

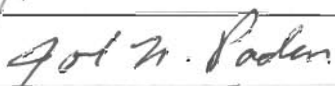
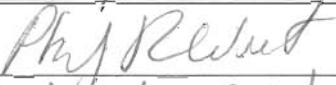
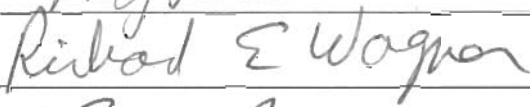

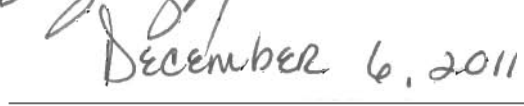


THE POLITICAL ECONOMY OF AUTOCRACY: INSIGHTS FROM ECONOMIC
THEORY, ANALYTICAL HISTORY AND THE EXPERIMENTAL LABORATORY

by

Jason Arentz
A Dissertation
Submitted to the
Graduate Faculty
of
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in Partial Fulfillment of
The Requirements for the Degree
of
Doctor of Philosophy
Economics

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and the Experimental Laboratory

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Doctor of Philosophy at George Mason University

By

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Master of Arts
George Mason University, 2008

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Fall Semester 2011
George Mason University
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DEDICATION

This work is dedicated to the voice of freedom, and to the tens of millions who died of violent starvation when that voice, already dim, was silenced.

ACKNOWLEDGEMENTS

First and foremost, I must offer my most sincere gratitude to Professor Rowley, whose vision and advising was instrumental to my success. Sir, I was frantically spinning wheels in a fog until you helped me find direction and traction. Though your retirement is well earned, the university, the department, and especially the students lament losing an outstanding scholar and advisor. Your work continues, and we carry it on as well, remembering always that freedom blooms even when tyranny threatens to freeze the world. It has been an honor working with you, and I thank you.

I am grateful to Professor Omar Al-Ubaydli for overseeing my experiment and for his ongoing commentary on the early chapters, and to Professor John Paden for guiding me into the literature on critical historical analysis.

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TABLE OF CONTENTS

	Page
List of Tables	vii
List of Figures	viii
Abstract	ix
OVERVIEW.....	1
CHAPTER 1. A POLITICAL ECONOMIC MODEL OF AUTOCRACY, IN THE SPIRIT OF RONALD WINTROBE	4
<i>Introduction</i>	4
<i>Model</i>	5
<i>When κ_0 poses a binding constraint</i>	14
<i>Optimal solutions and exogenous economic shocks</i>	16
<i>Notes on notation and structure</i>	21
<i>Concluding remarks</i>	22
CHAPTER 2. SELECTORATE THEORY IN THE EXPERIMENTAL LABORATORY	23
<i>Introduction</i>	23
<i>Simple economic model of the selectorate</i>	25
<i>Experimental approach</i>	32
<i>Hypotheses</i>	34
<i>Experiment Design</i>	34
<i>Results</i>	36
<i>Discussion</i>	38
<i>Concluding Remarks</i>	41
CHAPTER 3. INTRODUCING HETEROGENEITY INTO SELECTORATE THEORY	42
<i>Introduction</i>	42
<i>Influence</i>	45
<i>Basic Model</i>	47
<i>Equilibria and Price Discrimination</i>	49
<i>Conclusion</i>	50
CHAPTER 4: CRITICAL CASE STUDY OF JOSEPH STALIN'S USSR	51
<i>Introduction and Methodology</i>	51
<i>Setting the scene</i>	52
<i>Psychology of Stalin</i>	57
<i>Autocratic modeling of Stalin</i>	60
<i>Limitations</i>	66

<i>Coalition maneuvers during the interregnum, 1924-1929</i>	68
<i>Entrenchment on the path to tyranny, 1929-1932</i>	70
<i>Famine in the breadbasket, 1932-1933</i>	71
<i>Stalin's constitution, the Great Purge and Moscow Show Trials, 1933-1938</i>	74
<i>Epilogue: Stalin's death, Khrushchev's thaw 1953-1964</i>	79
<i>Conclusion</i>	80
CHAPTER 5: CRITICAL CASE STUDY OF MAO ZEDONG'S CHINA	82
<i>Introduction</i>	82
<i>Ancient context</i>	83
<i>Setting the scene</i>	89
<i>The Taiping analogy</i>	90
<i>The fall of Qing</i>	94
<i>Establishment of the Chinese Communist Party</i>	100
<i>Psychology of Mao</i>	102
<i>Autocratic modeling of Mao</i>	110
<i>Limitations</i>	117
<i>Testing communes on Jinggang Mountain, becoming a warlord, 1928</i>	119
<i>Rise to power in the Long March, 1934-1936</i>	121
<i>Weathering the war, consolidating ideology, nurturing the cult, 1936-1948</i>	124
<i>The People's Republic of China, 1949</i>	130
<i>Death of Stalin, birth of the General Line 1953</i>	131
<i>Great Leap from 100 flowers into famine, 1957-1962</i>	133
<i>Cultural Revolution 1966-1969</i>	140
<i>Aftermath, infirmity, and the rising Gang of Four, 1971-1976</i>	142
<i>Calamities and death, 1976</i>	144
<i>Conclusion</i>	144
CONCLUDING REMARKS	147
APPENDIX 1: GENERALIZED ALGEBRAIC FORM OF AUTOCRAT'S CHOICE	160
APPENDIX 2: INSTRUCTIONS AND SCREEN SHOTS	164
APPENDIX 3: GROWTH DATA FOR CHINA 1949-1979	178
REFERENCES	179

LIST OF TABLES

Table	Page
Table 1: Model Summary	13
Table 2: Data by session and treatment	37
Table 3: Soviet production in raw output by year	62
Table 4: Comparison of income and production statistics.....	64
Table 5: Growth data for China	178

LIST OF FIGURES

Figure	Page
Figure 1: Three images of loyalty and repression.....	9
Figure 2: Higher consumption levels involve smaller iso-budget rings	11
Figure 3: Iso-budget and iso-power curves for the three functions of loyalty.....	11
Figure 4: The rising minimum-power level constricts the autocrat's options.	14
Figure 5: Autocrat's utility contour in $\lambda\sigma U$ -space when substituting $B-\lambda-\sigma$ for C	16
Figure 6: Regime types.	17
Figure 7: Equilibria after a negative shock to economic performance, γ	20
Figure 8: Extensive form of the experiment	27
Figure 9: Logrithmic comparison of growth statistics.....	63
Figure 10: As the country's productive capacity expands.....	65
Figure 11: Chinese Gross National Product	113
Figure 12: Chinese per capita Gross National Product.....	114
Figure 13: Diagram of Mao's power over time, as expenditures	116
Figure 14: Diagram of Mao's power over time, as loyalty and repression.	117

ABSTRACT

THE POLITICAL ECONOMY OF AUTOCRACY: INSIGHTS FROM ECONOMIC THEORY, ANALYTICAL HISTORY AND THE EXPERIMENTAL LABORATORY

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George Mason University, 2011

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This dissertation coordinates multiple methodologies and lines of research with the goal of understanding power and autocracy. I present here results and insights from theory, experiments, and analytical history.

In my first chapter, I construct a public choice model of autocracy inspired by the seminal contributions of Gordon Tullock (1980) and most especially by Ronald Wintrobe (1998). By focusing attention primarily on autocratic expenditures – the actual variables of choice – I uncover internal equilibria that differ, sometimes significantly, from those uncovered by Ronald Wintrobe's four models. I also identify and resolve a few relevant ambiguities. The comparative statics regarding autocratic responses to external economic shocks for the most part qualitatively conform to those identified by Ronald Wintrobe, with the important exception of the tinpot-dictatorship model. This paper should add to

the seminal work of Ronald Wintrobe to provide a powerful theoretical basis for empirical research into the behavior of autocratic regimes.

My second chapter presents the first direct laboratory test of selectorate theory.

Selectorate theory uses the relative size of the minimum winning coalition to predict the behavior of autocrats and other political leaders, based on the logic of political survival.

To test this theory, I designed an experiment with two treatments that differed only in the institutional variable of minimum winning coalition size. I report here two main results.

First, consistent with the theory, smaller minimum winning coalition systems lead to greater kleptocracy and regime longevity. Second, contrary to the theory, I find no evidence that leaders increased public goods spending when the minimum winning coalition size increased. Since public goods helped secure support from out-group selectors, participant “leaders” viewed public goods as insurance against coalition defectors. However, when minimum coalitions were large, competition from the challenger was fiercer, so the “insurance”, like kleptocracy, was a luxury they could not afford.

In chapter three, I introduce selectorate heterogeneity into the model. By doing so, I am able to endogenize the size of the minimum winning coalition on the basis of the distribution of power. Therefore, while a small coalition from the population might exert authority over the majority, it must specifically contain the most powerful individuals to do so. I find that if the assumption of uniform payments is maintained, then the autocrat

will prefer the winning coalition with the smallest number of members. If uniformity is relaxed, then the autocrat can manage with many different compositions. However, if information and transaction costs are salient, then the dictator will choose compositions with fewer members. This expansion to the standard selectorate model renders the theory closer to real world examples, and therefore more useful as a tool for critical case studies.

In chapter four I apply the theories to case studies in Stalinist USSR, from 1921 to 1956. I find that both theoretical frameworks provide useful tools for deepening our understanding of the key moments under consideration. I find that the dominant factors are the increasing level of productive capacity available to Stalin, and the increasing concentration of his minimum winning coalition. Stalin's personality aligned closely with the utility functions used by the theories. However, the historic implementation of repression and loyalty required more careful consideration and exploration. I find that Stalin's power grew continuously through his reign, becoming tyrannical around 1931 at the onset of the Holodomor, and tipping into totalitarianism in the late thirties with the Great Purge.

My fifth chapter repeats the process for case studies in Maoist China. Again, access to productive capacity dominated Mao's political cycle. His power grew after the founding of the People Republic of China until he was surprised by the catastrophic failure of the Great Leap Forward, late in 1959. His power fell *pari passu* with the nation's wealth, but did not return immediately with its recovery. He instead returned to totalitarian authority

along with a massive change in the selectorate and winning coalition during his Cultural Revolution in 1969.

OVERVIEW

This work is an exploration of power. In particular, how do the institutions of power drive the behavior of those who wield it? I aim to understand and explicate this single question by converging multiple lines of inquiry upon it. Those lines are abstract theory, laboratory experimentation, and critical case studies in analytical history. At all times, I maintain the political economic assumptions that the leaders in question have various goals and desires that they seek to accomplish by political ends, and that they are bound by scarce resources and the desire for political survival. Whatever their desires may be, the political apparatus is only available to them so long as they maintain and accumulate power. Therefore, political survival must be their foremost concern.

The strategy is to create a formal framework in theory that explicitly captures the most important assumptions about the mechanisms of power accumulation and maintenance, and then to apply that formal theory to events in historic autocratic regimes, and see if the descriptions fit. The model of chapter one is a significant modification of one developed and popularized by Ronald Wintrobe. Its most important assumptions are that power stems from the fear and love of the masses, and that the autocrat's ability to extract resources from them depends upon his power. Rather than ponder whether it is better to be feared or loved, the autocrat spends resources acquiring both, specifically trading off

on the utility margins of spending resources on loyalty, repression, and personal consumption. Loyalty and repression combine to produce power, which determines revenue, which buys power. When an internal solution to this circle exists, the autocrat maintains a stable regime.

The model of chapters two and three, based on Bueno de Mesquita et al 2005, assumes instead that power is readily transferable. The focus, therefore, is on maintaining the support of at least a minimum winning coalition of elite, who prefer the leader over any challenger. That preference comes from the resources diverted to the coalition, and from the individual coalition member's fear of exclusion from the next coalition, should a challenger successfully usurp the leader. The most salient aspects are the structure and relative sizes of the pool of potential coalition members, called the selectorate, and the minimum portion of them necessary to entrench the leader. When the size of the minimum winning coalition is small, we expect established leaders to stay in power longer, and transfer more from the larger group to themselves and their coalition. I present the first experimental test of selectorate theory, and find general confirmation, with unexpected caveats. Typically, participant coalition members only supported leaders who benefited them preferentially. From almost every randomly selected handful of undergraduates, I found it shockingly easy for the ruthlessly dictatorial to emerge triumphant. The institutions that empower them guarantee it.

The models are based on observations and intuitions about autocratic incentives, and so reflecting them onto historic cases simultaneously challenges the relevance of the models, and provides potential further insights into the workings of the historic events. Chapters 4 and 5 reconsider crucial moments in the regimes of Joseph Stalin and Mao Zedong respectively. I find that both fit the functional utility requirements for the theory, but besides that, the two were very different men. Sociologically speaking, there's little reason to expect much commonality in their styles of rule. Yet the political economic prediction holds true, that they responded similarly to similar changes in their environments.

In studying these tipping points, I develop greater understanding of the models as well. The practical choices associated with vicious political survival add nuance and soul to broad concepts. In the final Concluding Remarks section, I draw together my new perspectives from history, and discuss their implications for improving the theory, and for other future research.

People with power want more power. My hope is that by understanding more clearly how the institutions of power influence its use, the rest of society will be less inclined to surrender power in exchange for lofty promises.

CHAPTER 1. A POLITICAL ECONOMIC MODEL OF AUTOCRACY, IN THE SPIRIT OF RONALD WINTROBE

Introduction

I here develop a model of autocratic choice. Drawing heavily on Ronald Wintrobe's seminal work, *The Political Economy of Dictatorship* (1998), I develop a model in which power derives from loyalty and repression, and in which autocrats have individual preferences over power and consumption. Unlike Wintrobe, I focus on the autocrat's oddly circular budget and expenditure dynamics, and arrive at results that do not generally agree with his original contribution. Therefore, this paper breaks new ground by clarifying ambiguities in the Wintrobe theory regarding the autocrat's budget and optimization procedures, and thereby develops a more general model.

Throughout this work I use the word autocracy loosely to refer to political systems in which power concentrates largely on one individual. Paradoxically, I model them with the idea in mind that there is no such thing as a true autocrat, that to be a leader one needs followers. Following Wintrobe, I divide autocratic types into four categories, based on their style of leadership, along the two basis vectors of loyalty and repression. Those are: tinpots, with low loyalty and low repression, totalitarians, with high loyalty and high

repression, tyrants, with low loyalty but high repression, and timocrats, with high loyalty but low repression. My focus, though, is on totalitarians and tyrants. I endeavor to avoid moral judgments of leaders, but seek rather to describe and predict their behavior.

Model

The theory assumes utility maximizing autocrats with preferences over consumption and power, where power stems from loyalty and repression. The budgets of these autocrats depend on the population's wealth and on the dictator's power to extract it (building on Mancur Olson's 1993 model of stationary bandits). Whereas Wintrobe focuses on curve shifts in the phase space of loyalty and repression, I focus instead on the dynamics of the circular budget function, expenditure, and utility maximization¹, which form the nexus of the autocrat's actual choices in the model. The complete model is also summarized in Table 1 at the end of this section, and a more generalized version is discussed in the appendix.

I assume that all autocrats derive utility from power, κ , and consumption, C , according to a constant-returns, Cobb-Douglas utility function $U(\kappa, C) = \kappa^\mu C^{1-\mu}$, though μ may vary from ruler to ruler. Power ranges from 0 to 1, with 1 representing the hypothetical state

¹ Please see Wintrobe, 1998, for his arguments and insights from historic and contemporary regimes. Also, I have changed the variable for power from Wintrobe's π to κ , the first letter of the Greek root for power "κράτος", on account of needing π 's numeric value in analysis. In the Wintrobe model, π ranges from 0 to infinity, but here $0 \leq \kappa \leq 1$, because both L and R are similarly bounded. This allows for the theoretical possibility of absolute loyalty, absolute repression, and absolute power.

of absolute power, and derives from repression, R , and loyalty, L , according to $\kappa(R, L) = L^\alpha R^{1-\alpha}$. α represents an institutional characteristic of power production and is outside the direct influence of the autocrat. In addition to the direct enjoyment of power, I assume that the autocrat can use his power to expropriate resources, such that his budget is $B(\kappa) = \kappa \cdot Y$, where Y represents the gross productive capacity of the economy², and is exogenous and fixed. Consumption, C , total expenditures on repression, σ , and total expenditures on loyalty, λ , must sum to B . Therefore, a portion of the budget is spent on loyalty and repression, which in combination produce power, which then determines the budget. This uniquely circular budget dynamic drives many of the results that follow.

I assume that expenditures on repression increase the level of repression at a decreasing rate, from zero to asymptotically approaching $R = I$, according to $R(\sigma) = (2/\pi) \cdot \text{atan}(\sigma)$. I further assume that the autocrat can choose the amount to spend on repression, but cannot alter the functional form of repression.

For the loyalty response curve, I consider three separate functional forms (represented graphically in Figure 1 below):

² Note, however, that the very meaning of an aggregate such as Y , or GDP, is extremely hard to interpret in a highly nationalized economy. As Robert Higgs (1997) points out, GDP can provide a meaningful metric only when prices and quantities approximate those of competitive market equilibrium. If prices and quotas are set arbitrarily by bureaucrats or ministers, then the aggregate measures will be likewise detached from underlying values. In future research, I intend to consider such effects more cautiously, but that important complexity is outside the scope of this paper. Y should not be thought of as a reasonable proxy for welfare when production emphasizes tanks and torture, and large portions of exchange are involuntary.

$$L(R, s, \gamma) = -2R^2 + 2R + (1/\pi)\text{atan}(s+\gamma) \quad (\text{L.1})$$

$$L(R, s, \gamma) = -R^2 + R \cdot (4/\pi)\text{atan}(4s+4\gamma) \quad (\text{L.2})$$

$$L(R, s, \gamma) = e^{-(s+\gamma)} \cdot R^{(s+\gamma)} (1-R) \quad (\text{L.3})$$

Loyalty is similarly bounded by 0 and 1. The quantity of loyalty supplied, L , increases asymptotically with total payments, s , received by suppliers of loyalty. I assume s is a constant fraction of the autocrat's expenditure on loyalty, $s = \frac{1}{2} \lambda$, though other possibilities could arise. For instance, if a payment was made in the form of a monopoly franchise, s could be greater than or less than λ^3 .

I assume that loyalty also depends on the performance of the economy, γ , and on the degree of repression. For simplicity, I treat γ and s as perfect substitutes, implying that subjects will cheer for booming business as loudly as they will for bread and circuses⁴. The relevant aspect of economic performance is more closely analogous to growth or to cycles than it is to overall wealth levels. Therefore, two cognitive biases are loosely implied, though never thoroughly addressed. The first is anchoring, so that changes are more salient than levels of wealth. The second is attribution, so that the leader is believed to have far more influence over the economy than he actually has.

³ The franchise may be cheap for the autocrat's commissioners to enforce, and the recipient might be more efficient at extracting the monopoly profits.

⁴ Put differently, economic performance is denominated in loyalty payments.

In fact, the degree to which a dictator might influence economic performance is unclear. As Tullock pointed out, dictators in search of ideal policies often find themselves inundated with contradictory suggestions, and have no criteria by which to choose among them (Tullock, 2005 [1980]). For that matter, no consensus yet exists among development economists or macro theorists either⁵. Therefore, I take γ as exogenously determined, and treat changes in γ as shocks to be managed.

Loyalty's dependence on repression, however, is more nuanced. At low levels, as repression increases, the cost of supporting an opponent rises, leading to a substitution effect in favor of the autocrat. At high levels of repression, however, rising ire combines with greater likelihood and magnitude of personal injustices, forming a negative wealth effect that eventually dominates substitution⁶. Essentially, if they bully a little, you go along, if they bully a lot, you revolt.

In L.1, the simplest form, economic performance and loyalty payments shift the loyalty curve to the right. While straightforward, this function has the disadvantage that all autocrats choose similar levels of repression, regardless of circumstances, and that even with infinite resources, it will never approach the $(L, R) = (1, 1)$ corner.

⁵ As evidenced by the decline of the Washington consensus and the seeming popularity of the so-called "Beijing Consensus." While many economic fundamentals enjoy general agreement, implementation does not.

⁶ See Wintrobe 1998 for further discussion of how loyalty responds to repression. In future research, I will explore also the possibility of a second bend for totalitarians, where extreme levels of repression again increase loyalty.

In L.2, performance and payments distort the curve outwards and upwards. This format yields greater variation of equilibrium repression levels, but surrenders popular resistance when σ and $s+\gamma$ are high⁷.

L.3 preserves the collapse to revolt and convergence to $(L, R) = (1, 1)$, but produces crossing loyalty response topologies⁸, as seen in Figure 1, L.3. Each has its advantages and limitations, but I have included all three, both to convey the inherent ambiguity of mathematical translations of loyalty, and to demonstrate the robustness of equilibrium predictions, circularities, and shock responses.

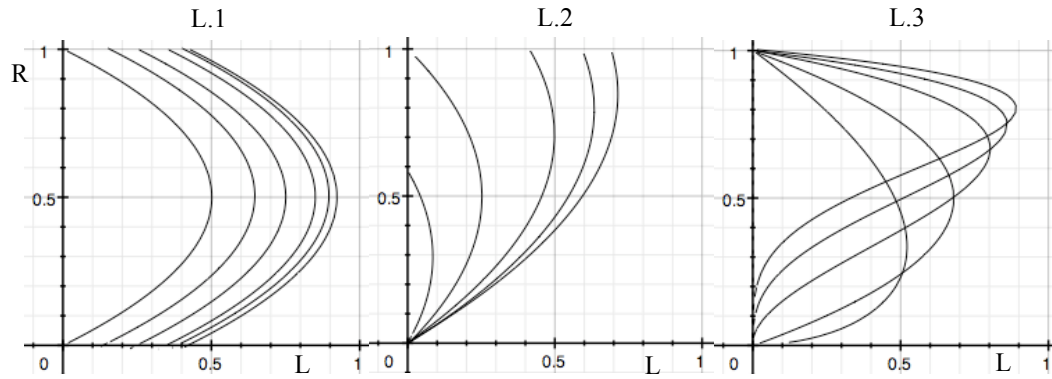


Figure 1: Three images of loyalty and repression. Each depicts the loyalty response curves when net loyalty payments $s+\gamma = 0, 0.5, 1, 2, 3$, and 4 . However, for both L.2 and L.3, zero loyalty payments equates to zero loyalty, regardless of the level of repression.

⁷ Personally, I am uncomfortable with the notion that even the last shreds of dignity and freedom can be bought or bullied from every one.

⁸ However, it's corresponding budget surface in expenditure space is still strictly concave, so all utility maximizing solutions are still unique.

By construction, the budget increases linearly with power, and power increases at a decreasing rate with budget. The autocrat is therefore constrained by the intersection⁹ of the two in $\lambda\sigma B$ -space, as shown in Figure 2 below (using $L=2$, $\gamma=0$, $Y=10$, $\alpha=0.7$, and $C=0$ and 2.7). I use a linear translation from power to budget here for simplicity, and because diminishing returns are already subsumed within power production. However, non-linear, or even non-monotonic functions for deriving budget from power could emerge. Wintrobe stresses that in some cases, the autocrat might even trade power for wealth. For example, in the nine years (1688 to 1697) following the Glorious Revolution, government borrowing increased more than ten fold. The sudden availability of funds was likely due in part to new binding constraints, requiring that the government actually pay back what it borrows (Wintrobe, 1998 p. 114, also North and Weingast, 1989 p. 805). Rowley and Dobra (2003), would rightly characterize the increase as an unintended consequence of rational choices made by multiple agents, rather than as a single tradeoff made by William III and Mary II. However, the underlying concept of the tradeoff holds.

⁹ Wintrobe (1998) has a two dimensional version of this argument on p. 111. However, it's not clear there how the autocrat chooses C before hand, nor how he arbitrates between spending on loyalty versus repression. It's as if his consumption preferences are momentarily perfectly inelastic, or as if two optimizations somehow run simultaneously. Again, I favor modeling based on the choice variables of expenditure, λ and σ .

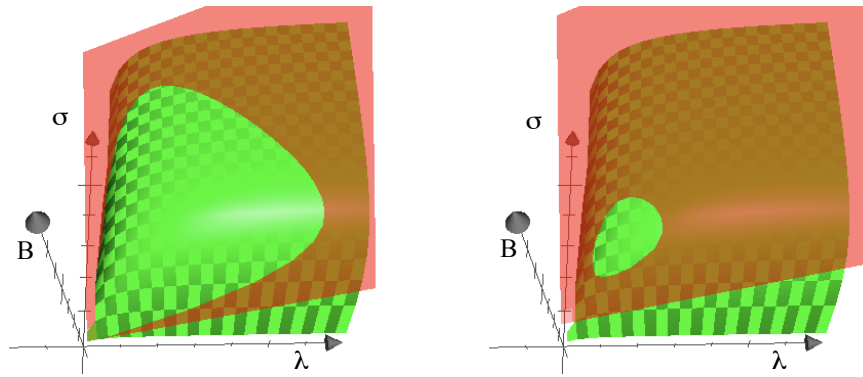


Figure 2: Higher consumption levels involve smaller iso-budget rings.

As the autocrat increases consumption, shifting the expense plane vertically by C , he has less to spend on loyalty and repression, which contracts his set of options for power. Thus all terms, including the budget itself, are determined jointly and simultaneously. These optimized budget choices project into the $\lambda\sigma$ -plane as layered curves or rings, and the equilibrium (λ, σ) point is found at the tangent of the (already optimized) budget and the highest iso-power curve it intersects, depicted in Figure 3.

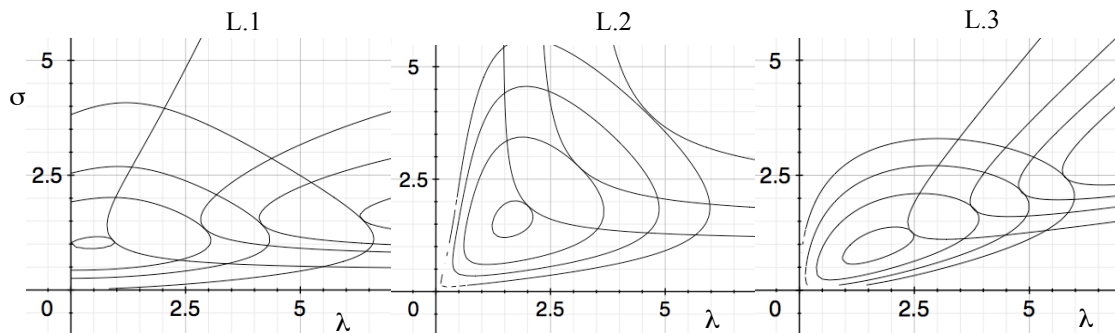


Figure 3: Iso-budget and iso-power curves for the three functions of loyalty.

Here, the outermost budget curve corresponds to zero consumption. The maximum consumption possible would occur at the budget point located at the center of the smallest budget ring. The exact orientation of the rings depends on the parameters and functions chosen, but this basic topology generalizes to any power surface with diminishing returns to expenditure and a backward bending loyalty response against high repression. Therefore even the most consumption-oriented autocrat will chose modest levels of repression and power, even if the κ_0 curve is very low. This finding is in direct contradiction to Wintrobe's characterization of tinpot dictatorships.

Table 1 summarizes the basic assumptions and implications for my revised theory.

Table 1: Model Summary

Variable or Function	Meaning	Description
$U(\kappa, C) = \kappa^\mu C^{1-\mu}$	Utility function of the autocrat. The maximand.	$0 \leq \mu \leq 1$ Preferences over power and consumption vary.
C	Autocrat's Consumption	Cars, palaces and the like.
$\kappa(R, L) = L^\alpha R^{1-\alpha}$	Power production function. Power derives from Loyalty and Repression.	$0 \leq \kappa \leq 1, 0 \leq \alpha \leq 1$ Also, the fraction of total productive capacity controlled by the autocrat.
κ_0	Minimum power threshold. Threat of coup.	Exogenous parameter. Autocrat usurped if power drops below κ_0 .
$R(\sigma) = (2/\pi) \cdot \text{atan}(\sigma)$	Repression as a function of expenditure.	Repression increases with diminishing returns to σ . $0 \leq R \leq 1$
σ	Total expenditure on Repression.	Budget spent on the act and institutions of repression.
$L(R, s, \gamma)$ either: $= -2R^2 + 2R + (1/\pi) \text{atan}(s + \gamma)$ $= -R^2 + R \cdot (4/\pi) \text{atan}(4s + 4\gamma)$ $= e \cdot (s + \gamma) \cdot R^{(s+\gamma)} (1-R)$	Loyalty to the autocrat.	Backward bending with R, increasing with diminishing returns to s and γ . $0 \leq L \leq 1$
$s = \frac{1}{2}\lambda$	Payment received by Suppliers of loyalty	A constant fraction of λ . Substitute for γ .
λ	Total expenditure on Loyalty.	Budget spent on the procurement of loyalty.
γ	Performance of the Economy.	Exogenous parameter. Substitute for s.
$B(\kappa, Y) = \sigma + \lambda + C$	Budget for autocratic spending. Depends on κ .	Fraction of Y available to the autocrat.
Y	Total productive capacity of society.	Exogenous parameter. Similar to GDP.
Autocrat chooses σ and λ to maximize: $\text{Max } U(\kappa, C) \text{ s.t. } B(\kappa) - \sigma - \lambda - C = 0 ; \kappa \geq \kappa_0 ; \sigma, \lambda, C \geq 0$		

When κ_0 poses a binding constraint

The influence of κ_0 is most easily understood in $\lambda\sigma\kappa$ -space, where the horizontal plane of κ_0 sets the absolute floor for the autocrat's choice of power. In Figure 4 below, assume that the inner budget curve maximizes the autocrat's utility from consumption and power at the point where its intersection with the power surface is highest. Assume also that the outer budget maximizes power only, with no room for consumption. In Figure 4 part a., κ_0 is below the dictator's utility maximizing κ , and therefore has no influence on his behavior. As κ_0 rises, however, the autocrat's preferred levels are no longer available, as seen in part b. He is forced to reduce his personal consumption, increase the repression and loyalty of his subjects, and become a more totalitarian regime than he would like to be. In part c., the autocrat is deposed. No feasible expenditure on repression and loyalty will produce the power necessary to remain enthroned.

