Resistance is Futile!: The Collective Action Problem and Successful Dissent

Katri K. Sieberg

Abstract

The subject of political repression has been a source of interest and frustration in the literature. Ideally, we would like to obtain insight into the relationship between coercion and resistance. Empirical evidence, however, has supported both theories that predict that repression will deter dissident behavior and theories that predict that brutal repression will incite protest. This paper develops a theoretical model of the potential effects of repression in terms of dissent. Approaching the study through an analysis of both the levels and targets of repression, insight is gained for why repression can lead to either a decrease or increase in resistance, and also for when we can expect either circumstance to occur.

> Lanser looked at him and smiled a little sadly, "We have taken on a job, haven't we?"
> "Yes," said the Mayor, "the one impossible job in the world, the one thing that can't be done."
> "And that is?"
> "To break a man's spirit permanently."…
> Thus it came about that the conquerors grew afraid of the conquered and their nerves wore thin and they shot at shadows in the night. (Steinbeck, The Moon is Down, 1942, Chapter 3)

Introduction

The relationship between repression and dissent is a topic of obvious concern in political science literature. From the continual reports of struggles throughout the world, problems related to the attempts of one group to gain control over another are contemporary and recurrent. The lack of resolution to these problems signals that strategies of repression and dissent have not been clearly formulated for either side of the conflict.

Analysts accept that coercion and protest are interrelated; however the exact relationship between the two remains unresolved. Repression is frequently used as a tool to deter dissident behavior, yet in some cases repression can instigate revolt. Analysis of the subject has ranged from theoretical models[i] to statistical tests,[ii] however agreement regarding the precise relationship between coercion and protest is lacking. In fact, a key source of frustration lies in the fact that portions of the literature claim that repression reduces dissent, while others assert the exact opposite - that repression increases it. Repression cannot be understood to have *both* effects! Or can it? This paper explores the relationship between coercion and protest using game theory to uncover the responses of dissidents to changes in levels and targets of repression. Using this tactic, I attempt to demonstrate both when and how the controlling group's use of the tool of repression may deter dissident behavior and when it may incite it. Through this technique, I attempt to bridge the gap between branches of the literature, creating a model that can account for the various reactions to repression.

This paper extends the literature in a number of ways. First, I acknowledge and formalize the fact that tactics used will depend on the situations in which competing groups find themselves. Second, I demonstrate that repression is not a blunt instrument – more is not always better than less, and frequently, the targets of repression are more important than the levels used. Finally, I show how misjudgments in the use of repression can incite dissident behavior. From this analysis we may uncover reasons behind empirical disparities in the relationship between coercion and protest.

As mentioned, the literature is divided regarding the relationship between coercion and protest. Intuitively, repression should be an effective tool against behavior directed against the state. From an expected utility perspective, repression increases the costs of disruptive behavior. If the costs become too great, many may opt against the type of behavior that will result in these costs. Along these lines, many researchers (Duvall and Stohl, 1988, McAdam, McCarthy and Zald, 1996) suggest that repression will decrease dissident behavior. This view has also been supported by empirical analysis (Goldstein, 1978).

Others suggest that the relationship is not that simple. Lichbach (1987) argues that dissidents will adapt their behavior in response to that of the state. If the state punishes violent protest, then dissidents will substitute non-violent protest and vice versa. Gupta, Singh, and Sprague (1993) claim that the effect of repression will depend of the type of system. They assert that repression incites dissident behavior in democracies but will deter it in nondemocracies. They state that the relationship between repression and dissident behavior is linear in a democracy and can be represented by an inverted U-curve in nondemocracies. Others, however, claim that repression can have a backlash effect, either from relative deprivation (Gurr 1970) or in response to brutal coercion (Mason and Krane, 1989, Khawaja, 1993, and Ziegenhagen, 1986).

Each of these theories has found empirical support. Moore (1998) uses data from Peru and Sri Lanka to find corroboration for Lichbach's theory. Francisco (1996) tests competing

hypotheses upon data from Northern Ireland and Germany and finds support for both the backlash and adaptation hypotheses. Gupta, Singh, and Sprague (1993) cite results from a pooled-time-series statistical analysis of twenty-four countries to give evidence for the inverted-U hypothesis.

