a peaceful normalcy, authority, normative attractiveness and popular allegiance that bolster its governance capacities.¹⁰⁷ The social order provided by DTOs, on the other hand, is probably only preferable to disorder and turmoil. Indeed, Vanda Felbab-Brown notes that the escalating violence limits the general public appeal of Mexican DTOs.¹⁰⁸ But while the state

theoretically has legitimacy and popular allegiance, these immaterial resources cannot be presumed in reality. As subsequent sections demonstrate, the popular legitimacy of the Mexican state is limited by a legacy of corruption and abuse, as well as perceptions of present incapacities (most notably the inability to stop the escalation of drug violence). The DTOs' deficit in legitimacy relative to that of the state may not comprise as significant a limitation as it could.

This rough sketch of the social order provided by DTOs remains murky, incomplete and fluid, but nonetheless demonstrates a broad DTO capacity to construct social order (extending to economic, political, social and cultural spheres, and even territorial control and governance functions). While the interests of DTOs are narrowly economic, these expansive patterns of order presumably facilitate continued resource extraction amid present conditions in Mexico. This section also suggests that violence represents a feature rather than the absence of such patterns. It remains too early to gauge the stability of these patterns of order, but

¹⁰⁵ "Falling Kingpins, Rising Violence," *The Economist* (16 December 2010).

¹⁰⁶ Arias, 124-5.

¹⁰⁷ For more on this and other facets of state capacity, see: Thomas Homer-Dixon, *Environment, Scarcity, and Violence* (Princeton: Princeton University Press, 1999), 100.

¹⁰⁸ Felbab-Brown, "The Violent Drug Market in Mexico," 14.

if conditions in Mexico prompt DTOs to increasingly negotiate with communities, then their broader governance functions could expand and endure.¹⁰⁹ Ultimately, it is by using violence and creating patterns of social order outside of government control rather than their core drug business that the DTOs challenge the state.

This and the previous subsections thus demonstrate that the violence of Mexico's drug war does not signify the absence of or solely the destruction of social order, but also represents a process of order creation (however unstable and uncertain) serving two conflicting systems of resource extraction. For the Mexican state, the war on drugs is an attempt to establish the rule of law as the basic parameter of a yet incomplete transition to free market democracy. The DTOs obstruct this transition by maintaining patterns of criminal and often violent social order in spaces outside of state control. The next two sections apply concepts from the complexity science literature to understand how resources affect this relationship between violence and social order. The second section demonstrates that the nature of their respective resources affects the different order-making capacities of the state and the drug trade, while section three explains how these differences affect the dynamics of the violent conflict.

¹⁰⁹ Just as it was not intended or planned that the state should emerge as the basic political infrastructure of Europe (Tilly), DTOs without political aspirations may nonetheless expand their governance function if the conditions favor it. This is not, however, to suggest that these governance functions will turn DTOs into 'states'.

Section 2: The State and the Drug Trade as Competing Systems of Resource Extraction

In its National Development Plan, the Mexican government proclaims that it “cannot and must not fail to combat the [drug] problem with all the resources in its reach.”¹¹⁰ But what resources underpin the drug war and how do they affect the dynamics of the struggle? The previous section argued that the conflict between the DTOs and the state is a struggle over the character of social order that will prevail in Mexico. This section considers how their differences as systems of resource extraction affect this contest. Given that the primary function of any system of resource extraction is to create and sustain patterns of organization that facilitate continued access to its resource base, how do the differing characteristics of the drug trade and the state as systems of resource extraction affect their ability to create rival patterns of social order?

To answer this question, this section draws upon the thermodynamics strain of the complexity literature, particularly the work of Joseph Tainter. As Tainter explains, any pattern of social order (or what the complexity literature often refers to as ‘social complexity’ – I use the two interchangeably) requires “a continuous flow of energy”¹¹¹ to preserve itself far from thermodynamic equilibrium (the universe’s natural tendency toward increasing entropy). “Energy flow and sociopolitical organization are opposite sides of an equation ... [that] must evolve in harmony.”¹¹² Without a sufficient supply of energy, complexity degrades and systems disintegrate.¹¹³ More specifically, Tainter and his colleagues demonstrate that the quality of resources “fundamentally influences the structure and organization of

¹¹⁰ Government of Mexico, 46, translated by author.

¹¹¹ Joseph A. Tainter, *The Collapse of Complex Societies* (Cambridge and New York: Cambridge University Press, 1988), 91.

¹¹² Ibid.

¹¹³ Thomas Homer-Dixon, “Complexity Science and Public Policy,” Manion Lecture delivered at the National Arts Centre, Ottawa (5 May 2010), 2; Thomas Homer-Dixon, *The Upside of Down: Catastrophe, Creativity, and the Renewal of Civilization* (Toronto: Alfred A. Knopf, 2006), 221.

living systems, including human societies.”¹¹⁴ The thermodynamics literature thus suggests that there is a strong relationship between resources and the character of the social order that they fuel. Tainter and his colleagues also provide a theoretical basis with which to examine the ways in which the former affects and constrains the latter in the context of competition between the state and the drug trade in Mexico.

This section is divided into three subsections. The first contrasts the resource bases of the drug trade and the state as high-gain and low-gain, respectively. This difference in energy quality generates different organizational demands of resource extraction. The second subsection argues that these different foundations favour different ‘styles’ of order-making: the drug trade is a highly flexible complex adaptive system marked by decentralized rule-making and relatively low organizational complexity whereas the state is a rigid system encumbered by the high bureaucratic complexity of hierarchical rule-making. The third subsection focuses on the relationship between these two systems of resource extraction, demonstrating that the drug trade can exploit state-resourced social order while the state must construct immense patterns of social complexity to exclude the parasitic influence of the drug trade. Overall, this section argues that the nature of the respective resource bases of the drug trade and the Mexican state significantly affect their order-making capacities in ways that advantage the drug trade. The differences between the state and drug trade as energy systems are summarized in table 1 below.

Table 1: The State and the Drug Trade as Energy Systems

	Drug Trade:	State:
Annual Revenues	\$20-40 Billion USD (estimated)	\$237 Billion USD (2010)
Energy Quality	High-Gain	Low-Gain
Organizational Demands	Intensive	Extensive
Complexity	Low and Highly Self-Organizing	High and Bureaucratic
Rule-Making	Decentralized	Hierarchical
Change	Resilient and Adaptable	Rigid
Relationship to Other System	Parasitic	Autonomous

¹¹⁴ Joseph A. Tainter, T. F. H. Allen, Amanda Little and Thomas W. Hoekstra, “Resource transitions and Energy Gain: Contexts of Organization,” *Conservation Ecology* vol. 7 no. 3 (2003), 2.

II-i Energy Gain and Resource Bases

Energy analysis begins with the concept of energy quality and the distinction between high-gain and low-gain energy systems. The energy quality of a resource refers to the ratio of the energy that can be extracted from it to the energy required to access it, or the 'energy return on investment' (EROI); the difference between energy invested and energy extracted is known as the 'energy gain'.¹¹⁵ The quality of a particular resource depends on the "efficiency of the technology used to locate, extract, process, distribute, and exploit the resource"¹¹⁶, which includes physical infrastructure ('technology' in common parlance) and especially social organization (technology in a more Foucaultian sense). Resources with a high EROI constitute high-gain energy systems, and low EROI creates low-gain systems. As Tainter et al explain,

High gain systems capture large amounts of energy at little cost. EROI is high. Although these systems produce impressive organization, they are notable primarily for high-quality energy flow. Low-gain systems may capture even more energy, but because they must capture it from more extensive sources, organization is required to aggregate resources.¹¹⁷

In high-gain systems, resources are abundant and concentrated in a way that allows low-overhead *intensive* structures of resource extraction whereas in low-gain systems they are relatively scarce so that resource capture is more *extensive*.¹¹⁸

In the case of the Mexican drug war, resources serve as a proxy for energy insofar as they represent the ability to do work – to maintain conditions that facilitate continued extraction by constructing favorable patterns of social order. The energy/resource base of the drug trade is its immense profits, and of the state its tax revenues. While drugs represent a high-gain resource, this subsection argues that state taxation is a low-gain resource base marked by considerable constraints stemming from Mexico's new political-economy.

The annual revenues of the Mexican drug trade are immense but not precisely known. The U.S. Congressional Research Service estimates that \$20-25 billion flows

¹¹⁵ Ibid.

¹¹⁶ Ibid.

¹¹⁷ Ibid., 4 (hypothesis, 8).

¹¹⁸ Ibid., 2-3 (hypotheses 4 and 5).

south of the US border each year from drug sales in the United States,¹¹⁹ but the DTOs also profit from other markets. Robert J. Bunker estimates drug revenues from the US to Mexico at \$14-17 billion, but notes that the DTOs accrue up to \$15 billion from other activities, most notably money laundering and migrant smuggling, for total revenues of around \$30 billion.¹²⁰ The Mexican media have estimated the DTOs' annual turnover at \$40 billion,¹²¹ and others as high as \$80 billion.¹²²

More important than absolute amounts, drug revenues constitute a *high-gain* resource.¹²³ The DTOs supply a high and inelastic worldwide demand that remains unfettered by illegality. The global prohibition of narcotics bestows a high risk premium upon drug production and trafficking which creates immense profitability. While enforcement efforts aspire to reduce consumption by rendering drugs more scarce and expensive, the inelasticity of demand sees users continuing to purchase drugs at higher prices so that counternarcotics efforts may actually *increase* DTO revenues.¹²⁴ Further, the drug trade accrues these immense gains from relatively minor technological and organizational investments. Drugs are a highly 'lootable' resource because they are easy to transport and require relatively little production and infrastructure. The previous section of this paper suggested that Mexican DTOs may require expanding patterns of social order and even governance to facilitate their operations. Section three explains that they have increased their investments in enforcement capacity as a transaction cost of business. Even with these increases in complexity, however, the drug trade still requires much less extensive organization than the state to continue a more lucrative process of resource extraction.¹²⁵

¹¹⁹ Bietel, 21.

¹²⁰ Robert J. Bunker, "Strategic Threat: Narcos and Narcotics Overview," *Small Wars & Insurgencies* vol. 21, no. 1 (March 2010), 15-21.

¹²¹ Steve Kingstone, "Mexico's Drug War: Made in the US,"

¹²² Payan, 25. This figure appears to be an outlier, thus this analysis estimates DTO revenues more conservatively within the \$20-40 billion range.

¹²³ Tainter et al identify drugs as a high-gain energy source owing to their immense profitability on p. 4-5.

¹²⁴ Velasco, 95; Sidney Weintraub, *Unequal Partners: The United States and Mexico* (Pittsburgh: University of Pittsburgh Press, 2010), 65.

¹²⁵ For example, Tony Payan explains that a half-gram of marijuana costs about \$1.10 to produce but on the street sells for \$8.60, generating a profit margin of \$6.90 or over 400%. (24). It should be noted that the street-level distribution of drugs entails more extensive patterns of organization and limited energy gain. However, the Mexican DTOs concentrate on the production, trafficking and wholesale of drugs – the phases with the highest EROI – and leave distribution to other individuals and organizations.

In 2010, the Mexican state amassed budgetary revenues of \$237 billion and expenditures of \$267 billion.¹²⁶ Its revenues accrue primarily from the taxes it levies on the formal economy,¹²⁷ which in 2010 encompassed a gross domestic product of \$1.56 trillion USD (by purchasing power parity), rendering it the 12th largest economy in the world.¹²⁸ Within Mexico's new free-market developmental paradigm, the state promotes trade (particularly export sector growth) and foreign direct investment (FDI) in order to grow the economy, which yields greater tax revenues that can be invested to further improve the climate for trade and investment (where there remains considerable room for progress).¹²⁹

Taxation, however, represents a *low-gain* resource system because only a relatively small amount can be extracted from each economic unit (household or company) and these taxes must be collected and aggregated, requiring costly and elaborate organization.¹³⁰ Whereas drug resources are concentrated, state taxes are dispersed; while the drug trade enjoys intensive, low-overhead resource extraction, taxation entails extensive extraction through widespread administrative organization. Further, the state must invest immense resources on infrastructure, education, healthcare, and myriad other wide-ranging patterns of social organization in order to nourish the economy it taxes.

In an added problem, Mexico's tax rate remains around a mere 10% of GDP in contrast to the OECD average of 36%.¹³¹ As Haber et al argue, "one of the most serious challenges facing a democratic Mexico is the need to find additional sources of public revenue."¹³² The nature of the new market-democratic political-economy, however, places significant constraints on the state's ability to do so. In the context of democratic politics, proposals for tax increases are highly unpopular, politically costly, and nearly impossible to pass.¹³³ Russell Crandall calls such conundrums the

¹²⁶ United States Central Intelligence Agency, Mexico Country Profile, *The World Factbook* (last updated 5 July 2011).

¹²⁷ Mexico relies heavily on a value added tax because wealthy individuals are able to exploit exemptions and loopholes to lower the taxation of their assets and incomes, and the state lacks mechanisms to tax individuals employed in the informal sector. Haber et al, 90.

¹²⁸ United States Central Intelligence Agency.

¹²⁹ Gereffi and Martínez. Haber et al note that liberal democracies tend to have larger tax bases than other political-economic systems insofar as they can create conditions favorable to the deployment of capital and thus foster larger economies from which to draw taxes (7).

¹³⁰ Tainter et al., 7.

¹³¹ Haber et al., 217.

¹³² Ibid., 216.

¹³³ Manuel Pastor and Carol Wise, "The Fox Administration and the Politics of Economic Transition," in Russell Crandall, Guadalupe Paz and Riordan Roett, eds., *Mexico's Democracy at Work: Political and Economic Dynamics* (Boulder CO: Lynne Rienner Publishers, 2005), 107-10; Haber et al, 218-20; Weintraub, 14.

'democratic paradox' in which "painful but often necessary reforms will be more difficult to implement in the now more democratic Mexico."¹³⁴

The country's new political-economy also creates an economic dilemma in which tax increases risk undermining the economic growth that sustains the tax base.¹³⁵ The maquiladora sector, a key driver of Mexico's export-led growth, offers a good example. While the sector is bolstered by its free access and proximity to the American market and low operating costs, rising real wages are eroding its competitiveness and prompting investors to utilize cheaper labor markets in Central

"The nature of the state's resource base [...] inherently constrains the amount of energy it can extract while creating extensive organizational demands"

America and Asia.¹³⁶ Increasing taxes on maquiladora operation would further lower Mexico's competitiveness and ability to attract FDI. To restore export sector competitiveness, the state would have to make considerable investments in skills acquisition and job training to improve productivity.¹³⁷ The nature of the state's resource base – taxation of an economy based on global market competition – inherently constrains the

amount of energy it can extract while creating extensive organizational demands.