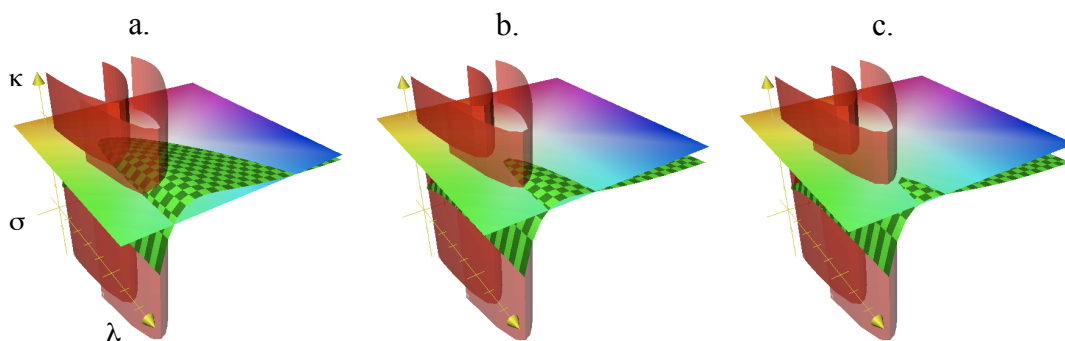


Figure 4: The rising minimum-power level constricts the autocrat's options.

While the specific parameters used here are arbitrary, it is worth recognizing that the threat of overthrow presses leaders to behave similarly, regardless of individual utility functions. In this model, if κ_0 is dramatically lower than the power maximum, preferences matter a lot. However, in a world represented by part b. above, even the most power-oriented and consumption-oriented dictators will by their actions seem indistinguishably totalitarian.

All this begs the question, whence κ_0 ? Wintrobe rightfully leaves κ_0 exogenous and small in his model. It never encroaches on high levels of power, and provides a binding constraint for the tinpot alone. κ_0 is a stumbling block for the incompetent and money hungry, but largely ignored by everyone else. However, in this model, consumption-maximizing dictators have interior preferences that exceed small values of κ_0 . On the other hand, when political competition is fierce, and when the state apparatus of power is largely transferable, we should expect κ_0 will weigh heavily on all autocrats.

Regardless, when κ_0 is binding, it merely forces the autocrat to behave as if he preferred a κ_0 level of power. Any such autocrat will still choose the point along κ_0 tangent to the inner most budget ring.

Optimal solutions and exogenous economic shocks

The autocrat's optimal choice is easily computed from the global maximum of his utility function expressed as $U(\lambda, \sigma, B-\lambda-\sigma)$, *s.t.* $\kappa \geq \kappa_0$; $\lambda, \sigma, C \geq 0$.

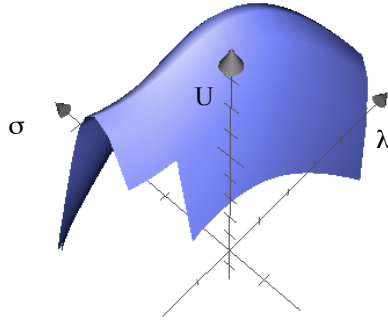


Figure 5: Autocrat's utility contour in $\lambda\sigma U$ -space when substituting $B-\lambda-\sigma$ for C .

If the autocrat has strong preferences for consumption, then the extremum of Figure 5's contour will correspond to the tangent point of an inner budget ring and iso-power curve in Figure 4, so long as the iso-power curve is at least as large as κ_0 . If his preference is for power, he will choose an outer one.

Since repression and loyalty are confined between zero and one, we can conveniently redefine the four dictator types from the Wintrobe model according to quadrants, as shown in Figure 6, using $\frac{1}{2}$ as the transition point¹⁰.

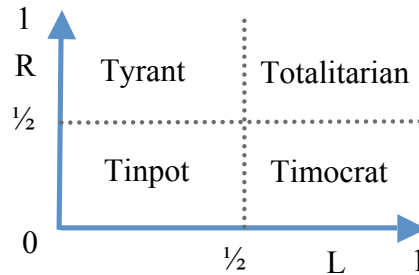


Figure 6: Regime types.

Though their preferences remain unobservable, the behavior of all autocrats will fit within one of these categories at any given time. Granted, the units in question might be impossible to define. Is a tyrant who implements repression of 0.6 twice as horrible as a tinpot at 0.3? Is a timocrat, commanding a power of 0.4, half as influential as a totalitarian with 0.8? And how might we assign a scatter plot of historic rulers to fit? While I demonstrate that this model is a useful tool for comprehension, and provides a strong framework for analytical discussion, clearly it does not yet map readily to measured events. Rather, it clarifies some of the mechanisms of power and illustrates ways in which we should expect regime types to change.

¹⁰ The use of $\frac{1}{2}$ is of course arbitrary. But the same transition analysis remains true regardless of the cut point chosen, so long as the same point is used for all dictators.

Negative economic shocks can take two forms in this framework. Negative short-run shocks to economic performance, γ , cause a rightward shift along the λ axis of the budget surface of Figure 2, and power surface of Figure 4. This deflates the iso-budget rings, while simultaneously shifting the iso-power curves in the positive λ direction. Eventually the cost of compensating lost loyalty exceeds the revenue that a feasible power level could extract.

Negative long-run shocks to the productive capacity, Y , cause a contraction downwards along the B axis of Figure 2. This decreases the consumption level associated with each iso-budget ring, until even zero consumption is unfeasible. At that point, again, the cost of producing any power exceeds the value of the resources that power could extract.

In either limiting case, the dictator is deposed, and would be also if the maximum feasible power level ever drops below κ_0 . Note also that this model assumes autocrats are dependent on the productive capacity of their subjects. The presence of some easy, exogenous resource would offer a degree of insulation from either type of economic shock.

After calculating the post-shock equilibrium in the $\lambda\sigma$ -plane (should they exist), we are able to translate the results into the LR-plane as well. Autocrats will always choose λ and σ such that the loyalty response curve is almost but not quite tangent to the iso-power

curve attained. The lower of the two intersection points is the equilibrium. The optimized tangency in the $\lambda\sigma$ -plane in fact precludes tangency in the LR-plane, because the optimization specifies that the autocrat is balancing marginal personal benefits of expenditure, not of loyalty and repression directly. This is another reason why it is methodologically vital to maintain focus on the specific choice variables of optimization.

As shown in Figure 7, the new equilibrium levels of repression and loyalty both decline in response to a shock, unless κ_0 is a binding constraint. In that case, as shown in the center equilibrium of the second graph in Figure 7, the autocrat changes nothing in his outward behavior, but consumes less. Notice also the relatively high power level chosen by the consumption maximizer before the shock to γ . In this framework, positive γ shocks are symmetric with negative shocks, except in the case where κ_0 is binding¹¹.

¹¹ In the Wintrobe model, tinpots choose intersection points closer to the origin and far from tangency, though it is unclear why. In fact, for all the reasons discussed here, I expect such choices would yield irrationally sub-optimal consumption levels. Also, Wintrobe assumes L is a stock good (Wintrobe 1990, p. 859), which leads to asymmetric short-run responses to economic performance shocks. The present model is not prepared for such dynamic considerations since the entire optimization occurs at one moment in time, so any change to L must necessarily change everything else as well. Regardless, if the shock to loyalty can be eventually compensated for by loyalty payments, then the final equilibrium L^* and R^* will not change if κ_0 remains constant and binding, because the marginal productivities and relative prices of L and R remain the same. In that sense, economic performance shocks can be thought of as sunk costs. As a matter of future research, and to properly include Wintrobe's intuitions of loyalty as a stock good within this methodology, I will soon endeavor to construct a dynamic computational model with relaxation constants for shocks and phase lags for expenditure. This new simulation will also better anticipate endogenizing growth, wealth, and shocks as consequences of dictator action.

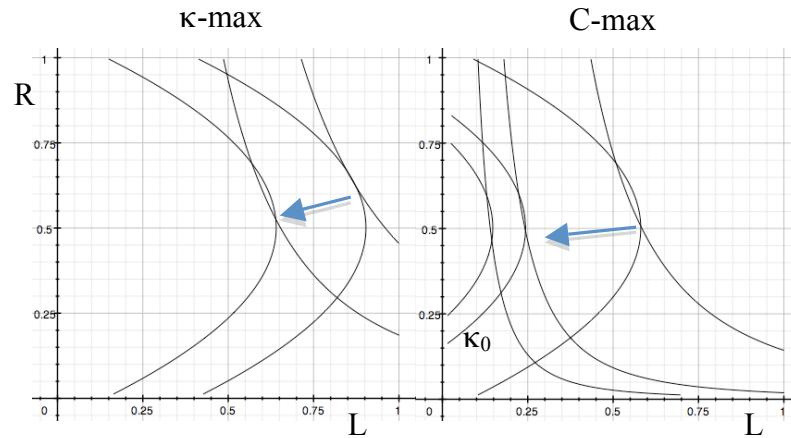


Figure 7: Equilibria after a negative shock to economic performance, γ , for power maximizing and consumption maximizing autocrats, respectively. The loyalty curve used here is L.1.

As demonstrated in Figure 7, autocrats will not in general remain within one quadrant. Exogenous economic shocks, or shifts in institutional parameters, will move autocrats from one type to another. Those who resist the change risk removal from office. In fact, their personal preferences will often exert little influence as compared with the institutions of power production, loyalty response, and the minimum power threshold. Preferences matter only when the gap between the maximum feasible power and the minimum necessary power is large. In such cases, the autocrat is free to choose his favorite mix of domination, demagoguery and expropriation.

Generally, a rising minimum power threshold will cause movement towards totalitarianism whenever the threshold is binding. Similarly, negative shocks to productive capacity destroy the resources needed to maintain a totalitarian regime, thereby eventually making all dictators into tinpots. However, the reverse is not

generally true. Falling κ_0 and rising Y expand the set of available choices, so that idiosyncratic differences in preference may emerge.

Short run shocks in economic performance are more difficult to generalize, but typically shift all autocrats towards tinpot levels when negative, and towards totalitarian levels when positive. Since economic performance is modeled here as a substitute for loyalty payments, any shock must necessarily alter the loyalty, budget, and power frontiers simultaneously. The new utility maximizing expenditures are easy to calculate in $\lambda\sigma U$ -space, but the interplay of loyalty, repression and power are not directly intuitive.

Notes on notation and structure

The Wintrobe model frequently evokes the economic analogy of supply curves for repression and loyalty, from which we learn the price and quantity of the autocrat's purchase. However, we would not expect anything resembling uniform prices. Some people, groups, classes, or regions are more costly to repress or bribe than others. For that matter, the autocrat in this analysis is both producer and consumer of repression. Without a transaction, the very meaning of repression's price comes into question.

Surely millions of people can be linked in the supply chain, but if a monopolist were also its own monopsonist, what would the sale price signify? With that in mind, I find it somewhat easier to glean intuitional guidance from repression and loyalty production

functions that depend on total expenditure. For any reader wishing to convert between the two models, assume P_R and P_L^D are average prices, and set $P_R \cdot R = \sigma$ and $P_L^D \cdot L = \lambda$.

Furthermore, while the envelope and implicit function theorems assure us of the existence of pricing functions for $P_L(L^*, R^*)$, and $P_R(L^*, R^*)$, I have found the behavior of these functions hard to intuit. The circular budget constraint rules out large portions of their phase space, and the interdependence of L , R , and B means that any shift in one will necessarily involve a simultaneous shift in the others, thereby rendering all of my comparative statics intuitions dangerously misleading.

Concluding remarks

In this paper I have derived a generalized model of dictatorship from Wintrobe's original theory. I have recast his budget constraint as a process of inferred optimization, and have illustrated the equilibrium consequences of various economic shocks. I have argued that the realized classification of a given autocrat results more from the incentives and constraints that he faces than from his tastes and preferences. Also, I have re-formalized the process of identifying equilibria, in the process identifying methodological problems with the original Wintrobe model.

CHAPTER 2. SELECTORATE THEORY IN THE EXPERIMENTAL LABORATORY

Introduction

The selectorate model of government was developed by Bueno de Mesquita et al, 2003¹² (drawing on insights from Shirk, 1993), and expanded by McGillivray and Smith, 2008, and Bueno de Mesquita and Smith 2009. The essence of their argument is that political leaders must maintain political office, regardless of the specific goals they wish to accomplish. But their position rests on the continual support of those who control the specific apparatuses of political power. The collection of all who wield such power is called the selectorate. Any subset of the selectorate capable of securing a leader's dominance is a potential winning coalition.

In democracies, the winning coalition is the core of voters who brought the leader to power, or keeps her there. In autocracies, of whatever kind, the winning coalition is often harder to identify, but they are similarly the ones whose influence keeps the leader in office. With a stable minimum winning coalition, the leader cannot be overthrown. But if the leader fails to capture the loyalty of the coalition, and members start to defect, then

¹² Most of this introduction is based on pages 7 and 8 of their text.

a challenger might be able claim a new winning coalition and usurp the leader. This paper addresses the selectorate issue exclusively with respect to autocratic systems.

Political competition between a leader and challenger in this model occurs on the basis of expenditures. While the original model includes the revenue side as well, I abstract away from taxes here for laboratory simplicity, and because Laffer-curve type responses are not my primary focus. The leader and challenger each announce a plan for how to divide the budget between public goods that benefit the entire selectorate, and private goods that benefit only the winning coalition. Therefore, all else constant, we would expect leaders to shift towards public goods and away from cronyism when the minimum winning coalition size is larger, because the relative value of fixed spoils divided amongst a larger group has fallen compared with that of additional public goods.

Within the context of the experimental laboratory I am able to avoid a real world problem that is inadequately addressed by Bueno de Mesquita et al. In the real world, there are few, if any, public goods in the sense identified by Paul Samuelson (1954 and 1956). Even such goods as defense, law and order and a stable monetary environment contain privateness characteristics. It would be irrational for an autocrat not to tilt even such goods towards the building of his coalition. In the laboratory, however, it is feasible to avoid this problem by identifying truly public goods, and so I did.

Any temptation a current winning coalition member might have to defect to the challenger will be tempered by the probability of inclusion in the challenger's long run winning coalition as well. As the ratio of sizes of the minimum winning coalition to the selectorate dwindles, so too falls that probability. Since public goods will be few in such cases, the threat of exclusion is high. Therefore, the leader enjoys the fiercest loyalties and therefore the longest reign in large selectorate, small coalition systems, such as rigged election autocracies.

My motivation for conducting experiments with selectorate theory is to examine how well the theory's predictions fare in the lab, to observe the dynamics of out-of-equilibrium play, and to acquire additional insights that may help connect the theory with other empirical work.

The following section gives a brief, formal account of the stripped down model I used as the basis for the experiment. The next discusses the experimental approach and prior research, followed by my formal hypotheses, experiment design, results, discussion, and conclusion.

Simple economic model of the selectorate

In line with Mancur Olson's stationary bandit model (1993), selectorate theory models all dictators as profit maximizers whose profit depends on political success, but who derive utility from maintaining authority as well. Here, the institutional constraint of interest is

the relative size of the minimum winning coalition necessary to maintain power, as compared to the size of the politically influential citizenry, called the selectorate, or W/S . In keeping with Tullock (1974), overthrow of the leader is accomplished by simultaneous defection of the elite, not by popular revolution.

Figure 8 shows an extensive form of the simplified repeated game. The fans represent continuous (or a large number of) choices, and the flowchart arrows show the portions of the game that are repeated depending on who wins a round. The specific numbers in the choice vectors come from the parameters I used, though the game tree itself is more general. The 5-vectors here represent binary choices with regard to individual members of the selectorate, with 1 meaning inclusion and 0 meaning exclusion. The 3-vectors represent planned allocations of the fixed budget, which in this experiment was $B=77$ experiment dollars (E\$) each round. At the end of the experiment, participants were paid one US dollar for every 23 E\$ earned.

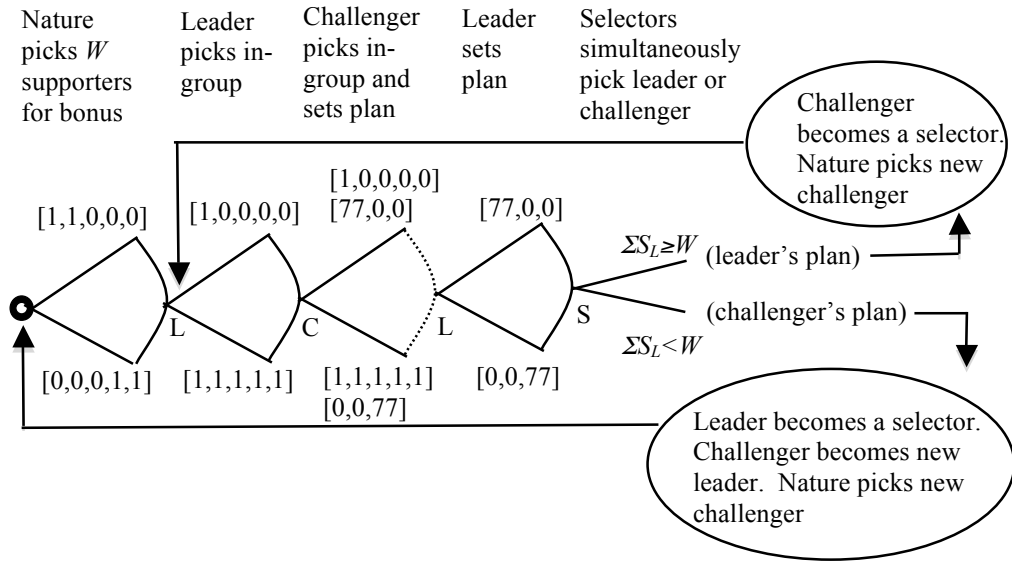


Figure 8: Extensive form of the experiment.

Each round has the following sequence (renumbered, but based generally on Bueno de Mesquita et al. 2003, pg. 106):

1. New challenger chosen randomly, incumbent favorites announced, and incumbent picks in-group (private goods recipients).
2. Challenger sees leader's in-group, and picks own in-group, which the leader does not see. Incumbent and challenger simultaneously propose plans for public (x), in-group (g), and personal (C) spending from a fixed revenue budget (B) such that $B = W_i \cdot g + p \cdot x + C$.
3. Plans and in-groups of both the leader and challenger displayed to all. Selectors simultaneously choose to support the incumbent or challenger. All selection choices announced.

4. If the leader received support from fewer than W selectors, the challenger wins, becoming the new leader next round, and discovering her preferences over selectors. Otherwise the leader wins and remains in power for the next round.
5. Earnings are tabulated according to the winner's plan. All selectors receive x from public goods, and those in the winner's in-group receive g as well. The looser gets nothing. The winner gets $\psi + C + \Sigma b$, where ψ is the winning bonus (13E\$), and b is the bonus leaders receive for having their favorite selectors in the in-group (5E\$ each). A new round begins.

The selectorate is a generalized electorate, denoted S , comprised of all political players who can exert influence in selecting a leader (see Shirk 1993, and Bueno de Mesquita et al 2003, ch. 3). For example, for most European monarchs, the selectorate was the aristocracy, nobles, barons, earls and the like. By assumption, the influence of all selectorate members is identical.

Exogenous to the model is the institutional parameter W , which denotes the minimum number of selectors that a leader needs support from in order to maintain power. In autocracies, this number is typically much less than half. The task of the autocrat is to offer to some configuration of W more in present discounted value than they could rationally expect to obtain from a challenger. By analogy, this provision might come in the form of land, private handouts from the public coffer, or perhaps franchised

monopoly rents. The standard theory typically equivocates between the W selectors supporting a leader and the W_i selectors to whom the leader offers private goods. Indeed, in the equilibrium discussed below, one would expect them to be the same. However, generally that need not be so. Since experiments often lead to play out of equilibrium, I distinguish the two by specifying the leader's choice of members as the "in-group" W_i . A leader could in principal choose an in-group of W_i selectors who all defect to the challenger, yet still win the contest if at least W other selectors supported him.

In the first round, the leader and challenger are chosen randomly. Each round thereafter, the winner of the previous round faces another randomly chosen challenger from the selectorate. Upon assuming office, each leader discovers his particular, random preference for certain selectorate members over others, induced by small bonuses for keeping certain members in the in-group.

Each round of the indefinitely repeated game begins with the leader announcing his in-group choice. Then the leader and challenger each simultaneously submit a plan for how to allocate a fixed¹³ revenue budget, $B = W_i \cdot g + p \cdot x + C$, where W_i is the number of selectors chosen for in-group membership, g is the amount of private money to be received by each in-group member, p is the price to the autocrat of producing a unit of public goods, x is

¹³ Readers already familiar with selectorate theory will note that this inelasticity to tax on the part of selectors is a simplifying departure from the original theory, which also allows me to remove leisure from the selectorate value function, and obviates the need for a "caretaker" policy backup. Whenever possible, avoiding complexity tends to improve experiments, and Laffer curve type tax responses are not vital to my primary hypotheses. For similar reasons, I have also linearized the selectors' value function.

the quantity of public goods produced, and C is the autocrat's (or potential autocrat's) personal consumption, the difference between revenues and other expenditures. Private goods are only distributed among members of the in-group, and each public good produces one dollar of value each for all selectors, but not for the leader or challenger. Therefore the value to an in-group selector of a given plan in a given round is simply $g+x$, while the value to an out-group selector is just x .

Selectors compare offers and decide simultaneously whom to support. If the leader receives support from W or more selectors, he continues as leader in the following round. If not, the challenger wins, becomes the new leader, and discovers which selectors have the bonus. Each participant is paid according to the plan of the winner.

The pivotal assumption of selectorate theory is that members of the current winning coalition consider the prospect of backing a challenger of equal skill and resource more risky than sticking with the incumbent leader. Better the devil you know than the devil you don't. Thereby, a Markov Perfect Equilibrium exists in which the incumbent potentially remains enthroned indefinitely. This is meant to account for the stylized fact that hazard rates drop off more rapidly with years in office for small coalition leaders than for large coalition leaders¹⁴. In the version of selectorate theory considered here, the

¹⁴ This may seem counter intuitive given the rapid turnover of many nascent dictatorships. Indeed, for the first six months in office, leaders in small coalition systems face the highest hazard rates, empirically. But the hazard rate drops for them more quickly than it does for large-coalition leaders. Therefore, conditional on surviving the first year, small-coalition leaders are much more likely to enjoy much longer tenure.

incumbency advantage is accomplished by a small exogenous preference that leaders have for certain selectors over others, but that they do not discover until they become leaders. Therefore, no challenger can credibly commit to keeping a given supporter in her long run coalition, but any leader can.

The preference ordering is an arbitrary but vital artifact of this model. It serves the function of breaking symmetry in two ways. First, only the favorite W members of the selectorate were typically invited to join the in-group. Second, while the leader knows from experience with whom he works best, and makes his preferences public knowledge, the challenger cannot anticipate who her favorites would be, were she to ascend to power. Furthermore, all leaders face the same maximand and budget, so that anticipated equilibrium allocations are the same for all leaders. Only the specific members of W are expected to change. Therefore, when a current coalition member computes the expectation of the present discounted value of sticking with the leader or defecting to a challenger, the selector must discount by the probability that she will end up in the challenger's long run coalition as well. Assuming uniform, randomized ordering, that probability is only W/S . Therefore, assuming a discount rate of δ and participants who have no concern for past events, in Markovian equilibrium, the leader makes sure that $(x^* + g^*)/(1 - \delta) > x^c + g^c + [\delta/(1 - \delta)](W/S)(x^* + g^*) + [\delta/(1 - \delta)](1 - W/S)(x^*)$. Here $*$ denotes

Additionally, term limits are modeled as endogenous. Therefore, if a democracy has an eight-year term limit, it is because of its large coalition characteristic. In contrast, if a “democratic” leader faces a small coalition instead, he is likely to find some way around the limit, awarding himself additional unconstitutional years, or even pronouncing himself dictator for life. For an extensive empirical assessment, please see Bueno de Mesquita et al., 2003, pp. 292-302.

equilibrium levels, and superscript c denotes the challenger's best possible single period offer. Furthermore, given linear utility¹⁵ for selectors and $W < p$, $x^* = 0$. Rearranging terms, so long as the leader gives his coalition $g^* > g^c(1-\delta)/(1-\delta W/S)$ they have no incentive to defect, and the leader can endure indefinitely. This gap is called the incumbency advantage, since g^* can be less than g^c , allowing the leader a margin of error, or a range for safe kleptocracy.

Ceteris paribus, smaller groups are more cheaply paid off than larger groups, so at the margin leaders can implement an extort-and-bribe strategy more easily when W is small. Similarly, when S is larger, members of W recognize the ease with which they could be replaced, and therefore expect smaller compensation. Therefore, the autocrat prefers the smallest W and largest S possible, whereas the selectorate prefer the largest relative W and smallest S .

Experimental approach

Experimental methods are still uncommon for political topics, and all but unknown in studies of autocracy. To my knowledge, no experiment has ever addressed autocrat incentives directly, let alone the comparative institutions discussed in selectorate theory.

¹⁵ This is a simplification from the original theory, which uses concave, additively separable utility for each payment type. Therefore, in the equilibrium of the original, the leader always offers some amount of public goods. Aside from that, the incumbency advantage is characteristically the same.

However, formal models of political processes are well suited for experimental study. Experiments have the advantage of controlling otherwise unobservable incentives or preferences by inducing them with salient preferences. Unobservability plagues all field studies in the social sciences, political science and economics in particular. Furthermore, models of incentives in political settings often assume very large numbers of participants, as do market models. Yet economic experiments have often discovered strong convergence with very few. They have also demonstrated differences in theoretically equivalent institutions. Experiments in political science will likely provide the same.

Two prior experiments do share some similarity with the one reported here. Fiona McGillivray and Alastair Smith (2008) used a repeated prisoner's dilemma played by group representatives to model international conflict when leaders face potential replacement. Essentially, small groups elect one member to play the PD on their behalf. Every round, they are able to reelect or replace the representative on the basis of the representative's performance. The model they explored incorporates some aspects of selectorate theory. They found that leader turnover can sometimes overcome a string of defect-defect plays. However, it can also reverse cooperate-cooperate, so their results were mixed. No other clear patterns emerged, and no treatment of coalition size was considered.

The paper which most closely resembles the work presented here is a 2008 working paper by Hamman, Woon, and Weber, who found some evidence of coalition effects when

democratically elected leaders could force some individuals to contribute to a public good while others – coalition members – were allowed to free-ride. Using the present notation, all sessions had W/S of $\frac{1}{2}$. Some sessions approximated the Pareto optimal, overcoming the tragedy of the commons. Others formed a coalition of the majority to exploit the minority. One leader, who discovered this mechanism for exploiting the minority, enthusiastically expressed that he would make a great mafia don.

Hypotheses

Selectorate theory predicts that, given a constant selectorate size, participant autocrats in the smaller minimum winning coalition treatment group will:

H1: enjoy longer terms in power,

H2: keep more for themselves, engaging in higher levels of kleptocracy, and

H3: provide fewer public goods.

Experiment Design

I assigned the institutional parameter of minimum winning coalition size, W , as the treatment variable in a laboratory test. Using groups of 7 randomly chosen and randomly assigned participants, the primary goal was to test the hypothesis that dictators requiring only 2 supporters in their minimum winning coalition would provide fewer public goods, keep more for themselves, and enjoy longer average tenures than would dictators who require 3.

Each experiment session had 7 participants assuming three roles that changed between rounds: 1 incumbent leader, 1 challenger, and 5 members of the selectorate. Each session lasted 10 rounds in one treatment, then 10 rounds in the other, with the order of treatments randomized, and with 8 sessions in total. Rounds followed the game structure discussed above.

The first incumbent and challenger were chosen randomly, and a new challenger was chosen at random from the selectors in each subsequent round. Leader and challenger proposals were based on a budget of 77E\$ (experiment dollars) per round. Money allocated to the in-group, g , was divided evenly. Public goods, x , cost 4E\$ to produce, and provided 1E\$ of benefit for each selector (but not for leaders and challengers), for a marginal per capita return (MPCR) of $1/4$. The leader's favorite W members of the selectorate were chosen randomly at the moment of assuming office, and induced by an additional payment of 5E\$ for each favorite included in the coalition in-group. The winner was also awarded a bonus of $\Psi=13E\$$. The payment function for the winner was therefore $V=77-4(x)-W_i(g)+13+5(\text{number of favorites in } W)$. Losers got nothing.

Selectors were paid each round according to the plan of the winner. Everyone in the selectorate received the public goods produced, but only those chosen for coalition membership by the winner receive private goods.

Following the results of Norman and Wallace (working paper), I implement an unknown stopping rule, whereby participants did not know how many rounds they would play, rather than a probabilistic one, both for simplicity and to avoid end-game effects.

Results

This section briefly presents my findings, the next discusses. All data is available on request.

H1: supported. Leaders in the small coalition treatment enjoyed a clear longevity advantage.

H2: supported, to a lesser degree. They were able to engage in more kleptocracy.

H3: rebutted. Surprisingly, leaders in the large coalition treatment did not spend more on public goods, and though the variance is large, it seems they spent less.

H1. Tenure reported below refers to the longest sequential reign any one leader accomplished in a given session. Only one session experienced a longer tenure in the large coalition treatment than in the small one. Another tied. All other sessions saw longer reigns for smaller coalitions, more than 50% longer on average, as seen in Table 2

below. Using the Wilcoxon signed rank test, this difference is statistically significant at the 5% level (p-value 3%).