This diversity in theory and in evidence has been frustrating to researchers. The fact that hypotheses predicting *opposite effects* of the relationship between repression and dissent find empirical and theoretical support means that the true relationship remains elusive. However, perhaps we should not be surprised that we confront such a great variety of responses. Each case has unique circumstances. Lichbach himself (1995) admits that dissidents will choose different behavior strategies depending on the circumstances.

> Different dissident groups with different [collective action] problems, facing different regimes, thereby adopt different solutions. Moreover, the explanation must also be sought in the political situation in which regimes and dissidents find themselves.(Lichbach, 1995:27.)

If Lichbach's suggestion is correct, then we should not be surprised that responses to repression in one place may vary somewhat from those found in another. Still, theoretically, this prospect is disturbing, if we wish to uncover a general relationship between repression and dissent. Careful analysis has been done of the numerous tactics dissidents can choose to undermine the state.[iii] Rather than focus on the internal group struggle, this paper explores dissident reactions to applications of repression.

The question addressed is, assuming differing initial conditions regarding the cohesiveness of the dissident group, what is the effect - in terms of dissident activity - of various means by which one group (a state or larger group) may attempt exert control over another? This analysis is theoretical and illustrated with examples. This type of study has limitations, but was selected over a statistical analysis because, as Duvall and Stohl point out (1988, 233) data on the precise levels and targets of state repression can be difficult to acquire.[iv] A further limitation of the analysis here

is that it does not account for how repression may vary across regime types.[v] This limitation derives from the fact that the theoretical analysis involved does not show how regimes or other controlling groups *do* use repression, but potential effects of this use on decisions made by members of a dissident group.

Group Cohesiveness and Establishing Control

Extending his collective action problem, (CAP) Olson (1995) examines the issue of control in the form of annexation and contends that in the case of a stronger nation overtaking a weaker one, emotions, such as patriotism, and the instinct for individual self preservation may run into conflict. In this case, the inhabitants of the threatened nation confront a free-rider problem. The result of this large scale Prisoners' Dilemma (PD) may be that a majority of the citizens fail to provide resistance to the conquering regime.

Olson's premise in this context is intuitive. When we take into account the relative gains and losses of actions to individuals, his equation of the dilemma facing the smaller country with a CAP is straightforward.

> If...an individual makes a sacrifice to rebel against the regime that he despises, he will bear the full cost and risk of whatever he does to help overthrow the hated regime. Yet any benefits of what he does will automatically go to people throughout the society, whether they made any sacrifices to help overthrow the hated regime or not. Each typical individual who acts to overthrow a bad government gets only an infinitesimally small share of the benefits from any success. (Olson, 1995,10-11).

It is simple to model the choices of individuals with a PD game, to demonstrate the enormous constraints that self-preservation places upon their decisions.

Lichbach (1995) extends Olson's theory. He claims that dissidents seeking a public good from the state face a CAP. Each must decide either to bear the cost of dissident behavior in order to potentially gain the public good, or to free ride on the activities of others. Using the assumption of a CAP, he conducts a thorough analysis of the varying tactics dissidents can use to overcome the incentives of their compatriots to free-ride.

Olson's insight regarding the existence of a CAP appears correct. Without much debate, it is reasonable to expect that if such a scenario does occur, then this lack of resistance facilitates the task of the stronger group to control the weaker group. Indeed, if this were universally the case, analysis of the actions of controlling groups would be minimal. Their tactics would merely involve undermining the attempts Lichbach describes of committed dissidents to reduce free-riding behavior. However, the fact that we do see dissident behavior that occurs counter to the behavior proscribed by the CAP calls us to question the assumption that all groups do face a CAP. Rather than immediately accepting Olson's insight, it is instructive to understand the kind of actions that could evolve within and between the opposing groups.

The analysis presented here focuses on evolving, rather than repeated games. The actions taken by the controlling group serve to change the game, altering the payoffs and also the corresponding strategies of the dissident players. The *strategies* of the controlling group are not explicitly modeled. International relations literature informs us that the decisions of a controlling group are influenced by numerous sources, including domestic and international pressures, and bureaucratic pull.[vi] The effect of these many and often conflicting pressures is that strategies of the controlling group can be difficult to model in any predictive manner.[vii] Instead, this approach examines the effects of potential actions that could be taken by a controlling group.[viii] Through this method, we can understand how these actions, or, similarly, how actions taken by a weaker group, can produce changes in the game, and how these changes affect outcomes and subsequent strategies of the weaker group in terms of collaboration or resistance.