The Mexican state supplements its general taxation by directly taxing the revenues of Pemex, the state-owned petroleum company, which can add an additional 6% of GDP to government revenues.¹³⁸ As much as 62% of Pemex sales revenues go to the state.¹³⁹ Oil represents a high-gain resource, but here too resource extraction is constrained. First, oil reserves in Mexico are declining so that Mexico will likely soon become a net oil importer, rendering it unable to rely on Pemex as a public revenue cash cow.¹⁴⁰ Second, oil also faces the aforementioned economic dilemma. Future oil deposits lay off-shore, but Mexico lacks the expertise for this type of drilling. To attract the investment necessary to exploit new oil reserves, Mexico will have to significantly reduce its taxation of oil.¹⁴¹

¹³⁴ Russell Crandall, "Mexico's Domestic Economy: Policy Options and Choices," in Russell Crandall, Guadalupe Paz and Riordan Roett, eds., *Mexico's Democracy at Work: Political and Economic Dynamics* (Boulder CO: Lynne Rienner Publishers, 2005), 73.

¹³⁵ See: Tainter et al, 7.

¹³⁶ Crandall, "Mexico's Domestic Economy," 77-8.

¹³⁷ Ibid., 78-9.

¹³⁸ Weintraub, 13.

¹³⁹ Crandall, "Mexico's Domestic Economy," 81.

¹⁴⁰ Weintraub, 13-5; Crandall, "Mexico's Domestic Economy," 81.

¹⁴¹ Weintraub, 14.

In sum, the drug trade represents a high-gain energy system in which resources are abundant, concentrated, and require relatively little extractive investment, whereas state taxation represents a low-gain system in which resources are dispersed, extraction requires extensive organization and the new development model imposes significant constraints. While the drug trade commands only 6-20% of government resources, the high-gain nature of its resource base nonetheless grants it an advantage in the construction of social order and enables it to parasitically exploit state investments in social complexity. The following subsections explore these two features in turn.

II-ii Complex Adaptive Systems and Bureaucratic Complexity

The drug trade and the Mexican state produce patterns of organization in very different ways. These differences stem largely from the high- versus low-gain quality of their respective resource bases and the resultant organizational characteristics of their extraction regimes. The drug trade comprises a complex adaptive system that is decentralized and highly adaptive. While the state may also be considered a complex adaptive system, it is distinguished by centralized hierarchy and the rigidity of high bureaucratic complexity. This subsection contrasts these different 'styles' of order creation to elucidate their important implications for the competition between these two systems of resource extraction.

Tainter and his colleagues suggest that high-gain energy systems create patterns of complexity that are very flexible, adaptive and resilient. They explain that a "high gain system can extract resources and organize itself with minimal explicit effort. The steep energy gradient does the work of organization."¹⁴² The demands of organization are relatively low and energy is abundant so that high-gain systems can afford to waste resources and be inefficient.¹⁴³ The nature of the resource promotes adaptation and resilience: "High-gain systems are perturbed only by the most extreme environmental disruptions. If disturbed in the context of a steep gradient, they will self-repair or a similar system will emerge to use the high quality resource."¹⁴⁴

In the case of the drug war in Mexico, the high-gain nature of the drug trade as a system of resource extraction supports its organization as a *complex adaptive*

¹⁴² Tainter et al, 4 (hypothesis 7).

¹⁴³ Ibid., 4 (hypothesis 6), 9.

¹⁴⁴ Ibid., 4-5 (hypothesis 12).

system (CAS). A *system* simply entails a collection of components that inter-relate in patterns that persist over time. In the case of the illegal drug trade, the components are individuals who interact along a chain of drug production, trafficking and consumption spanning from South America to the United States.¹⁴⁵

The *adaptive* characteristic of a CAS arises when the components each possess a 'schema' – an understanding of self and surroundings that provides a picture of the world, predictions of coming events and prescriptions for behaviour.¹⁴⁶ Schemata can be transmitted and they change in response to selective pressures from the environment, enabling adaptation and evolution.¹⁴⁷ As John Holland explains, these internal models enable systems to "change and reorganize their component parts to adapt themselves to the problems posed by their surroundings."¹⁴⁸ In the case of the illegal drug trade, a schema is a set of skills and practices that enable an individual to perform a function in the drug production-trafficking-distribution chain in conditions of illegality. Schemata are transmitted by the teaching of skills, rules and routines and modified with lessons learned, which enables adaptation to counternarcotics enforcement efforts and border controls.¹⁴⁹

The high gain nature of the drug resource supports and enhances this adaptive capability. Because energy is abundant and there is thus not a high premium on efficiency, the various components of the system can afford to experiment and develop novel schemas because the failure of any particular schema is hardly catastrophic for the system. For example, the multitude of individuals and cells that

¹⁴⁵ A key analytical challenge is to establish the boundaries of the system, which is difficult because complex adaptive systems are by definition thermodynamically open (exchange energy, material and information with their environment) and any boundary is somewhat arbitrary insofar as it is set to best capture the phenomena of interest to the observer. In the case of the drug trade, the boundaries of the system are flexible and change in response to shifts in the geographies of enforcement, production, trafficking and consumption. The Mexican state, in contrast, remains firmly bounded by the borders of its territorial jurisdiction. While counternarcotics cooperation with the U.S. government agencies and international organizations can to some extent compensate for Mexico's limited reach, its boundaries remain highly rigid whereas the drug trade enjoys a flexibility that respects no borders. This difference also ultimately advantages the drug trade as a system of resource extraction.

¹⁴⁶ Murray Gell-Mann, "The Simple and the Complex," in David Alberts and Thomas Czerwinski, eds. *Complexity, Global Politics, and National Security* (Washington DC: National Defense University, 1997), 8.

¹⁴⁷ Indeed, Gell-Mann defines a complex adaptive system as "variable schemata undergoing evolution through selection pressures from the real world." (11). According to John H. Holland, "Because the individual parts of a complex adaptive system are continually revising their ("conditioned") rules for interaction, each part is embedded in perpetually novel surroundings (the changing behaviour of the other parts)." As a result, they are always changing and never reach an optimal 'end-state'. John H. Holland, "Complex Adaptive Systems," *Daedalus* vol. 121 no. 1 (Winter 1992), 20.

¹⁴⁸ Holland, 18.

¹⁴⁹ See, for example, Kenney, 249-53; Peter Andreas, *Border Games: Policing the U.S.-Mexico Divide* (Ithaca: Cornell University Press, 2000).

smuggle drugs into the United States experiments with a multiplicity of different methods.¹⁵⁰ As border technology and enforcement have increased, some smugglers now use tunnels of growing sophistication to move drugs under the border.¹⁵¹ Other smugglers have increased their corruption of American border officials, who can make several times their annual salary for waving through a single drug shipment.¹⁵² Along the Imperial Valley between Texas and California, smugglers use ultra-light aircraft to drop drug shipments into the United States.¹⁵³ In other areas the easiest way to move drugs into the U.S. is to fling them over the border fence using medieval-style catapults.¹⁵⁴

The resource abundance of the drug trade promotes diversity, experimentation and innovation that enable drug smuggling to adapt to changing conditions. This creates a *decentralized* form of rule-making in which different individuals or cells use different methodologies that are selected based on their adaptive success. Successful schemas are positively reinforced by the reward of drug profits while unsuccessful ones are quickly removed by law enforcement. The loss of a drug shipment, arrest of a carrier or discovery of a particular route by authorities, however, represents only a minor setback to overall operations, which are buffered by their large profit margins.¹⁵⁵ The result is the rapid and effective evolution of organizational patterns within the drug trade.

At a more fundamental level, the present state of the drug trade represents a period of experimentation in their most basic *modi operandi*. Historically, the most basic drug schema was the ability to keep a low profile and maintain protection from state institutions. As section three details, present conditions place a high premium on a military schema that enables DTOs to deploy sophisticated, overt and devastating violence, and the government offensive can be understood as an attempt to alter conditions in a way that places an even higher premium on

¹⁵⁰ See Payan, 31-37 for one categorization of these various methods.

¹⁵¹ In just the last four years, authorities have uncovered at least 51 tunnels connecting Nogales, Arizona, and Nogales, Mexico. Marc Lacey, "Smugglers of Drugs Burrow on Border," *The New York Times* (2 October 2010).

¹⁵² In the last few years, arrests of Customs and Border Protection agents have increased 40% while the agency has grown by only 24%. The average agent makes only \$70 000 per year. Randal C. Archibold, "Hired by Customs, but Working for Mexican Cartels," *New York Times* (17 December 2009).

¹⁵³ Richard Marosi, "Ultralight Aircraft Now Ferrying Drugs Across U.S.-Mexico Border," *The Los Angeles Times* (19 May 2011).

¹⁵⁴ "Mexico Seizes Drug Catapults on US Border," *Voice of America News* (29 January 2011).

¹⁵⁵ For example, Payan describes one method of smuggling drugs in which several drug-laden cars are sent to a point of entry on the U.S.-Mexico Border at the same time, but one car is made easily detectable. Border enforcement agents get distracted by the car they do catch so that they miss the others, and the loss is easy for DTOs to absorb if the others get through (33).

clandestinity (and its attendant aversion to violence) within the schemata of the drug trade. The previous section argued that DTOs (especially LFM) are experimenting with a governance schema in which they provide public goods (security, rule-making and social welfare functions) alongside the drug business. There is thus a wide array of basic drug trade schemata in current operation and the outcome of future selection pressures remains highly contingent.

The *complex* characteristic of a CAS refers to a collection of properties generated by a multitude of adaptive interactions. The closest thing to a sufficient condition for a CAS is the existence of *emergent properties*.¹⁵⁶ These occur when the interaction of relatively simple behaviour at the level of individual actors generates novel higher-level behaviour with its own rules and dynamics that are not reducible to those of its parts. For example, a collection of birds in which each follows a simple set of rules that position it relative to its neighbours becomes a flock with its own dynamics of flight.¹⁵⁷ Similarly, the interaction of schemata produces complex patterns of *self-organization* within the system that emerge and change without central planning. Both of these properties comprise dynamics that arise from individual actions but are not adequately understood or addressed in reference to particular parts.

In the case of the drug trade in Mexico, the patterns of governance and social order discussed in the last section comprise the most important emergent property. From the interaction of very narrow criminal-economically motivated actions at the level of actors within particular environmental conditions, the drug trade generates informal norms, institutions, identities and practices that regulate political, economic and socio-cultural relations beyond core criminal activities. Though information on this phenomenon is scarce, it is hard to reduce these elements of governance to particular actors; they are likely to persist even as present DTOs change their characteristics or are replaced by new organizations. In this sense, these patterns represent novel higher-level emergent properties that are systematic and enduring.

More importantly, the high-gain nature of drug resources promotes processes of self-organization within three key areas of drug trade activity: production, transportation and enforcement. The illegal drug trade self-organizes a pattern of production that includes *which* drugs are produced and *where* they are produced, depending on environmental and enforcement conditions. For example, as

¹⁵⁶ Homer-Dixon, "Complexity Science and Public Policy," 2.

¹⁵⁷ Keith Sawyer, "Emergence in Sociology: Contemporary Philosophy of Mind and Some Implications for Sociological Theory," *American Journal of Sociology* vol. 107, no. 3 (November 2001), 555.

government eradication efforts have increased in traditional areas of cannabis cultivation in Mexico's south (particularly the states of Michoacán, Guerrero and Nayarit), production has shifted northwards to mountainous areas in Durango, Sinaloa and Sonora, closer to the American market.¹⁵⁸ In a greater adaptation, some Mexican DTOs have bypassed the border entirely by growing marijuana in large-scale outdoor plots on public lands in the Western United States (though drought and eradication in these areas has shifted production back towards Mexico).¹⁵⁹ Similarly, a recent decline in Colombian heroin production and the scarcity of Asian heroin in North America has prompted Mexican DTOs to increase their production of black tar heroin in order to expand into American markets.¹⁶⁰ Opium poppy cultivation more than doubled from an estimated 6900 hectares in 2008 to 15 000 hectares in 2009.¹⁶¹

Transportation routes, primarily to the American market, represent another pattern of self-organization that responds to enforcement, geography and infrastructure. As the historical background explained, the present strength of the Mexican DTOs owes largely to a systematic shift of trafficking routes from the Caribbean to the isthmus in the nineties. Colombia remains the key cocaine producer but now 90% of the cocaine entering the United States passes through Mexico.¹⁶² Transportation routes also make smaller adjustments. With the opening of a US-funded highway in El Salvador, drugs increasingly transit through this country rather than along the Central American coast.¹⁶³ Fetching higher prices in Europe, increasing shares of South American cocaine are crossing the Atlantic rather than flowing northward, contributing to shortages in the US.¹⁶⁴ While this trend bypasses Mexico, it is

¹⁵⁸ United States Department of Justice, National Drug Intelligence Center, *National Drug Threat Assessment 2009* (Washington D.C.: December 2008), 22. The US government estimates that in 2007, Mexico produced 15 500 metric tonnes of marijuana primarily for export to the US. Marijuana cultivation increased 35% from an estimated 8900 hectares in 2008 to 12000 ha in 2009, the highest level since 1992. United States Department of State, Bureau for International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Report, Volume I: Drug and Chemical Control* (Washington D.C.: March 2010), 435. Marijuana is estimated to constitute over 60% of Mexican drug sales in the US. See: Alfredo Corchado, "Drug Czar says U.S. Fueling Mexican Violence," *Dallas Morning News* (22 November 2008).

¹⁵⁹ United States Department of Justice, 17, 20-1.

¹⁶⁰ *Ibid.*, 25-32. Mexican black tar heroin is expanding into north-eastern US markets in particular.

¹⁶¹ United States Department of State, 435.

¹⁶² United States Department of Justice, 2; United States Department of State, 432, 436. Cocaine reaches Mexico by air, land and sea, and is smuggled overland into the United States.

¹⁶³ Tracy Wilkinson, "El Salvador becomes Drug Traffickers' 'Little Pathway'," *Los Angeles Times* (22 March 2011).

¹⁶⁴ United States Department of Justice, iv, 1, 8.

countervailed by the increased demand for drugs in Mexico as it becomes a consumer nation.¹⁶⁵

Together, the self-organization of production and transportation generates the higher-level property known as the 'balloon effect' wherein enforcement pressure in one geographical area simply squeezes production and transportation into others. The enforcement function of the drug trade also exhibits self-organization insofar as all DTOs have ramped up their capacity for violence in a system-level dynamic explained in section three.