Table 2: Data by session and treatment. Standard errors on the mean shown in parentheses. Maximum tenures are approximately 50% longer in the W=2 treatment. This result is statistically significant at the 5% level (p=.03) by the Wilcoxon signed-rank test. By the same test, the per session average amount kept by winners was about 70% higher in the W=2 treatment, statistically significant at the 10% level (p=.07).

<i>Session ID</i>	<i>Tenure, W=2</i>	<i>Tenure, W=3</i>	<i>Winner's take, W=2</i>	<i>Winner's take, W=3</i>	<i>Public, W=2</i>	<i>Public, W=3</i>
1	7	3	21.5 (2.7)	7.3 (2.2)	10.5 (4.9)	28.7 (6.3)
2	4	4	14.3 (3.7)	12.7 (3.1)	16.2 (5.9)	24.3 (7.7)
3	9	5	20.1 (2.4)	1.0 (0.7)	24.8 (4.0)	7.1 (2.6)
4	3	5	5.4 (2.1)	5.4 (1.4)	20.4 (10.2)	9.3 (4.7)
5	4	3	12.5 (2.3)	1.7 (1.4)	44.1 (3.5)	8.0 (5.0)
6	8	1	7.8 (1.9)	17.9 (3.8)	39.4 (6.1)	23.3 (6.2)
7	3	2	12.5 (2.5)	4.1 (1.3)	10.2 (2.9)	4.4 (2.1)
8	8	5	12.8 (1.7)	13.4 (1.5)	15.5 (7.2)	14.4 (3.6)

H2. Winners in the small coalition treatment kept on average almost twice what their large coalition counterparts did – 13.5E\$ vs. 7.9E\$ from an endowment of 77E\$. The increased take is statistically significant at the 10% level using the Wilcoxon signed rank test on session averages (p-value 7%). But there were notable individual exceptions. For instance, in the large coalition section of session 6, in the only round in which a leader defeated a challenger, victory came with a staggering 36E\$, more than half of the

endowment, while the average of the small coalition treatment for that session was only 7.8. It so happens that in that same round, the challenger had committed to keep even more, 46E\$. Even if somewhat statistically marginal, the economic significance of an institutional difference leading to 18% rather than 10% kleptocracy is of great importance to anyone suffering such a burden. The tragedy of the high variance is the invitation it elicits to hope for benevolent dictators instead of adopting superior institutions.

H3. Public goods spending was too dispersed for a clear statistical claim. However even the sign of the treatment effect runs contrary to theory (p-value 87%). Winners spent on average 23E\$ on public goods in the small coalition treatment, and 15E\$ in the large coalition treatment. Winning incumbents spent 19 and 13 respectively. None of these are statistically different from each other, nor from zero; nonparametric tests do not reject the null hypothesis that they are identical. That having been said, the experiment leads me to believe that the observed sign deserves further, future consideration, as discussed below.

Discussion

Participants from all but session 4 commented on the great advantage of the leader, and on the enhanced advantage when coalitions were small. Some who had been leaders said “you just have to keep your people happy.” The three small coalition leaders who had

been deposed conceded sheepishly that they had lost only because “I got greedy.” All were confident they could have maintained longer had they not.

In session 4 the perception was reversed. Several said that the challenger had the advantage when coalitions were small because they only had to pull one supporter away from the leader, since of course everyone else would follow the challenger. In fact, this bias towards the challenger was not universal, and in most other sessions the leader was favored instead. It would seem session 4 is the exception that proves the rule. When the minimum winning coalition is smaller with respect to the overall selectorate, consistently a leader will emerge who is able to utilize this advantage and entrench his regime.

Though a given candidate may not be up to the task, the institution naturally sifts out one who is.

That same leader advantage can be exchanged for higher personal gains. By spending more on themselves, and therefore less on the selectors, leaders routinely gambled with wealth against position. Of course the consequences to losing were small in this experiment, and I expect that future experiments could reduce this propensity by removing losers permanently from the experiment, eradicating their earnings, or implementing some other negative consequence. Weak consequences are a pervasive limitation of the experimental approach in general. Real world betrayals and coups often end in blood or ruin, but death is never a threat in the lab. However, even if the consequences for losing or defecting were dramatically larger, I doubt it would

eliminate the tradeoff entirely. The temptation to exploit is a powerful mitigating factor against the leader's advantage. Symmetrically, the ability to overthrow is a powerful mitigating factor on the leader's temptation to exploit. On the margin, the tradeoff is rarely zero.

Public goods were frequently not provided, but on average, leaders facing large coalitions produced less than leaders with small coalitions. In part this is an artifact of having simplified the payment structure from the original selectorate formulation to ease implementation in the experiment. With linear rather than concave, additively separable utility from each type of payment, adjustments on the margin are dominated by corner solutions. Indeed, by construction, the Markovian perfect equilibrium in both treatments eschews all public goods. In my next iteration of this experiment, I intend to explore other payment functions for evidence of internal preferences.

I suspect, though, that the underlying reason has more to do with the leaders' perception of the role of public goods. After the experiments, several leaders described public goods to me as a type of insurance, for "just in case" an in-group member defected. In the larger coalition treatment, competition between leaders and challengers was fiercer, and the incumbency advantage thinner, such that leaders had to spend less on themselves in all regards in order to survive, including buying less insurance. Public goods in this sense are a luxury. In future research, I would like to extend this observation to consider

whether democracies and other large coalition systems actually produce private goods for their coalitions, which they then wave off as public benefit.

Concluding Remarks

Selectorate theory is a simple abstraction by design. As an intermediate step to understanding the theory in practice, I contribute observations of actual humans presented with selectorate incentives, and find that political longevity and autocratic consumption conform with theory, but that public expenditures may not. In small coalition systems, leaders have an easier time maintaining power, and are able to skim more out of the treasury than can leaders in larger coalition systems. However, that opportunity is nonetheless limited. Every persistent small coalition leader who was eventually deposed said the same thing: I lost because I got greedy. As they kept more and more for themselves, eventually the selectors threw them out, hoping for a better deal.

CHAPTER 3. INTRODUCING HETEROGENEITY INTO SELECTORATE THEORY

Introduction

As a subsequent development in the literature, selectorate theory (Bueno de Mesquita et al., 2003) deals with the autocratic incentive of political power maintenance. In particular, the autocrat must maintain the support of a minimum winning coalition or risk forcible deposition. The main technical contribution of this chapter is the insertion of an assumption of heterogeneity, rather than homogeneity, among the selectorate. The intent is to increase the relevance of the model for the critical case studies of Russia and China.

The selectorate model of government was developed by Bueno de Mesquita et al, 2003, and expanded by McGillivray and Smith, 2008, and Bueno de Mesquita and Smith 2009. In selectorate theory, leaders and challengers use public and private goods to win the support of a winning coalition. Key variables of the model are the size of the minimum winning coalition and the size of its subsuming group of selectors. The pivotal assumption of selectorate theory is that, for one reason or another (they suggest several possibilities), members of the current winning coalition consider the prospect of backing a challenger of equal skill and resource more risky than sticking with the incumbent leader. Thereby, a Markovian Perfect Equilibrium exists in which the incumbent remains

enthroned indefinitely. This is meant to account for the stylized fact that hazard rates drop off more rapidly with years in office for dictators than for democrats¹⁶.

The selectorate is a generalized electorate, composed of all political players who can exert influence in selecting a leader (see Shirk 1993, and Bueno de Mesquita et al 2003). For example, for most European monarchs, the selectorate was the aristocracy, nobles, barons, earls and the like. Instead of voting, they pledged support, loyalty, and troops. The support of some meant more than the support of others. Generally, far less than half the selectorate maintained more than half of the power.

Any configuration of a winning team might comprise a minimum winning coalition, denoted W . The task of the autocrat is to offer to some configuration of W more than they could rationally expect to obtain from a challenger. This provision might come in the form of land, private handouts from the public coffer, or perhaps franchised monopoly rents. If the autocrat's commitment is credible, then coalition members have no incentive to defect. Under certain conditions discussed below, a repeated Markovian Perfect Equilibrium is for the dictator to extort the masses and use the spoils to bribe his

¹⁶ This may seem counter intuitive given the rapid turnover of many nascent dictatorships. Indeed, for the first six months in office, leaders in small coalition systems face the highest hazard rates. But the hazard rate drops for them more quickly than it does for large-coalition leaders. Therefore, conditional on surviving the first year, small-coalition leaders are much more likely to enjoy much longer tenure. Additionally, term limits are modeled as endogenous. Therefore, if a democracy has an eight-year limit, it is because of its large coalition characteristic. In contrast, if a "democratic" leader faces a small coalition instead, he is likely to find some way around the limit, awarding himself additional unconstitutional years, or even pronouncing himself dictator for life. For an extensive empirical assessment, please see Bueno de Mesquita et al., 2003, pp. 292-302.

coalition, who remain loyal to him until he dies in bed of old age. Autocrats do keep office twice as long as democrats on average (Bueno de Mesquita et al 2003, pg. 5), and surviving the first two years after a power grab predicts another 30 years on the throne (ibid). But the selectorate (S) and the minimum winning coalition ($W \leq S$) vary in relative and absolute sizes across time and borders. *Ceteris paribus*, smaller groups are more cheaply paid off than larger groups, so on the margin leaders can apply the extort-and-bribe strategy more easily when W is small. Similarly, when S is larger, members of W recognize the ease with which they could be replaced, and therefore expect smaller compensation. Furthermore, larger S tends to imply a larger tax base. Therefore, the autocrat prefers the smallest W and largest S possible, whereas the selectorate prefer the largest relative W and smallest S.

While selectorate theory is often proposed as a general theory for all political systems, here I focus on autocratic regimes. Furthermore, I limit my discussion to cases in which the military has the will to fire upon a general uprising. This component is crucial for any model of repression, especially of the sort discussed by Tullock (2005 [1974]) or Wintrobe (1998). I would contend that a similar aspect maintains the core of selectorate theory as well. Restated, the minimum winning coalition is that which grants authority over the use of violence. It is the cartel of sufficient size to exercise a monopoly over the tools of torture and death.

Of course this begs the question, when will a military forcefully suppress a popular uprising and when will it not? Furthermore, selectorate theory might provide a useful description of the military choice not to fire, as seen in several of the recent middle-eastern uprisings, if it could be shown that the uprisings revealed underlying shifts in the institutional structure of the selectorate and minimum winning coalition. Using the framework of Tullock (1974), we might describe them as Schelling Points for power realignment. If that combined description is accurate, we should expect only marginal changes in actual power distribution, even in cases where the leader is replaced by a challenger. Alternatively, using the framework of Wintrobe (1998), instantaneous global media and decentralized mass communication might have raised both the cost of repression and the backlash from using it in unanticipated ways. Again combining with selectorate theory, this would imply a simultaneous increase in W and S , and therefore ambiguous results. While these questions are certainly timely and engaging, I leave them for future research.

Influence

I introduce $s_i \in [0, 1]$ to represent a given selector's position on an ordered list of all selectors from the least influential to the most. Then the distribution of influence is modeled by $\eta s_i^{\eta-1}$, $\eta \geq 1$. The parameter η represents the concentration of influence within the selectorate, but integrated over all selectors, total influence is always equal to one. An incumbent leader must maintain support from a simple majority of influence, regardless of coalition configuration.

By way of example, consider $\eta=1$ and $\eta=2$. When $\eta=1$, influence is distributed as a unit square. Any majority coalition of selectors has a majority of influence. All selectors are equivalent¹⁷. However, when $\eta=2$, influence is distributed linearly. W is no longer constant because subgroups are no longer symmetric. Various coalitions W_k could potentially exceed half of the total influence, but the smallest possible minimum winning coalition would contain only the most powerful. In this case, the marginal selector to be included in the minimum winning coalition, s_c , must satisfy

$$\int_{s_c}^1 \eta s^{\eta-1} ds = \frac{1}{2}$$

The size of the smallest possible coalition is then $1-s_c$, or $W_{smallest}=1-(1/2)^{1/\eta}$. In the case of $\eta=2$, $W \approx 30\%$. Therefore, the leader requires as few as 30% of the selectorate to rule, but it's a very specific 30%. Using other selectors to form the coalition could require as much as 70%.

I assert that this conception of the minimum winning coalition is more consistent with the historical narratives used in support of selectorate theory. The most crisply numeric example from *The Logic of Political Survival* is of the barons necessary to elect and sustain the king at the time of John Lackland: “England’s 236 barons collectively controlled 7,200 knights fees in 1199...just 60 lay baronies held 4,632” (Bueno de

¹⁷ Note that the standard selectorate model can therefore be represented as the special case of $\eta=1$ in combination with an affinity ordering.

Mesquita et al., 2003, p. 52). Of course, the Pope played a significant role as well, but the example is illustrative. With the right 25% of barons, the king could muster 64% of arms in his defense. However, it had to be a very specific 25%!

Furthermore, an aspect of Andrew Hindmoor's (2006) discussion of William Riker applies here as well. Primarily, scholars have applied Riker's 1962 work on minimal-size coalitions to questions of policy and government formation, and with good reason. But the coalition described in selectorate theory involves very different assumptions. The assumption of office seeking holds, but preferences over ideology are abandoned. The selectorate is therefore more similar to a ministerial model (see Laver and Shepsle 1996), but with individual selectors in place of parties, whose only policy preference is for personal gain.

Basic Model

Incumbent leaders struggle with random challengers for control of a nation in an infinitely repeated game¹⁸. The nation has N members, of whom $S \leq N$ have real influence in selecting leadership. Some selectors are more influential than others¹⁹, as quantified in

¹⁸ For a thorough discussion of selectorate theory, see the seminal *Logic of Political Survival*, by Bueno de Mesquita et al., 2003. For an excellent summary, and an extension on the roll of public goods in society, see Bueno de Mesquita et al. 2009.

¹⁹ This is a break from earlier selectorate models, which assume identical influence for all members of the selectorate. Instead of requiring half of the influence, as I use here, other models have stipulated a single integer W as an exogenously determined fraction of S , but where W can contain any selectorate member equivalently. This seems to me to contrast the historic cases discussed as examples in the text. To break symmetry, the

η above. All share the same discount rate δ^{20} . Each round, the leader and a random challenger compete for the support of selectors by offering some bundle of private goods, g , and public goods, x . If a leader fails to capture half of the total influence, the challenger takes over as the new leader. If the leader succeeds, a new random challenger emerges the following round.

Private goods distribute uniformly to coalition members, and therefore have an implicit price of W . Public goods are each purchased at price p , but are enjoyed by all selectors, without exclusion or rivalry. Public goods might include such things as national defense, police services, sanitation and the like. Private goods include direct bribes, status goods, monopoly franchises, and privileged access of the sort doled out to Russia's *nomenklatura*. These bundles are financed by a flat-rate income tax, r , and the winning dictator keeps any difference between tax revenue and spending, in addition to the inherent joy of ruling, Ψ . Therefore, the contenders are concerned foremost with attaining power, and then also with personal consumption. Public goods do not benefit leaders or challengers. The losing contestant receives no reward.

models then include an affinity ordering over W , so that leaders prefer some selectors to others for their coalition. Critically, challengers cannot divine what their own affinity ordering of S would be if they won. Therefore, current coalition members know with certainty that the present leader prefers them, but anticipate only a W/S chance of being favored by a successful challenger. Thus affinity drives the incumbency advantage.

²⁰ It's not clear to me what a "uniform" discount rate means in a political context, where markets cannot arbitrage discount rates with loans and interest. It is, however, the simplest case and the literature standard. It may be that hyperbolic discounting would be more appropriate, since individual exponential discounts aggregate hyperbolically (Axtel, working paper).

Equilibria and Price Discrimination

The challenger backward induces from the selectors' utility function to make the best possible single period offer to a winning coalition. The leader then endeavors to beat that offer, at least in expectation.

If private goods are uniform, so that the autocrat must dole out favors evenly among the winning coalition, then all potential leaders will always prefer the smallest possible winning coalition, because it is the least expensive to bribe. The smaller the better.

If instead the dictator can price discriminate, offering more private goods to some than to others, then competition among selectors will drive their share of private goods down to their marginal fraction of total influence. Since winning requires half of the total influence regardless of composition, the leader is now indifferent between all selectors. The leader then enjoys an incumbency advantage, since anyone who defects is easily replaced.

In either case, we would nonetheless consider transaction and information costs to increase with coalition size. As the size of the minimum winning coalition grows, the potential for misestimation increases as well. The recent slew of uprisings in the Middle East may reflect this, as incumbent regimes discover that their coalitions are undersized. It remains to be seen, however, just how much the elite of those countries will actually have to give up, or whether they will select new leaders who change substantively

nothing. In fact, we may see a turn for the worse if the actual institutional shift has been a large increase in the selectorate with only a small increase in the minimum winning coalition. Especially in countries with historic proclivities towards communist dictatorships, a revolution of that sort might signal a significant turn for the worse.

Conclusion

By inserting heterogeneity into the selectorate, I have actually drawn the theory closer to its own historic narratives. With more concentrated distributions of influence, the dictator has an easier and cheaper task of maintaining a winning coalition. Crucially, the size of that coalition depends primarily on the heterogeneous make up of the selectorate. But if small coalitions can dominate, it is necessarily the case that selectors are not identical. If the dictator is somehow constrained to pay coalition members uniformly, then the most powerful selectors who form the smallest coalition will also represent the cheapest support base for the dictator. However, if the dictator can make differentiated payments, and if transaction and information costs are small, then the dictator will have no preference over his coalition makeup. With substantial transaction and information costs, however, the minimum sized winning coalition is again preferred.

CHAPTER 4: CRITICAL CASE STUDY OF JOSEPH STALIN'S USSR

*“God is on your side? Is He a Conservative?
The Devil's on my side, he's a good Communist.”
Stalin to Winston Churchill in Tehran, November 1943,
as quoted in *Fallen Eagle: The Last Days of the Third Reich*
(2000) by Robin Cross, p. 21*

Introduction and Methodology

This chapter uses the theoretical and experimental analysis so far described to inform and guide critical case studies of the Russian experience of communist autocracy. I examine major shocks and tipping points of the Stalinist era and its aftermath, from 1921 to 1956, as an interchange between totalitarianism and tyranny. I will not attempt a comprehensive historic account, but rather a sequential description of events with adequate variability in the selectorate and winning coalition composition to illuminate my theories. Therefore my intention for this narrative is less to provide cliometric empirical proof and more to provide theoretical illustration and calibration. It is nonetheless vital for conceptualizing the relative magnitudes under discussion, and for gauging the timeframe and process of shifting institutions of power. I attempt to identify the tipping points between tyranny and totalitarianism, as well as the indicators of shifting coalition compositions.

Using the framework of Robert Yin's *Case Study Research* (2009), I employ a multiple case, embedded design, using re-characterization of prior works, to examine the explanatory power of the theories from the prior chapters. For Russia, the Soviet archives are the primary source, and I have relied heavily on the work of archivists, biographers and historians to navigate them. I deliberately chose these cases because they appear to be superficially significant events that might or might not comply with theory. I chose them because at first sight they appear to represent significant shifts in parameters relevant to the models, and because the observable behavior of the autocrats may be sufficient to support or contradict the hypotheses in these cases. I use theoretical propositions as my analytic strategy, particularly pattern matching and explanation building according to the aforementioned theories of Wintrobe, selectorate theory, and my own. The case studies follow time-series analysis (not to be confused with longitudinal econometrics) in that they follow single rulers through substantial periods of time, rather than broad cross-sections of rulers at a common point in time. In the concluding chapter, I will synthesize what I learn from these studies and the previous chapters into reformulations and new theory building.

Setting the scene

By the time Iosif Vissarionovich Dzhugashvili rose to power under the chosen name of Joseph Stalin, the communist dictatorship of Vladimir Ilyich Ulyanov, by then known as Lenin, had changed forever the character of Russian autocracy. Bloody Sunday in January 1917, with hundreds dead, hundreds more wounded, had led to the start of the

Soviets, and to Leon Trotsky's arrest. In March²¹ of 1917, lousy economic conditions, the burden of WWI, and anger about tsarist repression culminated in mass demonstrations, protests, and riots in the streets of Petrograd²². Tsar Nicholas II, who was away fighting Germans at the time, ordered troops to fire on bread riots, killing fifty. Though lethal, it was a weak response, and instead of suppressing the uprising, served to inspire the army and navy to mutiny. With the military now in support of revolution, the Tsar and his government were quickly overthrown.

For a few months, revolutionary soviets shared power with an ostensibly republican Provisional Government. Lenin returned from Switzerland, Trotsky returned from the United States. However, the provisional government and the moderate socialists failed to provide for the rioters' demands. Coalitions and compromises proved impossible as politics radicalized. Many, including Constitutional Democratic party founder Pavel Milyukov²³, believed the only politically plausible options were a dictatorship of the right under General Lavr Kornilov, or a dictatorship of the left under Lenin (Evtuhov and Stites, 2004).

²¹ At the time, Russians used the Julian calendar, hence the confusion over the term "February Revolution".

²² St. Petersburg.

²³ Milyukov joined the Whites when Bolsheviks took over, later immigrated to France, and participated as Russian witness in the Berne Trials of "Protocols of the Elders of Zion."

In November²⁴ 1917, the Bolshevik party, led by Lenin and favored for their organization and extremism, overthrew the Provisional Government and soon established themselves as the new dictatorship of Russia – despite having lost to the Socialist Revolutionary party the only popular election they ever held. Lenin believed that the new society and utopia would require time and terror to accomplish, and that the people were not yet capable of ruling themselves. Ruthlessly committed to a program of state terror, he censored the press, arrested political figures, held revolutionary tribunals, and created the secret police, the Cheka.

After Lenin was shot in an assassination attempt at a factory, the terror intensified and institutionalized. Cheka firing squads and detainment camps laid the groundwork for the Gulags. And though the assassin, Fanya Kaplan, was in fact unaffiliated, the Communists falsely identified her as a Socialist Revolutionary, thus contributing to their sense of legitimacy for having ousted that more popular party.

The first response of foreign powers to the revolution was to send troops and resources in support of anti-revolutionaries in the coming Russian Civil War. The White Army, led by Kornilov, wanted something like the old order restored, but lacked a coherent purpose or vision. The Red Army fought for the Bolshevik party, now generally referred to as the Communists. Both armies demanded food and support from peasants. Both engaged in focused acts of propaganda and class violence. Just as the Reds shot civilians for wearing

²⁴ October in the Julian calendar. Hence the name “October Revolution”.

a tie or other bourgeois trappings, so the Whites killed people with calloused hands (Evtuhov and Stites, 2004, p302), and distributed the anti-Semitic conspiracy theory “The Protocols of the Elders of Zion”, which would become a cornerstone of Hitler’s justification. The Red Terror murdered tens of thousands, including the captive Tsar Nicholas II and his family in July of 1918. Fearing a return to serfdom from the Whites or the loss of everything from the Reds, many peasants joined the Green Army to resist both, or rallied under the black flag of anarchism. But the tragic irony of revolutionaries crushing rebellions continued through the 1921 Kronstadt Rebellion of former navy officers, and beyond.

In June of 1920, Lenin ordered troops into Poland, both to defend against possible invasion by the West through Poland, and with hopes to cross Poland and spark a central and western European communist revolution. The assault failed at the threshold of Warsaw. However, Polish advances into the Ukraine were reversed, and the borders were strengthened.

By 1921, the Red Army proved triumphant. Victorious communists would soon rename the Tsar’s territory the Union of Soviet Socialist Republics, setting Moscow as it’s capital. With a nation now, more than a collection of soviet worker councils, Lenin feared the revolution could be undone, and so tightened control. As the last foreign interventionists withdrew their support, the communist dictatorship was established, and the party assembled for its Tenth Congress. Though fractious and full of various

oppositions, the congress did endorse Lenin's doctrine of democratic centralism and his prohibition of factionalism. Democratic centralism criminalized any public disagreement with party policy once a decision was made. Prohibition of factionalism criminalized gathering a coalition around a given concern or politician, thus curtailing the right to free assembly even within the party. Both increased the difficulty of dissent, and paved the way for Stalin's future vendettas.

Famine and peasant resistance in 1921 forced Lenin to compromise on some capitalist liberties for peasants, called the New Economic Policy. To the humiliation of the party, partially liberated markets thrived, quickly outperforming state enterprise. Shortly after, Lenin suffered a stroke in 1922, drastically impairing his ability to participate in political life, just as the new constitution was formed. By the time it was ratified in 1924, Lenin was dead, and the creation of the U.S.S.R. was official.

On a theoretical note, while the famine was likely caused and certainly exacerbated by the War Communism economic reforms, it was probably not intended nor anticipated by Lenin and the ruling Bolsheviks. Therefore, for the purposes of the models discussed in prior chapters and below, the famine can be taken as an exogenous economic shock. Lenin's strategic retreat to the New Economic Policy is consistent with the predicted totalitarian response of the Wintrobe model and my own reformulation – with fewer resources than anticipated, Lenin had to fall back on a lower power level, incorporating less repression.

Psychology of Stalin

Stalin was fraught with megalomania, paranoia, narcissism, and sadism. His success depended on it. He was fixated on boots and beatings, and used identification with aggressors as a defense mechanism (Rancour-Laferriere, 1998). While I am primarily concerned for theoretical reasons with Stalin's reactions to economic shocks and changing institutions, it is always important to consider singular personalities more closely, since the standard economic assumptions about representative agents or even rationality may falter on an individual. Fortunately for this analysis, Stalin was extremely rational with regard to the cases considered here. Furthermore, the category of utility function under consideration would seem to fit Stalin's revealed preferences quite well. Simon Sebag Montefiore (2004) makes a strong case for Stalin's true devotion to Marxist and Bolshevik ideals, but always with a mercurial adaptability that allowed nothing to impede his path towards accumulating more power.

Though the literature on Stalin is voluminous, experts in psychology have written little. The great exception is Daniel Rancour-Laferriere, *The Mind of Stalin* (1988), an engaging, compact psychoanalysis based on some of Stalin's most salient behaviors. Regrettably, he has not published an update since the opening of the Soviet archives (nor does he plan to), but other historical portraits remain entirely consistent with his conclusions. In an earlier work, cited heavily by Rancour-Laferriere, the political

scientist and Sovietologist Robert C. Tucker's *Stalin as Revolutionary* (1974) utilizes a psycho-biographical approach, though with greater emphasis on personality and mental illness. An excellent, more recent biography that makes full use of the Soviet archives is Simon Sebag Montefiore's *Stalin: The Court of the Red Tsar* (2004). This is a scholarly, authoritative work in which Montefiore goes to great lengths to capture the nuance, quirk, and daily life of the man.

Megalomania typically includes an obsession with power and domination, and a delusion of importance. However, "Stalin did not have delusions of grandeur. He had grandeur (not to be confused with charisma). The megalomaniac basis was there, but the delusional aspect was not" (Rancour-Laferriere p. 72). He craved power and had it. He commanded real power over the lives of real people, and could therefore indulge his power fantasies on a vast scale.

Similarly, paranoia typically includes mistrust and the fear of conspiracy, as well as the delusion that one is important enough to conspire against. In Stalin's case, he was right. There were real plots and threats against him, though not as many, nor as elaborate as he later implied. Furthermore, the Bolsheviks believed that paranoia, though they called it vigilance, was "an almost religious duty" (Montefiore, 2004). His paranoia was useful, if not vital. For example, Rancour-Laferriere echoes Tucker 1971, "...Party members (both Soviet and foreign) who could be suspected of being genuinely anti-fascist Communists were particularly hard hit *as a class* by the mass repressions of 1936-1938." It would

seem that in addition to reducing the size of his minimum winning coalition, and manifesting his paranoia, Stalin was also establishing the diplomatic ecology he would need to secure a Soviet-Nazi alliance of untold imperialistic fervor. I must agree with Rancour-Laferriere that Stalin's paranoia turned out to be politically useful (p. 82). That said, matters with Germany did not work out as well as Stalin had hoped for.

Paradoxically, Montefiore (2004) describes how surprisingly casual Stalin was about security in the early days, both in the Kremlin and in Moscow. He would often walk at night with just one, or even no bodyguard. Also, clear though his paranoia was, declaring so was deadly. At least three psychoanalysts who described him as paranoid died shortly after: Bekhterev, Pletnev and Levin (Rancour-Laferriere Note 3 page 122).

He loved and craved the adulations lavished upon him. Indeed his narcissism was insatiable. The magnates lived in perpetual anxiety over accidental, miniscule offences. Stalin dressed simply, but his humility was false. His narcissism mixed with his paranoia, such that even small slights to his character were perceived as potential threats to his power. Rancour-Laferriere posits that this may be due in part to humiliation he felt as a battered child, and self-consciousness about his slightly deformed left arm, toes, pockmarked face, and stature²⁵. Politically, Stalin's narcissism was useful, if not essential, in establishing his monumental cult of personality.

²⁵ Approximately 5'5"; not short, but not as tall as he pretended, wearing boosted shoes and claiming the taller step. Ironically, this is exactly Napoleon's height as well, though

Yet as much as he loved to be loved, he loved to be feared as well. The rush of raw, primitive power Stalin must have felt indulging his sadistic fantasies is difficult for a normal person to imagine. He proposed jovial toasts to the deliberate starvation of millions. When his wife Nadia refused to drink, he belittled her. He encouraged violent interrogations, and seems to have enjoyed watching his high ranked officials sweat as their wives were sent off to the Gulags, even involving the wretched husbands in the documentation. Molotov and Poskrebyshv in particular were subjected to such humiliation.

Autocratic modeling of Stalin

Stalin's personality matches well with the mindset envisioned by the Wintrobe model discussed in the first chapter of this dissertation. Stalin did enjoy his movie theater, limousine cavalcades, vacation home dachas, performances and fine dining, but personal consumption was not his most prominent concern. Foremost he wanted power. Power to indulge his sadism, his megalomania, his paranoia, and his ideology.