The game below analyzes the immediate effects of different levels of punishment or reward on members of the dissident group. To do so, we consider the simultaneous choices made by any two dissidents. The choice of this type of a one-shot simultaneous game was selected to distinguish the effects of various levels and targets of the repression itself on dissident strategies. It should be noted that to fully capture the resistors' undertakings in successful overthrow of a regime, a repeated or sequential game would be more appropriate.[ix] This paper pursues the more limited question of the relationship between repression and dissent. Thus the model used here was chosen to avoid confusion of the effects of dissident interaction to overcome repression with those of the repression itself.

This choice of focus differentiates this paper from two seminal lines of work in the area of repression and dissent. Wintrobe (1998) addresses the issue of the tools available for various types of dictators to control a population in order to optimally pursue his or her goals. These goals can range from maximization of power to maximization of consumption. Similar to Wintrobe's assertions, this paper also analyzes the use of tools of repression and reward. In contrast to Wintrobe, this work does not seek to uncover the optimization strategies for the dictator - or ruling group - himself, but rather to gain an explicit measure of the effect of various types of repression and reward on various targets.

Lichbach's important work[x] on the strategies and options involved in the dissident group also bears relation to, but differs from this project. As stated, Lichbach explores the selective incentives necessary to overcome the CAP inherent in dissident movements - either from participants' preferences or from repression. This paper examines the distinction between these preferences and the repression, to provide a basis for understanding Lichbach's work.

Again, rather than starting with the assumption that the dissident group faces a self-defeating CAP – which would facilitate the task for the controlling group – let’s imagine a worst case scenario for the occupier. A legitimate fear of the occupier is that members of the conquered

nation may wish to cooperate with one another in dissident behavior[xi] to the detriment of the controlling regime. If this were indeed the case, then the potential strategic choices with payoffs to members of the resisting group might assume the form:

		Player 2	
		Cooperate	Betray
Player 1	Cooperate	4,4	2,3
	Betray	3,2	1,1

Figure 1 -- Harmony[xii]

In this game the two players are both members of the weaker (controlled) group. The options of each member are to either Cooperate with or Betray a fellow member. Since, with this simple setting, the fellow member will select one of the two strategies, we end up with the four options represented in the payoff matrix. Their payoffs represent the differential outcomes dependent upon their own actions as well of those of fellow members of the group. The numbers are mainly symbolic. For simplicity of later analysis, the numbers are cardinal, however, they generally serve to represent the ordinal ranking of outcomes among the players.

Our first setting is one in which there are no external controls over the members of the weaker group. Consequently, we will assume the rankings to take the following form: An individual receives his or her highest payoff, 4, by helping a fellow countryman or group member. That person's second-best outcome, represented by a payoff of 3, is if he or she Betrays without being Betrayed. The next best outcome, with a payoff of 2, is to be Betrayed while Cooperating, and the worst outcome is if both Betray each other. If this matrix applies to a group, then we can

expect that members will frequently choose their dominant strategy of Cooperation, leading to the Pareto superior Nash equilibrium of Cooperate/Cooperate.

Such a situation would undermine the control of the regime. If members of the weaker group are willing to Cooperate with one another, then we can imagine that they could pose a risk to the controlling group - particularly if that group wishes to effect changes that are not consistent with the desires of the weaker group. If this is the case, the controlling group may find itself facing two options: abandon efforts, or attempt to alter the payoffs of the weaker group so that they would be less likely to resist changes - i.e. use a form of repression.

The latter strategy merits closer inspection. Why would a group seek to alter the payoffs of the opposing group? As we recall from Olson, the existence of a CAP in a group limits the ability - at least in the short run - of that group to take action, despite the potential benefits such action might entail. Extending this line of reasoning, if some type of CAP could be created in the weaker group, then the controlling group could maintain control with minimal opposition.

To some extent, one could argue that this creation of a CAP is not completely different from the analysis of Olson or Lichbach. They see the CAP as endogenous, and indeed include the force of the state or controlling group in the dissidents' payoffs. In fact, however, it is through explicit analysis of the controlling group's *creation* of the CAP that we can derive a systematic understanding of the use of repression. If, through the use of repression and rewards, the controlling group can successfully create and maintain a CAP within the dissident group *even in cases in which there was no such problem*, then it can maintain control. We will see that if the state errs in this activity then dissident behavior will reemerge. Significantly, through examination of the effects of any changes in levels or targets of repression, we may deduce the effect of this tool on the actions of the dissident group.