Ultimately the emergent properties and self-organization of the drug trade are fuelled by its immense profits and as such, are likely to persist even if particular individuals or organizations are removed. They are system-level phenomena that relate to the nature of the drug trade as a high-gain system of resource extraction. These resources encourage experimentation, innovation, and decentralized rule-making that generate highly resilient and adaptive patterns of organization. As Tainter et al explain: "In the so-called war on drugs, it does not matter how many Colombian producers are imprisoned. The gradient of illicit drug sales is so steep, i.e. profitable, that new producers will always emerge."¹⁶⁶

In contrast to high-gain energy systems, low-gain systems require extensive organization to collect and aggregate less-concentrated and lower-quality resources. Scarce resources demand a much higher degree of efficiency.¹⁶⁷ The Mexican state is organized as a type of complex adaptive system that helps it cope with these conditions. Its territorial jurisdiction marks the system boundaries,¹⁶⁸ the formal roles and functions of its officials constitute its schemata, and its ability to provide governance may be considered a pattern of emergence and self-organization. Indeed, the consolidation of the rule of law facilitates self-organization not only in the economy, but also in the political sphere. Insofar as the state can guarantee political rights and civil liberties, it empowers every citizen as a political agent, rather than mere subject, able to participate in political decision-making and demand accountability from government officials.¹⁶⁹ While this represents an improving site of adaptive capacity, the state remains a highly rigid CAS in comparison to the drug trade due to three distinguishing factors related to the

¹⁶⁵ United States Department of State, 436. As many as 5% of the Mexican population (3.5 million people) use illegal drugs, including as many as 600 000 addicts.

¹⁶⁶ Tainter et al, 5.

¹⁶⁷ Ibid., 4 (hypothesis 6).

¹⁶⁸ See footnote 145 above.

¹⁶⁹ O'Donnell, 38.

character of its resource extraction. I present these factors theoretically before providing examples of their manifestation in the Mexican case.

First, the extensive nature of resource collection requires increasing layers of organization, particularly in the form of administration and public services, which create high levels of bureaucratic complexity. As Joseph Tainter explains, societies respond to a constant stream of challenges by creating new rules, procedures and bureaucracies, and in this way accumulate vast layers of complexity.¹⁷⁰ Similarly, Francis Fukuyama, in his account of political order in human history, notes "the enormous conservatism of human societies with regard to institutions" so that "societies do not get to sweep the decks clear in every generation. New institutions are more typically layered on top of existing ones, which survive for extraordinarily long periods of time."¹⁷¹

Increasing complexity as a means of problem solving, however, generates rigidity and vulnerability. Tainter argues that each additional investment in complexity faces diminishing marginal returns while requiring an increasing flow of energy to sustain an accumulation of unwieldy organizational expansion. Further, "if the demands on the system are great, it will be vulnerable to instability or will require higher organization."¹⁷² This process can leave societies rigid and vulnerable to shock, and even collapse.¹⁷³ Similarly, Fukuyama notes that conservatism can erode political order because "there is often a substantial lag between changes in the external environment that should trigger institutional change and the actual willingness of societies to make those changes."¹⁷⁴

¹⁷⁰ Tainter, 91-126.

¹⁷¹ Fukuyama, 437-8. In the case of Mexico, Haber et al remark: "Some of the institutions that emerged during Mexico's prolonged period of authoritarian rule, such as those governing the certification of elections, can be swept away with the stroke of a pen; other institutional arrangements, however, are extremely difficult to reform and thus can persist well after a country has democratized.... [In Mexico] These include the judicial and law enforcement, property rights, and taxation systems.... Changing the way they work requires interlinked reforms across a broad front, and those reforms can only be accomplished at considerable political or fiscal cost." (3, 202).

¹⁷² Tainter et al, 9.

¹⁷³ Tainter, 91-126. See also: Homer Dixon, *The Upside of Down*, 219-23. As Thomas Homer-Dixon explains, "Over time the society's resilience declines. An expanding portion of its wealth is sucked into the task of maintaining existing complexity, while its reserves to deal with unexpected contingencies fall, making it more susceptible to sudden, severe, shocks" (222).

¹⁷⁴ Fukuyama, 23.

Second, the state must administer the vast population and territory from which it extracts resources, and does so with centralized, hierarchical rule-making. Indeed, Mexico's democratic transition represents a shift from the hierarchy of the PRI to the hierarchy of law.¹⁷⁵ Rule-making is centralized and constrained by a large collection of laws and legal procedures, including multiple layers of rules, rules about making rules and rules about changing the rules about making the rules. Whereas rule-making in the drug trade is decentralized and proceeds based on adaptive success, the state's hierarchical rule-making restricts change with complicated formal procedures that often require elusive political agreement. The

"...the attempt to simplify complexity can actually increase resource demands and bureaucratic complexity"

schemata of the state are largely codified in the formal institutional roles of officials. Institutional rules and procedures also constrain change in schemata (such as rules guiding the introduction of new offices, agendas, portfolios, policy directions or responsibilities). The bureaucratic nature of state schemata thus limits diversity and experimentation, thereby creating higher rigidity

and resistance to change in comparison to the drug trade. These strictly delineated roles and procedures help reduce redundancy and increase bureaucratic efficiency in a climate of fiscal conservatism, but limit the state's capacity for adaptive change.

Third, largely to cope with the first two factors, the state often attempts to simplify its administrative tasks through standardization and homogenization. Faced with a diverse and complex social reality, states can use the law to render society more legible and controllable in two ways. First, it can actively compel diverse circumstances to conform to a state standard. Second, it can add caveats and details to the law so that it incorporates difference while retaining its universal character. In either case, the attempt to simplify complexity can actually increase resource demands and bureaucratic complexity because the state must either punish deviance or administer added legal details and exceptions.¹⁷⁶ Several examples demonstrate these three rigidities in the case of the Mexican state.

The challenge of increasing public revenues provides a key example. While the state must increase its tax rate in order to finance the drug war and other programs, the hierarchical rule-making procedures of its democratic politics obstruct reform in a 'democratic paradox' (as discussed above). Attempts to

¹⁷⁵ See O'Donnell, 34-5 for more on this concept.

¹⁷⁶ See: James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven and London: Yale University Press, 1998).

simplify the tax code by closing the many loopholes and exemptions that restrict taxation of the wealthy meet with fierce political opposition. The state might also increase its tax revenues by cracking down on tax evasion, which is as high as 30%,¹⁷⁷ and developing mechanisms to tax the informal economy, which encompasses 40-50% of the workforce.¹⁷⁸ Both of these reforms, however, entail more extensive and costly layers of bureaucratic complexity to administer and enforce.

Anti-corruption efforts provide a key example of the layering of bureaucratic complexity. In order to root out pervasive corruption, the Mexican government is creating internal control bodies to oversee key offices. Resources for these initiatives, however, are already scarce, and the state faces the added challenge of creating mechanisms to prevent corruption within the control bodies.¹⁷⁹ Another layer of anti-corruption complexity includes obligatory background checks, twice yearly polygraphs, and inspections of public officials' bank accounts.¹⁸⁰ Since 2007 Mexico has fired over 1000 customs agents, hired 2300 and, in an attempt to dissuade corruption, doubled their base salaries and subjected them to lie-detector tests, job rotations and monitoring by surveillance cameras, all in an attempt to better catch incoming drug cash.¹⁸¹ While such measures add expansive and costly layers of bureaucratic complexity, they have not yet disrupted drug corruption of state institutions.

While diversity is an adaptive asset for the drug trade, the proliferation of institutions tends to create rivalries, blockages and rigidities for the state. A concerted war on drugs throughout Mexico's territory requires coordination and information sharing among institutions at all levels of government, but the multitude of Mexican state bodies suffers from incompatible standards and intense bureaucratic politics. Wikileaks of American diplomatic cables from Mexico reveal rivalries between Mexican security agencies, including failure to share information or cooperate in joint operations and zero-sum competition between them, all of which hamper the drug war.¹⁸² The state must construct a degree of

¹⁷⁷ Crandall, "Mexico's Domestic Economy," 79; Indeed, tax evasion is so rampant that although the value-added tax rate is 15%, it only produces revenue equivalent to 3% of GDP. Haber et al, 218.

¹⁷⁸ Pastor and Wise, 107.

¹⁷⁹ Government of Mexico, 63.

¹⁸⁰ Diana Villiers Negroponete, "Measuring Success in the Drug War: Criteria to Determine Progress in Mexico's Efforts to Defeat Narco-Traffickers," *Brookings Institution* (21 July 2011).

¹⁸¹ William Booth and Nick Miroff, "Stepped-up Efforts by U.S., Mexico Fail to Stem Flow of Drug Money South," *The Washington Post* (25 August 2010).

¹⁸² Indeed, one cable argued that Calderón is struggling with "an unwieldy and uncoordinated interagency" law enforcement effort. Tracy Wilkinson, "WikiLeaks Cables Reveal Unease over Mexican Drug War," *The Los Angeles Times* (2 December 2010).

standardization to facilitate the information-sharing and coordination that would enable a more effective enforcement strategy. Such a simplification, however, is an immense challenge. It requires homogenizing Mexico's 1 661 different police bodies, which are spread over three levels of government and often use different technologies, receive different training and apply different standards.¹⁸³ Under Mexico's federal system, state-level courts and judicial bodies each operate according to their own unique procedures and substantive laws.¹⁸⁴ Only by overcoming bureaucratic politics and improving coordination will the state enjoy an effective decentralized system of law enforcement.¹⁸⁵

Finally, democratic politics create political obstacles to prompt, concerted and effective action in the drug war. On 28 April 2008, for example, the Mexican Congress passed a National Security Act that permits only civilian law enforcement to detain suspects, repeals the ability of the president to declare an emergency and suspend individual rights in cases of organized crime, and requires a state governor or legislature to formally request a military deployment rather than allowing the executive to do so unilaterally.¹⁸⁶ While these conditions may comprise respectable safeguards for democracy, civil liberties and human rights, they also demonstrate how the hierarchical rule-making of the state's bureaucratic complexity can create obstacles and constraints in place of adaptation and freedom of action.

In sum, the difference between the state and the drug trade as high-gain and low-gain systems of resource extraction (respectively) generates very different 'styles' of social order-making that advantage the DTOs in the drug war. High-gain resources support the nature of the drug trade as a complex adaptive system notable for its adaptability, resilience, and decentralized rule-making. The low-gain resources provided by the state's tax base, in contrast, demand extensive bureaucratic complexity that is layered, hierarchical, rigid and highly constrained by political and legal procedure. Although there is a multitude of factors that influence

¹⁸³ Government of Mexico, 73-4. As Kan and Williams comment: "The use of the Mexican military notwithstanding, the country is still a federal system with a patchwork of competing legal authorities and jurisdictions that greatly complicates efforts to gain the upper hand against organized crime." (227). The National Development Plan stipulates that better coordination "will be key in integrating federal, state and municipal governments in a single front in the struggle against crime." 57-8, translated by author.

¹⁸⁴ Haber et al, 208-9.

¹⁸⁵ Stratfor explains: "Calderon has planted the seeds for reforming the state's security organizations with a unified command in hopes of professionalizing each state's security force to the point where states do not have to rely on the federal government to combat organized crime." *Mexican Drug Wars*, 2.

¹⁸⁶ *Ibid.*, 2-3; Biettel, 18.

these patterns of organization, the foregoing discussion suggests that resources are of foundational importance.

II-iii Parasitism versus Autonomy

The relationship between the drug trade and the Mexican state as systems of resource extraction also has important implications for their ability to create rival patterns of social order. The Mexican state in no way depends on the drug trade for its existence and would better function without it. Conversely, the drug trade depends parasitically on the state to create a stable environment in which to operate, hide and draw recruits. By deploying their immense profits, DTOs can manipulate state investments in social order to undermine the rule of law in favor of criminality. This subsection argues first that the state effectively subsidizes the drug trade through its trade infrastructure, military defections and corruption, and second, that the levels of social complexity the state must construct in order to exclude drug parasitism are dauntingly immense.

The new Mexican economy depends on a vast network of transportation infrastructure to facilitate vast numbers of cheap and rapid border crossings by cargo trucks, boats, planes, cars and pedestrians, particularly to and from the United States, Mexico's primary trading partner. This very same infrastructure, however, readily facilitates drug smuggling.¹⁸⁷ The scale of legitimate crossings is simply too large to effectively intercept drugs, arms, and cash flowing over the US-Mexico border. According to the U.S. Bureau of Transportation Statistics, 2010 saw 4 742 925 trucks, 6 044 852 personal vehicles and 39 914 981 pedestrians enter the United States via its southern border.¹⁸⁸ Even with expensive gadgetry, expert Stephen Flynn notes that border inspections face 'needle-in-a-haystack odds' given that America's annual cocaine consumption can be supplied in merely fifteen 40-foot containers, each of which would take five agents an average of three hours to search.¹⁸⁹ Further, the global economy in general allows illicit criminal networks astonishing agility, including information sharing, money transfers (and

¹⁸⁷ Tony Payan remarks that NAFTA is a "heaven-sent blessing" to the DTOs because they can hide drugs in the millions of tractor trailers that carry 70% of US-Mexico trade, and use highways to reach major distribution areas (34).

¹⁸⁸ United States Bureau of Transportation Statistics, *Border Crossing/Entry Data* [database] (accessed 4 August 2011).

¹⁸⁹ Stephen E. Flynn, "The False Conundrum: Continental Integration versus Homeland Security," in Peter Andreas and Thomas J. Biersteker, eds. *The Rebordering of North America: Integration and Exclusion in a New Security Context* (New York: Routledge, 2003): 113.

laundering), and even 'just in time' delivery.¹⁹⁰ Drug parasitism on legal trade infrastructure creates a serious dilemma for the state: efforts to more extensively screen for illicit flows at the border will hamper trade and ultimately restrict state resources.

In a second pattern of drug parasitism on state-based social order, the DTOs readily recruit defectors from Mexico's armed forces and thereby deploy the state's investments in military force towards criminality. Faced with multiple insurgent movements in the 1990s, the Mexican government rapidly expanded the counterinsurgency capacity of its armed forces without properly vetting these highly-trained personnel. They were easily recruited by DTOs offering higher salaries.¹⁹¹ In fact, the Los Zetas DTO was formed by a group of defectors from the elite *Grupo Aeromóvil de Fuerzas Especiales* (Special Forces Air-Mobile Group), many of whom received specialized training in counterinsurgency and counternarcotics from American military experts.¹⁹² Defense officials estimate that 100 000 soldiers defected to the DTOs between 2002 and 2009.¹⁹³ Today the Mexican Secretariat of National Defense claims that one of every three DTO members has military experience.¹⁹⁴ The US Department of State estimates that just three of the DTOs (the Sinaloa Federation, Gulf DTO and Los Zetas) field over 100 000 footsoldiers, whereas the Mexican military has about 130 000.¹⁹⁵

Third, pervasive drug corruption co-opts the political arrangements, procedures and policies created by the state into criminal patterns of social order. Corruption is endemic and hard to over-estimate. In 2008, the Calderón Administration's Drug Czar, Noe Gonzales, was arrested for accepting \$450 000 per month from the Beltran Leyva Organization (BLO) for information on government counternarcotics operations.¹⁹⁶ 2009 saw Mexico's top organized crime prosecutor and the Director of INTERPOL in Mexico both arrested for accepting drug bribes.¹⁹⁷ In August 2010,

¹⁹⁰ Astorga and Shirk, 6; see also: Moisés Naím, *Illicit: How Smugglers, Traffickers and Copycats are Hijacking the Global Economy* (London: William Heinemann, 2006).