In the fully parameterized model considered in the first chapter, autocratic utility takes the form $U = \kappa^\mu C^{1-\mu}$, where μ represents relative preference for power versus consumption, C is consumption, and $\kappa(L, R) = L^\alpha R^{1-\alpha}$ is power produced from loyalty, L , and repression,

the popular misconception of Napoleon's stature stems from an incorrect unit conversion between French and British inches at the time.

R. The μ parameter was high for Stalin. Furthermore, as a matter of future study, he seemed to derive utility from both loyalty and repression directly, not just from the power they produced, and the equilibrium effects of that are unclear. For the time being, however, the more simplified model suffices since his desire for both would have a balancing effect at the margin.

To recapitulate, both the original Wintrobe model of totalitarianism and the reformulation in chapter one predict specific autocratic responses to external system shocks. Economic shocks, both to overall productive capacity and to current performance, correlate positively with levels of repression and loyalty when an autocrat strongly favors power. Therefore both loyalty and repression increase with economic growth and decrease with economic decline, in both the long run and the short run. The continuous growth in productive capacity in the USSR meant Stalin had more and more resources at his command to bend towards producing power. I present a few alternative views on that growth presently.

However, I acknowledge that even crude estimates of GDP in the USSR are difficult to interpret. Prices, quantities, qualities, and varieties were not driven by desire and profit, but by central plans largely divorced from market forces. Furthermore, growth in most market economies serves as a proxy for wellbeing, in large part because purchases reflect consumer demand. That mechanism was further detached in the USSR. Nonetheless,

while magnitudes and meanings are heavily disputed, the following give some sense of the changing pool of productive capacity at Stalin's command.

Table 3: Production in raw output by year. Table from Nove, 1992. Original figures from *Kommunist* (No. 11 1967) and *Pravda* (4 Feb 1967).

	<i>1928</i>	<i>1940</i>	<i>1950</i>	<i>1960</i>	<i>1970</i>
Electricity (milliard Kwhs)	5·0	48·3	91·2	292·3	740
Steel (million tons)	4·3	18·3	27·3	65·3	116
Oil (million tons)	11·6	31·1	37·9	147·9	353
Gas (milliard cubic metres)	0·3	3·4	6·2	47·2	200
Coal (million tons)	35·5	166·0	261·1	509·6	624
Cement (million tons)	1·8	5·7	10·2	45·5	95·2
Machine-tools (thousands)	2·0	58·4	70·6	155·9	(240)
Motor vehicles (thousands)	0·8	145·4	362·9	523·6	916
Tractors (thousands)	1·3	31·6	116·7	238·5	459
Mineral fertilizer (million gross tons)	0·1	3·2	5·5	13·9	55·4
All fabrics (milliard metres)	3·0	4·5	4·5	8·2	10·2
Knitwear (million units)	8·3	183	197	584	1134
Leather footwear (million pairs)	58	211	203	419	676
Beet sugar (million tons)	1·3	2·2	2·5	5·3	9·4
Radios and radiograms (thousands)	–	160	1072	4165	7800
Television sets (thousands)	–	0·3	11·9	1726	6700
Domestic refrigerators (thousands)	–	3·5	1·5	529	4100

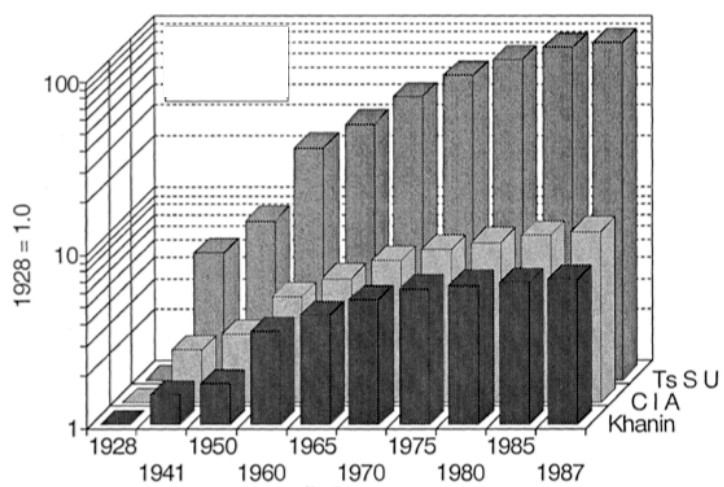


Figure 9: Logarithmic comparison of growth statistics computed by Girsh Khanin, the CIA, and the TsSU, or Central Statistical Administration of the USSR. Figure from Harrison, 1993.

Table 4: Comparison of income and production statistics from TsSU and independent sources. Table from Harrison, 2000.

Soviet national income and industrial production, 1932 to 1955, selected years: alternative index numbers (percent of 1927/28)						
	Weights	1932	1937	1940	1950	1955
National income						
TsSU (1956) ^a	1926/27 prices	182	386	513	843	1417
Clark (1957) ^b	international prices		133	161	(212)	..
Jasny (1961) ^c	1926/27 prices	..	171	189	244	374
Bergson (1961) ^d	1928 factor costs	..	275	..	..	..
	1937 factor costs	..	162	197	243	350
	1950 factor costs	..	160	188	232	335
Moorsteen–Powell (1966) ^e	1937 factor costs	110	172	203	246	357
Khanin (1988) ^f	mixed weights	..	..	(150)	173	..
Industrial production						
<i>(A) Industry as a whole</i>						
TsSU (1956) ^a	1926/27 prices	202	446	646	1119	2065
Jasny (1955) ^g	1926/27 prices	165	287	350	470	..
Nutter (1962) ^g	moving weights	140	279	312	385	608
Moorsteen–Powell (1966) ^e	1937 factor costs	153	267	318	415	674
Khanin (1991) ^h	mixed weights	..	..	346	..	..
<i>(B) Civilian industry</i>						
Clark (1951) ^g	international prices	128	310	339	..	..
Hodgman (1954) ^g	1934 wage costs	172	371	430	646	..
Seton (1957) ^g	cross-country regression weights	181	380	462	733	1210
Kaplan–Moorsteen (1960) ^g	1950 prices	154	249	263	369	583
Nutter (1962) ^g	1928 weights	140	261	283	419	683
	1955 weights	136	222	216	313	456
	moving weights	140	261	267	387	566

Though disagreement remains, and though official TsSU growth rates were clearly exaggerated, the USSR did exhibit continual growth through the period. Unfortunately, smaller, business cycle type fluctuations are masked by these broader measurement difficulties. Therefore the economic performance variable γ embedded in the loyalty equations cannot be utilized.

The institutions erected by the Bolsheviks mapped a growth path through tyranny and into totalitarianism. Movement along that path was monotonic after the NEP hiccup under Lenin. The tipping point into tyranny occurred around 1931 with the lead-in to the brutal, perhaps genocidal starvation of ethnic Ukrainians and other peasants. That tyranny expanded through the show trials and Great Purge of the late thirties and early forties, which tipped the regime into totalitarianism. The USSR remained totalitarian until Stalin's death in 1953. By the time Khrushchev took over, it had returned to tyranny. A loose, qualitative approximation of these developments is presented graphically in Figure 10 below.

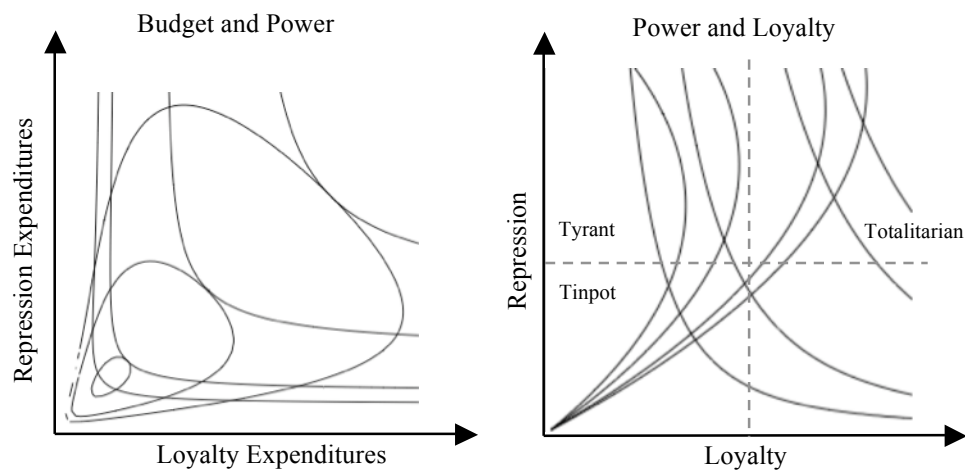


Figure 10: As the country's productive capacity expands, the dictator is able to afford more power.

Stalin behaved with exceptional sensitivity to the incentives outlined by selectorate theory as well. He tirelessly concentrated the de facto locus of political choice around himself. He reduced the number of agreeing parties needed for action, while simultaneously increasing the ease with which those same elite could be replaced. An underappreciated aspect of the Bolshevik revolution was its experiment with universal suffrage. Ostensibly, the entire Soviet adult population was included in the selectorate. True, the elections were fixed, but anyone could potentially rise through the ranks, and some poor farmers in fact did. Of course, the Soviet selectorate thus defined was radically heterogeneous in composition. For more on that important departure from classic selectorate theory, please see Chapter Three.

Limitations

Several important limitations of these models must be addressed. First, the overall changing conditions are considered here on an ad hoc basis, because neither model is yet properly suited for long run, interdependent, endogenous dynamics. Furthermore neither model incorporates external threats, and so the major wars are left out as well. In future work, I hope to recapture these important aspects. Also, I cannot yet claim a level of precision necessary for “fitting” or “measurement.” The models add depth to the historic description, but cannot yet make numeric predictions.

Since the models assume high degrees of homogeneity within the population, differential treatment of subjects within a group is not addressed by them. Historically, Stalin used what he took from those he repressed as rewards for those who supported him. He wiped out some groups while strengthening others. Purging builds loyalty both by threat and by culling. Furthermore, the purges did occasionally eliminate legitimate opposition amongst the innocent slaughtered crowds. The models at present assume a backwards-bending response to repression, such that as repression increases, loyalty first increases, then declines. However, consideration should be given to an S shaped possibility as well, under which the most extreme repressions again elicit increasing loyalty when the greater part of detractors are dead. While both terrifying and possible, this last aspect is not necessary for analysis. As shown in Figure 10, Stalin continuously reinvested his fraction of national product back into loyalty and repression. If the true loyalty response resembled the curves shown, then Stalin was able to avoid the backwards bend via loyalty payments for curve expansion. Therefore, at all stages of his rule, additional margins of repression inspired greater loyalty.

Lastly, these models make no allowance for outside threats. They are designed for consideration of local power struggles only. Therefore, the war periods must be excluded. Clearly, this makes room for important future contributions. However, in a somewhat broad sense, we can note that the external pressures on Stalin were somewhat relaxed during the inter-war period, when Russia was closely allied with Western powers, and when Stalin still held aspirations for partnership with Hitler. That period of ease left

Stalin a bit more leeway to divert resources and political clout away from war preparation and towards internal politicking.

Coalition maneuvers during the interregnum, 1924-1929

Stalin was among the most ardent, energetic, and devout of the Bolsheviks, and the first Commissar of National Affairs. He had rescued and protected Lenin from arrest in 1917, was the editor of *Pravda*, and was among the first five members of the Politburo. At first, in keeping with democratic centralism and anti-factionalism, the Politburo maintained a veneer of unanimous rule after Lenin's death. In reality, Stalin had formed a troika with Lev Kamenev and Grigory Zinoviev to counter Trotsky (Evtuhov and Stites, 2004, p333), rendering Mikhail Tomskey and Premier Alexei Rykov essentially impotent. At the time, Trotsky's eventual supremacy seemed inevitable. Trotsky spoke and wrote persuasively, and was favored by the military and the youth. However, Trotsky failed to grasp the necessity of politicking within the party, a point on which Stalin shone.

A brilliant political organizer, Stalin had, since 1922, used his position as General Secretary to stack the party and Central Committee with loyal followers. In essence, Stalin outmaneuvered Trotsky by perceiving with greater clarity the political incentives he faced. Stalin built his winning coalition by replacing large portions of the higher-ranking selectorate, who in turn felt they could rely on his continued patronage. Trotsky played to outsiders, youths and intellectuals at home and abroad, with unyielding

emphasis on global revolution. Though I will concede the possibility that he considered revolution a public good or necessity, Trotsky's pursuit was theoretically equivalent to excessive personal consumption, like an obsessive hobby diverting resources away from potential coalition members at home.

From 1925 to 1927, both Zinoviev and Kamenev lost faith in Stalin, and defected to Trotsky's side, forming and heading the United Opposition faction against Stalin. Their primary push was towards a return to democratic process within the party, though certainly not democracy for the nation, and towards allowing factions again, their own in particular. Put differently, they sought to expand the requisite size of the minimum winning coalition while holding the size of the selectorate constant. If successful, they would have increased the odds one among them might prevail over Stalin. This was a rational move, given their doubts about Stalin's loyalty.

With the help of Alexei Rykov and Nikolai Bukharin, Stalin's coalition won out. At the 15th Party Congress, Trotsky, Kamenev, and Zinoviev were all expelled from the party. Soon after, Trotsky was expelled from the country as well, though Kamenev and Zinoviev were eventually brought back into the fold. By 1929, Stalin was deeply entrenched as master of both the party and the government apparatus. Even Bukharin, Rykov, and Tomsy were crushed for resisting Stalin's radical industrialization and increasing repression.

His loyal appointees enjoyed a period of reward and authority. But the reciprocity of Stalin's loyalty would prove fickle, as the purges soon would show.

Entrenchment on the path to tyranny, 1929-1932

Though undeniably preeminent, Stalin was not free of challengers and detractors. He was still challenged openly in meetings of the Central Committee and Politburo by some braver members. Mikhail Kalinin, the nominal head of state, argued on behalf of the peasantry from which he came. It was an offense his wife would pay for dearly during the Purge, but at the time, Stalin feared the Politburo might unite against him.

Martemyan Ryutin, an Old Bolshevik, tried and failed to accomplish just that from his non-voting seat on the Central Committee. Stalin took the threat quite seriously, redoubled repression, invented conspiracies, arranged show trials and executions for “wreckers,” and accelerated collectivization and industrialization. Yet at the same time he used the repression along with propaganda and redistribution under the 5-year plan to invest in loyalty as well. The productive capacity of the Soviet Union was expanding, though individual well-being for the most part was not²⁶. Stalin flexed his power to capture ever-increasing shares of that production, and reinvested nearly all of it in more power.

²⁶ I again direct interested reader to the crucial insights of Robert Higgs. Soviet production was never consumer wealth. It was a war machine, not easily compared with western prosperity.

Ryutin was arrested, expelled, reinstated, and eventually sentenced to ten years forced labor, a sentence cut short by death during the Purge. Stalin turned the secret police against the Red Army high command as well, such as General Tukachevsky, his enemy since the Polish war of 1920. Agreeing with the accusations of lesser soldiers, Stalin claimed his plans were “so over ambitious as to be almost counter-revolutionary” (Montefiore 2004). His show trial was insufficient though, and Stalin had to concede reluctantly, “The commander turns out to be completely clean.”

To secure against potential opposition, Stalin needed to mold his surrounding institutions further. He had to shift more power away from rivals, concentrating it on himself and his coalition. Repression and charm were his primary means to that end. He did not merely defeat challengers; he replaced them with loyalists and changed the rules and institutions in his favor. The challengers drove him to extort the out-group further, and to funnel that stolen wealth to the people who held him aloft. His path to totalitarianism arched first through tyranny.

Famine in the breadbasket, 1932-1933

The Ukrainian famine of 1932 was an undeniable act of Holodomor – murder by hunger. Probably between three and four million died in the Ukraine, approximately half of the six to eight million who died across the Soviet Union as a whole. Calculated by ethnicity, including Ukrainians laboring on neighboring soils, ethnic Ukrainians

comprised nearly 80% of the famine's fatalities. Whether Stalin still believed in the economic viability of the socialist collectives he enforced is irrelevant, as are bad weather or lingering war effects. As Amartya Sen (1983) has repeatedly expressed, famine is mostly a problem of entitlement to food, not availability of food.

Stalin could have easily averted the worst of the famine by simply belying grain taxes a few months, even with given crop yields, even without foreign assistance, yet chose instead to deepen it. Furthermore, much of the grain collected was for export, for the purchase of urban industrialization. Stalin knew exactly what was happening and why, and encouraged young Bolshevik activists to torment starving farmers, whom he accused of hoarding grain.

Since the consequences were anticipated, the Holodomor should be analyzed as an act of genocide. Even if the events and motivations fail to meet some legal definition of genocide, it nonetheless maintains the moral equivalent of genocide. Bueno de Mesquita et al, 2003, explicitly exclude the Ukraine's Great Famine from selectorate analysis on the grounds that "our theory does not seek to explain nor can it explain genocide against those who pose no threat to the regime" (p 347). Indeed, neither model is currently equipped for differential treatment of disenfranchised subgroups. Even as the Holodomor was under way, government programs for health and education were on the rise elsewhere. Stalin was extracting wealth from the disenfranchised Ukrainians for the benefit of big city Russian communists.

Even within that framework, however, it would be uncharacteristically myopic of him to burn out so much human and physical capital, unless he really did regard the Ukrainians as a major obstacle or threat. If so, then the famine is instead a result and tool of deliberate and simultaneous increase in both repression and loyalty spending, but via transfers. Indeed, Lenin too had strong concerns about the “peasant problem” and had concluded that the peasants would have to do a bit starving. It would seem, then, that Bueno de Mesquita et al too quickly dismiss the threat, *as it was perceived from Moscow*.

The first five-year plan was celebrated for its explosion of productive output, in spite of doing little for the desires of consumers. But what it did produce, Stalin could use, and this step fits squarely on his expected path, though its differential aspects deserve closer, future attention. This interpretation also aligns with the great efforts Stalin made to keep the famine hidden both at home and abroad, since it was an embarrassingly ruthless crime, and not a natural disaster.

Furthermore, the theoretical description holds if Stalin either instigated the famine deliberately, or simply accepted it as a consequence of accelerated repression, loyalty, and power. The specific question of whether the Holodomor fits a legal definition of genocide is therefore irrelevant to this discussion²⁷.

²⁷ Interpretation through the Wintrobe model and my own extension depends on historical assumptions. If Stalin truly believed the violence of collectivization would bring about plenty, even in excess of his next five-year plan, then the famine can be read as a

Stalin's constitution, the Great Purge and Moscow Show Trials, 1933-1938

The Moscow Trials and ensuing Great Purge began in earnest August of 1936. Show trials and purges were commonplace before and after this period, but at no time were they so rampant as in the late thirties. This period is relevant because it ushered the most dramatic contraction of Stalin's de facto minimum winning coalition. It represents a drastic increase in repression, and surprisingly, an increase of loyalty as well, thereby marking the tipping point from tyranny to totalitarianism.

In the model I developed in chapter one, repression and loyalty expenditures occur simultaneously, in static optimization. Here, the two were partially staggered, with repression spending preceding loyalty spending. The opportunity for gains from exchange shine between the first model and selectorate theory in this case. As discussed below, the indications of both models play out, with each adding to the explanation of the other. Increasing access to increasing national production allowed Stalin to increase loyalty and repression, as described in the first model. On account of selectorate concerns, Stalin wished to use repression to alter the institutional structure of the winning coalition, and then afterwards reward the surviving members, hence the interval. On the

negative shock to both economic performance and productive capacity, both of which should correspond to a decrease in both loyalty and repression, as occurred in 1921 under Lenin with the start of NEP. We observe the reverse, and so if these historical assumptions hold, the famine contradicts the Wintrobe models.

other side, repression, as modeled in the first chapter, provides the mechanism for fulfilling the incentives prescribed by selectorate theory.

For my purposes here, the show trials, purges, and restructuring of the new constitution are really one multi-pronged assault on the institutional constraints Stalin abhorred. The new constitution in 1933 set Stalin at the helm of an ever-increasing apparatus of repression that operated now beside and above the communist party. In practice, this alone made dissent and debate suicidal. The Central Committee, now called the Supreme Soviet, met just three times more before his death. He used this enhanced power to eliminate all challengers and to remove the opportunity for opposition. Kirov's assassination at the close of 1934 provided Stalin with the political catalyst he needed to launch this full-scale assault. It was the perfect cover for false investigations and strategically imagined conspiracy theories. They struck hardest at the top.

Civil war hero and longtime rival Tukhachevsky was among the first removed. Approximately 40,000 military personnel followed Tukhachevsky in the fall. Among them were "60 percent of the marshals, about 90 percent of the highest army commanders, all the admirals, about 90 percent of corps commanders," and other high level leadership (Evtuhov 2004, pp. 365-368). From the party, nearly all of the Old Bolsheviks were purged, along with 70 percent of the Central Committee, 90 percent of the union leaders, the politburo, and two successive heads of the NKVD secret police

force (along with much of the force itself), Yagoda and Ezhov -- for whom this period is often named (*ibid*).

The purges spread through all levels of society and throughout all regions of the USSR, and not all orders came from the top. Stalin allowed and even encouraged officials and civilians alike to report proactively on one another. Active, creative purging became an almost entrepreneurial duty. This was perfect for Stalin, who knew that competition for his own throne was mitigated by fierce competition below. Officials battled for Stalin's approval, for advancement, and for survival. The new climate of lethal rivalry by denunciation made coalition formation even more costly for rivals than ever before.

Consistent with selectorate predictions for a small coalition, large selectorate system, from this time until Stalin's demise, party elite and *nomenklatura* enjoyed aristocratic trappings and relative riches. Apartments came to resemble museums. The privileged knew well the mechanism of patronage that filled their coffers. And they knew, now more than ever, how easily they could be replaced. The repressive environment mixed with high rewards for loyalty, gave Stalin a power unprecedented in human history. That was the genius of Stalin's system. The more he repressed, the more loyal the people became. At its height, however, the repression peaked away from his eventual equilibrium mix. At that time he was trading off institutional change for static equilibrium. It was a risk, because if the right challenger had swooped in when fear was high and loyalty payments were low, the story might have changed. Stalin accepted the

tradeoff off and won the gamble. By 1938, the institutions had given way, and the mighty Gensek redirected all negative emotions and blame onto his last significant internal threat. So ended Nikolai Ezhov, the Bloody Dwarf who had enacted Stalin's terror.

What of the populace? I had long taken for granted the image of a beaten and cowed population, paralyzed by atrocity into automaton servitude, as was Zamyatin's 1921 prediction in *We*. This was emphatically, mercifully not the case. For most people who survived, life simply went on. People studied, toiled, courted, wed, and drank. They explored different types of employment, dabbled in black markets, and viewed cinema. Farmers stole time to work private plots, and exaggerated their actual communal contributions. Though jokes and illegal pamphlets denouncing Stalin still circulated, fervent adoration of him abounded. Stalinism was a personality cult, complete with mythology, legend, and religious ecstasy.

It was a passionately, if not delusionally optimistic way of life that kept a brighter tomorrow firmly rooted at the heart of today. The revolution was a success, they believed, the USSR had achieved Socialism, and all the promised rewards were on their way. I can imagine how triumphant and vindicating it must have felt to believe. True, the revolutionary spark was dimming, but the lifestyle was writ in. Roughly two million people had been arrested, most of them had died, or would soon in gulags. Yet The Great

Purge, while horrific, was far from overwhelming in a country of more than 160 million people well acquainted with death in its myriad variety.

Hanging unresolved in the framework of most historic accounts of the era is the lingering question “why?” Why did Stalin go to such ends, even weakening his own military and national defense with the threat of war present and rising? Was it just to satisfy a series of grudges? Was it all the madness of a paranoid sadist slipping into senility? In the context of these models, there is no mystery. The grudges were incidental, the paranoia merely convenient. Stalin’s path to greater power required the purges, so he enacted them without hesitation or remorse. From his perspective, the cost in military expertise was well worth the massive re-concentration of political authority. Purges served his purpose brilliantly, and must therefore be regarded as the deliberate machinations of a fully rational, albeit evil genius, and not as a madman’s fearful, vengeful folly.

Sadly, that same sick rationality pervaded every level of society. Stalin did not plan nor execute every aspect of the purges; he did not need to. The institutions he designed encouraged the fire to spread on its own. Neighbors purged neighbors, colleagues purged colleagues, even families turned in against themselves. As the flames subsided, fear and devotion were all that remained.

Epilogue: Stalin's death, Khrushchev's thaw 1953-1964

Stalin's death was a rare focal point for the surviving elite. Further research would be necessary to confirm this hypothesis, but I believe they perceived Beria as a continuation of Stalin, and eventually saw Khrushchev as the farthest distant alternative. Stalin had compressed the institutions of power, and at last those institutions could push back. The sudden increase in the minimum winning coalition size came with an imperfect transfer of the apparatus of repression and loyalty, tools more expensive for Khrushchev than they had been for their former master. His only choice, therefore, was to retreat into the thaw, falling back through tyranny to near tinpot levels. In fact he cut back too far, as evidenced by his eviction a mere ten years later.

In the final days before Stalin's death on March 5th of 1953, the ranking members of the Presidium made plans for succession, a process never formally addressed in the Soviet system. At the forefront was the troika of Georgy Malenkov who would be chairman of the Council of Ministers, Lavrenti Beria who would head Internal Affairs and State Security and would back Malenkov with the secret police, and Vyacheslav Molotov who would take up as Foreign Minister. Following in rank order were first deputies Nikolai Bulganin and Lazar Kaganovich.

While the troika struggled for control of the ministries and state apparatus, Khrushchev stepped down as Moscow party leader to focus on his position as one of eight secretaries of the Central Committee, further establishing himself in the party. Recognizing that

Beria's tyrannical ambitions posed an immediate and lethal threat, Khrushchev orchestrated a collective betrayal, which culminated in Beria's arrest and eventual execution in June and December respectively. By the time Khrushchev gave the famous 1956 "Secret Speech" denouncing Stalin, he had won party favor over Molotov and secured leadership over the union.

The fact that many of Khrushchev's legacies were overturned after his removal in 1964 may indicate that his winning coalition was looking for a better deal. Particular with regard to insisting that one third of officials be replaced after each election, a mandate they removed shortly after him. I am curious to discover how much his party coalition had changed since defending him from the Anti-Party Group seven years before, but that is a story for another paper.

Conclusion

The selection of these specific cases is justified by the anticipation that these events can provide insights into the viability of models developed in earlier chapters. While the model descriptions fit well, I found that variability within the cases was less than I had anticipated. For selectorate theory, the dominant feature was Stalin's ever-shrinking minimum winning coalition. For the model I developed based on Wintrobe's insights, the driving factor was growing productive capacity that could then be redirected towards power. Both of these factors turned out to be monotonic in Stalin's time, if the Ukrainian

famine is rightly characterized as deliberate repression and not as a negative economic shock.

Originally, I had thought Stalin moved from totalitarianism to tyranny during the Purge, but then back again. I was wrong. On the growth path for Stalin's power, both repression and loyalty increased throughout his regime. Tyranny was a waypoint on his quest for far worse. Yet his subjects never ebbed their love for him. Their lives were far less unsettled than I ever would have imagined, and on reflection, that terrifies me far more than the dystopian fantasies I held. It is more frightening because it's more real. It is a possibility so close to me now that I can actually imagine making the series of choices that would have had me simply going about my daily factory chores throughout the worst of times. I can even clearly imagine believing the revolution had won, and feeling glad for it. These are dark thoughts that redouble my gratitude for my birth-land, my education, and particularly my solid foundations in the public choice school of thought, and in methodological individualism in the context of natural rights.

But worst of all, and what plagues my sleep most – in that twilight horror where innocent blood is just another efficiency calculation, where the future is worth whatever the past, and where faith, not freedom, was the highest virtue: in that cold, fanatical land, less than a century past, I fear that I too might have become a Stalinist.

CHAPTER 5: CRITICAL CASE STUDY OF MAO ZEDONG'S CHINA

“You’d better have less conscience.
Some of our comrades have too much mercy,
not enough brutality, which means they are not so Marxist.”
-Mao Zedong, 1955, on the topic of peasant starvation²⁸.

Introduction

Mao Zedong was a complex autocrat, full of contradictions. He was born into chaos, and would later create chaos for political advantage. Though unique in scope and composition, Mao was also a rational agent, subject to incentives, confronted by shifting budgets and opportunities. His power was never magical or divine, but stemmed from an immense and devoted followership, in an institutional framework that required a very small winning coalition garnered from a very large selectorate. I present here a political-economic analysis of key tipping points in his autocratic rule extracted from their historic context. I find that with consistent application of the two models discussed and developed in chapter 1 and 2, all of Mao’s major acts evidence rational choice power-augmenting characteristics. Perhaps Mao hoped for a socialist utopia as well. In the

²⁸毛主席则侧重于强调要通过加快生产关系的改造来大力发展生产力。… 在七届六中全会的结论中，他在谈到加快农业合作化动因时说：“在这件事情上，我们是很没有良心哩！马克思主义是那么凶哩，良心是不多哩，就是要使帝国主义绝种，封建主义绝种，资本主义绝种，小生产也绝种。在这方面，良心少一点好。我们有些同志太仁慈，不厉害，就是说，不那么马克思主义。”

early years, he seems to have nurtured a genuine wish for it. But once in power, keeping and extending power came first. From that perspective, all else follows.

China's cultural heritage is ancient, and it extends into the present era. To understand current Chinese politics, salient aspects of the country's history must be addressed. I begin by setting the context and scene with the ancient and more recent histories respectively²⁹. I then critically evaluate controversial interpretations of Mao's personality, and make explicit the assumptions necessary for modeling his actions. After recapping the basic predictions of those models, I turn to Mao's path to power, focusing attention on perceived tipping points in his regime. The final section concludes.