If the controlling group does choose to follow this option, then we may reconstruct the game facing the weaker group. If a CAP is to be created, then the controlling group must destroy

the incentives for members in the weaker group to Cooperate with one another. In terms of payoffs, this alteration may be effected by making it more costly to Cooperate and/or more rewarding to Betray. We can imagine that the controlling group could produce this effect through the use of punishment for Cooperation and/or rewards for Betrayal.

If individuals who refuse to Betray others can be singled out, then the controlling group can punish them. Rather than a blind system of rewards and punishments, this model dictates that the controlling group treats individuals differently, according to their circumstances. In this way, those who Cooperated with one another would be penalized a random amount, which, when accompanied by the likelihood of such a penalty, creates the expected penalty of ?, reducing their expected payoff of joint cooperation from 4 to 4-?. The penalty to a Cooperator who was Betrayed by his countryman might be different, reducing his payoff from 2 to 2-Z. Similarly, the Betrayer of this person could be rewarded for his or her actions, raising his payoff from 3 to 3+T. For those who Betrayed one another, they might each expect to be penalized,[xiii] reducing their payoff from 1 to 1-? .[xiv]

	Cooperate	Betray
Cooperate	4-?, 4-?	2-Z, 3+T
Betray	3+T, 2-Z	1-? , 1-?

Figure 2 -- Punishment/Reward Model

Recall that the purpose behind the addition of punishments and rewards is to create a CAP within the weaker group. To be effective, the regime should ensure that the rewards for

Cooperation are not as strong as those for Betraying a cooperative person. The numbers in the matrix are purposely chosen to aid the analysis. Initially, as long as

4-? ? 3+T,

or whenever T> 1-?, the Cooperate/Cooperate cell is no longer a Nash equilibrium. This factor, with the values for Z and ? determine whether the game is a PD or Chicken. If T> 1-? and ? is less than Z-1, then the game is a PD, if T> 1-? and ? >Z-1, then the game is Chicken.

Will this simple adjustment in payoffs transform a world of cooperation into an Orwellian system of betrayal? An initial examination of the game indicates that this is possible. If both players have a dominant strategy to Betray, the Nash equilibrium is mutual Betrayal. Research into the repeated PD informs us that, using a form of the Tit-For-Tat strategy, if there are sufficient levels of information in a community, it is possible to avoid the Pareto inferior Nash equilibrium in a group. (Saari-Sieberg, 1998) However, the associated requirements to acquire a large enough source of information involve creating a community of trust that are so demanding in this setting that we can expect players to obey their dominant strategies at least in the short term.

Furthermore, if a controlling group were aware that information flows could undermine their hold on a community, then we would expect that group to take measures to limit the amount of information available. These actions would serve to limit the knowledge of who has cooperated within the group, by refusing to Betray his or her fellow countrymen, in the past.[xv]

If the game of Chicken is created, neither player has a dominant strategy, however, the Nash equilibria are Betray/Cooperate and Cooperate/Betray. The worst payoffs are received from mutual Betrayal, however, a player's best payoff arises from unilateral Betrayal of another. Thus, each player has some incentive to Betray another.

From this initial examination we can see that merely by altering the payoffs through a system of punishment and reward, a controlling group can achieve a situation in which many of the

controlled will strive to collaborate with the leaders at the expense of one another. From this analysis we gain insight into how repression is used effectively in order to stifle dissent.

Partial Resistance

The previous section demonstrated that even in a group that experienced cooperation with one another, a CAP could be imposed, given the proper application of punishments and rewards. Through the use of comparative statics, this section offers a more precise description of the effects of levels of punishment upon the compliance of the group.

To achieve a more specific concept of the actual compliance of a group, we can extend our notion of strategies from *discrete* strategies to *continuous* strategies. The impact of this change is that we no longer assume that individuals select from pure strategies (Cooperate or Betray), but that they take actions that are somewhere between the two extremes. I refer to this mixing of strategies as p*artial resistance*.

This extension allows for the possibility for a player to collaborate as much as necessary (Betray) yet to also take some risks in terms of limited cooperation with others. We would expect that larger levels of punishment would serve as a deterrent for resistant behavior, causing the player to choose his strategy as close as possible to Betray. Likewise, we would expect that lower levels of punishment might give some people incentives to risk Cooperation with one another. By approaching the choice of behavior through this framework, we may develop a theoretical basis for the adaptation strategies proposed in the literature (Lichbach, 1987, Opp and Roehl, 1990).