¹⁹¹ Graham H. Turbiville, "Firefights, Raids, and Assassinations: Tactical Forms of Cartel Violence and their Underpinnings," *Small Wars & Insurgencies* vol. 21 no. 1 (March 2010), 128-33. For example, one Zeta banner (narcomanta), hung over a Nuevo Laredo thoroughfare, read "The Zetas want you, soldier or ex-soldier. We offer a good salary, food and benefits for your family." Quoted in: Ted Galen Carpenter, "Drug Gangs Winning the War for Mexico," *The Houston Chronicle* (7 February 2009).

¹⁹² More specifically, members of Los Zetas have received training by American, Israeli and French military specialists in rapid deployment, aerial assault, intelligence-gathering, counter surveillance, and ambushes, among other skills. Felbab-Brown, "The Violent Drug Market in Mexico," 12-13.

¹⁹³ Lacey, "In Drug War, Mexico Fights Cartel and Itself,".

¹⁹⁴ Kan and Williams, 225.

¹⁹⁵ Sara A. Carter, "100,000 foot soldiers in Mexican Cartels," *The Washington Times* (3 March 2009).

¹⁹⁶ Stratfor, *Mexican Drug Wars*, 17.

¹⁹⁷ Lacey, "In Drug Wars Mexico Fights Cartels and Itself,".

Mexico's Federal Police Commissioner fired 3200 officers (a full 10% of the federal force) for failing basic integrity tests.¹⁹⁸ Local level police often receive double their salaries in bribes and are threatened with death if they do not accept them.¹⁹⁹ Judges, politicians, officials and prison guards are also known to be corrupt. In 2010, Mexico ranked 98th of 178 countries in Transparency International's Corruption Perception Index with a score of 3.1 out of 10, falling from 63rd of 163 countries with a score of 3.3 in 2006.²⁰⁰ With a relatively small infusion of cash, the DTOs can turn the social order created by the state against the state.

In these ways, the DTOs can pervert costly state efforts to create social order into altered configurations that support criminality rather than the rule of law. In contrast to DTO *parasitism* on the state, the state does not depend on the drug trade to create social order. It is an *autonomous* system of resource extraction, especially since severing its institutional collaboration with the drug trade decades ago. The potential to accrue illicit drug revenues within its border, however, creates an immense dilemma for the Mexican State.

In Charles Tilly's account of European states, state formation and strength result from the ability of powerholders to co-opt, promote and tax the most lucrative economic activities within their sphere of control. This enables them to exclude rival extractors by fighting off armed incursion, incorporating rivals to state authority, and maintaining institutions that provide favourable social order.²⁰¹ The prohibition of narcotics creates an immense obstacle to this developmental path in Mexico. The state must combat an armed rival that wields extensive resources, but the state is unable to take over those resources and deploy them to this end. The illegal drug trade creates a potential for social order, armed capacity and authority *inherently outside of state control*.

With the drug trade entrenched in Mexico, the state faces a *triple cost* in the creation of social order. The first is the cost of maintaining its preferred institutional arrangements, particularly the effective rule of law. Second, by formally committing itself to narcotics prohibition, the state forgoes the ability to benefit from the lucrative drug resource, which represents a significant opportunity cost. Third, the

¹⁹⁸ Biettel, 4.

¹⁹⁹ Weintraub, 69.

²⁰⁰ Transparency International. *Corruption Perceptions Index* (2006 and 2010).

²⁰¹ Charles Tilly, "War Making and State Making as Organized Crime," in Peter B. Evans, Dietrich Rueschemeyer and Theda Skocpol, eds. *Bringing the State Back In* (Cambridge and New York: Cambridge University Press, 1985): 169-91.

state must construct patterns of social order sufficient to prevent *any other* actor from accessing the drug potential of Mexico.²⁰²

A key question is thus: what types of social order must the state create in order to prevent individuals and groups from tapping the immense potential for drug profits contained within Mexico's borders? In order to exclude the illegal drug market in Mexico, the state must create patterns of social organization that counter the key facilitating factors of the drug trade. The following discussion details six such patterns of social order and demonstrates that they are immense and costly in their extent.

First, the state must build the military capacity to counter the DTOs' rising proficiency in violence. Mexico's National Development Plan points to shortfalls in military equipment, training and capacity, noting that the "economic solvency of organized crime allows them access to the black market in arms and the purchase of information, among other things. Today the task is to prevent the forces of the state from being overtaken in this aspect."²⁰³ The asymmetric nature of the conflict exacerbates this problem. By one estimate, the DTOs can provide 3-4 months of training and high tech weaponry to produce an effective criminal soldier for just \$5000,²⁰⁴ while the state must maintain expensive conventional military capacities ill-suited to a drug war. Already the military is stretched too thin to be everywhere it is needed,²⁰⁵ while police reforms that may relieve the burden will still take years to complete.²⁰⁶ In the meantime, present enforcement efforts may only escalate the scale of the challenge. As Stratfor explains: "Calderon's current strategy appears to be inciting more violence as the cartels try to seize upon their rivals' perceived weaknesses, and the federal government simply does not have the resources to effectively contain it."²⁰⁷

The second pattern of order that the state must create in order to exclude the drug trade is the law enforcement and judicial capacity to effectively detain, investigate and prosecute crime.²⁰⁸ Performance in this area remains dismal. In September

²⁰² Richard Snyder argues that if public or joint extraction regimes are impossible, "rulers prefer no extraction as opposed to private extraction. Private extraction is the worst outcome because it makes it easier for private resource holders to accumulate wealth and power that can be used to challenge the rulers' authority. Thus if neither public nor joint extraction is feasible, rulers will choose a spoiler strategy aimed at ensuring that no extraction occurs." (949).

²⁰³ Government of Mexico, 69 translated by author.

²⁰⁴ Bunker, 21.

²⁰⁵ Stratfor, 3, 18.

²⁰⁶ Ibid., 18-9.

²⁰⁷ Ibid., 19.

²⁰⁸ As organized crime expert Edgardo Buscaglia argues, "Sending the army is very feasible and very effective in establishing authority in pockets of failed states. But after that, you need to make sure

2010, President Calderón reported to Congress that only 12 percent of criminal investigations during his administration ended in convictions.²⁰⁹ A study conducted by the Monterrey Institute of Technology projected that of the 7.48 million crimes committed in 2010, only 1.5% would end in conviction.²¹⁰ Between December 2006 and January 2010, authorities arrested nearly 78 000 drug suspects, but 96% were mere street dealers, while only 2% were charged and convicted of a crime (the rest were released or remain in custody).²¹¹ This focus on lower-levels of the drug trade is unlikely to disrupt the DTOs but could overwhelm the police and judicial systems.²¹² Although high-profile drug suspects are paraded before the Mexican media on an almost weekly basis, critics note that many are quietly released after the 80 days of investigation permitted by Mexico's judicial system.²¹³ Overall, this record does little to deter participation in the drug trade, and improvement entails immense and costly reform.

Third, the state must provide salaries and incentives to state officials sufficient to prevent corruption and defection. This entails immense expense. Each of Mexico's 2500 municipalities and 32 states has its own police forces,²¹⁴ which would need to be individually compensated and vetted for corruption. As Luis Astorga and David Shirk comment, "Most Mexican police officers have had few opportunities for educational development, and lead lives that are terribly impoverished."²¹⁵ President Calderón has already raised soldiers' salaries several times to prevent defections, but the DTOs have responded by simply doubling the standard pay of their enforcers.²¹⁶ Los Zetas, for example, offers loans, life insurance and better

you have civilian police in place, prosecutors in place, rule of law, and intelligence service in place." Indeed, the U.S. Assistance Program, originally focused on providing military equipment, now aims more to professionalize Mexican police cadets, judges and prosecutors. "Point Person: Our QandA with Edgardo Buscaglia,"

²⁰⁹ Associated Press. "Mexican Marines Capture 30 Drug Suspects," *The New York Times* (29 September 2010). Mexico's National Development Plan describes a study finding that of every 100 reports made to the justice system, only 23 are investigated, of these 12 go before a judge and only 3 result in sentencing (45-6).

²¹⁰ It also found that only 64 000 crimes would be reported, of which only 15% would be investigated, and only 4% completed due to the slowness of proceedings and failure to comply with the law. See: "Study: 98.5% of Crimes Go Unpunished in Mexico," *The Latin American Herald Tribune* (14 November 2010).

²¹¹ Tracy Wilkinson and Ken Ellingwood, "Mexico Drug Cartels Thrive Despite Calderon's Offensive," *The Los Angeles Times* (7 August 2010).

²¹² Felbab-Brown, "The Violent Drug Market in Mexico," 19.

²¹³ Lacey, "In Drug War, Mexico Fights Cartel and Itself". In a further dilemma, those leaders who are detained can often continue to run their criminal enterprises from Mexican prisons, leading the government to rely heavily on extradition of such kingpins to the US. For example, Gulf DTO leader Osiel Cardenas continued to direct drug trafficking and hostilities against the rival Sinaloa Federation from a Mexican federal penitentiary until his extradition to the United States in 2007. Williams, 45.

²¹⁴ Castañeda, "Mexico's Failed Drug War," 2.

²¹⁵ Astorga and Shirk, 27.

²¹⁶ Grayson, *Mexico's Struggle with 'Drugs and Thugs*, 45, 55-6.

living conditions than the army.²¹⁷ In an added difficulty, the prolonged use of the military in the war on drugs increases the susceptibility of the relatively corruption-free institution to penetration by drug bribes.

Fourth, to exclude the influence of the drug trade, the state must develop the capacity to seize drug revenues and undermine the resource flows that comprise it. Such an achievement would impede the adaptive, coercive and order-making capacities of the drug trade. Unfortunately, here too existing performance is dismal. One study conducted by the *Washington Post* based on data from the US and Mexican governments found that authorities are seizing no more than 1% of the cash heading into Mexico, and generally in small amounts rather than serious losses.²¹⁸ Crime expert Edgardo Buscaglia maintains that a frontal military assault on organized crime without a financial strategy and effective anti-corruption measures will not succeed because illegal groups simply devote more resources to violence and public corruption.²¹⁹

Fifth, the state must ensure that the impoverished masses of Mexico find attractive opportunities within the licit economy (where they will increase state resources) rather than turning to the drug trade as the most attractive vocation. In order to reduce its unemployment, Mexico's formal economy must grow at 5% annually and generate over one million jobs per year,²²⁰ but its new free market arrangements have created average growth of just 2.6% between 1994 and 2010,²²¹ and have not produced the employment many had hoped for. In 2008, 18.2% of Mexico's population lived below the food-based poverty line and 47% lived below the asset-based poverty line.²²² Unemployment was 5.6% in 2010, but underemployment may be as high as 25%.²²³ The burgeoning masses who do not find opportunity within the formal economy either migrate to the United States or join organized crime.²²⁴ Particularly vulnerable are Mexico's millions of youth who lack education

²¹⁷ Finnegan.

²¹⁸ Booth and Miroff.

²¹⁹ Finnegan.

²²⁰ Federico Reyes-Heroles, "Mexico's Changing Social and Political Landscape," in Russell Crandall, Guadalupe Paz and Riordan Roett, eds., *Mexico's Democracy at Work: Political and Economic Dynamics* (Boulder CO: Lynne Rienner Publishers, 2005), 47. The present economy generates only 600 000 jobs per year.

²²¹ World Bank. *World dataBank*. World Development Indicators and Global Development Finance (accessed September 2011).

²²² United States Central Intelligence Agency.

²²³ Ibid.

²²⁴ Serrano, 271; Payan, 25. As many as 500 000 Mexicans migrate to the United States in search of job opportunities each year, generally illegally. The global financial crisis worsened the situation, as the economy *contracted* a full 6% in 2009 according to World databank statistics, and many businesses have closed. See: Biettel, 20. Remittances from migrant workers have declined sharply,

and employment (often called *los ni ni* for *ni estudia ni trabaja* – those without education and employment) and are easily lured by the money and status of the drug trade to become thugs, gunmen, mules, peddlers and lookouts at an age as young as 11.²²⁵ The state must expand the opportunities of the legal economy enough to divert individuals from entering the drug trade,²²⁶ but this requires immense investment in education and social welfare. It remains uncertain that the present political economy, with its emphasis on competitiveness and restricted state intervention, can facilitate such a feat.²²⁷

Finally, and perhaps the greatest challenge, the state is actively trying to engineer a social revolution to create a broad 'culture of legality' that directs everyday public behaviour in support of the rule of law in Mexico.²²⁸ The effort can be understood as an attempt to expand the reach of the state into more spheres of daily life so that respect for the law regulates people's conduct and constitutes a basic feature of socialization.²²⁹ The challenge, however, is daunting amid a background of state corruption, abuse, distrust, ineffectiveness and impunity. One survey conducted by *Latinobarometro* places the level of trust in police, courts and politicians at below 30% because people perceive officials to be in the employ of the DTOs or too scared to be effective.²³⁰ As Secretary of Public Security Geraro García Luna laments, Mexicans "look upon policemen not as professionals but as strange creatures, as martians."²³¹ It will be a long and difficult process for the state to gain citizen support to tackle the reigning culture of impunity.

The Mexican state must construct these six patterns of social order to prevent other actors from tapping the immense potential for drug profits contained within its

suggesting a declining potential in this longstanding 'pressure valve' for the lack of economic opportunity in Mexico. Finnegan.

²²⁵ Ibid.; Author and social commentator Carlos Fuentes states: "The great danger I see in Mexico is that young Mexicans, those less than 30 years of age, which is nearly half of the population, divert from their destiny and turn to crime." Quoted in: Ken Ellingwood and Tracy Wilkinson, "Mexican Drug Cartels Find Youths to be Easy Prey," *The Los Angeles Times* (18 December 2010). Indeed, there are only a few programs aimed at preventing DTO youth recruitment.

²²⁶ Indeed, the National Development Plan outlines the need for 'social prevention' which "consists of eliminating those problems that can lead a youth to commit delinquency. Through the method of opening better and more effective opportunities for education, gaining capacities and employment, values of respect for legality and law are extended through the population so that the temptation to search for economic benefits outside the law or procure justice by one's own hand will be less frequent." (Government of Mexico, 74, translated by author).