Ancient context

Though Mao strived for a jagged break from China's vast history and tradition, he drew inspiration and legitimacy from two classical totalitarians, chiefly involved in China's first unification. More than two millennia prior to communist take over, during the warring states period around 350 BCE, Lord Shang Yang 商鞅 was authorized by the Duke of Qin to implement his interpretation of legalist philosophy. Chinese legalism is the philosophical consequence of placing the ruler above and in control of the law, and all others under the rule of his law, but without any protection or even conception of natural rights. It is a nationalistic philosophy in which devotion to the state is paramount, dearer

²⁹ This section leans heavily on the structure of Spence 1998 and 2006, and Hammond 2004.

even then family, but is hostile towards aristocracy and nepotism, favoring positions allocated by performance. For instance, Lord Shang made a policy of taking land away from aristocrats and giving it to high performance farmers and officers. What we would think of as property rights were never fully respected, and in fact merchants and commerce were explicitly deemed parasitic. However, production beneficial to the ruler was incentivized.

Legalism assumes, at least implicitly, that rulers and ministers are (or must be) wise, that the populace is evil, corrupt and lazy, and that obedience, not virtue, is the ultimate responsibility. Law and power must be explicitly amoral, their sole purpose being the advancement of the leader and the state. The powerful state, with laws equally applied, aimed to control the strong and weak alike, a fierce break with prior dynasties. With position determined by law and performance, Shang hoped to end wasteful aristocratic struggles and intrigues, and to monopolize predation. His ideology was raw pragmatism, realpolitik turned inwards. His military strategy was to do and exploit what others were ashamed to do. Yet he assumed, despite the cruelty, that he would garner mass support because he believed the people crave most glory and stability, even when achieved by brutal and ignoble means.

The ancient historian Sima Qian described Shang as “endowed by heaven with a cruel and unscrupulous nature, and was a man of little mercy.” Shang illegalized sloth, enslaving or conscripting those who worked little or poorly. He assigned clusters of

neighbors to spy on one another, and penalized anyone who failed to report a crime, as severely as the criminals themselves. The personal intrusion and cost in social capital fell heaviest on large families and farming communities. He criminalized the housing of undocumented strangers. Disagreement with the state, even at an abstract philosophical level, was a treasonous offence.

Many scholars and intellectuals were put to death. The penalties were ruthless and severe, often lethal, and for the first time levied as readily on the nobles as on the masses. Not surprisingly, this assault on privilege caused his downfall. As soon as Duke Xiao of Qin, Lord Shang's patron ruler, died, the elite descended upon Shang, eventually slaughtering his family, while ripping Shang's body apart by five chariots.

Though ruthless and despised by Confucians then and since, Lord Shang's stable, nearly universal, legal structure provided a radical productive and military advancement over the purely arbitrary rule of prior lords. Fixed laws, even bad ones, have advantages over fluid, flippant, or absent laws. Though the welfare of the people is hard to assess, the Qin state grew powerful and wealthy. Shang created the conditions and set the example Qin Shihuangdi needed to conquer all seven kingdoms and unify all of China under one rule, for the first time, in 221 BCE.

Born 259 BCE, Ying Zheng 嬴政 defeated the surrounding kingdoms, claimed the mandate of heaven and with it a new title, which could be translated as "First Splendid

Divine Emperor of Qin” – Qin Shihuangdi, 秦始皇帝. Qin Shihuangdi implemented the legalist framework Shang designed. He was just as ruthless, for which he was hated, feared and respected. Like Shang, he awarded positions on the basis of skill and loyalty, ending hereditary command. As had Shang, he burned books and buried scholars alive, particularly Confucians. Ideological exclusivity was essential for suppressing appeals to virtue that might countervail the law.

Mao Zedong shared this contempt for intellectuals, once boasting: "He buried 460 scholars alive; we have buried forty-six thousand scholars alive... You [intellectuals] revile us for being Qin Shihuangs. You are wrong. We have surpassed Qin Shihuang a hundredfold" (Mao, 1969). Mao drew the comparison repeatedly, admiring and emulating Qin Shihuangdi, even while paradoxically lambasting imperialism. Political commentary, rare though it was, thinly masked complaints against Mao in the form of historic rants against Qin.

Furthermore, coherent with legalists and with Shang in particular, Mao held the masses in contempt as well. The earliest written work we have from Mao is a school essay he wrote after returning from army duty at the age of nineteen. The essay praises Lord Shang, and reveals the early roots of Mao's perspective. The foreshadowing is strong as well, so I include the essay here in its entirety. Mao responds to a particular story of a heavy pole that Shang left at the city's south gate, with a large financial reward for anyone who could set it up at the north. At first, no one trusted the reward, but once

completed, the reward was paid as promised, as a symbolic gesture that Shang always lived up to his word, and by extension, would always enforce the law.

How Shang Yang Established Confidence by the Moving of a Pole

When I read the Shi ji about the incident of how Shang Yang established confidence by the moving of a pole, I lament the foolishness of the people of our country, I lament the wasted efforts of the rules of our country, and I lament the fact that for several thousand years the wisdom of the people has not been developed and the country has been teetering on the brink of a grievous disaster. If you don't believe me, please hear out what I have to say.

Laws and regulations are instruments for procuring happiness. If the laws and regulations are good, the happiness of our people will certainly be great. Our people fear only that the laws and regulations will not be promulgated, or that, if promulgated, they will not be effective. It is essential that every effort be devoted to the task of guaranteeing and upholding such laws, never ceasing until the objective of perfection is obtained. The government and the people are mutually dependent and interconnected, so how can there be any reason for distrust? On the other hand, if the laws and regulations are not good, then not only will there be no happiness to speak of, but there will also be a threat of harm, and our people should exert their utmost efforts to obstruct such laws and regulations. Even though you want us to have confidence, why should we have confidence? But how can one explain the fact that Shang Yang encountered the opposition of so large a proportion of the people of Qin?

Shang Yang's laws were good laws. If you look today at the four thousand-odd years for which our country's history has been recorded, and the great political leaders who have pursued the welfare of the country and the happiness of the people, is not Shang Yang one of the very first on the list? During the reign of Duke Xiao, the Central Plain was in great turmoil, with wars being constantly waged and the entire country was exhausted beyond description. Therefore, Shang Yang sought to achieve victory over all the other states and unify the Central Plain, a difficult enterprise indeed. Then he published his reforming decrees, promulgating laws to punish the wicked and rebellious, in order to preserve the rights of the people. He stressed agriculture and weaving, in order to increase the wealth of the people, and forcefully pursued military success, in order to increase the prestige of the state. He made slaves of the indigent and idle,

in order to put an end to waste. This amounted to a great policy such as our country had never had before. How could the people not fear and trust him, so that he had to use the scheme of setting up the pole to establish confidence? From this we realize the wasted efforts of those who wield power. From this, we can see the stupidity of the people of our country. From this we can understand the origins of our people's ignorance and darkness during the past several millennia, a tragedy that has brought our country to the brink of destruction.

Nevertheless, at the beginning of anything out of the ordinary, the mass of the people always dislike it. The people being like this, and the law being like that (i.e., the people clinging to their old ways, and the law being directed toward radical change), what is there to marvel about? I particularly fear, however, that if this story of establishing confidence by moving the pole should come to the attention of the various civilized people of the East and the West, they will laugh uncontrollably so that they have to hold their stomachs, and make a derisive noise with their tongues. Alas, I had best say no more. (as translated in Schram 1992)

In this essay we see many vital components of Mao's philosophy, subtly aligned. Slavery for the crimes of idleness or poverty is justified and desirable. Yet such slavery somehow preserves the rights of the people. One wonders, what rights? Mao sees no conflict in this, and is humiliated that the Chinese people would doubt a lord with such power. Interconnection alone should obviate all distrust. Furthermore, the doubts and complaints resounding from the masses are trivial to dismiss, since they always dislike the beginnings of radical change, clinging, as they do, to old ways. Turmoil justifies any radical change. The ruler must punish the rebellious. He seems also to equivocate between the welfare of the country and the might of the state. With authority and prestige, the people's happiness is assumed. So how can one explain such a large proportion in opposition to Shang? Persistent stupidity and backwardness, he answers. Since he assumes the laws were good ex ante, there can be no other reason to resist.

Mao was never a Confucian, nor was he in any meaningful way egalitarian, least of all in outcomes. The authoritarian roots of Chinese power run deep in time and culture, and Mao grew his own empire from the same. Fu Zhengyuan, author of *Autocratic tradition and Chinese politics* (1993), goes so far as to argue that the communist takeover was a mere continuation of Chinese imperial autocracy, and not a revolution at all. He sought all along to act like an emperor while breaking down the past. He built a cult of worshippers around him, just as he himself had worshipped in the cults of Shang Yang and Qin Shihuangdi.

Setting the scene

Mao Zedong 毛泽东 was born into the tumultuous turn of the century, December 26th, 1893. So great was the upheaval of both centuries that a fair comparison can be drawn to the Warring States period of his two role models. Having accumulated four thousand years of continuous divine rule under the mandate of heaven, of numerous cyclical fragmentations and reunifications, barbarian invasions and assimilations, for the first time, as the nineteenth century turned into the twentieth, the hitherto unquestioned preeminence and centrality of China was imperiled. Until the late 1800's, all outside the immediate imperial oversight were barbarians expected to pay tribute to the Celestial Empire. There was no concept of China as a nation among many. Mao encapsulated this

same sense of centrality into his own persona as the grand and ultimate philosopher. The Celestial centrality was China's version of exceptionalism, a worldview Mao characterized.

The century preceding Mao was rife with colonialism, opium wars, and uprisings. It began in the midst of the ethnic Miao Rebellion and the tax-related, mystic White Lotus Rebellion. Both were quelled, but unease with Qing rule grew, and the dynasty weakened. British attempts at trade were resisted or treated as tribute. When free exchange was forbidden, violence and colonies followed. Opium proliferated. Britain battled over opium trade barriers, settling with Hong Kong in the 1840's. In the 1850's the Miao rebellion re-flared, but was overshadowed by the massive, quasi-Christian, cult-like Taiping Rebellion from 1851 to 1864.

The Taiping analogy

The Taiping uprising speaks to the surprising likelihood of the cult of Mao. Taiping was a movement hinged on one man named Hong Xiuquan 洪秀全. Hong had had a feverish, almost comatose vision-dream. He couldn't parse the dream at first, didn't understand the significance of the man who'd called him younger brother, the older woman who had purified and presented him, nor of the old bearded man, who was somehow paternal, and exhorted him to battle demons. The dream was so vivid, so gripping, that his family said he leaped unconsciously from his bed, flailing and slicing as if with an invisible sword.

Years later, when his friend pointed out a large pamphlet Hong had brought home long ago but never read, the interpretation became clear. The pamphlet was Biblical excerpts, translated into Chinese, with some commentary. The interpretation was that Hong had met his spiritual father Yahweh, spiritual mother (Yahweh's wife, though distinct from Mary), and his older brother Jesus. Hong accepted this realization as fact, and it changed him. His confidence and purpose radiated. Followers multiplied around him, numbering above 50,000 in less than six years.

Their doctrine was holistic with remarkable similarities to communist ideals, especially in the first Taiping commune just outside Guangzhou (Canton). Breaking with Confucianism, they at first abolished rank and hierarchy, embracing radical egalitarianism. Private property was abolished. Families were encouraged to work and provide for their own needs, but were also required to donate all surplus to the communal treasury. Family ties were weakened or broken, and family members typically lived separately. Men and women were separated as well. Land was common. Tasks and crafts were pooled and shared. They were by all accounts more communal, and more socialistic than the Chinese communists would ever be. They were more puritan as well. And though Hong never read nor heard anything about Marx, Marx did eventually read and write about Taiping. As the movement grew, Hong's ambitions grew, from establishing a separate community to overthrowing the Qing and establishing a heavenly kingdom on earth. In 1850 he decided to act. He launched a military campaign with himself as the Heavenly King, and with his top elite as the four kings of the cardinal

directions. They fought through Hunan province, skirmishing with the armies of the Qing. Their appeal to the population was great, and new members flocked to them wherever they went.

Earlier on, clashes had occurred with Qing authorities when the Taiping sect started desecrating and destroying temples, statues, and other false idols. Hong understood this as part of his task for slaying demons. He therefore militarized his followers, won some battles against the Qing, but was eventually driven away. And so, likening himself to Moses in Exodus, he led his heavenly kingdom on Earth on a long march from Guangxi province in the south to the Yangzi river 长江³⁰, questing for the promised land, and gathering followers along the way. They settled at last in Nanjing, the temporary paradise on Earth, a holding ground until the Lord decided to transport the faithful to heaven. Once established, they began to fight for expanded territory, never quite reaching Beijing, but conquering much of south and central China. Throughout this time, the Taiping leaders adopted increasing luxuries, and established a royal harem, which drew criticism and resentment by contrast to the enforced puritanism for their hundred million subjects. They broke the laws of abstinence from sex and alcohol, which carried a death sentence for followers³¹. Not surprisingly, Western powers considered Hong to be insane, not at all the Christian ally they had hoped for, and eventually ended up helping the Qing instead. They were especially displeased once they discovered just how much

³⁰ Commonly known as Cháng Jiāng, the Long River.

³¹ Opium use was so ferocious a transgression that it was awarded its own commandment.

of the Bible he had edited to fit his vision of purity, and to cleanse all sin from his patrilineal ancestry of spirit.

Ultimately, the Taiping could not resist the well-funded Qing general Zeng Guofan 曾国藩. In 1864, Zeng massacred Nanjing and the surrounding areas. The rebellion was brought to an abrupt end. Ironically, Taiping 太平 means Great Peace, or Heavenly Peace, yet it echoes still as one of the bloodiest rebellions in human history, slaying several million soldiers, and causing plague and famine claiming all told perhaps ten to twenty million souls.

Mao and Hong share many important similarities. Somewhat superficially, they were both messianic autocrats with vast cult followings. Both imposed brutal, lethal, arbitrary law based loosely on the distorted pretense of egalitarianism. Both used the law to repress rivals and entrench themselves. Both rose to power on long marching military campaigns, keen on overthrowing the seated regimes. Though it seems Hong was a true believer at first, both drew consternation for hypocritically indulging in the luxuries and lecheries of power. More significantly, both blasphemed the purportedly immutable and infallible texts from which they derived their political legitimacy, and both purged their highest ranks of devotees.

But their deeper similarity speaks less of leadership, and more to their common followership. Chinese political climate has heavy momentum, and the climate of the late

Qing humiliations under multiple colonial torments enabled potential autocrats. Both men found eager executioners and enthusiastic soldiers, all birthed from furious peasant lands, each of whom sought foremost the escape from tyrannies foreign and domestic. But, as violent revolutions so often accomplish, the peasants merely exchanged their old tyrants, through bloody purchase, for new tyrants.

At all levels of society, the people were quick to discard individual rights and dignities for the more thrilling prospect of heaven via purge. Rare seeds though they might be, Mao and Hong sprouted from the same soils of discontent, and blossomed in the same institutions of extremely concentrated power, enforced by violence and collectivization. Millions thronged to the hope of their new societies. Few anticipated the horror and impossibility of enforcing mandatory equality of outcomes. Mao's institutions of power, and therefore his results, were an amplification of Hong's. For Hong, the Qing Dynasty was still too strong, and he lacked Russian troops and Stalin's eye for a communist neighbor.

The fall of Qing

The Qing responded the rebellions and turmoil with the Self-Strengthening Movement, hoping to escape further humiliation. Elites argued for the establishment a powerful modern military and for western science and industrialization. They formed a bureau to translate western science and engineering, and also social and political works,

particularly social Darwinism. From this they learned the political theory of the equality of nations inherent in treaties, and were angered by un-equality of treaties to which they were subject. The Zongli Yamen was formed to manage diplomatic relations with foreign nations. Their worldview of Celestial centrality was cracking. However, unlike the Meiji restoration in Japan, which was a massive and unified push towards modernization, many conservatives in the Qing authority resisted modernization. This merely added to the humiliation of the Sino-Japanese wars in 1894. The emperors and elite had thought of Japan as a distant little brother. The little brother dominated the elder and significantly imposed its will upon him.

Demand for a more effective response to imperialism grew. Liang Qichao and others advocated complete institutional restructuring. Qing Emperor Guangxu gave them that chance in 1898. Guangxu was convinced by the writings of the reformers, and launched the 100 days of reforms, including reducing bureaucracy, increasing information flows and eliminating restrictions on information. Constitutional monarchy was seriously considered. Yuan Shikai袁世凯, commander of the modern troops, decided the reforms had gone too far. Conspiring with The Empress Dowager Cixi, he put the emperor under house arrest. This ended the last chance for the Qing to modernize and secure its global position. With repeated high level failure, hope for peaceful revolution waned.

Mongolia, Tibet, Xiangjiang, and other regions struggled for autonomy (a option Mao supported in his youth). Local warlords wrested increasing local powers. Conflicts emerged or persisted with Britain, India, Russia, Germany, France, Japan, and the United

States. The Qing Empire was slowly forced to concede, not only was it just one nation among many, but perhaps the weakest of its rivals.

When Mao was seven, the Boxer Rebellion 义和团运动 of 1900 failed to oust the foreign presence. Peasant movements were a long tradition in the fall of dynasties. Again, the rebellion had a spiritual core. They believed that their martial training and mysticism could protect them from western bullets. They were furious with the colonies and associated unfairness. Missionaries, for instance, were protected under the treaties with the Qing. Therefore, rice-Christians (Chinese who converted for food or influence) could exploit such connections, and to gain special access to charity, food, and other resources. The Boxers sought to purify society from foreigners and foreign influences alike. The governor of Shandong province encouraged them. In the summer of 1900, they marched on the imperial palace and were welcomed. Cixi proclaimed she was on their side. In June of 1900, the Boxers laid a 55-day siege on the diplomatic corridor of Beijing. An international alliance of interested countries defeated the Boxers in August, then occupied Beijing. Cixi fled with the young emperor, all mystical powers having proved useless. Though Cixi signed a new treaty allowing her to return, trials and executions were held for sympathetic officials and Boxer leaders alike, including indemnities owed to the western powers – large sums of money – that signaled the Qing were falling, and indeed lasted only another decade.

In 1905, the same year Japan defeated Russia in battle, Confucian exams halted. They had run continuously since 1380. Plans for a constitutional monarchy were established, including provincial assemblies by 1916. However, the plans were again resisted, this time for not being radical enough. Sun Yatsen 孫中山³² emerged as the most promising revolutionary, despite several botched attempts at military uprisings and violent popular uprisings against Qing government officials, particularly in the south. In 1908, both the Emperor and the Empress Dowager died. As her final edict, Cixi named three-year-old Puyi 溥儀 as emperor, though actual power stemmed from a regency council of his conservative uncles. Political adaptations ground to a halt. Sun devoted great effort to organizing young officers with the Revolutionary League, and to planning insurrections. He then launched a worldwide fundraising tour to finance his revolution.

In October 1911, bombing saboteurs in a Russian concession were discovered. Authorities prepared to purge the army, so the army soldiers, many now loyal to Sun, responded by coup, and arrested senior officers and magistrates. The rebelling soldiers called upon the military and people to support them against the Qing. Other military groups followed suit spontaneously. Sun Yatsen received word of the uprisings in

³² Chinese naming rituals can be confusing for westerners. Sun is also known by the following: Sun Deming 孫德明, Sun Wen, Sun Dixiang 孫帝象, Sun Rixin 孫日新, Sun Yixian 孫逸仙 (pronounced as Sun Yatsen in Hong Kong where he first acquired it; he used this version most frequently in encounters with the west), Zaizhi 載之, Nakayama Sho 中山樵 (his alias in Japan) and Sun Zhongshan 孫中山 (by which he is best known in China). Sun also carried the honorary titles Guofu 國父 (father of the nation), and 革命先行者.

Denver Colorado, where he was fundraising at the time. After finishing his world tour, Sun returned in December 1911. Yuen Shikai, still commander of Beiyang Army in the north, had remained close to the capital and to the Qing elite. He was therefore able to position himself as the middleman in negotiations between the nascent republic and the abdicating Qing.

As expected, Sun Yatsen assumed the presidency of the new government in January of 1912. Surprisingly, as part of the deal Yuen arranged, Sun agreed to step down along with the emperor, handing the presidency over to Yuen in February of the same year. This stage was planned as a temporary, transitional republic until the new constitution could be ratified. Perhaps Sun believed he could win the presidency again. A constitutional assembly formed by election, and Sun's group transformed from the Revolutionary League into the Guomindang 国民党, or Nationalist Party (abbreviated KMT), winning most of seats in the new congress under Nationalist Leader Song Jiaoren.

Yuen Shikai did not allow the assembly to progress. He had Song assassinated, the Nationalists expelled, and himself declared president for life. Over the next three years, despite Japan's 21 Demands for economic authority and eventual take-over of German colonial concessions, Yuen made arrangements for dynastic imperial establishment. However, in March 1916, after proclaiming himself emperor, popular outrage forced him to flee the capital. The subsequent decade unfurled in a slow and agonizing collapse. Warlords emerged from the ranks of generals, officers and others. China would have no

capital and no central government until 1927. Foreign powers, particularly Japanese, made inroads.

New voices for even greater radicalism followed. All aspects perceived in associated with imperialist history were shunned, including culture, dress, ritual, Confucianism, and the use of ancient Chinese language (as opposed to common vernacular). Ancient language embedded the hierarchical value system, and was rejected. Thoughts turned towards the West, to thinkers, philosophers, even anarchists – who in fact organized the first Chinese labor union, among barbers (Hammond 2004). As the First World War diverted western production, Chinese and Japanese businesses filled much of the global supply shock. For the first time in droves, Chinese students and workers studied and labored abroad.

In 1919, the Great Peace Conference in Versailles gave China short shrift. President Wilson had proclaimed self-determination as an aim of the war. Colonies were therefore understandably outraged that self-determination would not occur. Chinese felt this was an outrageous betrayal, and became the focal point of the May 4th movement. Students gathered at Tiananmen and marched towards the diplomatic areas, eventually burning down the house of the foreign minister (who had fled in the dress of his maid). The movement spread quickly across the country, joined not just by students but by merchants, workers, and others. The Western betrayal lingered at the heart of it. Hope for a Western style, liberal, democratic republic shattered against the treaty's hypocrisy.

Realpolitik humiliated those who wished to emulate foreign success. Attention turned to nearer neighbors, and embraced the Russian Bolshevism instead.

Establishment of the Chinese Communist Party

A dozen delegates and 50 party members in 1921 founded the Chinese Communist Party in Shanghai, the result of Marxist study groups and agents from Moscow's Communist International, or Comintern. Mao attended as the Hunan representative. They called for an alliance with the Nationalist party, as Stalin had suggested, and Sun Yatsen agreed. The First United Front allowed standing Communist members to join up. Mao did so, becoming simultaneously the leader of the Peasant Bureau under the Nationalists, and the Head of the Hunan Secretariat under the Communists. The Communists had grown from 195 members to 420 in 1923 (Spence 1999).

However, in 1925, Sun Yatsen died. Absent his ideological influence, the Nationalists stumbled slowly under Chiang Kaishek's command and leadership. Chiang Kaishek 蒋介石³³ had studied for six months in Russia, and though impressed with Russian and Bolshevik success and organization, he came away powerfully opposed to the Communist Party and its ideology. Chiang used his position at the head of the

³³ In Mandarin, his name is actually pronounced Jiǎng Jièshí. It seems his western appellation stems from mispronunciation of the Wade-Giles form of a blend of his Mandarin and Fujian pronunciations.

Nationalist army to launch the Northern Expedition and his own political career. At the time, Guangdong province was the only area under Nationalist control. As Kenneth Hammond (2004) quipped, one might even see Chiang as just one among China's many warlords, but who happened to have the Nationalist party as his political machine. The Northern Expedition then followed the same path blazed by the Taiping exodus of the previous century, bringing along many communist soldiers in their ranks. Warlords along the way were defeated, absorbed, or bargained with. By 1927, China south of the Yangzi was under Nationalist command.

Chiang decided to break the United Front, and in April 1927 he purged the ranks, turning machine guns on the communist organizers and trade unions of Shanghai, even while the Shanghainese Communist insurgents battled on his behalf against the local government, foreign powers, and organized criminal underworld. The Communists were crushed and the Unified Front dissolved. In similar fashion, communists were expelled from cities elsewhere as well.

Urban workers had long been considered the engine of the party, but absent cities, peasants became the most powerful option, and Mao's peasant expertise gave him an advantage. City uprisings and insurrections led by remaining party leaders and Soviet agents failed everywhere, including one led by Mao. Soundly defeated, they retreated to the distant mountains of Jinggang Shan, to regroup, reformulate, and explore the power dynamics of small-scale communes.

Psychology of Mao

Mao's was a complicated and conflicting psychology, more complex than initial impressions imply. He responded to every scenario on multiple levels. As Kissinger repeatedly demonstrates (Kissinger 2010), Mao was comfortable, even skillful at simultaneously holding contradictory positions. It would seem his personality generally drifted over time from inquisitive revolutionary to domineering demagogue, which is to say he responded to his changing incentives. He was ruthless, but nuanced, with a genuine interest in China's development. Unfortunately, as is so often the case, his view of the greatness of "China" did not depend on the wellbeing or rights of individual "Chinese". He was ideologically concerned about issues such as poverty and exploitation, but willing to break any bookism if it failed to fit his practical vision, or strengthen his grip on power. Though he rallied passionately for the proletariat and peasant, he maintained consistent contempt for what he deemed the stupidity of the Chinese people (as in his essay on Lord Shang discussed above).

To illustrate the variety of extant opinions, consider the contrasting popular portrayals, in descending order of favor, of Snow, Kissinger, and Chang and Halliday. In Edgar Snow's *Red star over China* (1937, revised 1968), Mao is a rough, practical, ambitious, young revolutionary who has just risen to power after the Long March. He presents Mao

for the most part in Mao's own words, and the manuscript was edited, at least in part by party officials. It was quickly translated into Chinese, and made widely available on the mainland. Snow even likened Mao to Abraham Lincoln. While perhaps not a deliberate propaganda piece, it is undeniably the communist's best foot forward, and omits entirely the darker aspects of purges or repression. For instance, while he does use the word "purge" eight times and "purged" once in the later edition of the book, only five refer to purges committed by Mao and the party (all justified), all others are of purges they suffered. Similarly, the only use of "repression" is in regards to Chiang Kaishek repressing students (p. 111), and communists or the impoverished suffers all ten instances of "oppressed". Its publication was a tremendous public relations boost for Mao and the Communists worldwide.

Henry Kissinger's *On China* (2010) gives a more nuanced and paradoxical view of Mao. He outlines Mao as a strategist employing ancient techniques of managing foreign hostilities and avoiding encirclements, as conceived in the Chinese game weiqi (called go in Japan and the US). He is simultaneously a statesman, strategist, visionary, and Machiavellian prince. Kissinger's admiration of Mao (and Zhou, and Deng) is clear, even referring to him as a colossus undertaking titanic struggles. However, Kissinger's own image is somewhat intertwined, and it seems he errs on flattery, perhaps to avoid being remembered as one who dealt with devils. Kissinger portrays Mao as ruthless but sagely, leaning somewhat towards the side of good on balance.

By stark contrast, Jung Chang and Jon Halliday's *Mao: the unknown story* (2005) is an unrelenting demonography. They cast Mao as a sadistic mastermind, one who tortures for the thrill of it, and misses no opportunity to instigate evil, directly or through his puppet Politburo. Chang's hatred of Mao permeates every chapter with increasing ire. Though diligent and tireless in their research, the book takes on too many airs of sensationalism and despotic conspiracy. They too often stretch original sources to fit the demon narrative. And yet their perspective is understandable, and not uncommon. It's a stretch, but one could imagine reading Mao along their general line.

For example, after a month long tour in the Hunan countryside, Mao wrote a report in 1927 of the brutality he had seen. It was a tour, they say, Mao later described as having "completely changed my attitude." Mao watched and heard accounts of peasants assaulting at random anyone they deemed bad gentry. They robbed, humiliated and beat them, often to death. But here's the stretch. As Chang and Halliday tell it, Mao reported feeling "a kind of ecstasy never experienced before... It is wonderful! It is wonderful!" (Chang and Halliday, 2005, p. 42). However, adding context and a note on translation brings Mao back from edge of sadism to the more common, though still brutish, jubilation of all violent revolutionaries. By returning to the original source, I found that "ecstasy" above was poorly translated from *tong kuai* 痛快, which refers more closely to a combination of elation and satisfaction, like the joy of accomplishing something difficult after hard work. Here it expresses the emotional state of a slave who has at long last overpowered her cruel master with a vengeance and now knows no restraint. It is a

violent emotion, true, but different from sadism, and has none of the pseudo-sexual overtones of “ecstasy”.