An example of this type of behavior may be portrayed as follows: While many individuals choose not to participate in active resistance, several select strategies that lie between the extremes of resistance and collaboration. These strategies could involve minimal resistance, such as knowing the identities and/or locations of resistors without revealing them to the controlling group. Others may adopt higher levels of resistance, supplying food, arms, or even temporary shelter for

resistance members (for an example, see Laar, 1992, 70). The strategies taken by these people represent neither the extremes of full Cooperation nor those of full Betrayal. Rather, the strategies are selected at varying levels between the extremes.

The concept of partial resistance is modeled in the same way as are mixed strategies. Here, however, the mixed strategy results are interpreted in terms of levels of partial resistance chosen by individuals, rather than as a randomization process designed to prevent one's opponent from second-guessing which pure strategy will be selected. Under partial resistance, a player may select a pure strategy or some path in between the two extremes of Cooperate and Betray[xvi].

In situations of resistance, the actual game is not necessarily one of simple Cooperation or Betrayal - instead, the adopted actions must be replicated over many daily actions that lie between the extremes of Cooperate and Betray. We may view these multiple decisions as n-dimensional. Interpreting these choices as selections on a continuum allows us to consolidate this n-dimensional game into a more simple two-by-two game. To use this approach of collecting all actions into one dimension, we must assume that actions are monotonic - i.e., that if a person is willing to choose partial resistance at a high level, then he is also willing to participate in partial resistance at a lower level.

Again, the application of punishments and rewards has changed the game to the following.

		q	1-q
		Cooperate	Betray
p	Cooperate	4-?, 4-?	2-Z, 3+T
1-p	Betray	3+T, 2-Z	1-? , 1-?

Figure 3 -- Partial Resistance

In this game, the variables p and q are used to denote the expected level of partial resistance. For instance, if p=0, then Player 1 chooses a strategy that places full weight on Betrayal. If p=1, then Player 1 fully Cooperates. Any p between 0 and 1 will represent the selection of a strategy between the two extremes.

As stated above, we would expect the level of punishment to affect a player's choice of p or q. Following the reasoning from the derivation of mixed strategies, Player 2 selects a level of q that makes Player 1 indifferent between the two

strategies, so it must be that

$$(4-?)q + (2-Z)(1-q) = (3+T)q + (1-?)(1-q),$$

or

$$q = \frac{1 ? Z ? ?}{T ? ? \quad ? ? \quad ? Z}. \qquad \text{(Equation 1)}$$

For Player 1 the case is symmetric,

$$p = \frac{1 ? Z ? ?}{T ? ? \quad ? ? \quad ? Z}.$$

Comparative statics may now be applied to determine the effect of the level of punishment upon the level of resistance selected. These results reveal precisely the bifurcation phenomenon asserted in the introductory section. Namely, some kinds of repression will cause the conquered to be meek (captured here by low q values) while others will actually encourage them to find ways to revolt (higher q values). More precisely, there are values of T and Z (representing, respectively reward for collaboration and punishment for rebellion if betrayed.) so that if f and ? (representing, respectively random punishment for rebellion and punishment despite collaboration by being betrayed) are either above or below these values, different behavior can be expected from the

conquered. It is particularly interesting that the greater the distance these f and ? values are from the critical T and Z values, the larger, or smaller, the q value.

Having made these distinctions, the results may be summarized in a table:[xvii]

	?>1-T	?<1-T
? >Z-1	increasing Z decreases partial resistance increasing f decreases partial resistance increasing T decreases partial resistance increasing ? **increases** partial resistance	increasing Z **increases** partial resistance increasing f decreases partial resistance increasing T decreases partial resistance increasing ? decreases partial resistance
? <Z-1	PD Nash equilibrium = Betray/Betray q=0	increasing Z **increases** partial resistance increasing f **increases** partial resistance increasing T **increases** partial resistance increasing ? decreases partial resistance

Figure 4 -- Effects of Repression and Reward

The results of the comparative statics highlight an important fact – repression is a tool that must be used carefully. A blind application of repression – even one designated to create a CAP – will not eliminate all forms of dissent. Most uses of penalty will decrease resistance, but some, highlighted in the table above, will actually increase it. These results demonstrate the importance of understanding the effect on both the levels and targets of repression and reward. This point is not obvious and may account for the wide variety of reactions we see empirically when dissident groups are confronted with repression.