²²⁷ Mexico's democratic transition has indeed included a systematic decline in social welfare spending. Haber et al, 18.

²²⁸ Government of Mexico, 64-5.

²²⁹ Similarly, Kan and Williams comment that "other measures need to erode a culture which reinforces the mystique surrounding the drug trade [machismo, for example] and establish a culture of lawfulness and outrage." (227).

²³⁰ Negroponete. Indeed, only one in five crimes in urban areas is reported to officials due to popular perceptions of low efficacy of the justice system. Government of Mexico, 45.

²³¹ Quoted in: Grayson, *Mexico's Struggle with 'Drugs and Thugs'*, 43.

borders and converting it into violence and alternative patterns of social order. The scale of the challenge is immense and immeasurably costly. Ultimately, the state must create a much deeper and more extensive social order than the drug trade in order to maintain its political economy, grow its resources and close the space for alternative criminal organization. The dilemma is that devoting substantial resources to the drug war may leave Mexico vulnerable to a host of other issues confronting it today, including declining oil revenues, ongoing insurgencies and unrest, and vulnerability to global economic shocks.²³² The risk highlighted by Tainter is that an attempt to create such immense patterns of social complexity in a way that overextends available resources increases the likelihood of crisis and collapse.

“As Mexico’s resource needs continue to increase, the drug trade erodes the resource base provided by Mexico’s new political economy.”

As Mexico’s resource needs continue to increase, the drug trade erodes the resource base provided by Mexico’s new political economy. In 2009, Mexico spent \$4 billion on combating drug trafficking, and likely much more through indirect expenses.²³³ Between 2006 and early 2009, the Mexican government had spent \$6.5 billion on top of its normal security budget fighting the drug war.²³⁴ Although Mexico continues to attract foreign investment with low wages, proximity to the US and the benefits of NAFTA, growing numbers of companies are shying away from investment due to escalating violence. The Chief economist for Mexico at J. P. Morgan estimates that drug violence cost Mexico \$4 billion in FDI in 2010.²³⁵

Transaction costs of operating in Mexico, including protection rents, ransoms and security, are rising dramatically.²³⁶ Escalating violence and kidnapping affect

²³² Russell Crandall remarks that that “although the political and economic reforms carried out over the past several years are noteworthy and impressive, Mexico remains confronted by a seemingly endless list of issues that the country desperately needs to address effectively if it is to fully institutionalize its political, economic, and social progress.” Crandall, “Introduction,” 1. A selection of these challenges is listed on p. 3. President Calderón declares: “We must not divert our attention from problems as urgent as insecurity, poverty, inequality, illiteracy, the lack of educational opportunities, maternal and infant mortality, insufficient job creation, the backwardness of rural areas and the loss of natural resources, among others.” Message from the President in: Government of Mexico, 12, translated by author.

²³³ Astorga and Shirk, 3. The United States will contribute an additional \$1.4 billion over several years to Mexico’s war on drugs via the Mérida Initiative.

²³⁴ Ken Ellingwood, “Mexico to Send up to 5,000 More Troops to Ciudad Juarez,” *The Los Angeles Times* (27 February 2009).

²³⁵ Nicholas Casey and James R. Hagerty, “Companies Shun Violent Mexico,” *The Wall Street Journal* (17 December 2010).

Mexico's industrial core, particularly Monterrey, Mexico's third largest city and once among its safest and most modern. Today the rich must take extensive security precautions and small businesses are affected by protection costs and a widespread public fear of going out at night.²³⁷ Pemex too suffers kidnapping of its workers, leading to the closing of oil and gas plants in the Burgos Basin of north eastern Mexico, one of its most lucrative installations. While DTOs have stolen oil in the past, the present violence appears to be an attempt to halt production and control the region.²³⁸ Finally, the economically vital tourist industry has declined significantly with rising violence in Acapulco, Cancún, Mazatlan, Taxco and Cuernavaca, as well as cities along the US-Mexico border.²³⁹ Overall, the Mexican government estimates that the drug war diminishes economic output by 1.2% each year.²⁴⁰

In sum, the parasitic nature of the drug trade and the extensive patterns of order the state must create to exclude criminal rivals ultimately advantage the drug trade.

²³⁶ Felbab Brown, "The Violent Drug Market in Mexico," 2.

²³⁷ Stratfor, 16; Biettel, 17. Americans are now leaving the city and some businesses are allowing employees to send their families back to the US.

²³⁸ Wilkinson and Ellingwood, "Mexico Drug Cartels Thrive Despite Calderon's Offensive,".

²³⁹ Biettel, 17.

²⁴⁰ Jens Erik Gould and Thomas Black, "Mexico's Drug War Leaves 30 196 Dead in Four Years," *Businessweek* (16 December 2010).

Section 3: Impact of Mexico's War on Drugs

The previous section argued that the different character of resources and resource extraction of the state versus the drug trade generate very different patterns of social order that advantage the drug trade. This section asks: How do the different order-making characteristics of the state and the drug trade affect their violent confrontation? The types of organization associated with these different systems of resource extraction yield important implications for the dynamics of the conflict. This section adopts a systems-level approach in order to assess the impact of the state's military offensive amid the adaptive qualities of the drug trade. It explains that the military offensive could compel a fragmentation of DTO organizational structures that significantly reduces their threat to the state, but argues that the resilience of the DTOs enables them to withstand the state's onslaught while generating significant perverse effects. This section concludes by arguing that the extended use of the military may ultimately undermine the state's attempt to build the rule of law. Ultimately this section demonstrates that the nature of the drug trade as a system of resource extraction advantages it in today's violent struggle.

The main feature of Mexico's war on drugs is President Calderón's mass deployment of the military to directly confront the DTOs.²⁴¹ The bureaucratic complexity of the state is ideal for mounting such large-scale conventional military campaigns owing to the ability to accumulate capital, concentrate coercion and coordinate large scale

²⁴¹ The present military deployment began under the Fox Administration which declared the "mother of all battles" against the DTOs in January 2005, but was quickly and broadly expanded by President Calderón. Scott Stewart, "New Mexican President, Same Cartel War?" *Stratfor.com* (16 June 2011).

hierarchies.²⁴² While the Mexican armed forces have in the past performed select counternarcotics enforcement efforts and crop eradication missions, the present deployment is unprecedented.²⁴³ In addition to established functions of aerial monitoring, border control and interdiction, the military has now taken on extensive public safety and law and order duties normally performed by civilian police, including patrols, traffic stops and arrests.²⁴⁴ At the centre of the present campaign, however, is the use of the Mexican military to collect intelligence and mount sophisticated tactical raids to capture high-value DTO leaders, a practice known as the 'kingpin strategy'.²⁴⁵

The major challenge confronting this military approach is the high resilience of the drug trade. Martin Bouchard defines the resilience of the illegal drug market as "the ability of market participants to preserve the existing levels of exchanges between buyers and sellers, despite external pressure aimed at disrupting the trade", particularly state enforcement efforts.²⁴⁶ Three factors comprise this resilience: *vulnerability* refers to the exposure of DTOs to attacks and their ability to evade shocks; *elasticity* denotes their ability to 'bounce back' from an external shock by replacing parts that have been damaged or removed (personnel and drug shipments); and *adaptive capacity* is their ability to change their structures when prior arrangements are rendered untenable.²⁴⁷ Expanding this framework slightly, elasticity may be understood as the ability to make small adjustments to operations in order to compensate for losses and avoid past mistakes, whereas adaptability denotes changes to fundamental structures.²⁴⁸ For example, DTOs *adjust* their means of smuggling drugs into the U.S. by using tunnels, aircraft, border crossings

²⁴² Indeed, the institutions of the state largely emerged to perform this very function. See Tilly, *Coercion, Capital and European States*.

²⁴³ Aguilar and Castañeda, 11-12.

²⁴⁴ The militarization of domestic security also includes the appointment and recruitment of military personnel to law enforcement agencies. Astorga and Shirk, 28.

²⁴⁵ Stephen Meiners and Fred Burton, "The Role of the Mexican Military in the Cartel War," *Stratfor.com* (29 July 2009).

²⁴⁶ Martin Bouchard, "On the Resilience of Illegal Drug Markets," *Global Crime* vol. 8 no. 4 (November 2007), 329. Importantly, this definition is similar to the more general definition of resilience used by Brian Walker, C.S. Holling. and colleagues: "Resilience is the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks." Brian Walker, C. S. Holling, Stephen R. Carpenter, and Ann Kinzig, "Resilience, Adaptability and Transformability in Social-Ecological Systems," *Ecology and Society* vol. 9 no. 2 (2004), 2.

²⁴⁷ Bouchard, 329-30.

²⁴⁸ In this sense, elasticity and adaptability in Bouchard's framework roughly correspond to adaptability and transformability, respectively, in the work of Brian Walker, C.S. Holling and colleagues, who propose that the boundary between the two may be "fuzzy, and subject to interpretation." Brian Walker et al, quote from p. 2.

or catapults, but have not yet been forced to *adapt* the fundamental trafficking route through Mexico and into the U.S. to an alternative, such as the Caribbean.

Bouchard's framework provides a useful tool with which to assess the impact of the state's military offensive and the resilience of the DTOs. Placing Bouchard's three factors in a hierarchical arrangement, the significance of a shock increases depending on whether DTOs can merely evade it, make adjustments to repair existing structures, or whether they are forced to adapt basic organizational features in order to persist. The illegal drug market can only be eliminated by a shock so profound that it overwhelms its ability to adapt (see appendix II). Escalating violence and successful government arrests and seizures indicate that the Mexican drug trade is vulnerable. The real question is how Calderón's offensive strains the DTOs' elastic and adaptive capacities, which requires a closer examination of the mechanisms by which the military approach could succeed.

The exogenous shock of the military offensive could induce two major adaptations that would profoundly diminish Mexico's drug problem. First, by steeply escalating enforcement pressure in Mexico, the military offensive may raise the costs and risks of production and trafficking in Mexico sufficiently to squeeze production to other countries and shift trafficking routes back to the Caribbean.²⁴⁹ Already increased enforcement pressure and inter-DTO competition have compelled several Mexican DTOs (particularly Los Zetas and the Sinaloa Federation) to expand into Central America as a key staging ground for trafficking to the US, especially for cocaine from Colombia.²⁵⁰ In December 2010 the Guatemalan Government even declared a state of emergency in an effort to retake cities from the influence of Los Zetas in the department of Alta Verapaz on the Mexican border.²⁵¹ There is yet no indication, however, that this expansion *into* Central America represents a shift *out of* Mexico or a return to the Caribbean route. The shift is rather an extension of trafficking routes through Mexico to the American market. Given Mexico's optimal location, its 3 169 km land border with the United States, and its already established trafficking networks, it would likely take an immense amount of enforcement pressure to squeeze the drug trade out of such an ideal geography.²⁵²

²⁴⁹ Felbab-Brown, "The Violent Drug Market in Mexico," 3.

²⁵⁰ As El Salvadoran Defense Minister David Munguia explains, these DTOs are "moving their strategic rear guard to Central America." Quoted in: Wilkinson, "El Salvador becomes Drug Traffickers 'Little Pathway,'" ; See also: Randal C. Archibold and Damien Cave, "Drug Wars Push Deeper into Central America," *The New York Times* (23 March 2011).

²⁵¹ Rory Carroll, "Drug Gangs Seize Parts of Northern Guatemala," *The Guardian* (7 January 2011).

²⁵² Tony Payan argues that the high, inelastic American demand for illegal drugs coupled with its prohibition creates a lucrative profit margin that will continue to draw rational individuals into production and trafficking, while basic geography of the border and its immense opportunities for

The military offensive may succeed in a second way that is more central to its design as a kingpin strategy. By killing or arresting DTO leaders faster than they can be replaced, unleashing opportunistic competition between DTOs amid such transitions and putting constant pressure on drug operations, the government may trigger the collapse of today's large-scale DTOs and cause them to adapt into less threatening, smaller-scale organizational forms.²⁵³ In this sense, the military strategy is intended to replicate Colombia's struggle against its Medellín and Cali DTOs in the late 80s and early 90s.²⁵⁴ As the two DTOs wracked the state with violence, the Colombian government (with heavy American support) mounted large-scale surveillance operations and tactical raids targeting the leadership of these organizations, most notably Pablo Escobar and the Orejuela brothers.²⁵⁵ Without their leaders these organizations collapsed but were quickly replaced by the emergence of over 300 'baby cartels' – smaller and more loosely-organized groups operating in decentralized networks.²⁵⁶ Colombia's cocaine exports continued to increase and drug corruption of state officials remains pervasive;²⁵⁷ but these new groups cannot mount violence against the state on the devastating scale of the Medellín cartel, which executed a series of car bombings, systematically killed police officers and assassinated prominent politicians.²⁵⁸

illegal smuggling into the United States ensure that Mexico will remain a primary drug gateway (70% of drugs consumed in the US are smuggled over the US-Mexican border), (24-7); Calderón advisor Joaquín Villalobos writes: "The size of the narcotrafficking problem is determined by its vicinity to the United States, the largest drug consumer in the world, and by the consequences of this in terms of demand and flows of money and arms." Villalobos, translated by author; Felbab Brown, "The Violent Drug Market in Mexico," 3.

²⁵³ Felbab-Brown argues that "the state could prevail and succeed in breaking down the DTOs into a number of smaller and weaker crime groups that would continue conducting illicit business, but would not be able to generate great levels of violence. Such a state-crime relationship would resemble the U.S. or Western Europe today—crime, including drug trafficking exists, but it is not associated with paralyzing levels of violence, and state penetration by crime organizations remains limited. This scenario represents the optimal outcome, and it is the goal of president Calderón's efforts." "The Violent Drug Market in Mexico," 6.

²⁵⁴ Ted Galen Carpenter, "Mexico is Becoming the Next Colombia," *CATO Institute Foreign Policy Briefing* no. 87 (15 November 2005), 6.

²⁵⁵ For a detailed account of this strategy, see: Mark Bowden, *Killing Pablo: The Hunt for the World's Greatest Outlaw* (New York: Penguin Books, 2001); Ron Chepesiuk, *The Bullet or the Bribe: Taking Down Colombia's Cali Drug Cartel* (Westport CT and London: Praeger, 2003); Felbab-Brown, "The Violent Drug Market in Mexico," 15-7.

²⁵⁶ Juan Carlos Garzón, *Mafia & Co.: La Red Criminal en México, Brasil y Colombia* (Bogota: Planeta and Fundación Seguridad & Democracia, 2008), 12; Carpenter, "Mexico is Becoming the Next Colombia," 6; "Birth of the Baby Cartels," *Newsweek* (20 August 1995).