In Schram’s version (1994), he translates tong kuai to “joy” instead, which is also inadequate, though less inflammatory. Translation is always a compromise. But the complete context reveals the inappropriateness of Chang and Halliday’s implications. Speaking of the reservations shared by many, that the village violence goes too far, Mao refutes:

“It’s terrible!” is obviously a theory for combating the rise of the peasants in the interests of the landlords; it is obviously a theory of the landlord class for preserving the old feudal order and obstructing the establishment of the new democratic order; it is obviously a counterrevolutionary theory. No revolutionary comrade should echo this nonsense. If your revolutionary viewpoint is firmly established, and if you go to the villages and have a look around, you will undoubtedly feel a joy you have never known before. Countless thousands of slaves – the peasants – are there overthrowing their cannibalistic enemies. What the peasants are doing is absolutely right; what they are doing is “fine!” “It’s fine!” is the theory of the peasants and of other revolutionaries. Every revolutionary comrade should know that the national revolution requires a great change in the countryside. The Revolution of 1911 did not bring about this change, hence its failure. Now a change is taking place, and this is an important factor for the completion of the revolution. Every revolutionary comrade must support this change or he will be a counterrevolutionary. (Schram 1994, p. 432)

While I remain unconvinced by many aspects of his argument and premise, and would not condone such violence, this passage cannot be taken as evidence of sadism. The tong kuai 痛快 here clearly refers to the results of the uprising more generally, not to a particular relish for torture. To be sure, Mao was quite comfortable with the violence, and encouraged its use to spread a terror among the gentry, as did most revolutionary

Marxists. His acceptance of violence made him ideologically compatible with Moscow, consistent with Trotsky, and fit for a Leninist revolution. “A revolution is not like a dinner party” he admonished. “It is necessary to bring about a ... reign of terror in every county” (Mao, 1927 in Schram 1994). But the vector of terror he encouraged at the time was of the peasants terrorizing their former masters, many of whom had in fact abused them.

Such deep-seated yet contrasting characterizations of Mao are difficult if not impossible to adjudicate. Fortunately, my purpose here is not to judge his soul, but rather to model his action. Therefore, I now turn to psycho-biography to further establish the necessary link between Mao’s personality and the autocratic incentives to establish and maintain power through loyalty, repression, and coalition maintenance. Caution must again be stressed, and I echo Rancour-Laferriere’s (1988) insights with regard to Stalin, that diagnosis and pathology are a different matter when the personality under analysis really was important, really was grandiose, and when other people really were conspiring to murder him, as opposed to the more common delusions of such.

The most thorough attempt at a modern psycho-biography of Mao is “Mao Zedong’s Narcissistic Personality Disorder and China’s Road to Disaster,” by Michael Sheng, (in Feldman and Valenty 2001). Though, admittedly, Sheng is a historian, not a psychoanalyst by training. Sheng hypothesizes that Mao’s driving mental characteristic is a pathological narcissistic personality disorder. He describes an overbearing,

overindulgent mother who imbued him with the sense that he was the all-good center of an all-good world, and entitled to special treatment. In stark contrast, his harsh father made him the all-bad center of an all-bad world. Rather than balancing or compromising the two, he split and compartmentalized, imbedding the contradiction into his sense of self and worldview. From that point on, he could retreat from feelings of worthlessness in a hellish world, into fantasies of worthiness in utopia. This regression into archaic narcissism was a paramount pattern.

Mao was astonishingly rebellious towards his father, even insisting that the old should work more than the young. When his father died, Mao didn't bother to return for the funeral, or after, a massive taboo in China even today. In his 40's, Mao told the reporter Edgar Snow that his father was a hot-tempered taskmaster, who offered little reward for hard work, but frequent beatings. Mao said he hated him, and during the Cultural Revolution even mentioned that he wished his father could suffer the same harsh treatments of the purged. He in turn became a harsh father as well, for his children and his country alike. Sheng attributes Mao's paranoia and insecurity to aggression against his father imago.

He was also, I must interject, a questionable husband at best. Though he often disparaged marriage as a capitalist, bourgeois, institution of slavery, Mao had four overlapping marriages, and probably many other lovers as well. His first was an arranged marriage to Luo Yixiu 罗一秀, which he rejected out of hand, and never considered legitimate. His

second sprang from a long and dear romance with Yang Kaihui 杨开慧, the daughter of one of his mentors. In spite of his philosophical misgivings, their informal wedding took place the same year as the First Conference, in 1921. They had three children together, which prompted her to beg Mao not to leave for the revolution. She was captured and executed by the Nationalists in 1930. Though Mao had essentially abandoned her, he seems to have maintained strong feelings about her throughout his life. Before she died, however, Mao had already married He Zizhen 贺子珍 in May of 1928 on Jinggang Mountain. Just prior to the marriage, Yang Kai Hui wrote to Mao with despondent, loving concern for how sad he must be, alone on the mountain, though he was already in He Zizhen's embrace. He Zhizhen eventually bore six children, but only ever knew one, the other five having died or disappeared after giving them up at birth, a matter that tortured her throughout her life. She later travelled to Russia for treatment of cervical cancer and to have bomb shrapnel and a fetus removed. She decided to keep the child but it died in months. She stayed in Russia to care for her daughter and for Mao's other children by Yang Kaihui. Mao married his fourth wife, Jiang Qing 江青, in 1939. She had one daughter with Mao, and later rose to power in the Gang of Four, though Mao spurned her for other women. Whatever Mao's commitment to his party and ideology, clearly his commitment to family was weak indeed.

As with so many narcissists, however, Mao's mother could do no wrong. He praised her hatred for injustice, her purity, and her impartial love for all. "His idealizing transference with his mother evolved into transference with the communist cause, which supposedly

represented the ultimate good for China and the world.” It fed his grandiose conception of himself as hero of the universe. But his Self Condemnation, as the following journal entry was titled, was as deep as his aspirations were lofty. He projects an imagined “guest” who points a finger at him and condemns:

I see that you have but one crude skill, and yet, you make a treasured gift of it. You have not achieved any measure of virtue, and yet, you wish to make a show for the crowds, gathering your kind around you and putting on airs by rolling up your sleeves and raising your eyebrows. You do not have the capacity for tranquility; you are fickle and excitable. Like a woman preening herself, you know no shame. Your outside looks strong, but your inside is truly empty. Your ambitions for fame and fortune are not suppressed, and your sensual desires grow daily. You enjoy all hearsay and rumor, perturbing the spirit and misuse time, and generally delight in yourself. (Schram, 1992 pp. 72-74, as quoted in Sheng)

The paradox of these two images of self is characteristic of narcissism. Mao pursued an impossible ideal that covered a deep-rooted sense of worthlessness. His cult emerged as a sort of exchange between his ideology-hungry followers and their mirror-hungry leader.

His outer shell was fragile, though, and as his power expanded, so too did his insecurity and paranoia. Hence his famous intolerance of disagreement, criticism, or acknowledgement of mistakes, no matter how plainly wrong he might be. All such negative emotions were instead projected onto the many enemies he perceived or invented. The same encouraged denial and avoidance of personal responsibility when behavioral correction was in order. Sheng attributes much of the Great Leap Forward to denial, but Dikotter (2010) reveals transcripts of conversations between Mao and top officials in which he clearly does not deny the consequences, but rather denies any better

or alternate course of action. For Mao, buying foreign weapons and allegiance was a calculated improvement over merely sparing millions of his people from starvation.

Mao's narcissism and resultant paranoia proved useful instruments for his political triumph. Paranoia helped him notice and act on suspicions of threat, and willingly purge any and every potential challenger. He accepted precautions and isolation others might have considered unreasonable. And unlike the vast majority of narcissists, millions of followers agreed that Mao was more important than anyone else. He gladly stoked that belief, set his plans to boil in what he asserted was cast-iron ideology, and harnessed the steam to propel his highly pressurized, unrelenting drive for China's advancement.

Autocratic modeling of Mao

Political economic models are effective, but they rarely tell us the whole story, or even the greater part. We must use social science more generally to relate historic tipping points into theory. Oksenberg (1977) outlines the general consensus that Mao's authority was weak during the early years, 1949-1955, grew through the Great Leap Forward, 1955-1959, waned due to failure from 1960-1965, climaxed 1966-1969 with the Cultural Revolution, then subsided from 1969-1976, as age and the Gang of Four struggled for dominance.

Using production data and broad coalition observations, I ascribe tipping points to Mao's career as follows: from nascent warlord to tinpot in 1949; from tinpot to tyrant with the General Line in 1953; from tyrant to totalitarian leading into the Great Leap Forward in 1957; back to tyrant at the Lushan party conference amidst the disastrous consequences in 1959; and from tyrant back to totalitarian riding the Cultural Revolution in 1969.

Contrary to Oksenberg's conception, Mao maintained totalitarian authority until his death in 1976. Unfortunately, there is some degree of inescapable ambiguity with respect to the meaning of the term tyrant as applied to the period between the Leap and the Cultural Revolution. The regime was in a state of tyranny, though Mao himself was much less engaged in the workings of the government, operating instead through the party and popular publications.

Mao's psychology adheres well with the axioms of Selectorate theory, the Wintrobe model, and my reformulation of the Wintrobe model in chapter one. Mao prioritized power over consumption, but enjoyed a superior lifestyle throughout his reign. He presented a public image of frugality, but always feasted while others starved, enjoyed weekly, lavish parties and performances, a luxurious armored personal train, and multiple, palatial, resort like homes, with swimming pools, walled in gardens, sectioned off rivers, lakes, and the like. He needed power to enact his revolutionary vision, and to play out his heroic fantasy, but that always included a hero's reward. Unlike Stalin, Mao was never a true believer. Marxism-Leninism-Stalinism fooled Mao, as it did so many others, but never transformed him into a devotee. It was merely his best shot among

many competing revolutionary tracts, though he demanded that everyone else accept his word as irreproachable.

In the fully parameterized model considered in the first chapter, autocratic utility takes the form $U = \kappa^\mu C^{1-\mu}$, where μ represents relative preference for power versus consumption, C is consumption, and $\kappa(L, R) = L^\alpha R^{1-\alpha}$ is power produced from loyalty, L , and repression, R . The μ parameter was moderately high for Mao, even given his natural taste for fine living.

Both the original Wintrobe model of totalitarianism and my reformulation in chapter one predict specific autocratic responses to external system shocks. Economic shocks, as depicted unambiguously in Figure 11, both to overall productive capacity and to current performance, correlate positively with levels of repression and loyalty when an autocrat strongly favors power. Therefore both loyalty and repression increase with economic growth and decrease with economic decline, in both the long run and the short run.

Periods of growth provided increasing resources that Mao could capture and bend towards domination. Likewise, the dramatic period of decline caused by the Great Leap Backward contracted Mao's budget and forced an abrupt retreat from power. The contraction corresponds (with a phase lag) to the dip from 1958 to 1960 shown below. It simultaneously provided a focal point for coalition participation to expand. Note though, that while the depression following the Great Leap came as a shock, the cost of the

Cultural Revolution (captured by the dip from 1967 to 1969) was an anticipated, massively bundled, simultaneous expenditure on youth and army loyalty, pragmatist and intelligentsia repression, and institutional coalition and selectorate restructuring. It most assuredly was not an unexpected exogenous shock.



Figure 11: Chinese Gross National Product in billions of 1979 US dollars. Note the massive contraction from 1959 to 1961, and the spike in 1966. Data from US CIA (1980), as reported in Cheng, 1982, Table 10.1, and reproduced in APPENDIX 3: GROWTH DATA FOR CHINA 1949-1979.

Figure 12 shows the per capita growth for the same time period. Note, though, that the important aspect for autocratic revenues is total productive capacity, as shown above.

Per capita measures relate instead to the loyalty response curve through the variable γ .

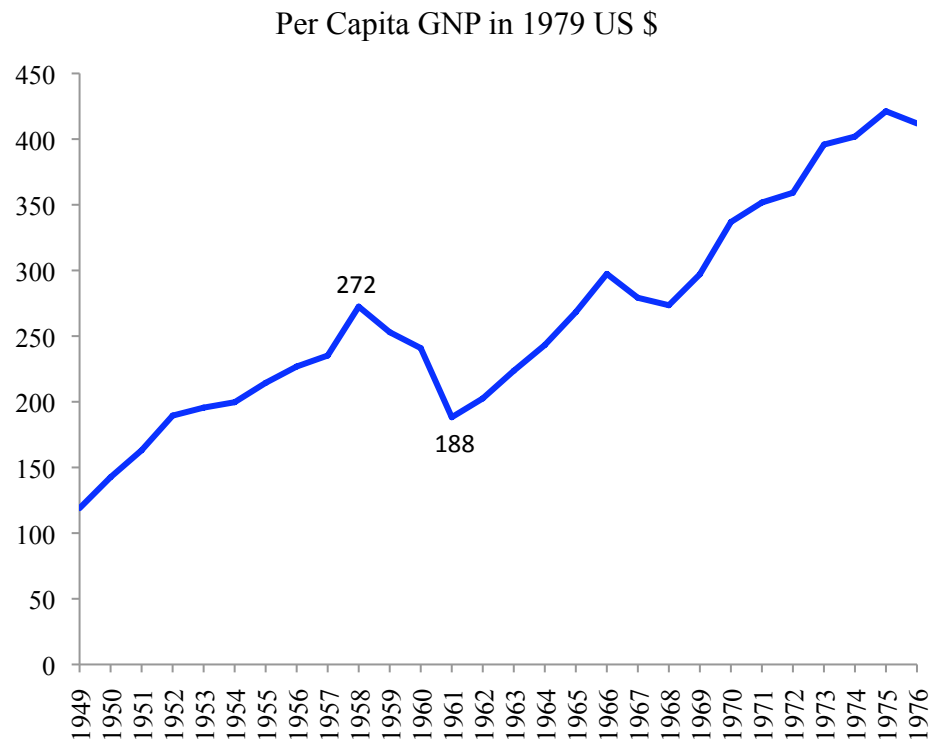


Figure 12: Chinese per capita Gross National Product in 1979 US dollars.

As is always the case for command economies, even crude estimates of national product in China are difficult to interpret. Prices, quantities, qualities, and varieties were not driven by desire and profit, but by central plans largely divorced from market forces, as Robert Higgs (1997) consistently persuades. Furthermore, growth in most market economies serves as a proxy for wellbeing, in large part because purchases reflect consumer demand. Communism detaches that mechanism. Nonetheless, while

magnitudes and meanings are heavily disputed, Figure 11 gives some sense of the changing pool of productive capacity at Mao's command.

Figure 13 displays a qualitatively plausible representation of Mao's responses to the economic shifts described above in the phase space of expenditures, while Figure 14 shows the same movements in the space of loyalty and repression. This is meant to show the establishment of autocratic equilibrium in 1949 as a still weak, tinpot regime at point A, followed by increasing productive capacity and tyranny with the general line at B, then totalitarianism leading into the Great Leap in the mid 1950's at C, then the shock back to mere tyranny following the Lushan conference in 1959 at D, and at last reclaiming totalitarianism with the Cultural Revolution in 1969, passing C and advancing to E. In Figure 13, the points mark tangent intersections of iso-power curves and iso-budget curves.

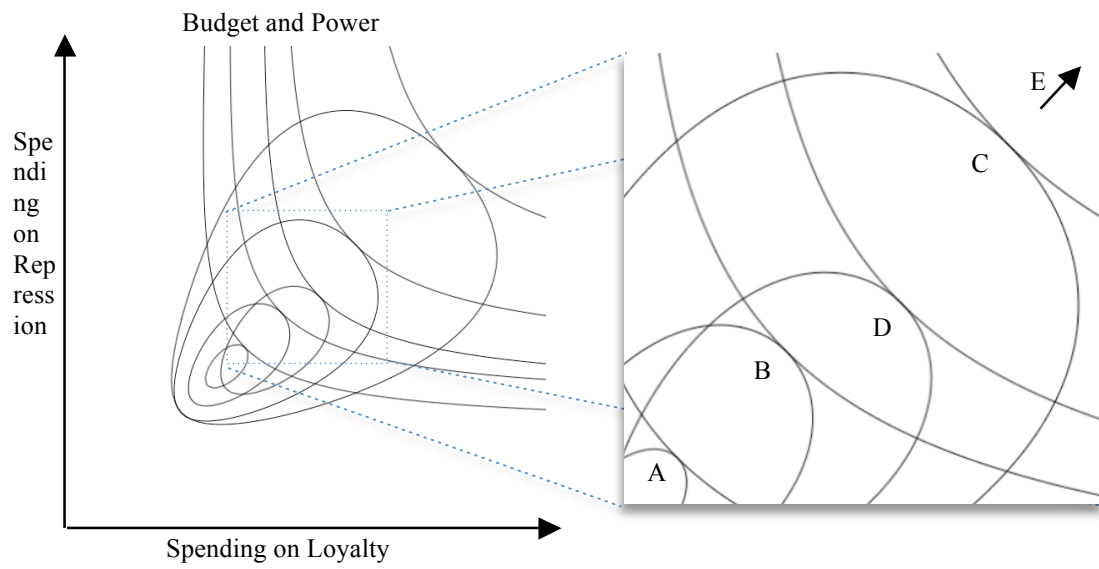


Figure 13: Diagram of Mao's power over time, as expenditures.

Figure 14 displays the same path, but as intersections of iso-power curves with shifting loyalty response curves.

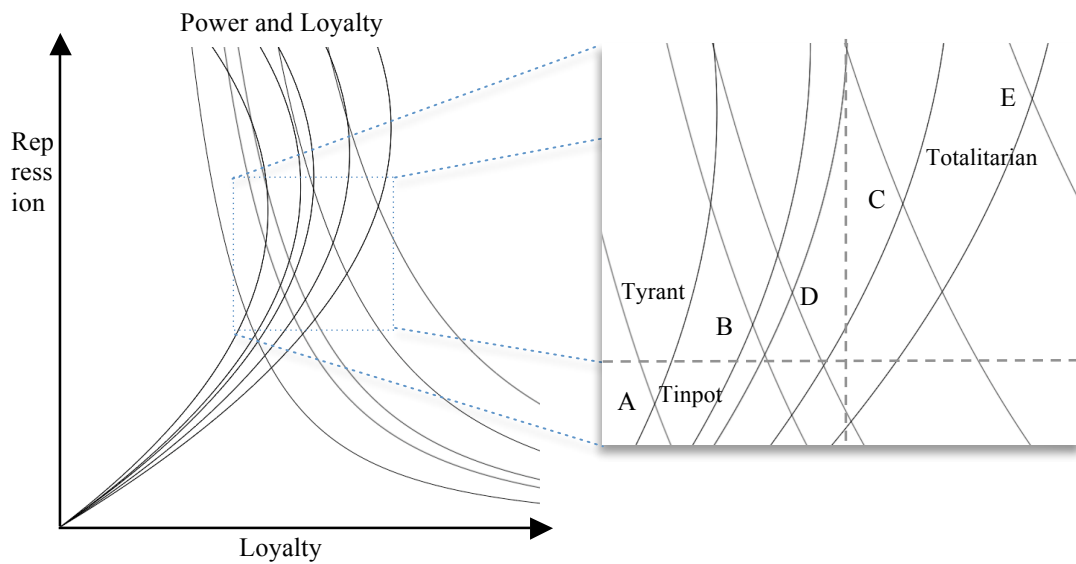


Figure 14: Diagram of Mao's power over time, as loyalty and repression.

Limitations

While elaborations on selectorate theory do attempt to model war and other external threats to regime stability, the fundamental model does not. Similarly, the Wintrobe model and my own reformulation are scoped for internal power dynamics, not for international realpolitik and the various strategies of diplomacy and combat.

However, the million odd troops pacing intermittently at Mao's many doorsteps must not be entirely ignored. War and its various potentials make up the greater thrust of Kissinger's thoughts on Mao (Kissinger 2010). In fact, Mao's perpetual revolution was mirrored by perpetual tensions for war and its various preparations. Stalin kept troops and arms at their borders, and Khrushchev did the same. Promises of a decade's peace

at the close of the Chinese civil war were broken with troops passing in to North Korea. Plans were considered and boundaries tested for the prospect of recapturing Taiwan. A lull and then surge of interest in Vietnam may have distracted Mao from further revolution. All of these presented (according to Kissinger's analysis) threats of encirclement by Western imperialists. All of them drained resources that could have been turned to other productions of power.

However, the war efforts also provided Mao with a perpetual propaganda excuse for an increasingly militarized society, and for massive extractions from peasants, in addition to Leninist demands for modernization. After all, the military was a primary source of support for Mao, due in part to the Long March. Therefore, once America was repelled from North Korea, the additional financial burdens, beyond what might amount to loyalty payments for officers and soldiers, were never dire.

The theories used here are admittedly highly aggregated and hyper symmetric. They cannot, in unadjusted form, handle questions such as: Who did the headliners represent? What was the power distribution within the selectorate and winning coalition? How do markets for power clear? Were there tiers of selectorates, repressions, and loyalties? How were groups of groups organized? For that matter, how does propaganda and thought correction actually work? Nevertheless, in combination, the models developed in this dissertation perform well in critically evaluating the following tipping points identifiable during Mao's autocratic rule:

Testing communes on Jinggang Mountain, becoming a warlord, 1928

After being purged from the Nationalist Party in 1927, and after a failed attempt to capture Changsha, Mao retreated with about a thousand of his remaining troops high into the remote Jinggang Mountains. He was later joined by the forces of Zhu De 朱德, with Lin Biao 林彪 at that time under Zhu's command. Mao and Zhu grew very close, even acquiring the joint nickname Zhu-Mao (a homonym pun for "pig's hair"). At their peak, they commanded approximately eight to ten thousand undisciplined troops, and ruled a combined population of half a million. Not to say there were no conflicts. When Lin Biao was promoted later that year, he seems to have considered it something of a favor from Mao, and tended thereafter to side with Mao against Zhu in disputes (Jin, 1999). At the time, Zhou Enlai was the de facto leader of the communist party, and commanded the main part of the Red Army, which meant Mao was Zhou's subordinate.

Mao had not yet distinguished himself as anything more than a regional leader, but was now able to explore all aspects of forced communal life, at least on a local scale.

Jinggang became their dress rehearsal for things to come. They were brutal and lethal, generally ignoring the infrequent and contradictory party instructions that trickled in from the Central Committee. It was Mao's first pass at a Lord Shang Yang like authority, though with only a fraction of the former's philosophical rigor. It was a time of peasant extremism surpassing what he had seen in Hunan. They enforced radical reforms, such

as Land Laws that took all land from wealthy, giving some to peasants, keeping some common, and using some to set up model farms. Here everyone was compelled to work, another favored edict of Lord Shang. At this point, Mao was essentially a warlord, sharing power with the other top party members and secret society leaders on the mountain.

It was also a time of dangerous distrust. From Jinggang forward, fear of Nationalist spies, moles, and sympathizers led to frequent humiliations and executions. Their fears were justified, but their methods were extreme. From this time through the early 1950's, at least 700,000 but perhaps 2,000,000 people died under ostensible suspicion. Later inquiries found that a substantial, but un-measurable, portion was accused on the bases of personal grudges or local power struggles.

Unpleasant though the times may have been, the benefit to Mao was great. By adding these early stage repressions, he actually increased loyalty. He had not yet reached autocratic equilibrium, nor did he command a vast source of revenue. But at the lower end of the loyalty response curve, moderate repression made Mao a more attractive option for people who otherwise might have been opposed to him. Better to go ahead and side with Mao, and thus avoid repression. Furthermore, at least at first, many of those purged really were adversaries and dissidents. Destroying those who were most easily identified was a cheap way of sifting the composition of loyalty suppliers.

Allowing popular implementation locked activists in, since their “struggles”³⁴ would become crimes if the Nationalists returned.

Eventually, as Nationalist pressures rose, they were all called down from the mountain, and suddenly subject to central command. Mao was now overshadowed by higher authorities, like Zhou Enlai 周恩来, and Lin Biao 林彪, who were furious with his command decisions, radical policies, and purges. He was even accused of targeting anti-Maoists more than counterrevolutionaries. Mao was marginalized and frequently ill in the Jianxi Soviet. The Long March would revive him.

Rise to power in the Long March, 1934-1936

In spite of Japanese attacks in 1932, Chiang Kaishek considered the Communists the greater threat, so civil war continued. In October of 1934, Red Army commanders determined that retreat was necessary from the encircling, advancing Guomindang³⁵. The Jinagxi Soviet was thus abandoned, and the Long March began.

The ultimate goal was to regroup with the Yan'an Soviet, thousands of kilometers to the North, over vicious terrain, crossing hostile territory, and without any clear sense of how

³⁴批判斗争 pi pan dou zhen, or 批斗 pi dou for short, means to judge and to fight. Therefore, the typical translation “struggle” is unfortunately weak.

³⁵ With military advice from Nazi Germany, until Germany later allied with Japan.

to get there. 115,000 started the retreat, leaving some 16,000 behind. Mao and He Zizhen joined when the march passed the hillside temple where they were staying on October 18th 1934. Mao had sustained intense criticism from party leadership for his handling of Jinggang and other military matters, and was under what might have been thinly veiled house arrest (Spence 1999). He was also recovering from exhaustion and a number of illnesses, including malaria. On both counts, he was largely removed from political and military affairs.

The march was an opportunity for Mao to revive his political position. Tensions were strong between political and military leaders with regards to how decisions should be made and by whom. Just a few months into the continuous trek, under frequent live fire from Nationalist forces, the situation already looked bleak. They agreed to stop, take stock, and weigh options at what they called the Zunyi Conference, or meeting of the extended politburo, January 1935. Angry accusations of blundering tactics were slung at the generals with regard to the Nationalist victories. The generals had, up to that point, employed primarily conventional military strategies. Mao pressed for a radical switch to guerrilla tactics on a fighting retreat. They would lure forces in, ambush them and run, giving up all hope for holding any territory at all. After a few days of strong debate, Zhu De and Zhou Enlai³⁶ turned strongly to his favor. Mao was promoted to be Military Assistant to Zhou Enlai, and a Standing Member of the Politburo.

³⁶ Chang and Halliday present an elaborate story of blackmail, conspiracy, and sabotage to explain Zhu and Zhou's loyalties, and many other aspects of the Long March. Until

The Long March continued for another ten months, just over a year in total, in constant retreat from the Nationalist forces. Mao's forces travelled the most treacherous, unlikely paths through deep gorges, over high icy peaks, and across a vast and deadly, barren marsh. Parts of the march would later be exaggerated into almost mythic propaganda. But the difficulty and raw stamina involved was undeniably astonishing. Legends and tales of the Long March spread quickly, and won support from peasants across China, many of who were eager to be rid of corrupt Nationalist oppressors. And though Mao had been carried on a stretcher for much of the journey, he was widely credited with its spirit and its success.

In October 1936, fewer than 8,000 remnants staggered into Yan'an Soviet. Fewer than one in ten from the initial group had survived. The implements of government they had started out with, such as coinage, mints and official documents, had been left like so many comrades along the way. Forced to abandon all heavy arms and mortars, all they had left were rifles and few bullets each. Yet, loyalty to Mao had grown just as markedly as his army had declined in number. The remnants, for the most part, adored Mao Zedong.

professional opinion of their hypothesis turns favorable, I will leave their theories out. Readers can consult their text directly for a darker read.

Weathering the war, consolidating ideology, nurturing the cult, 1936-1948

Those who remained were battle hardened as well as devoted. They became the top leadership of the Communist Party, and many held office well into their eighties. The Long March was a staggering military defeat, but a powerful political victory. As other army sections rejoined and regrouped, Mao settled in for a protracted civil war, and for a war of ideas. He had acquired leadership, but it was immature, and the theoretical level of the party was low. Mao had never received formal training in socialist, communist or Marxist thought. But with the tutelage and guidance of Chen Boda 陈伯达 he studied dialectical materialism and tried to adjust it to what he perceived as China's situation. His understanding was always fragmentary and incomplete. But he knew he had to win as a dialectical theorist, not just on the battlefield. On June 27th, 1937, the first glorifying portrait was done of Mao, with soldiers below his image. In 1938, Chen published ideological support for Mao's theories, and Mao lectured extensively on them. Mao's 1927 Hunan report was explicitly compared with the ability of Confucius at capturing the heart of modern matters. The cult of Mao was beginning.

A crucial aspect of these formative years was the institutional structure they established. In principal, anyone could attain membership in the communist party, but influence was highly condensed in the hands of those who had participated in the Long March. Participants included Mao Zedong, Zhou Enlai, Zhu De, Deng Xiaoping, Peng Dehui, Lin Biao, Liu Shaoqi, Hu Yaobang, and Hua Guofeng. Thus from the very onset, the selectorate was bound to be large, and the minimum winning coalition small.

Furthermore, early ideology justified and encouraged violent suppression of opposing views, and rewarded fanatical loyalty to the regime. Thereby the implements of repression and loyalty were legitimated as the party's central mechanism. Any highly centralized system that relies on state repression and fanatical loyalty is simply begging for dictatorship.

Mao's power in the party was growing rapidly. He was moving from persuasion towards dominance and power. As Jonathan Spence (1999) observes, Mao became "less flexible, and more determined to make all those around him conform to his own whims and beliefs. From living the simple life because he had to, Mao had moved to choosing to live the simple life, thence to boasting about living the simple life, and now to forcing others to live the simple life." By establishing himself as the theoretical core of an ideological movement, he was able to perpetuate the idea that all policy would require his approval. He harbored particular bitterness and irritation towards the educated and scholarly, as had Shang Yang and Qin Shihuangdi before him.

On December 12th 1936, two top Nationalist military officers kidnapped Chiang Kaishek and forced him to negotiate an alliance with the Red Army. The kidnapping would soon be known as the Xi'an incident. Mao led the negotiations from his new position as Chairman of the Communist Military Council, agreeing under pressure from Moscow to unify with the Nationalist against the invading Japanese.

Eight years of total war followed. Japanese attacked from Manchukuo pressing south, and from Shanghai pressing west, planning to meet at Wuhan in pseudo-blitzkrieg fashion, but faced greater resistance than they had expected. After forcing the Nationalists to retreat to Chongqing in Sichuan, Japanese troops enacted the Rape of Nanjing in December. Hundreds of thousands of civilians and disarmed soldiers were killed and raped – civilians the Nationalists had trapped in the city.

Once established, the war settled in. Communist guerrilla fighters battled in the north, while pockets of Nationalist resistance fought in the south. The brunt of the fighting was born by the Nationalist and warlord armies, though, while Mao and many of the communists remained more isolated in the Yan'an region. As the war progressed, however, the burden began to shift to the communists. Conflict took on many forms as communists resisted the multiple puppet regimes established by the Japanese and staffed by Chinese collaborationists.

The Japanese and Nationalist forces demolished much of China's infrastructure. Mao sought to establish communism as the alternative, pitting peasant democracy against feudal serfdom and imperialism. Worship in his cult expanded, inviting more ideological purges. Maoism became a weapon against countervailing thought, even as trained Marxist scholars battled against Mao's weak ideological base. He won those battles by

retreating into his cave for formal study of dialectics, and by shifting the framing of the debate to practical application in China as he perceived it.

His practical expertise, established by the Hunan report and Long March, gave Mao the edge he needed. Intellectuals who failed to self-criticize and align themselves with the Maoist line were “struggled” against, violently. In 1938 and 1939, Chen Boda published a series of articles painstakingly justifying the theoretical correctness of Mao’s line. He argued that Mao was to the communist age what Confucius had been to Feudalism, the epicenter and essence of an unfolding revolutionary history. The Great Helmsman was taking the wheel.

The 7th Congress met in Yan’an in 1945. 544 delegates with 288 alternates claimed representation of more than a million Communist Party members. The party constitution was ratified, enshrining Maoist doctrine as its guiding principal. Mao was now undisputed leader of the party, chairman of both the party and military commission. His necessary minimum winning coalition was small and shrinking, and his electorate was expanding as more peasants flocked to the communists for support. Though he expressed regret for violence against party members who were killed or driven to suicide, he ended on a powerful rallying call by invoking an ancient story of a foolish old man, 愚公移山. The man decided to move two mountains, and set to work with his sons. When a wise man mocked his futile endeavor, the foolish man replied that his children and his children’s children would carry on his work through the generations, each one reducing

the mountain slightly. The mountain, however, had no means to grow or recover, and was therefore sure to flatten eventually. When God heard of the man's simple, yet profound dedication, He was so moved that He sent two of his most powerful spirits to carry the mountains away at once. Mao made the analogy explicit.

The two mountains are feudalism and imperialism. God is the people. If the communists by their tireless devotion could inspire the people to rise up in unison, they could flatten any mountain. His rhetoric was incredibly powerful. Moved to action by his words, one can easily imagine the pledge of loyalty he inspired, and how that loyalty would increase his power, and simultaneously shift institutions towards smaller coalitions, as delegates and party members traded off checks and balances in favor of glorious and rapid unified action.

No one guessed that Manchuria would play a major role; nor that the war with Japan was nearly over. Hiroshima and Nagasaki sealed the fate of the Empire of Japan as the Emperor himself was forced to sue for peace under the threat of the total extermination of Japan via renewed nuclear warfare. As Japan surrendered across the Pacific, its puppet regimes quickly followed. Soviet Russian armies invaded the north in August 1945, as Stalin had secretly promised Churchill at Yalta. Chinese communists could move troops into Manchuria much faster than could the Nationalists. The Soviets gave the Red Army materiel seized from the Japanese occupiers together with other military assistance. Now

with Truman in the White House, and the Japanese defeated and expelled, the Communists and Nationalists returned to outright civil war.

Excused in part by the war efforts, land reform now became increasingly violent, with mass killing of landlords and total seizure of land. Propaganda efforts increased as well. When U.S. service men raped a Chinese schoolgirl, the propaganda machine transformed the tragedy into a metaphor of China, helplessness in capitalist arms. Mao even transformed the atomic bomb into a paper tiger by establishing an unprecedented tolerance for loss of human life. If half of China should die, the other half would rise victorious. Atomic bombs simply could not kill fast enough, according to Mao's rhetoric.

In 1948, the People's Liberation Army won the tank battle of Huai Hai, defeating the Nationalists in conventional warfare, and adding greatly to their propaganda image. The Nationalists were defeated on the outside, and rotted out by corruption and inflation from within. Chiang Kaishek at last withdrew with his followers to Taiwan, where he would crush the local indigenous Taiwanese resistance and impose 40 years of martial law. Mao was now autocratic ruler of China, his power consolidated by high levels of loyalty coupled with carefully applied repression.

The People's Republic of China, 1949

Loyalty to Mao was now extreme. The hardened warrior of the Long March had delivered the impossible dream of a communist state, rid at last of Nationalist, Japanese, feudal, and imperialist claims. In April of 1949, Communist troops entered Beijing, which had been besieged since autumn. October 1st, Mao announced the official formation of the People's Republic of China from the Tiananmen gate. China was again unified following 40 years of constant turmoil. But the unification was as closed as it was compact, and China's age of openness was abruptly ended.

The next few years came with promises of long peace and gradual transformation. Mao, however, was never as patient as his rhetoric often implied. Land reform was brought to the core of transformation. It was a complex, brutal, repressive process. With it came additional purges of the landed elites, further culling of the remaining opposition to Mao's vision. Land redistribution allocated plots to women as well as men. Mao sought to transform the central values, to abandon the Confucian hierarchies, and to impose simplistic uniformity along with unification. Also, by liberating women from their husbands and fathers, Mao was able to enlist them in his own designs. By including women as potential communists, he dramatically expanded the selectorate as well, as had Lenin before him.

At first, there were no administrative structures. No unified currency. Communication and travel were broken. Mao even called for autonomy for Tibetans, Mongols and

Muslims. Central debates questioned whether to invade or to allow the independence of autonomous regions to grow. Stalin opposed independence, and encouraged Mao to subdue the Tibetans instead. Mao left China for the first time to meet with Stalin, on December 16th 1949. Chen Bo Da went as well to temper Mao, and to bolster ideological discussions. Bo Da had published about Stalin's contributions. Along with a credit of 300M US\$, Stalin suggested Mao secretly foment tension in Hong Kong, then step in at a critical moment to establish himself as a respected statesman. Stalin and Mao soon reached an impasse over contested territory, and little else was said. Mao was largely ignored for the rest of the visit.

Mao returned to China strong, but decisions were still made in committee. Though undeniably preeminent, and though his power was rising, Mao was not free of challengers and detractors. He was still challenged openly in meetings of the Central Committee and Politburo.

Death of Stalin, birth of the General Line 1953

Stalin died unexpectedly in March of 1953, leaving Mao Zedong for the first time free from Moscow's expensive approval. Mao could now aim to outdo the Soviets. He had long been indebted to Stalin. Khrushchev, by contrast, commanded no respect from Mao, especially when Khrushchev denounced Stalin, and denounced the USSR's cult of personality. Mao was furious.

Following the peace treaty ending the Korean War as a stalemate, with Korea divided along the 38th parallel, Mao decided it was time to accelerate his plan to build a Chinese socialist utopia. The seeming encirclement of China by western imperialists had been thwarted for the time being (Kissinger 2011). Military resources were again available for militarized production. Mao announced the new General Line, and pushed plans for faster collectivization and economic reform. The bridge from socialism to communism, he decided, would be built through communes. Collectivization would also aid in centralizing power through continuous revolution.

Not surprisingly, the new agriculture and land reforms inspired great resistance. Previously, most people were given something that had been taken from landlords and aristocrats, but this reversed under the General Line collectivization. Land transfers would no longer be loyalty payments. Mao was betting on the hypothetical plenty promised by communism. With increasing repression and eyes pressed to the future, Mao expected a great payoff for his investment, and promised future rewards to his loyal followers. Mao bought the transition to totalitarianism on credit.

At first, Mao had reason to be optimistic. Gradual small-scale mechanization and improvements in cultivation techniques showed early promise. Improvements in fertilizers, and the spreading of fixed machine costs across larger areas benefitted from early stage, high margin returns to scale. At first, food supply per capita increased, even

with rapid population growth. But these were all low hanging fruit, and his confidence would soon prove false. As the economy went into decline, so Mao's loyalty would erode and increased repression would become a major substitute.

Great Leap from 100 flowers into famine, 1957-1962

Mao faced philosophical opposition to collectivization both inside and outside the party. He responded with the 100 flowers campaign, a call to free speech and open discourse, ostensibly encouraging competing schools of thought to air in open. Perhaps it was a trap all along. Perhaps Mao had truly expected everyone to agree with what he considered the obvious superiority of Maoist orthodoxy. In any event, when criticism turned sharply towards Mao personally, the party crashed down hard on free speech, and those who had spoken out against Mao were quickly rounded up, arrested and purged: about half a million in total.

Party members were purged first, replacing tens of thousands of resisters with hard and radical men. Zhou Enlai, Deng Xiaoping, and Liu Shaoqi were all bullied into giving their full support to Mao's plans for the Great Leap Forward, having all resisted some aspects. Accusations of Right Wing factionalism were even levied against anyone who complained the bureaucracy had grown excessive, which it certainly had, as indicated by report falsifications and increasing alienation. Maoism was pounded back into primacy, crushing ideological challenges to the side.

Instead of compromising with the legion of complaints, Mao launched into the second five-year plan, better known as the Great Leap Forward, starting January 1958. The Leap was intended to manifest the promised plenty from utopian communism. They had miscalculated outrageously by extrapolating up from high-margin early gains to new technologies, by scaling the output claims of local officials who were highly incentivized to lie, and by generally neglecting all responses to changing incentives. It was the same naïve mistake Lenin had made at the dawn of socialism. Lenin reluctantly retreated to the New Economic Program. Mao was more stubborn, less compromising, but would soon be forced to do the same.

Starvation was foreshadowed by gluttony. Local cadres and politicians competed to out produce each other, and to show off how much they could exceed quotas. In summer 1958, Khrushchev (who could not swim) sat on the edge of Mao's pool and listened to complaints of too much grain, as was the official slogan. Overeating was officially encouraged. So farmers tried to take advantage of it, knowing full well that whatever they did not eat would soon be taken away. Tens of thousands of people were already dying in spring and summer of 1958. They were worked to death, died of disease, or starved. Mao's doctor, Dr. Li, wrote of his experience, having to go to work digging, even as a privileged class. Peng De Hui and others began to speak out. Dikotter (2010) has laid to rest any doubt that Mao and the other high officials were fully aware of the

massive starvation they caused. Archived transcripts of meetings, letters and conversations reveal clearly that all top officials knew it was starvation by force.

China had bought entire factories from the USSR, priced in grain. As the bills came due, officials realized the grain targets had failed. Early on, Zhou Enlai was instrumental for pressing and implementing the plans, and had even said he would rather repay than eat. Zhou was very good at it. He made sure each province actually contributed its lot, pressuring and pushing to make sure the grain was delivered, and then handled the paperwork. Deng Xiaoping proposed that if all ate less, debts could soon be repaid.

Mao saw instead the opportunity to use the hundreds of millions of farmers for massive irrigation projects, which of course produced essentially no benefit, and were soon abandoned like vast monuments to profligacy. In similar fashion, Mao encouraged millions of small backyard furnaces for steel production, but which actually served to melt down useful tools, such as pots and plows, and render them into useless, brittle ingots. On March 25, 1959, Mao said, “Let half the people die if the other people can live.” He then ordered grain procurements to increase to one third (Dikotter 2010).

A Party Conference was held for 150 top party officials in July of 1959 in Lushan. At first, Mao encouraged a sense of open dialog, but tensions grew as discussions turned increasingly towards the tragic failings of the Great Leap, and even of Mao. When defense minister Peng Duhui wrote to Mao, almost obsequiously, with criticisms of the

Great Leap and of mass starvation, Mao took it as a threat no less serious than a direct challenge. He called a meeting of the standing politburo, distributed the letter to all attendees, then summoned loyalists Peng Zhen, Chen Yi, Huang Kecheng and more for backup. Yet, on arrival army chief of staff Huang spoke in support of Peng Dehuai, having felt deeply perturbed by the degree of starvation. Hunan party secretary Zhou Xiaozhou and vice-minister of foreign affairs Zhang Wentian spoke in opposition as well.

Mao's minimum winning coalition persevered, with Zhou Enlai, Liu Shaoqi, Deng Xiaoping, Lin Biao, Zhu De and others holding the line. However, his grip on that power was clearly shaken. Mao had made grand promises of sweet rewards for loyalty, but now the illusion came clear. At the same time as the conference, a local coup, outraged by privation, ousted the Gansu secretary Zhang Zhongliang, a loyalist to Mao, who had just announced at the conference that his great success was due to close adherence to the Great Leap. Additionally, Pravda published Khrushchev's public condemnation of communes as a fundamental misunderstanding of communism, and criticized starvation in China as well. Mao had paid for loyalty with promises, and his power faltered as they broke.

Mao forced a dichotomous choice between himself and Peng Dehui, threatening to raise a peasant army and return if the party refused him³⁷. The choice was pressed on each

³⁷ Ever the clever orator, he actually offered to lead the peasants in overthrowing the government, if the party leaders thought Peng Dehui was right about the government being the problem. So the threat was thinly veiled by servitude.

delegate individually, then on the assembly as a whole (Spence 2006). In this manner, the difficulty of spontaneously coordinating against Mao increased. In the ensuing months, Peng and all who supported him were forced to self-criticize and confess to anti-party conspiratorial factionalism.

Purging returned to the upper echelon. Mao remained Chairman of the Party, but was distanced from the apparatus of state. Power shifted towards the Pragmatists in his coalition, towards Deng Xiaoping as secretary of the secretariat, and towards the president Liu Shaoqi (Second Chairman of the PRC). At the trough of his power, Mao risked becoming a mere figurehead, though he maintained continuous control over ideology and the party. Daily affairs fell almost entirely to Liu and Deng, who moderated towards realistic appraisals and economic calculations over politics, in direct contradiction to Mao. They broke communes into much smaller units, and incentivized farmers with shares of surplus. They even relaxed oversight of daily life, allowing small instances of market activity.

By 1961, production was starting to recover, and by 1962, the Great Leap was abandoned. Deng popularized an old Sichuan saying that Liu Bocheng had often cited with regards to military tactics, and Deng wished to apply to pragmatic production: 不管黄猫黑猫，抓住老鼠就是好猫 It doesn't matter whether a cat is yellow³⁸ or black, a cat that catches mice is a good cat. But he also said in 1962, knowing 8 to 10 million had

³⁸ Often misremembered as white.

died in Sichuan, that he admired the Sichuan style, because when a command was issued by the center, Sichuan province actually delivered the goods.

The People's Communes had relied heavily on enthusiasm, but any lack of enthusiasm was punished with cruelty. In archival research for *Mao's Great Famine* (2011), Frank Dikotter expected to read about violence in collectivization. After all, "when you strip every incentive away from people, you have to literally beat them to get them to do anything." However, he was very surprised by the "spiraling mountain of violence." Dikotter found that people were beaten, shot, and buried alive. But more common was to simply ban from the canteen. Most individual travel was forbidden, so exclusion from the canteen became a quick death sentence by starvation. Anyone deemed unfit, unproductive, or undesirable might be banned. In several counties around Sichuan, 80% of those who died had been banned, had been deliberately starved. Even lighting a fire was a counter-revolutionary act. And even if you accumulated the work points necessary for entitlement to a full bowl, the man who wielded the ladle could still determine your fate, dipping deep into the pot or merely skimming the surface. By October 1960, so many tens of millions had died that even logistics ground to a halt, and piles of grain were left to rot at the roadside.

We know all this because as propaganda grows stronger, the regime's need for accurate information grows. Inspectors and investigators were sent from the Public Security Bureau, which was kept distinct from propaganda, and a team investigating mass murder

or torture has little incentive to exaggerate death rates. Dikotter was able to find a provincial archive with detailed minutes of top official meetings. Their connection and control over the countryside was clear. Like all totalitarians, it was a regime that reduced people to numbers. People were tallied like livestock, with their food and housing measured as cost. From those same calculations, planners rationed approximately half a kilogram of grain per person per day, which contained approximately 1,000 calories (Dikotter 2010). Even at the highest levels of aggregation, theirs was a diet of starvation.

Endemic of all famine, starving people resorted to eating leaves, bark, clay, and eventually each other. Cannibalism was carefully recorded. Stealing was universal, yet morally problematic, since stealing meant taking from someone else's quota, and that meant someone else would starve instead. Farmers mixed sand into grain appropriations, and that sand ended up in weak bellies. As Primo Levi (1996) said about surviving Auschwitz, survival is not heroic. You survive by making moral compromises, by stealing, by not sharing. Therefore, imposing a famine destroys lives, but it also destroys morality. Such concepts as good and evil lose meaning and usefulness. Of those who did not survive, the most agreed upon estimates range from 30 to 45 million dead. Roughly 7% of China's 600 million died, and of those, roughly 7% died as a direct result of traumatic violence. All of it authorized from the top as an unfortunate but necessary cost to advancing the revolution.

The regime had fallen back upon crude tyranny, but the locus of power was spreading out, and without the cult of personality, the pragmatists had to rely on wider appeals, aimed at a larger coalition. Mao, though weakened, began the Socialist Education Campaign in 1962, sending leaders into the countryside and factories, tasked with learning from the people. But the leaders did not want to abandon their comforts and privileges, and so it became another anti-rightist campaign, and a path back to power. Yet in 1965, Mao even struggled to publish in the party newspapers. He was losing his hold on his last pillar of authority. Nevertheless, Mao had one last fight in him. Based in Shanghai, he began preparations for the Great Proletarian Cultural Revolution.

Cultural Revolution 1966-1969

Mao was carried to the pinnacle of his power on the jubilant backs of vicious cultural revolutionaries. He lit a great self-perpetuating purge, as wild and as ravaging as Stalin's, who had inspired it. He opposed in particular those in the party who argued for a more capitalist road. It was, after a fashion, a second revolution, as Mao exhorted the masses to attack the party.

Unfortunately, there is still very little evidence available on the Cultural Revolution. The current administration still keeps the vast majority of those archives closed. What we do know is that in spring of 1966, large-scale street and worker demonstrations arose in Shanghai and other industrial cities, with demands for various reforms. In winter of

1966-67, Shanghai set aside the Communist Party Leadership Committee, and replaced it with the Shanghai Commune. Mao encouraged students to struggle against their teachers, and workers against their managers. He encouraged rebellion against the party members who took what he called the capitalist road, or diversions from socialism as he had conceived it. No longer in the palace himself, he used his cult status to light fires around it, though always putting them out in time to preserve a party for him to recapture.

The popular perception is that the revolution got out of hand, that the Gang of Four and local youth group leaders were out of control. But it's wrong to think the revolution was not what Mao intended, even if he failed to presage its every detail. Mao intended for the revolution to return him to primacy, and that is exactly what transpired. Whether or not Mao also harbored romantic aspirations of grassroots utopian socialism is entirely incidental and, by this time, highly unlikely. Tyranny would rule and repression would be the anvil of Mao's resurrection.

Deng Xiaoping and Liu Shaoqi were purged ferociously and repeatedly, though Zhou Enlai escaped the worst by offering multiple humiliating self-criticisms. Deng was arrested, stripped of all party positions, forced into re-education, paraded around Beijing in a dunce cap, made to wait tables, set under house arrest for two years, and sent to work in a tractor factory in exile with his family in Jianxi province. His son, Deng Pufeng was pushed from a building, and then denied hospital care, leaving him paralyzed for life. But Deng had it easy. Mao branded Liu Shaoqi as class enemy number one, and he and

his wife were arrested. Liu Shaoqi disappeared from public view, and the nature of his captivity, final years, and death remain uncertain and contested. After public denunciation at the Ninth Party Congress, Liu Shaoqi was never seen again, and even his family was denied the news of his death for several years.

In April of 1969, at the Ninth Party Congress of the CCP, Mao had again collected command of the party. 1,512 delegates attended, representing 22 million party members, who controlled a country of more than 700 million people. Many of the delegates were Red Guard or PLA soldiers, and not even communist party members. Mao had replaced large portions of the delegation with people loyal to him, though we do not yet know exactly how many or how loyal. Though it continued in name, Mao was done with the revolution, having accomplished what he had designed it to do. He announced the end of police violence, and took the apparatus of state back under his personal control. With the wealth of the nation again at his command, Mao returned to totalitarian authority.

Aftermath, infirmity, and the rising Gang of Four, 1971-1976

Another limitation of the models utilized in this dissertation is that they do not readily account for the health of the autocrat. Towards the end of Mao's life, he seems to have remained mentally sharp; but he grew depressed and nostalgic as his body atrophied under Lou Gehrig's disease. In fact it is not clear whether his power waned or not.

In 1971, an odd sequence of events, which might have been an assassination attempt or coup, ended with Lin Biao's death. Bueno de Mesquita et al (2003) warn that impatient heirs to a throne may attempt a move once the leader falls ill. But Lin Biao's coup, if that's what it was, is still surrounded by too much mystery to adjudicate. The Gang of Four, led by Mao's wife Jiang Qing, had risen to prominence during the Cultural Revolution, and continued to exert authority. However, recovered elements of the Pragmatists were also on the rise, and it seems that Mao was playing the two against each other.

In 1972, he welcomed Nixon to China. By 1973, Mao and his current wife, Jiang Qing, openly despised one another. In 1975, with Zhou Enlai's encouragement, Mao reinstated Deng Xiaoping, this time as Vice Premier, and put him in charge of science and technology policy. In one sense, it seems pathetic of Mao to return to the ancient strategy of pitting rivals against one another; but in another sense, Mao was always more concerned with his own legacy than with current affairs. China may have opened to a United States presidential visit under Mao, but its autocracy did not backtrack from extreme reliance on loyalty and repression until after Mao's death.

Calamities and death, 1976

1976 was a year of mourning. Zhou Enlai died in January of cancer, and throngs rallied for his wake in April³⁹ at the Tiananmen monument to the People's Heroes. The Gang of Four interpreted the wake as popular criticism against them. Riots broke out, police cars were burned, and troops eventually summoned. On July 6th, Zhu De died, and on July 28th, a massive earthquake in Tangshan killed nearly 300,000 people, and damaged Beijing as well. It was the bloodiest of all 20th century earthquakes, and was popularly interpreted as a dark omen, setting a very somber mood.

On September 9th 1976 Mao Zedong died.

Conclusion

Following the pattern of behavior and resources through the course of Mao's rule, I find that the motivating theories contribute a deep sense of understanding to the historical narrative. The selection of these specific cases was justified by the anticipation that the events could provide insights into the viability of my reformulation of the Wintrobe model and selectorate theory. At all stages of his career, Mao acted rationally with regard to the incentives he faced for maintaining power and political survival. I find also that the models predict well the general course of Mao's authority.

³⁹ Pure Brightness Day on April 5th is the traditional time to visit and tend the graves of departed loved ones.

Mao led the nation in a powerful, but energy-draining and economically disastrous campaign against the self-interest characteristic of human nature. This explains in part how Deng Xiaoping recovered the country so well. The creative and productive forces of China had been suppressed for so long, all he had to do was step out of the way and allow for a modicum of individual choice. Without the massive totalitarian personality cult Mao had cultivated, Deng Xiaoping and the pragmatists had to rely on ever-increasing minimum winning coalitions and a static selectorate. That institutional change is reflected in altered loyalty response and repression curves as well. Though the regime has access to wealth unimaginable in Mao's time, it has not returned to the same levels of totalitarian invasion. Deng Xiaoping and the other ruling pragmatists made sure that the change in regime incorporated a massive change in the structure of authority as well.

Mao's power grew with the founding of the nation until his utopian fantasy crashed down with a Leap to horror. With less access to fewer resources, Mao and the party weathered a massive contraction of power. Mao's cult of personality was so strong that he was able to turn the masses against the party for a second revolution. Once his authority was reestablished, Mao had at his command the spoils of a less monstrous policy, and he kept his totalitarian control to the end.

Even in the Marxist state, economic cycles drove political cycles. Subject to autocratic budgets and constraints, Mao maximized his own utility predictably. He used political

excuses to turn national resources in against political rivals and unfavorable institutions. Whenever possible, he pushed to contract the boundary of his minimum winning coalition, while expanding participation in the selectorate, even to students and youth groups under the Red Guard. He traded off on the margin between loyalty and repression, and used each as a tool to hone the other.

In the end, he was a powerful autocrat, like any other who survives assassination or exile. He is remembered now, by some with passionate longing, by others with visceral ire, and by most with vaguely curious indifference. His power was simultaneously violent and charming. He had an abstract love of China's glory, but calloused detachment from individual rights or suffering, no matter how dense the droves. He was born into chaos, and clung to it desperately, never allowing its manifestations to leave his side. In one sense, he was the most influential poet and theorist in China's long history. But in another, he was by far the bloodiest and most ruthless of China's emperors.

CONCLUDING REMARKS

Modeling power turns out to be tricky business. In broad strokes, the models fit quite well, connecting large-scale shocks and changes with general patterns of autocratic behavior. Before embarking on this research, I had believed there were more oscillations in the power structures of both Stalin and Mao. I was confused about difference between tyranny and totalitarianism, with some idea in mind about a high level choice between all loyalty, all repression, or some mix or balance of the two, as would be the case in a standard production possibilities frontier. In that context, I thought totalitarianism was a sort of moderation of absolute tyranny, where a leader gave up some repression in favor of more loyalty. After thinking more carefully through the models, it became clear that this is not the case.

A tyrant (as modeled here) might not have access to the resources required for totalitarianism, and the loyalty response of his particular subjects might make repression the relatively cheaper option, as compared with the budget curves of other dictators. But for any given autocrat, an increase of productive capacity means more spending on both loyalty and repression. The two increase together, and all growth paths lead to totalitarianism. Preferences only modify how quickly they will get there. In this sense, for an outside observer or for one of the repressed, any given autocrat will be worse in

their totalitarian phase than they were as a mere tyrant. However, comparisons in cross-section between various tyrants and totalitarians in given moments of their rule, are not guaranteed the same ordering. A specific tyrant at a specific moment might be crueler than some other specific totalitarian.

In fact, pulling together my full experience from this dissertation, I think the next step is to move away from categories of dictatorship type. I use them here for the sake of continuity with Wintrobe's original work, and as a convenience for marking the tipping points embedded in the case studies. However, as I show in chapter one, the types represent differences in magnitudes, but not changes in phase. Furthermore, they do not reliably identify differences in autocratic personality or preference, since external institutional factors matter so much. Yet in Wintrobe's own conception, the types are more important precisely because they relate stable personality and preference characteristics to observably different equilibria and reactions. I have found that all autocrats would be totalitarians if their institutions and resources allowed it. However, in general usage, terms such as tyranny and totalitarianism carry with them constellations of meaning beyond the present magnitudes of loyalty and repression they employ. The word tinpot is particularly inadequate for describing what might be called a fledgling tyrant, and should be distinguished from the complacent kleptocracy or cruel incompetence that tinpot generally connotes. Looking back, the confusion may not be worth the convenience. Looking forward, the equivocation of meanings could prove dangerous for policy.

I am less interested in comparing judgments of regimes, and more interested in the pattern overlaps of how they unfolded. After correcting for ambiguities inherent in the Wintrobe model and considering heterogeneous selectorates, I found that Stalin and Mao reacted in much the same way to respective enveloping macroeconomic phenomena. As their economies grew, their access to resources increased, and they spent that revenue on more power from more repression and more loyalty, and also on a bit more consumption. In Mao's case, the same worked in reverse as well, when the Great Leap Forward brought forth immiseration, though he had expected surplus. Their justifications, attitudes, and styles generally differed, yet both followed the same fundamental incentives wherever they led. Both used extensive purges to tighten their coalitions, and set those purges loose to accomplish the same throughout the hierarchy. Both employed repression to cull the least loyal, and to invigorate the most devoted. They were different men, with different goals and desires, but similar circumstances and ultimately, similar outcomes.

I have learned, however, that loyalty and repression as described here are very difficult to code. At present, I would go so far as to argue that they cannot be measured, not even in principal. I remain open to persuasion, and if someone could accomplish a meaningful measurement, it would open a vast new field of study. But I do not think it can be done, not in the sense meant here, and even high quality aggregators, such as the Freedom House index, will not work because they represent Cartesian elicitation proxies of expert opinion, but not marginal input contributions to an autocrat's ability to extort domestic

product. Furthermore, indexes focus on federal government level policy, and have a harder time grappling with community level expressions. Repression can take the form of sticks and bullets, or heavy taxes and quotas, as we often conceive of it. But it is also restricted access to the canteen, systematic or arbitrary denial of travel documents, or even ostracism from community and family. In both regimes, millions were beaten to death or shot, but an order of magnitude more were murdered slowly, through the unrelenting bureaucracy of agricultural property law. Loyalty too has many shades. Loyalty payments are often promises for future rewards. They have as much to do with shifting entitlements as with transfers and transactions. Loyalty comes with a number of lock-in mechanisms as well, switching-costs that exceed the risk related expectation calculations I initially considered. As I mentioned earlier, in an external sense, revolutionaries must fear becoming criminals if their revolution is overthrown. But I suspect now that the internal aspect may matter even more; revolutionaries can only justify their actions to themselves by continual belief that their revolutionary ideology is correct. Opposition to a party leader invites dangerous introspection about the validity of the movement itself.

The models, strictly speaking, are not designed to manage these subtleties. But the subtleties are vitally important for furthering our understanding of the mechanisms of power and authority. The analytic histories have taught me that future research must incorporate the basis of power for each tier of command, not just for the supreme leader. The origins and vectors of personal and positional power must be included.

Furthermore, the models as they stand are essentially static. Dynamics of loyalty accumulation, and time dependent responses to shocks will likely require an agent based simulation approach. The loyalty response curve used now should be replaced by agent level preferences and decisions, and repression should be explicitly modeled as differentially but imperfectly seeking out high margins for power. My reformulation would merge with selectorate theory here, forming a combined theory of political survival and power operation. The synthesis would propel me closer to my ultimate goal, which is an actionable model of power firmly rooted in the choices of individuals. Before attempting cliometric or macro-aggregate estimates of actual countries and their rulers, we must first understand at the simulated level where those observables come from, what they rest on, and what sorts of distortions they might belie.