²⁵⁷ Felbab-Brown, "The Violent Drug Market in Mexico," 10, 17; H. Brinton Milward and Jörg Raab, "Dark Networks as Organizational Problems: Elements of a Theory," *International Public Management Journal* vol. 9 no. 3 (2006), 340, 343. Robert J. Bunker notes that while Colombia overcame an onslaught similar to that which confronts Mexico today, it "has never been the same and now, in many ways, resembles a narco-democracy." (10).

²⁵⁸ Felbab-Brown, "The Violent Drug Market in Mexico," 16-7.

Michael Kenney provides a detailed explanation of this transition in DTO structure. Based on accounts of captured drug traffickers, he explains that the Medellín and Cali DTOs were *wheel networks* in which a core group (hub) centrally coordinates different nodes responsible for specific stages of drug production and trafficking (see figure 3). Within wheel networks, decision-making and organizational knowledge are concentrated in a small cadre of leaders, leaving the organization vulnerable to head-hunting strategies due to their hierarchical structure.²⁵⁹ The level of hierarchy, however, is easily overstated. The Medellín and Cali cartels remained relatively flat organizations, with only three or four levels of management from top to bottom.²⁶⁰ Because this hierarchy was simultaneously a network of different nodes, however, the collapse of hierarchical 'wheel' arrangements simply prompted those nodes to form new arrangements closer to a *chain network* configuration (see figure 4). Within this network type, nodes relate in a diffuse, flexible and largely self-organizing (rather than centrally managed) pattern, passing the illicit product to another group at each stage in the supply chain.

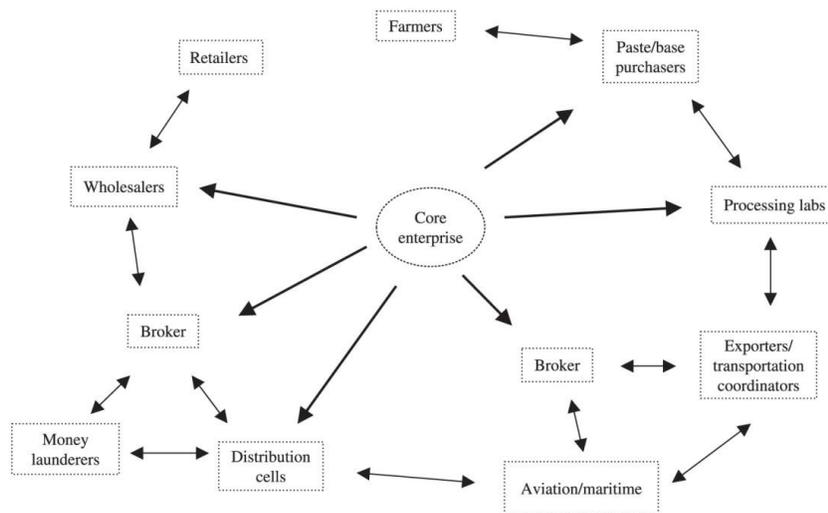


Figure 3: Wheel Network (some hierarchy)

²⁵⁹ Kenney, 243-4, 257.

²⁶⁰ Ibid., 247; See also: Bunker and Sullivan, 33-4.

based on clandestinity over one based on overt violence. The Colombian precedent thus suggests a key dilemma of the kingpin strategy: success renders the drug trade less of a threat to the state, but does so by causing its adaptation into a more complex, resilient, clandestine and elusive network.

The military offensive in Mexico could succeed by compelling such a phase transition in Mexican DTO organizational structures. As Mexican Attorney General Eduardo Medina Mora explained to former U.S. Drug Czar Barry McCaffrey, the goal of the military offensive is to break up today's large scale Mexican DTOs into 50 smaller scale organizations lacking comparable financial resources and firepower.²⁶⁵

Depending on environmental and especially enforcement conditions, the illegal drug market may configure into a variety of organizational forms varying in scale, degree of hierarchy and type of network. Intelligence on the Mexican DTOs suggests that they have central, hierarchically organized structures of leadership;²⁶⁶ but each organization also utilizes a network form by subcontracting many enforcement, trafficking, distribution and other criminal functions to affiliate gangs in both the US and Mexico.²⁶⁷ This mixture of hierarchy and networked nodes suggests that the Mexican drug trade is dominated by 7-9 large-scale, somewhat hierarchical wheel networks, similar to their Colombian predecessors.²⁶⁸ The scale and centralization of these organizations allow them to accumulate and concentrate capital sufficient to sustain their high capacity for violence and ability to create social order. We can understand the convergence on this particular DTO structure as an emergent property of present conditions in Mexico,²⁶⁹ and the military offensive as an attempt to change these conditions and thus compel an adaptation of drug market organizational structures into a less threatening configuration.

²⁶⁵ McCaffrey, 8. Similarly, President Calderón explains, "what happened in Colombia, and what's happening now in Mexico, is that when you confront these cartels, it generates a process of self-destruction that, clearly, weakens them". Quoted in: Tracy Wilkinson, "A Top Salvadoran Ex-Guerrilla Commander Advises Mexico's Conservative President," *The Los Angeles Times* (22 October 2010).

²⁶⁶ See the hierarchical organizational charts for each DTO in: Stratfor, *Mexican Drug Wars*.

²⁶⁷ Bunker, 10-15; Bunker and Sullivan, 43.

²⁶⁸ For example, the Los Zetas DTO may appear to adopt a military hierarchy, but is actually a horizontal network with only four levels of management. At the top is a small command of senior individuals providing strategic and operational level guidance and support. A second level operationalizes this guidance in certain specific areas and functions, whether finance, operational planning, or recruitment. The third and fourth levels are the small cells or groups that manage and carry out particular activities in specific areas of operation (Manwarring, 19-21). This is very similar to Kenney's description of the Colombian DTOs above.

²⁶⁹ As a precedent for this phenomenon, Lars Erik Cederman examines the emergence of the state as the common political-institutional form as an emergent property of the interaction of powerholders and environmental conditions, generating the state as an *emergent actor*. See: Lars Erik Cederman, *Emergent Actors in World Politics* (Princeton: Princeton University Press, 1997).

Many commentators interpret the escalating violence as an indication that such a transition is approaching.²⁷⁰ The complexity literature, however, raises two issues in relation to such optimism. First, because such thresholds emerge from the contingent interaction of a multitude of variables in often non-linear ways, it is near impossible to predict when one will be reached within a CAS.²⁷¹ While proponents of the drug war refer to the Colombian precedent, complex systems tend to exhibit sensitivity to initial conditions, and critics point out many important differences between the two countries.²⁷² The present violence could signal the proximity of the threshold, or it may take many more years of even more intense violence to reach a transition in DTO structures. Second, the nature of the transition (if achieved) has significant implications for the extent (and expense) of social order that the state must construct to sustain it. Figure 5 below presents three possible transition types that relate enforcement pressure to DTO scale.

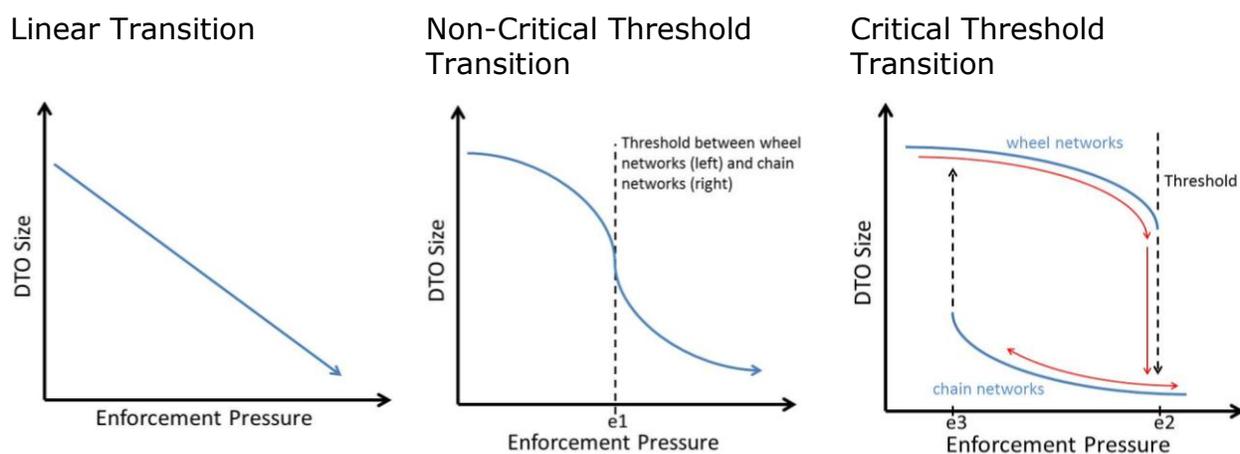


Figure 5: Different Transitions

²⁷⁰ For example, Diana Villiers Negroponte at the Brookings Institution argues: "The removal of "drug capos" and the fight by less experienced and more brutal lieutenants to replace them indicate a splintering among the drug cartels. The experience of Colombia teaches us that as the cartels fragment and reform, violence increases. Also, the nature of the violence becomes more atrocious because successors demonstrate their power through vicious acts of terrorism against citizens. Mexico is currently living through this stage of its 'war on drugs.' To many, the brutality indicates that the federal government is losing. However, Colombia's war in Medellín, Cali and Bogotá demonstrated that splintered organizations are more prone to state penetration. It sounds counter-intuitive, but the nature of Mexico's murder rate in 2010 must be understood as an indicator of cartel fragmentation and relative weakness."

²⁷¹ Schneider and Kay, 628-9.

²⁷² For example, In Colombia there were only two DTOs which were largely centred in single cities, whereas Mexico now confronts 7-9 DTOs each with multiple strongholds. Colombia was also in the midst of a genuine civil war which allowed it to draw on paramilitary structures that were not restrained by the rule of law. Further, whereas Colombia went after the DTOs one at a time, Calderón is taking them all on at once. See, for example, Felbab Brown, "The Violent Drug Market in Mexico," 19-20; Aguilar and Castañeda, 103-26 (chapter 6: Mexico and Colombia are Not the Same).

In the first possibility (linear transition) there is no threshold. Instead, increased enforcement capacity gradually lowers the average size of the DTOs. In the second possibility (non-critical transition), increases in enforcement pressure eventually reach a threshold (e1) marking a phase transition from large-scale wheel networks to small-scale chain networks. In the case of either a linear or a non-critical transition the state must constantly maintain a high degree of enforcement pressure in order to restrict DTO size. Reductions in enforcement will create conditions that favour the regrowth of large-scale organizational forms and, in the case of non-critical transition, the re-emergence of wheel networks.

The third possibility (critical transition) is not as reversible. Enforcement pressure moves DTO size along the top curve (wheel networks) until it reaches the threshold (e2) and drops to the bottom curve (chain networks). After this transition, enforcement pressure can be reduced as DTO size remains on the lower curve unless enforcement pressure recedes to the threshold e3 and DTOs return to the wheel network curve. A critical transition is thus the optimal outcome of the military offensive, because once achieved it allows a reduction in costly enforcement measures without causing a resurgence of today's large scale DTOs.

There is reason to believe that such a change in DTO structures will be a critical transition. The DTOs of today developed over decades, through multiple generations of key families who built large repositories of expertise and contacts (especially within the state).²⁷³ If enough key personnel are lost, the disruption of the present organizations may sever the institutional memory necessary to reconstitute large-scale organizational structures. Alternatively, Milward and Raab present a theory of dark networks based on case studies of al Qaeda and the Colombian cocaine market that emphasizes the "ebb and flow" of organizational principles of *integration* – the amalgamation of large scale structures with a high capacity for violence – and *differentiation* – the proliferation of small groups performing particular functions and comprising a more resilient and decentralized network.²⁷⁴ Within this conceptualization, a DTO organizational transition in Mexico will be a non-critical threshold that produces less threatening DTOs until a reduction of enforcement pressure enables integration in place of differentiation.

Ultimately, the nature of such a transition will only be discerned after it occurs. The key question of the moment is whether there are indications of fragmentation and transition in DTO organizational structures in Mexico. Presently the state is

²⁷³ Astoga and Shirk, 4-16.

²⁷⁴ Milward and Raab.

removing DTO leaders at an impressive and unprecedented pace.²⁷⁵ Two recent examples suggest that the military offensive and its concomitant inter- and intra-DTO violence are causing DTO fragmentation. First, Mexican Marines killed Arturo Beltran Leyva, leader of the Beltran Leyva Organization (BLO), in a December 2009 raid and captured his brother Carlos later the same month. The organization split between two rival successors into the Hector Beltran Leyva faction (rebranded as the Pacifico Sur DTO) and the Edgar 'La Barbie' Valdez Villareal faction. When Valdez was captured on 30 August 2010, his faction quickly collapsed.²⁷⁶ Its remaining members formed a third DTO, the Independent Cartel of Acapulco (CIDA), which is battling with the Pacifico Sur DTO for control of Acapulco's seaport.²⁷⁷

Second, Mexican security forces killed Nazario Moreno Gonzales, founder of the La Familia Michoacana DTO, in December 2010 and unleashed a power struggle between Jose de Jesus 'el Chango' Mendez and Servando 'la Tuta' Gomez Martinez over leadership of the organization. Gomez formed his own faction, rebranded as The Knights Templar, while Mendez was arrested in June 2011.²⁷⁸ Overall, the Mexican drug market has changed from 4 major DTOs in the early 2000s (Gulf, Sinaloa Federation, AFO and VCF) to 7-9 at present, mostly due to such splits.

In contrast to these two examples of DTO fragmentation, however, other DTOs have grown in scale and influence. For example, the Sinaloa Federation has not fractured but rather *expanded* its power and reach despite the government offensive.²⁷⁹ The picture remains mixed and ambiguous. Astorga and Shirk thus make a critical distinction between *fragmentation* – the government's goal of atomizing DTO networks – and *fractionalization* – the present phenomenon of new

²⁷⁵ Between January and April 2011, for example, state security forces captured 11 mid- to upper-level leaders of Los Zetas, including one of its founders, Flavio "el Amarillo" Mendez Santiago. Stratfor Global Intelligence, *Mexican Drug War 2011 Update* (21 April 2011), 2.

²⁷⁶ Ibid., 8-11; James C. McKinley Jr. and Elisabeth Malkin, "U.S. Student Became Mexican Drug Kingpin," *The New York Times* (8 September 2010).

²⁷⁷ Stratfor, *Mexican Drug War Update 2011*, 2.