Anticipating the dramatic increase in detail necessary to match history with such a model, I have begun charting out the individual career paths and possible network connections of politburo and central committee members under both Stalin and Mao. I hope to turn qualitative explanations of coalition changes into quantitative estimates, and to better understand the interwoven alliances, jealousies, and betrayals at work. I plan also to extend both to Khrushchev and to Deng Xiaoping. Historians often mention in passing the subtle shifts in policy opinion that accompanied Central Committee and Politburo members as they adjusted from one ministry to another. I see a hint in that about the nature and science of political pull, but at present have no way to incorporate it.

Decisions based on bureaucratic reputation and sway are necessarily tangled, but an agent level model with some assumptions about the structure of influence could begin to incorporate them.

Another crucial, but here neglected aspect is ideology. I suspect that the key to including ideology explicitly hides somewhere on the interface of human proclivities towards cult formation and the temptation to indulge in conspiracy theories. I anticipate that practical epistemic choices are as subject to incentives as any other human action. Information is scarce, and propaganda seems to harmonize beliefs, far more than I would expect. Moreover, the stories imbedded in an ideology shape the meaning individuals ascribe to events. These factors are therefore vital to the formation of values and utility. For now, ideology remains a wild card, though one notably subservient to realpolitik. Having studied the histories, I now believe that beliefs must not be ignored. The cults of personality and the cults of ideology will feature prominently in my future research.

If I had a multi-million dollar endowment tied to a mandate for a second iteration on these same themes, there are a few things I would do differently this time around. First, I would hire out the construction of the agent based program mentioned above, and would likely spend nearly half of my total research time carefully considering the specific response functions and parameters of interest. I would then use that same computational algorithm to design experiments, but then replace the robotic subjects with human participants. If the humans deviated largely or consistently from the response functions I

had programmed, then I would return to redesign the robots and try again. I would then attempt to elicit detailed expert opinion on each of the known members of the Politburos and Central Committees of Russia and China, which would become the parameters of the simulation. I would then run the program along with known macroeconomic and military shocks and threats, and just see how similar or different the simulated stories turn out to be. If inputs such as preference estimates lead to accurate overall group behavior patterns without excessive data fitting, then I would have a strong argument for the strength of the underlying model. I see some of that now in this dissertation, but at much lower resolution. I am concerned with making errors of aggregation, and would be curious to see the micro-level activity that combines into observable macro events.

I would run additional sessions on pure selectorate theory as well. I am pleased with the quality of results from my experiment here, and would like to extend them to additional parameter ranges and to larger group sizes. I anticipate, for instance, that if I were to run the design from chapter two, but use seventy, rather than seven participants per session, I expect that I would observe the same pattern of results, but with less variance, more ruthlessness, and more helpless anger. In my design, selectors have some incentive to foment instability, just to raise the odds of conquest, should they have the chance to challenge. As the pool of potentials grows, that probability declines, and so stability looks relatively more attractive for coalition insiders. Note, however, that historically the upper tiers of power rarely numbered more than a dozen or so. Therefore, in terms of applicability, I see the possibility of permanent removal as more relevant in this case than

small session sizes. With the option to remove losers from the experiment, I anticipate that they would strategize more cautiously, and that incumbent leaders would not attempt to keep as much for themselves. I further anticipate that a strong negative accompaniment to removal, such as a nasty electric shock, would accomplish more of the same. However, the design I have in mind would involve two classes of selector, one with stronger influence than the other, such as a Politburo and a Central Committee. Mobility between groups would be possible, though difficult, and the leader would require a majority of influence pledged in his support in order to maintain authority. Influence, however, would be heterogeneously distributed, as discussed in chapter three. Additionally, individuals could be purged if a majority votes them down. I anticipate that the mere existence of these institutional structures would leave inexorably to exactly the sort of Great Purge power concentration that Stalin and Mao utilized. I expect this would lay to rest any question of finding the “right man for the job” when the institutions dictate brutality. On the other hand, if sessions varied greatly, and if many were able to arrive at more beneficent equilibria, such results would form a very strong counter argument, and a fascinating indication for future research. But I doubt it.

One strong advantage of the multiple methodology approach I have employed is that it has, by way of a triangulation of sorts, naturally sharpened my understanding of the meaning behind the tools and words that are often used but rarely discussed in studies of political power. Similarly, the disadvantage is the risk and temptation of equivocation. Ultimately, a word like power can mean many things. In dark ways, power is a bit like

love: it emerges from human relationships, alters behavior, has evolutionary roots in the mind, heart, and chemistry, eludes explicit definition, but is unmistakable when it manifests. Generally, I find that the meaning of the word power is fluid and unstable, bending to the author's convenience, yet remaining somehow within broad agreement. However, consider the contrast of Stalin's power to frame, destroy, and execute even political and military super-elite, as compared with the power a monopoly might wield in a market, or the power a musician might have to move you. Honestly, I think we should be using different words. Throughout this work, I have carefully specified that when I refer to the measure of power, I mean the fractional multiplier applied to total productive capacity, which determines the leader's command of revenue. However, this power to extract both determines and is determined by the ability to repress, and the ability to elicit support. Iterating further, repression here is specifically that which is useful as an input variable for extractive power. The same is true for loyalty. Where I am most guilty of equivocation is in the autocrat's utility function, which includes a term for power. Do autocrats actually derive direct utility from their authority to extract, beyond what they might enjoy spending from their keep? I believe the answer is yes, but within that justification are appeals to the chemical rush of facing a cheering crowd, and the sadistic "power trip" of inflicting suffering on people who beg you for mercy and forgiveness. Therefore, should I have used loyalty and repression directly instead? Equivocations show up there as well, since the sadist might seek to maximize the trembles of fear, or the screams of agony, but not necessarily the same mix that assures

compliance at the coffer. Since all models must simplify, I am comfortable with my choice, but remain mindful of this drawback.

With that said, I close now with a few thoughts on Stalin and Mao. I had not expected that they would be so similar in terms of the factors relevant to these models, nor that they would be so different in other aspects. Both men started off with a crusader's drive for power. Whatever else they may have wished to accomplish, power was the central concern for both at all times. They were crusaders of faith, true believers in the plan, and that authenticity bought them early supporters and formidable stocks of reputation. For Stalin, faith was fanatical Bolshevism, which he became adept at reinterpreting to his advantage until he was able shift the cult focus onto his own person. For Mao, it was his own poeticism, fueled by revolutionary fervor. Mao never yielded the preeminence of his own lyrical interpretations on history, consequence, or the path to utopia, and he despised the communist intellectuals who returned from studies in Russia to challenge him.

The two therefore stand across significant gaps of origin, yet the practical implementation was still propaganda in justification of whatever action or desire they saw fit. Restated, their final use of ideology was functionally identical, even though their internal experience of ideology was undoubtedly not the same. I think what mattered most in the similarity of their ideologies was the moral mandate to obliterate entirely the rights of individuals in favor of a claimed collective, which they spoke for and commanded.

Communist socialism was particularly well suited to this task, in part because it spun the sacrifice of property rights into an investment for future plenty, but any absolutist nationalism, fascism, or theocracy would have accomplished the same, as the Taiping rebellion might have done.

With the institutional similarities they constructed by rule-of-man completely supplanting rule-of-law, and by centralized power stemming from coalitions that increasingly yielded formal authority to the center, both men were bound to a common path by raw political survival. Their personal differences in terms of desire, lust, hope, or compassion, melted away by comparison with the demands of the political push. External factors are important as well, such as the German threat to Stalin, or the multitude of possible encirclements facing Mao. But the robustness of these theories is demonstrated in part by showing that external factors are not necessary for the explanation. Beyond adding pressure to fight for power, threats distorted production somewhat towards military concerns. Without them, there would likely have been some shift in worker allocation away from soldiers and into factories, where production might have shifted slightly towards other types of disastrously misallocated, massive machinery. Or maybe not. Communist ideology already justified Lenin's invasion of Poland to inspire the proletariat. How easy could either have promoted propaganda for world domination on the basis that workers of the world required one flag under which to unite?

Specifically, I contend that the horrors of the Holodomor and Great Leap would have played out approximately as they did, even if neither nation feared invasion. Those threats may have worsened conditions some, but all the Holodomor required was Ukrainian reluctance to surrender all rights of product and production. As I mentioned previously, Lenin had said the peasants would need to do some starving, and Stalin was eager to comply. It was the rational next step for his path to power, regardless of that power's aim. The Holodomor was a focused, repressive program to break the backs of the peasants. It was a slaver's mission, and Hitler's war was but one incentive among many.

The Great Leap folly shares more in common with Lenin's famine. Mao, like Lenin, was the progenitor of his government. He believed in his own sweeping reimaginings of Marxist-Leninism, and was legitimately surprised when it collapsed around him. Where he and Deng, Zhou, Peng, Zhu and others resembled Stalin was in their willingness to impose starvation to meet their goals and secure their power. Perhaps some were more reluctant than others, but they actively capitulated regardless. Mao was less able to single out groups for blame and propaganda inversion, and so did not manage to promote the idea that starvation itself was counterrevolutionary and therefore deserved, as Stalin had done before him.

One subtle but valuable contribution of this work is to obviate the need for contest between demonic and saintly portrayals of the two men. In a vital sense, it really does

not matter how their hearts or spirits would be judged. The lived experience of their subjects depended on the institutions of power and property, regardless of the confluence of motivations that produced them. Whoever emerged with the charm to manipulate, and the will to do anything for power, bar none, was bound as well to create the same categories of horror. Lacking either trait, their removal would be eminent. Therefore the ultimate cause of catastrophe was all that permitted and promoted the realized institutions of power. More than any given men, it was the intoxicating spirit of revolution, and the willingness to surrender any right and every virtue for the promise of a people's utopia. Neither Mao nor Stalin were mere unlucky draws that benevolent doppelgangers could have reversed. Their legacies are a natural, logical consequence, unexcused by chance or good intention.

APPENDIX 1: GENERALIZED ALGEBRAIC FORM OF AUTOCRAT'S CHOICE

The calculus of the autocrat's choice in this model is relatively straightforward, though prohibitively cumbersome. The autocrat maximizes utility subject to the power production function, the budget, the minimum power, and positive expenditures. When the constraints cannot be met, the autocrat falls out of power. As before, subscripts are reserved for partial derivatives. In abstract form:

$$\text{Max } U(\kappa, C) \text{ s.t. } C = B(\kappa, Y) - \sigma - \lambda ; \quad \kappa \geq \kappa_0 ; \quad \sigma, \lambda, C \geq 0$$

Where: $\kappa(L, R)$; $L(R, s, \gamma)$; $s(\lambda)$; $R(\sigma)$.

The relevant responses to shocks in γ and Y are then easily derived from the relative implicit functions on the first order conditions, $\frac{dU}{d\sigma} = 0 = \frac{dU}{d\lambda}$.

$$\frac{d\sigma}{d\gamma} = \frac{-\frac{d^2U}{d\gamma d\sigma}}{\frac{d^2U}{d\sigma^2}}, \quad \frac{d\sigma}{dY} = \frac{-\frac{d^2U}{dY d\sigma}}{\frac{d^2U}{d\sigma^2}}, \quad \frac{d\lambda}{d\gamma} = \frac{-\frac{d^2U}{d\gamma d\lambda}}{\frac{d^2U}{d\lambda^2}}, \quad \frac{d\lambda}{dY} = \frac{-\frac{d^2U}{dY d\lambda}}{\frac{d^2U}{d\lambda^2}}$$

The seven relevant cross and second derivatives of U are

$$\frac{d^2U}{d\lambda d\sigma} = U_{\kappa} \cdot \frac{d^2\kappa}{d\lambda d\sigma} + U_{\kappa\kappa} \cdot \frac{d\kappa}{d\lambda} \cdot \frac{d\kappa}{d\sigma} + U_{C\kappa} \cdot \left(\frac{d\kappa}{d\lambda} \cdot \frac{dC}{d\sigma} + \frac{d\kappa}{d\sigma} \cdot \frac{dC}{d\lambda} \right) + U_{CC} \cdot \frac{dC}{d\lambda} \cdot \frac{dC}{d\sigma} + U_C \cdot \frac{d^2C}{d\lambda d\sigma}$$

$$\frac{d^2U}{d\gamma d\sigma} = U_{\kappa} \cdot \frac{d^2\kappa}{d\gamma d\sigma} + U_{\kappa\kappa} \cdot \frac{d\kappa}{d\gamma} \cdot \frac{d\kappa}{d\sigma} + U_{C\kappa} \cdot \left(\frac{d\kappa}{d\gamma} \cdot \frac{dC}{d\sigma} + \frac{d\kappa}{d\sigma} \cdot \frac{dC}{d\gamma} \right) + U_{CC} \cdot \frac{dC}{d\gamma} \cdot \frac{dC}{d\sigma} + U_C \cdot \frac{d^2C}{d\gamma d\sigma}$$

$$\frac{d^2U}{d\lambda d\gamma} = U_{\kappa} \cdot \frac{d^2\kappa}{d\lambda d\gamma} + U_{\kappa\kappa} \cdot \frac{d\kappa}{d\lambda} \cdot \frac{d\kappa}{d\gamma} + U_{C\kappa} \cdot \left(\frac{d\kappa}{d\lambda} \cdot \frac{dC}{d\gamma} + \frac{d\kappa}{d\gamma} \cdot \frac{dC}{d\lambda} \right) + U_{CC} \cdot \frac{dC}{d\lambda} \cdot \frac{dC}{d\gamma} + U_C \cdot \frac{d^2C}{d\lambda d\gamma}$$

$$\frac{d^2U}{dY d\sigma} = U_{C\kappa} \cdot \frac{d\kappa}{d\sigma} \cdot B_Y + U_{CC} \cdot \frac{dC}{d\sigma} \cdot B_Y + U_C \cdot B_{Y\kappa} \cdot \frac{d\kappa}{d\sigma}$$

$$\frac{d^2U}{d\lambda dY} = U_{C\kappa} \cdot \frac{d\kappa}{d\lambda} \cdot B_Y + U_{CC} \cdot \frac{dC}{d\lambda} \cdot B_Y + U_C \cdot B_{Y\kappa} \cdot \frac{d\kappa}{d\lambda}$$

$$\frac{d^2U}{d\sigma^2} = U_{\kappa} \cdot \frac{d^2\kappa}{d\sigma^2} + U_{\kappa\kappa} \cdot \left(\frac{d\kappa}{d\sigma} \right)^2 + 2U_{C\kappa} \cdot \left(\frac{d\kappa}{d\sigma} \cdot \frac{dC}{d\sigma} \right) + U_{CC} \cdot \left(\frac{dC}{d\sigma} \right)^2 + U_C \cdot \frac{d^2C}{d\sigma^2}$$

$$\frac{d^2U}{d\lambda^2} = U_{\kappa} \cdot \frac{d^2\kappa}{d\lambda^2} + U_{\kappa\kappa} \cdot \left(\frac{d\kappa}{d\lambda} \right)^2 + 2U_{C\kappa} \cdot \left(\frac{d\kappa}{d\lambda} \cdot \frac{dC}{d\lambda} \right) + U_{CC} \cdot \left(\frac{dC}{d\lambda} \right)^2 + U_C \cdot \frac{d^2C}{d\lambda^2}$$

With the optimality condition that

$$\frac{d^2U}{d\sigma^2} < 0, \quad \frac{d^2U}{d\lambda^2} < 0, \quad \frac{d^2U}{d\sigma^2} \cdot \frac{d^2U}{d\lambda^2} > \left(\frac{d^2U}{d\lambda d\sigma} \right)^2$$

The derivatives of κ , and C are

$$\frac{d\kappa}{d\sigma} = \kappa_L L_R R_{\sigma} + \kappa_R R_{\sigma}$$

$$\frac{d^2\kappa}{d\sigma^2} = \kappa_L L_R R_{\sigma\sigma} + \kappa_L L_{RR} R_{\sigma}^2 + \kappa_{LL} L_R^2 R_{\sigma}^2 + 2\kappa_{LR} L_R R_{\sigma}^2 + \kappa_R R_{\sigma\sigma} + \kappa_{RR} R_{\sigma}^2$$

$$\frac{d\kappa}{d\lambda} = \kappa_L L_S S_\lambda$$

$$\frac{d^2\kappa}{d\lambda^2} = \kappa_L L_S S_{\lambda\lambda} + \kappa_L L_{SS} S_\lambda^2 + \kappa_{LL} L_S^2 S_\lambda^2$$

$$\frac{d^2\kappa}{d\lambda d\sigma} = \kappa_L L_{RS} R_\sigma S_\lambda + \kappa_{LL} L_R R_\sigma L_S S_\lambda + \kappa_{LR} R_\sigma L_S S_\lambda$$

$$\frac{d\kappa}{d\gamma} = \kappa_L L_\gamma$$

$$\frac{d^2\kappa}{d\gamma d\sigma} = \kappa_L L_{\gamma R} R_\sigma + \kappa_{LL} L_\gamma L_R R_\sigma + \kappa_{LR} L_\gamma R_\sigma$$

$$\frac{d^2\kappa}{d\lambda d\gamma} = \kappa_L L_\gamma S_\lambda + \kappa_{LL} L_\gamma L_S S_\lambda$$

$$\frac{dC}{d\sigma} = B_\kappa \cdot \frac{d\kappa}{d\sigma} - 1$$

$$\frac{d^2C}{d\sigma^2} = B_\kappa \frac{d^2\kappa}{d\sigma^2} + B_{\kappa\kappa} \left(\frac{d\kappa}{d\sigma} \right)^2$$

$$\frac{dC}{d\lambda} = B_\kappa \cdot \frac{d\kappa}{d\lambda} - 1$$

$$\frac{d^2C}{d\lambda^2} = B_\kappa \frac{d^2\kappa}{d\lambda^2} + B_{\kappa\kappa} \left(\frac{d\kappa}{d\lambda} \right)^2$$

$$\frac{d^2C}{d\lambda d\sigma} = B_\kappa \cdot \frac{d^2\kappa}{d\lambda d\sigma} + B_{\kappa\kappa} \cdot \frac{d\kappa}{d\lambda} \cdot \frac{d\kappa}{d\sigma}$$

Unfortunately, since L_R can be positive or negative, there is no straightforward way to sign these functions algebraically. Furthermore, the specific functions from this paper do not simplify to useful expressions when inserted into the implicit functions above, and have therefore been omitted due to spatial constraints. Fortunately, greater insights are available from a diagrammatic approach, as advocated (with many appropriate and

scholarly points of caution) by Mark Blaug and Peter Lloyd (2010). In their introduction they bring attention to a passage from Alfred Marshall's *The Pure Theory of Foreign Trade*, 1887. While Marshall acknowledges mathematical calculus as "the most powerful engine" for grasping "general quantitative relations on the assumption of which the theory is based" (p. 5), he goes on to encapsulate my own experience delving into this model and others as follows:

But diagrams are of great service, wherever they are applicable, in interpreting to the eye the processes by which the methods of mathematical analysis obtain their results. It happens that with a few unimportant exceptions all the results which have been obtained by the application of mathematical methods to pure economic theory can be obtained independently by the method of diagrams. Diagrams represent simultaneously to the eye the chief forces which are at work, laid out, as it were, in a map; and thereby suggest results to which attention has not been directed by the use of methods of mathematical analysis. (Marshall, 1879 [1930, p. 5])

APPENDIX 2: INSTRUCTIONS AND SCREEN SHOTS

WELCOME

You have already earned \$5 for showing up on time. You may earn more during the experiment, depending on your actions and on the actions of others. We ask that you avoid any communication until you leave the lab. Please turn off all cell phones and other electronics and store them under your desk. Please sit quietly until the lab assistant says to begin.

Proceed to [Instructions](#)

E\$

E\$ are experiment dollars.

At the end of the experiment, your earnings in E\$ will be converted to US\$.

1 US\$ = 23.0 E\$

[back](#) | [next](#)

ID

You will be assigned a fixed ID letter: A, B, C, D, E, F, or G.

Your ID letter is unique to you, and will not change throughout the experiment.

[back](#) | [next](#)

ROLES

In this experiment, you may be randomly assigned to any one of the following roles:

- **Leader**
- **Challenger**
- **Supporter**

Your role may or may not change between rounds.

At any given time, there will be 1 Leader, 1 Challenger, and 2 Supporters, for a total of 4 participants.

[back](#) | [next](#)

PROCESS

Each round, the Leader and Challenger will compete.

Supporters decide who wins by picking between the Leader and Challenger.

[back](#) | [next](#)

CONTEST

If 2 or more Supporters support the Leader:

then the Leader wins.

If fewer than 2 Supporters support the Leader:

then the Challenger wins, and becomes the new Leader in the following round.

[back](#) | [next](#)

ROLE ASSIGNMENTS

At the beginning of each round, you will learn your new role for that round. Roles are determined as follows:

- If the Leader won the previous round, then he or she is the Leader again for this round.
- If the Challenger won the previous round, then he or she becomes the new Leader for this round.
- The losing Challenger or Leader always becomes a Supporter in this round.
- One of the Supporters from last round will be randomly chosen as the new Challenger for this round.
- Who becomes the new Challenger is pure chance.

[back](#) | [next](#)

MONEY

Before the supporters choose whom to support, the Leader and Challenger make a commitment about how they will spend money if they win.

Supporters see this commitment, and the winner must stick to the commitment.

Leaders and Challengers make money by winning and by committing to keep some of the money for themselves.

The money Supporters make depends on the plan of the winner.

[back](#) | [next](#)

LEADER AND CHALLENGER PLANS

The Leader and the Challenger each have a budget of 77 E\$ which they can plan to spend in three ways.

1. Keep some for him or herself.
2. Give some to the in-group.
3. Spend some on public goods

[back](#) | [next](#)

IN-GROUPS

The Leader and the Challenger each pick 1, 2, 3, 4, or all 5 Supporters for their in-group.

Therefore, a given Supporter might be in the Leader's in-group, the Challenger's in-group, both, or neither.

Money given to the in-group is split evenly among members.

For example: if the winner planned to give 8 E\$ to an in-group with 4 people, then each in-group member gets $8\text{E\$} \div 4 = 2\text{E\$}$

[back](#) | [next](#)

IN-GROUP SUPPORTER BONUSES

If you become the Leader, 2 Supporters will be randomly assigned to grant you a 5E\$ bonus.

The Supporters with a bonus will not change as long as you remain the Leader.

If you pick one or more of them for your in-group and win, you will be paid their bonus.

The bonus payment does not come from the Supporter's earnings. It is a pure bonus.

The Challenger cannot get the bonus.

[back](#) | [next](#)

PUBLIC GOODS

Each public good costs the Leader or the Challenger 4.0 E\$ to produce.

Public goods are special: they don't need to be divided. Once produced, all **Supporters** benefit from them by getting 1 E\$ for each.

For example: if the winner planned to spend 28.0 E\$ on public goods, then $28.0 \div 4.0 = 7$ are produced. Therefore every supporter would get 7 E\$

[back](#) | [next](#)

LEADER AND CHALLENGER PAYMENTS

Whoever loses gets 0 E\$ for the round.

Whoever wins gets 13 E\$ plus however much of the budget that person planned to keep.

If it was the Leader who won, then he or she might have in-group supporter bonuses as well.

[back](#) | [next](#)

SEQUENCE

First, the Leader picks his or her in-group. Next, the Challenger picks an in-group, and the Leader and the Challenger each submit a plan. Last, the Supporters pick which one to support.

Remember, the Leader must have support from 2 or more Supporters to win.

To understand the process of each round, consider the following example.

[back](#) | [next](#)

PERSON B: YOU ARE THE LEADER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 ES				
B					
C	+5 ES				
D					
E					
F					
G					

Please select your in-group members now by clicking on their highlighted boxes.

Each supporter with a bonus in the ★ column that you pick for your in-group will grant you an extra 5 ES if you win.

[back](#) | [next](#)

PERSON B: YOU ARE THE LEADER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$	<input checked="" type="checkbox"/>			
B					
C	+5 E\$	<input checked="" type="checkbox"/>			
D					
E					
F					
G					

Please select your in-group members

For example, say person B then clicks the boxes for players A and C.

if you win.

[back](#) | [next](#)

PERSON B: YOU ARE THE LEADER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$	<input checked="" type="radio"/>	22.50		
B			30.00		
C	+5 E\$	<input checked="" type="radio"/>	22.50		
D					
E			1.00		
F			1.00		
G			1.00		

Public Spending: 4

Starting with 77.00 E\$, for example, say the Leader decides to keep 30 for herself, buy one unit of public goods for 4.00 E\$, and spend the remaining 43.00 on her in-group. Then if the Leader wins this round, person A and person C will each get 22.50E\$, while E, F, and G will get only 1E\$.

Continue to the next screen for a chance to familiarize yourself with the controls.

[back](#) | [next](#)

PERSON B: YOU ARE THE LEADER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$				
B					
C	+5 E\$				
D					
E					
F					
G					

Public Spending: 0

In-Group Spending: 0

You Keep: 77

COMMIT TO PLAN

Please use the sliders to spend money on either the public or your in-group.

Were this an actual game, the "COMMIT TO PLAN" button would end your action for the turn.

[back](#) | [next](#)

CHALLENGER

The Leader has now finished making decisions for this round.

Meanwhile, the Challenger is making the following decisions.

[back](#) | [next](#)

PERSON D: YOU ARE THE CHALLENGER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$				
B					
C	+5 E\$				
D					
E					
F					
G					

Please select your in-group members now by clicking on their highlighted squares.

[back](#) | [next](#)

PERSON D: YOU ARE THE CHALLENGER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$				
B					
C	+5 E\$				
D					
E					
F					
G					

Please select your in-group members now by clicking on their highlighted squares.

For example, say person D then clicks the boxes for players C and E.

[back](#) | [next](#)

PERSON D: YOU ARE THE CHALLENGER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$				
B					
C	+5 E\$			✓	
D					
E				✓	
F					
G					

Please use the sliders to spend money on either the public or your in-group.

Public Spending: 0

In-Group Spending: 0

You Keep: 77

[COMMIT TO PLAN](#)

Now the challenger has an opportunity to pick her in-group and plan her budget.

[back](#) | [next](#)

PERSON D: YOU ARE THE CHALLENGER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$				2.00
B					
C	+5 E\$			✓	33.00
D					7.00
E				✓	33.00
F					2.00
G					2.00

Please use the sliders to spend money on either the public or your in-group.

Starting with 77 E\$, for example, say the Challenger decides to keep only 7 for herself, buy two units of public goods at 4.0 E\$ per good, and spend the remaining 62.0 E\$ on her in-group. Then if the Challenger wins this round, person C and person E will each receive 33.0 E\$, while A, F, and G will receive only 2E\$.

[COMMIT TO PLAN](#)

[back](#) | [next](#)

SUPPORTER

The Leader and the Challenger have now finished making decisions for this round.

The Leader's plan and the Challenger's plan are both announced.

Next, the Supporters pick the winner.

[back](#) | [next](#)

PERSON C: YOU ARE A SUPPORTER

player	leader bonus	leader's in-group	leader offering	challenger's in-group	challenger offering
A	+5 E\$		22.50		2.00
B			30.00		
C	+5 E\$		22.50		33.00
D					7.00
E			1.00		33.00
F			1.00		2.00
G			1.00		2.00

[SELECT THE LEADER](#)

[SELECT CHALLENGER](#)

Please make a selection.

In this example, say A selects the Leader, while C, E, F, and G all select the Challenger. Therefore, the Challenger wins.

[back](#) | [next](#)

RESULTS

After all supporters submit their decisions, the winner is determined.
Each Supporter receives the specific payment that the winner offered.

[back](#) | [next](#)

LOSER PAYMENT

In the contest between the Leader and the Challenger, whichever one loses gets no money.

In this case, the Leader lost, and therefore earns nothing this round.

Had she won, she would have been awarded 13 E\$ for winning, plus the 30 E\$ she planned to keep, plus 5 E\$ each for having two ★ column supporters in her in-group, for a total of 53 E\$.

[back](#) | [next](#)

WINNER PAYMENT

In this case, the Challenger won, and therefore earns 13 E\$ for winning, plus the 7 E\$ she planned to keep, for a total of 20 E\$.

[back](#) | [next](#)

NEW ROLE ASSIGNMENTS

Person D was the Challenger and won, so becomes the new Leader.

Person B was the Leader and lost, so becomes a Supporter.

One of the Supporters from last round is chosen at random to become the new Challenger.

[back](#) | [next](#)

WHEN THE EXPERIMENT ENDS

When the experiment ends, please sit quietly, gather your belongings, and wait for your name to be called.

You will be paid your cumulative earnings individually and privately.

If you have any questions, please raise your hand, and a laboratory assistant will come to assist you.

[back](#) | [I'm ready to begin](#)

APPENDIX 3: GROWTH DATA FOR CHINA 1949-1979

Table 5: Growth Data for China. Data from US CIA (1980), as reported in Cheng, 1982

<i>Year</i>	<i>GNP in 1979 B US\$</i>	<i>Per Capita GNP in 1979 US\$</i>	<i>Grain in Million Tons</i>	<i>Population in Millions</i>
1949	64	119	111	538
1950	78	143	130	547
1951	91	163	141	558
1952	108	189	161	570
1953	114	196	164	583
1954	119	200	166	596
1955	131	214	180	611
1956	142	227	188	626
1957	151	235	191	642
1958	179	272	206	657
1959	170	253	171	672
1960	165	241	156	685
1961	131	188	168	696
1962	143	203	180	706
1963	161	224	190	720
1964	179	243	194	736
1965	202	268	194	753
1966	229	297	215	770
1967	220	279	225	788
1968	221	274	210	808
1969	246	297	215	828
1970	286	337	243	849
1971	306	352	246	870
1972	320	359	240	891
1973	361	396	266	912
1974	375	402	275	933
1975	401	421	284	952
1976	400	412	285	971
1977	433	439	283	987
1978	483	482	305	1002
1979	514	505	315	1017

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