²⁷⁸ Wilkinson, "Mexico Arrest may do Little to Change the Drug Cartel Equation,"

²⁷⁹ Stratfor, *Mexican Drug Wars*, 20. Stratfor recently noted that the Sinaloa Federation "is now the regional hegemon in the Western half of Mexico and is actively expanding its territory. Currently there are Sinaloa forces helping the Gulf Cartel battle Los Zetas in the northeast, slowly strangling the VCF in Juarez, running the show in Tijuana and fighting for supremacy in Acapulco.... In every case Sinaloa is gaining territory. While internal strife and external pressure from the Mexican military and federal law enforcement agencies have weakened all of the other cartels, the Sinaloa Federation has proved impervious to the turmoil – and it is growing." Stratfor, *Mexican Drug War 2011 Update*, 2.

factions emerging in place of old ones without fundamental changes to prevailing DTO structures.²⁸⁰

Even amid this fractionalization, drug production and trafficking continues to grow. U.S. Government sources indicate that marijuana smuggling from Mexico has doubled since 2004 to reach its highest level in two decades; poppy cultivation doubled between 2008 and 2009; and Mexican authorities are destroying increasing numbers of meth labs. Only cocaine availability declined in the U.S. during 2009 due to law enforcement efforts, several particularly large seizures and increased sales to Europe and West Africa.²⁸¹

In sum, while the Government's military offensive may weaken the DTOs and obstruct their operations, it has not yet overcome their elastic capacity (ability to replace personnel and product), and has not compelled an adaptation from large-scale wheel networks to small-scale chain networks. Two types of adjustments help bolster present DTO structures amid the military pressure. First, DTOs make shifting alliances that help them weather state incursions and shifts in the balance of power. While the AFO has largely disintegrated due to the loss of leaders and factional infighting, a turf-sharing agreement with the Sinaloa Federation may be keeping it in operation.²⁸² Los Zetas was once the enforcement wing of the Gulf DTO but fought openly with its former parent organization throughout 2010. The Gulf Cartel compensated by allying with the Sinaloa Federation and LFM while the Zetas made alliances with the VCF, AFO and Pacifico Sur DTOs, a coalition that helps the latter maintain its position in Michoacán against LFM.²⁸³ Second, DTO operations are highly fluid. When pressure from rival DTOs or the military pushes DTOs out of a particular area, they can make geographical adjustments to their operations. For example, Los Zetas were forced out of their stronghold in Reynosa in 2010, but have expanded operations throughout Mexico and into Central America and are likely preparing to retake their lost territory.²⁸⁴

While these adjustments prevent military pressure from triggering an adaptation of DTO organizational structures, the state offensive has driven two DTO adaptations that further bolster their resilience while generating more intense violence and criminality. First, increased enforcement pressure has prompted the DTOs to diversify their criminality. Second, the military offensive has escalated the paramilitarization of the DTOs. This section assesses these adaptations in terms of

²⁸⁰ Astorga and Shirk, 18.

²⁸¹ Biettel, 5-6.

²⁸² Stratfor, *Mexican Drug Wars*, 11-12.

²⁸³ *Ibid.*, 3-5; Stratfor, *Mexican Drug War 2011 Update*, 1, 10.

²⁸⁴ Stratfor, *Mexican Drug Wars*, 4-5; Stratfor, *Mexican Drug War 2011 Update*, 2.

the energy analysis developed in section two before concluding with an analysis of the bureaucratic limitations confronting the state's campaign.

By the end of 2010 the Calderón administration had seized \$11.2 billion in drugs, including the largest single cocaine seizure ever recorded (23.6 metric tonnes seized in November 2007),²⁸⁵ and the largest marijuana seizure ever made in

"...the state offensive has driven two DTO adaptations that further bolster their resilience while generating a more intense violence and criminality"

Mexico (134 metric tonnes seized in October 2010).²⁸⁶ Such achievements affect DTOs' need for a constant and reliable cash flow in order to purchase drugs and fund smuggling and enforcement.²⁸⁷ For those organizations most heavily engaged in fighting the government and rivals (particularly Los Zetas and the VCF), the core business of drug trafficking has become increasingly difficult and cash flow is a significant problem.²⁸⁸ The impact of successful government

enforcement efforts is considerable not because it ultimately reduces the flow of drugs to market (so far it has not, as explained above) but because it forces the DTOs to make significant adaptations in order to maintain these flows.

DTOs have adapted by diversifying their operations into other forms of organized crime to make up any shortfall in revenue. Migrant smuggling, for example, was once the purview of independent 'coyotes' but is now dominated by the DTOs who generate at least \$2 billion annually from the activity.²⁸⁹ Mexican human rights groups estimate that nearly 20 000 migrants were kidnapped in 2009, generally for ransom.²⁹⁰ Similarly, DTOs once used kidnapping solely to settle accounts with other DTOs and discipline their members. Today they kidnap individuals with no relation to the drug trade in order to supplement their revenues.²⁹¹ The Mexican Attorney General registers 72 kidnappings each month while the Citizen's Institute

²⁸⁵ United States Department of Justice, 4.

²⁸⁶ Randal C. Archibold, "Marijuana Bonfire Celebrates a Fragile Calm,".

²⁸⁷ Stratfor, *Mexican Drug Wars*, 15.

²⁸⁸ *Ibid.*, 8, 15.

²⁸⁹ Bunker, 18.

²⁹⁰ Randal C. Archibold, "Massacre sets off New Fears in Mexico," *The New York Times* (27 August 2010). Los Zetas in particular are known to lure migrants with fake internet offers of employment and migration, then hold them for ransom from their family or force them to work for the DTO, often by smuggling drugs into the US. The Zetas are also blamed for the August 2010 massacre of 72 migrants who apparently refused to collaborate. See: Bunker, 20; Felbab-Brown, "The Violent Drug Market in Mexico," 2; "Massacre in Tamaulipas," *The New York Times* (29 August 2010). The VCF is also known to be involved in migrant smuggling via Juárez. Stratfor, *Mexican Drug War 2011 Update*, 8.

²⁹¹ Felbab-Brown, "The Violent Drug Market in Mexico," 1.

for Crime Studies places the number at over 500, the majority of which are not reported.²⁹² While some kidnappings target high profile individuals for ransoms in the tens of millions, the majority generate much less and include even ATM extortion targeting the poor.²⁹³ Kidnapping operations are believed to have helped the VCF DTO survive heavy fighting around Ciudad Juárez.²⁹⁴

The DTOs are also involved in arms trafficking, money laundering, armed robbery, counterfeiting, electronic fraud, piracy – 22 different types of criminality in all.²⁹⁵ While kidnapping, theft, community taxation and the arms trade are estimated to generate less than a billion dollars each year individually, money laundering may produce \$8.6 billion.²⁹⁶ This evolution into poly-criminal organizations helps the DTOs withstand the strains of military pressure on the drug business;²⁹⁷ but it also escalates the level of violence and criminality plaguing Mexico. Since the beginning of the military offensive in 2006, Mexico has experienced increased numbers of intentional homicides, kidnapping, car theft, property theft and extortion.²⁹⁸

A second key adaptation that bolsters the present large-scale DTOs against the state's military strategy is the coevolution of their increasing capacity for violence.²⁹⁹ As the US Drug Enforcement Administration (DEA) explains, the Mexican drug trade has experienced a "transition from the gangsterism of traditional narco hit men to paramilitary terrorism with guerrilla tactics."³⁰⁰ This adaptation began decades ago as the DTOs replaced the regulation formerly provided by the state with their own coercive capacity. By 2003, the DTOs had gained such military capacity that they could openly and directly confront the military forces of the state.³⁰¹ Calderón's military offensive and the inter-DTO struggles it aggravates only increase the premium on DTO coercive capacity. Amidst the heavy violence, the schema most vital to success has shifted from

²⁹² McCaffrey, 6.

²⁹³ Bunker, 19; McCaffrey, 6. Kidnaps may bring in ransoms as high as \$30 million, but they are generally in the range of \$10-\$30 thousand.

²⁹⁴ Stratfor, *Mexican Drug Wars*, 12; Stratfor, *Mexican Drug War 2011 Update*, 8.

²⁹⁵ "Point Person: Our QandA with Edgardo Buscaglia,".

²⁹⁶ Bunker, 15-21.

²⁹⁷ Indeed, Stratfor credits the Sinaloa Federation's diversification of revenue streams - "from narcotics to Avocados" - for its staying power. Stratfor, *Mexican Drug War 2011 Update*, 4.

²⁹⁸ Negroponte.

²⁹⁹ Bunker and Sullivan, 42-3.

³⁰⁰ Quoted in: Turbiville, 124. Similarly, one U.S. Alcohol, Tobacco and Firearms (ATF) special agent comments: "Back in the 1990s, we were still seeing small calibre handguns and single-barrel shotguns... But from around 2004 onwards, we saw an upswing in military-style weapons – like AK47 and AR-15 clones and high-capacity 9mm pistols... Whatever the Mexican military is using, the cartels want." Quoted in Kingstone, "Mexico's Drug War: Made in the US".

³⁰¹ Turbiville, 131, 133-5.

business and criminality (which remain central) toward sophisticated military aptitudes, and the DTOs have shifted from mere criminal networks to specialized military forces.³⁰² This system-level adaptation largely explains the rise of Los Zetas and LFM, relatively new DTOs known for their brutal violence.³⁰³ Other organizations have adapted by contracting enforcer gangs including the Aztecas, Los Negros, La Linea, Polones and the Central American Maras.³⁰⁴ Former US Drug Czar General Barry McCaffrey describes the formidable capacity of the Mexican DTOs today:

The outgunned Mexican law enforcement authorities face armed criminal attacks from platoon-sized units employing night vision goggles, electronic intercept collection, encrypted communications, fairly sophisticated information operations, sea-going submersibles, helicopters and modern transport aviation, automatic weapons, RPG's, Anti-Tank 66 mm rockets, mines and booby traps, heavy machine guns, 50 cal sniper rifles, massive use of military hand grenades and the most modern models of 40mm grenade machine guns.³⁰⁵

This rising military capacity enables increasingly audacious DTO tactical operations.³⁰⁶ In retaliation for the arrest of leader Arnoldo Rueda Medina, for example, the LFM organization launched 15 coordinated attacks on police stations and officers in 8 cities spanning three states over just two days in July 2009. One attack hijacked a bus and killed all 12 Federal Police officers on board. Another saw two SUVs pull up to the Federal Police station in Zitacuaro, launch a grenade attack followed by a machine gun barrage, and then flee, all in just two minutes.³⁰⁷

DTO tactics continue to escalate. On July 15, 2010, La Linea, an enforcer gang for the VCF Organization, became the first group to employ an improvised explosive device (IED), killing four state officials and wounding several others. With subsequent car bomb attacks in Tamaulipas and Nuevo León states, many fear an escalation of terrorist tactics (though IED attacks have not yet targeted civilians).³⁰⁸ Meanwhile, the nationwide homicide rate rose from 11 per 100 000 in 2008 to 14 in

³⁰² Bunker and Sullivan, 34.

³⁰³ Hawley.

³⁰⁴ For a full listing of enforcer gangs in Mexico and the US contracted by the Mexican DTOs, see: Bunker, 12.

³⁰⁵ McCaffrey, 6. McCaffrey also comments: "Mexican authorities routinely seize BOXES of unopened automatic military weapons. The confiscation rates by Mexican law enforcement of hand grenades, RPG's, and AK-47's are at the level of wartime battlefield seizures." (7).

³⁰⁶ Turbiville, 124.

³⁰⁷ Hawley.

³⁰⁸ Biettel, 1; Stratfor, *Mexican Drug Wars*, 12, 16.

2009.³⁰⁹ As the US State Department comments: "Criminal gangs are now often in the control of more erratic and violent subordinates, leading to more killings and less predictable behaviour."³¹⁰

Thus while the military offensive can be understood as an attempt to force an adaptation in DTO structures, the drug trade has adapted in two different ways that allow it to withstand the pressure while escalating violence and criminality in Mexico. Drug resources enable high levels of adaptability, flexibility and resilience, so that change is hard to predict and control.

The previous section, however, highlights one sense in which these adaptations may constitute progress for the state. The diversification into non-drug forms of organized criminality represents a shift to resource bases with lesser EROI, even though these other activities remain highly profitable. When violence escalates, revenues decrease as risks increase because more must be invested in the transactions costs of enforcement. Further, the more the DTOs relate to communities (for example through protection and taxation as discussed in the first section), the greater the level of administrative organization they require. And finally, the drug trade increasingly displays a sophisticated level of specialization in its various functions – including multiple military specializations ranging from counter-intelligence to tactical assault, for example.³¹¹ Within Tainter's framework, these changes constitute a declining EROI and more rigid forms of complexity that could erode the present resilience of the drug trade and create new vulnerabilities. For example, some analysts posit that the rising violence indicates that DTOs are losing the ability to control the various contractors and enforcers they hire.³¹²

While we lack the metrics with which to assess such a prospect, this energy analysis does reveal something fundamentally important about the drug trade: not all adaptations are equal, and adaptability is not infinite. In some cases, such as smuggling drugs over the border, there is a wide range of cheap but effective adjustments the DTOs can make amid enforcement efforts. As such, Tony Payan

³⁰⁹ Biettel, 22.

³¹⁰ Quoted in: Hawley.

³¹¹ This systematic 'ramping up' of military capacity is an example of structural deepening whereby competition within the system causes each actor to increase its organizational complexity in order to meet new challenges. See: Homer-Dixon, "Complexity Science and Public Policy," 3.

³¹² Bunker 10-11; Further, as the Mexican military has arrested or killed DTO members, the DTOs are forced to recruit members with less expertise and experience who are often more violent and less disciplined, creating new risks and vulnerabilities in their organizations. Villalobos; Stratfor, *Mexican Drug War 2011 Update*, 3.

notes that "what does not kill [the DTOs] only makes them stronger"³¹³ and indeed border enforcement often eliminates small scale smuggling operations to the benefit of better financed organizations. In other cases, however, adjustments and adaptations may entail switching to progressively less optimal methods which erode EROI, ramp up organizational complexity and create potential vulnerabilities – as in the DTO shift toward less lucrative and more demanding forms of organized crime. If such changes create the potential for collapse, they may force the drug trade to make even more profound adaptations – at the level of organizational structures, for example.

This process, however, is not likely to unfold if the Mexican state cannot sustain its enforcement efforts due to the constraints of its bureaucratic complexity. The use of the military is eliciting growing public outcry over the escalating violence and abuses of the drug war. In January 2009, for example, protesters confronted Calderón during a presidential visit to Ciudad Juárez (which suffered 2600 drug-related deaths the previous year) demanding the withdrawal of the army.³¹⁴ The next month public protests against the military's role in the drug war shut down parts of Monterey and border crossings in Reynosa, Nuevo Laredo, Matamoros and Ciudad Juárez.³¹⁵ More recently, the first weekend of May 2011 saw hundreds march fifty miles from Cuernavaca to Mexico City where they were joined by thousands more to demand an end to the drug war and even a government accommodation with the DTOs.³¹⁶

The ultimate risk of the military strategy is that it may be self-defeating as a means of fortifying the rule of law as the foundation of state-based social order in Mexico. On the one hand, rampant police corruption and the paramilitary capacities of the DTOs force the government to use the military.³¹⁷ On the other hand, prolonged

³¹³ Payan explains: "Whenever the U.S. government attempts to escalate the drug war, the cartels change their modus operandi: they invest in more sophisticated methods to smuggle drugs across the border, they recruit new members, they corrupt more officials, and they seek innovative ways to remove obstacles to the business of the organization, etc." (29-30).

³¹⁴ Finnegan.

³¹⁵ While Mexican authorities proposed that the demonstrations were organized by the DTOs, they more likely reflect public frustration with the lack of security and escalation of the violence. Felbab-Brown, "The Violent Drug Market in Mexico," 20.

³¹⁶ Dudley Althaus, "April Death Toll Highlights Trauma of Mexican Bloodbath," *The Houston Chronicle* (4 May 2011). The protest was led by poet Javier Sicilia whose innocent son was killed in the drug war. Sicilia commented: "The state controls nothing... Felipe Calderón wants to listen, but the country is no longer in his hands. He has no vision. He cannot imagine a better world. He does not see that the cruelty and impunity -- and the killing -- can also be blamed on our failing institutions." Quoted in: William Booth, "Mexicans Protest Drug War with Silent March," *The Washington Post* (8 May 2011).

³¹⁷ Government of Mexico, 67. As Joaquín Villalobos explains: "The dimension of the threat created by the cartels; the firepower, number of assassins and level of organization of criminal structures; the moral crisis and problems of cooptation of state and municipal police in conflict zones; the limited

military deployment is generating mounting violations of human rights and civil liberties. Citizens' complaints against the military include its use of arbitrary detention, rough treatment and torture of suspects, unauthorized searches and seizures and inappropriate rules of engagement leading to civilian deaths.³¹⁸ One report by Human Rights Watch documents 17 cases of military abuses in which over 70 victims suffered rape, torture, killing and arbitrary detention at the hands of the military, none of which were officially investigated.³¹⁹ In these ways the prolonged use of the military in an internal security role may undermine the rule of law and democratic accountability its deployment is ultimately intended to achieve.³²⁰

The coming 2012 elections will ultimately determine whether the military campaign can be sustained in a democratic context. A public poll conducted in October 2010 revealed that for the first time, a plurality of the population considers the government's campaign a "failure".³²¹ In a leaked US diplomatic cable from October 2009, The US Embassy quotes Mexican Deputy Minister of the Interior Geronimo Gutierrez as saying "We have 18 months [left in the Calderón administration] and if we do not produce tangible success that is recognizable to the Mexican people, it will be difficult to sustain the confrontation into the next administration."³²² Even if the government believes military action to be necessary, in a democratic context this public outrage could force a return to the barracks. This dilemma represents a key constraint arising from the hierarchical rules of bureaucratic complexity.

quantity of personnel provided by the Federal Police; the transnational character of the narco-trafficking problem and, finally, at the roots, the social force and territorial dominance of organized crime in certain areas of Mexico." Villalobos, translated by author.

³¹⁸ Mieners and Burton; Felbab-Brown, "The Violent Drug Market in Mexico," 20.

³¹⁹ Human Rights Watch, *Uniform Impunity: Mexico's Misuse of Military Justice to Prosecute Abuses in Counternarcotics and Public Security Operations* (New York: Human Rights Watch, April 2009).

³²⁰ Velasco argues: "By undermining the rule of law and democratic accountability, fostering 'militarization,' and provoking human rights violations, [the drug trade] challenges the alleged democratic nature of recent political change in Mexico." (91).

³²¹ "Falling Kingpins, Rising Violence,".

³²² Wilkinson, "WikiLeaks Cables Reveal Unease over Mexican Drug War,".

Conclusion: Security as Control versus Security as Resilience

This paper used concepts from the complexity science literature to elucidate several important relationships between resources, violence and social order within Mexico's war on drugs. In contrast to accounts that interpret the violence as the absence of order, this paper argues that the violence is a part of rival processes of order formation. The first section drew upon numerous theoretical sources to develop a framework in which resources (depending largely on their licit or illicit nature) support either state based social order or non-state (criminal) social order, and the incompatibility of these two systems of resource extraction generates violent conflict rather than coexistence in their interaction. It argued that the war on drugs is a part of an incomplete democratic transition in which the state pursues the rule of law while the Mexican DTOs create broad patterns of social order and even governance outside of the rule of law. While some interpret illegal drugs as a narrow problem of law enforcement, these sections suggest it is a much more complex problem of competing development that confounds simplistic fears of 'state failure' with myriad possible configurations of governance in Mexico's future.

While other accounts of the drug war tend to focus on particular actors, this paper elucidates the system-level dynamics of the conflict by focusing on its resource foundations. Examining the drug trade and the state as rival systems of resource extraction, the second section used energy analysis to show that the nature of their respective resource bases affects their ability to create patterns of organization, contributing to the adaptive flexibility of the drug trade and the rigid bureaucratic complexity of the state. The third section demonstrated that these characteristics affect the dynamics of the violent conflict. While the state is attempting to force a systematic adaptation of DTO organizational structures that would reduce the threat posed by the drug trade, DTOs have instead adapted in other ways that allow them to withstand the pressure while escalating violence and criminality. Within the rules of democracy, the intensification of the violence may ultimately

render the military campaign unsustainable. This paper thus identifies system-level dynamics that are not adequately understood in reference to particular organizations and actors and are likely to persist even if the kingpins and DTOs of today disappear. Ultimately, this analysis demonstrates that the drug trade enjoys systematic advantages in the present struggle.

The drug war in Mexico supports several broader observations about the relationship between resources, violence and social order. First, although countless other variables may intervene, the extraction of resources has a strong influence on the character of social order in a society. The existence of a lucrative resource base outside of state control fosters the growth of alternative patterns of social order and the potential for intense armed violence. Second, the character of resources (energy quality) and the character of the extraction regime (the organization of the drug trade into large-scale wheel networks or diffuse chain networks) have important implications for violence and social order. Third, while armed conflicts, such as the drug war in Mexico, are often understood as a struggle between the forces of order and the forces of disorder, this paper suggests that such conflicts are better conceived as contests between rival patterns of order. We can learn much about the dynamics of these struggles by examining the ability of different order-makers to convert available resources into social complexity. Finally, this paper demonstrates that concepts from complexity science, including thermodynamics, resilience, adaptation, and critical transitions, can be productively applied to social phenomena.

Of even greater importance, this paper provides a highly illustrative case study for a fundamental shift in security paradigms. Perhaps the most important innovation in the recent security governance literature is Emilian Kavalski's delineation of a new 'security as resilience' paradigm based in the complexity literature from traditional 'security as control' approaches.³²³ Security as control is based on Newtonian assumptions of a universe marked by gradual and predictable change. It presumes the human ability to deliberately impose order on reality using problem-solving approaches to discrete threats. Security as resilience emphasizes instead the ability of a society to perpetuate itself by adapting to unforeseen stresses in a world of non-linear and unpredictable change. It focuses on our ability to adapt to a reality beyond our control. The above analysis of the drug war in Mexico reveals when and why a security as control approach is inadequate, and what a security as resilience approach to such challenges might look like.

³²³ Emilian Kavalski, "The Complexity of Global Security Governance: An Analytical Overview," *Global Society* vol. 22 no. 4 (October 2008), 423-43.

Calderón's military offensive comprises a 'security as control' approach insofar as it uses traditional military means to eliminate or control the drug trade, which is understood as a discrete 'threat'. The nature of the drug trade as a complex adaptive system, however, confounds the security as control approach. The self-organizing properties of the Mexican DTOs enable immense flexibility and resilience that defy government plans. The kingpin strategy, as explained above, is an attempt to force a directed adaptation in DTO organizational structures into a less threatening configuration. With such a broad range of possible adjustments and adaptations available to DTOs (largely stemming from their high-quality energy base), they have resisted this change by diversifying their criminality and escalating their military capacities. The government attempt to control change in the drug trade has generated unintended perverse effects. More fundamentally, a strategy directed at key leaders within particular DTOs is unlikely to eliminate or seriously disrupt a system that can reorganize itself without central planning. These dynamics comprise the basic inadequacy of the security as control paradigm amid a complex challenge such as the drug trade.

The security as resilience paradigm applies to challenges that are too complex to be controlled or eliminated. It concerns the ability of societies to remain resilient and adaptable, limit their rigidities and reduce vulnerability to shocks in a world of unpredictable and uncontrollable change.³²⁴ According to Kavalski, "*security as resilience* indicates an ability *to cope* successfully with challenging or threatening circumstances, *to defy* destructive pressures and *to construct* new proficiency out of unfavourable conditions."³²⁵ The paradigm hinges on how societies choose to deal

"Security as resilience concerns the ability of the drug trade and the state to convert their available resources into competing patterns of social complexity"

with problems that are beyond control and cannot be eliminated, particularly in terms of how they avoid rigidity, promote adaptability and steer change in favourable directions when it cannot be stopped.

This paper suggests the basic outlines of such an approach to the drug trade in Mexico. Security as resilience concerns the ability of the drug trade and the state to convert their available resources into

competing patterns of social complexity. In particular, it involves the state's ability to exclude and eliminate the drug trade while providing an effective and resilient

³²⁴ As one of the New Synthesis documents explains, resilient systems are able "to adapt and adjust to unforeseen events, to absorb change, and to learn from adversity." Quoted in: Homer-Dixon, "Complexity Science and Public Policy," 7.

³²⁵ Kavalski, 434.

form of governance throughout Mexico. It would focus on the ways in which the increasing spending on combating the DTOs (and creating the extensive patterns of social order necessary to exclude their influence) is ramping up the rigidities and bureaucratic complexity of the Mexican state, overextending its resources and leaving it potentially vulnerable to the myriad other problems that confront it today.³²⁶ It would also note that the adaptive possibilities of the drug trade are not infinite and map the finite possibilities for change available to the DTOs, particularly how these erode the energy quality of its resource base and create new vulnerabilities, as well as the ways in which extraordinary enforcement pressure might leave the drug trade out of options in Mexico.

The findings of this study, situated within the security as resilience paradigm, ultimately yield important policy implications for Mexico's war on drugs. Insofar as the order-making and violent capacities of Mexican DTOs are rooted in the profitability of their resource base and the high-quality nature of illegal drugs stems from their international prohibition, this paper is highly relevant to the debate about legalizing drugs as one possible way in which societies may adapt to the persistence and resilience of the illegal drug trade. A June 2011 report of the Global Commission on Drug Policy (which includes former heads of state from Mexico, Colombia and Brazil), for example, declared that the "global war on drugs has failed" and encouraged "experimentation by governments with models of legal regulation of drugs to undermine the power of organized crime and safeguard the health and security of their citizens."³²⁷ Legalizing the production, marketing and consumption of drugs would erode the energy quality of the resource by subjecting it to free-market competition while bolstering state finances with a significant addition to the tax base that could be used to address the structural drivers of organized crime. The analysis presented here provides a possible basis for future research on this policy option. Such a drastic change of strategy may seem far off, but without fundamental alteration of the present situation, Mexico will likely be condemned to a further escalation of violence and criminality.

³²⁶ These problems include: the presence of at least 15 non-drug-based insurgencies in Mexico, which, while largely dormant today, could escalate their challenge to Mexico's democratic transition; the ongoing risk of financial instability in an economy that declined by 6% amid the global financial crisis in 2009 and carries a public debt of 41.5% of GDP (according to the CIA); the rising welfare and public goods demands placed upon the state by an expanding democratic polity; and the continuing decline in oil revenues which have long served as a key resource base for the Mexican state.

³²⁷ Global Commission on Drug Policy, *War on Drugs: Report of the Global Commission on Drug Policy* (June 2011), 2.

Appendix I: Major Mexican DTOs

The following are the major DTOs presently operating in Mexico:

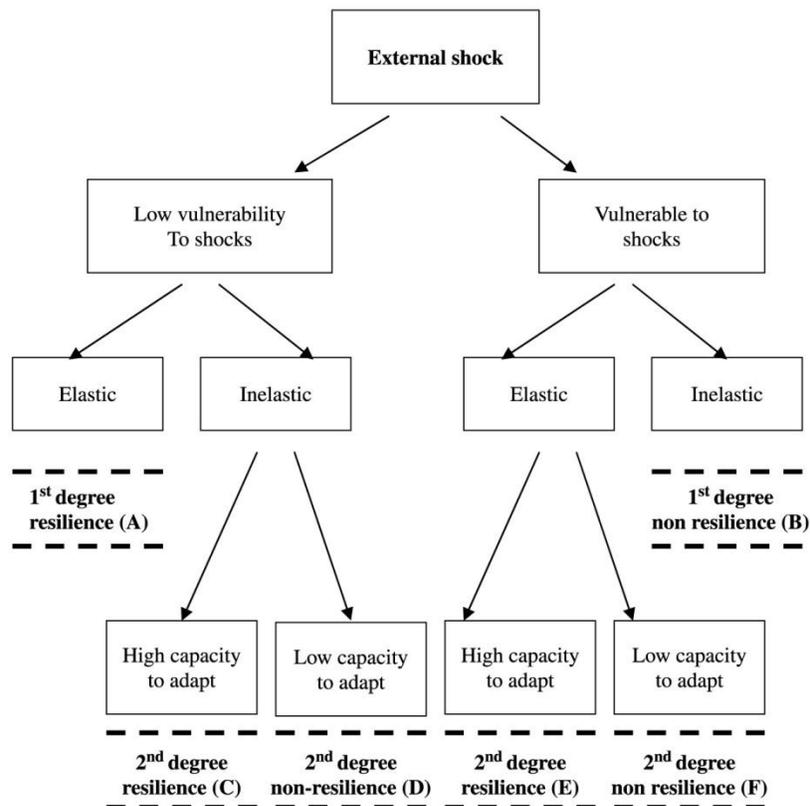
- Arellano Felix Organization (aka the Tijuana DTO)
- Beltran Leyva Organization (recently split into the Pacifico Sur DTO and the Independent Cartel of Acapulco)
- La Familia Michoacana
- Gulf DTO
- Independent Cartel of Acapulco
- Knights Templar (recent offshoot of La Familia Michoacana)
- Pacifico Sur DTO
- The Sinaloa Federation
- Vincente Carrillo Fuentes DTO (aka the Juárez DTO)
- Los Zetas

DTO areas of operation (as of April 2011) are mapped below:



Source: Stratfor Global Intelligence. *Mexican Drug War 2011 Update* (21 April 2011), 1.

Appendix II: Martin Bouchard's Framework on the Resilience of Illegal Drug Markets



Source: MartinBouchard, "On the Resilience of Illegal Drug Markets," *Global Crime* vol. 8 no. 4 (November 2007): 339.

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