Another key point is that we must also consider the interrelation of levels and targets. As shown in the lower right cell of the table, under certain circumstances (if the reward for

collaboration, T, is low - less than 1-? - and the penalty for being betrayed while rebelling, Z, is high - greater than ? +1) then increases in *most* forms of punishment will be counterproductive. [xviii]

Decrease in Force

A large percentage of international public opinion argues against the severe tactics used by controlling groups. In areas of oppression such as Iraq, North Korea, apartheid South Africa, and China, external democratic governments have put pressure on leaders to obey human rights doctrines and to reduce punishments levied upon "dissidents." It is frequently expected that the suppressed people would welcome and reward an easing of certain restrictions by becoming more cooperative with the controlling group. This analysis shows that this expectation is not always the case.

Recall that an increase in punishment (or an increase in reward) can, in some cases, lead to a decrease in partial resistance. However, a *decrease in these levels of punishment (or reward) can result in an increase in resistance*. Restating the results in terms of opportunities for partial resistance, we obtain the following.

	?>1-T	?<1-T
? >Z-1	decreasing Z **increases** partial resistance decreasing f **increases** partial resistance decreasing T **increases** partial resistance decreasing ? decreases partial resistance	decreasing Z decreases partial resistance decreasing f **increases** partial resistance decreasing T **increases** partial resistance decreasing ? **increases** partial resistance
? <Z-1	PD Nash equilibrium = Betray/Betray q=0	decreasing Z decreases partial resistance decreasing f decreases partial resistance decreasing T decreases partial resistance decreasing ? **increases** partial resistance

Figure 5 -- Reducing Repression and Reward

The results indicate that the decrease in punishment and suffering advocated by Human Rights groups may not produce more peace in a troubled region. Instead, this decrease may spark resistance and increased struggle! It should be noted, though, that under the circumstances noted above, (if the reward, T, is less than 1-? - and the penalty for being betrayed while rebelling, Z, is greater than ? +1) then decreasing penalty will provide desired results.

On closer inspection, however, many of the above results are intuitive. We would expect that as the penalty for cooperation decreases, more people who desire resistance against an oppressor would be willing to take the risks associated with this form of action. These results support Olson's beliefs regarding the power of an occupier to control dissent. According to Olson, *perceptions* of power are crucial in stifling resistance (1995, 16). If a group is powerful and is believed to be powerful, as evidenced by its ability to levy sanctions upon dissidents, then, Olson suggests the CAP will persist and individuals will not take the risk of resistance. Once the group's power begins to appear diminished, however, many will be more willing to risk penalty due to resistance activities, because they believe that this punishment will be less costly to themselves. The results above indicate that we should, in fact, expect to observe an increase in resistance activity following a decrease in certain levels of punishment.

Olson's descriptions of mobilization in East Germany provide a vivid example of this phenomenon.

> ...[T]hen suddenly the regime that was previously so powerful came to have no power at all. Its officials finally did not carry out its instructions. When this happened, the risk of demonstrating against the regime became almost zero. Participating in such a demonstration still cost the participant some time, but that

> cost was small enough...The unprecedented excitement of participating in these events and the drama of sudden and awesome political change even made participation positively attractive for some.(Olson, 1995, 17-18)

As the penalty decreased, resistance increased. There are also numerous examples in the case of Soviet-occupied Estonia that are consistent with these results.[xix] Incrementally, in the years following Stalin's death, as punishment for dissident action of any type became less severe, individuals began to take risks. When punishments ebbed, dissent grew. When, in contrast, Moscow cracked down hard, dissent all but vanished (Taagepera, 1993, 116-120).

The significance of the analytical results is that we now have part of the explanation for the relationship between repression and resistance. Frequently, the occurrence of resistance is explained in reference to the suffering of one group at the hands of another. When this suffering becomes unbearable, then, supposedly, the group has little choice but to revolt. These results indicate that, in contrast, in certain cases a *decrease* in suffering may provide an opportunity to revolt.

Potential Errors: The Collective Action Problem Reversed

Drawing from the above analysis, a controlling group might reason that leniency is tantamount to destruction, and that higher penalties are desirable at all costs. It can be shown, however, that reliance upon punishments to decrease resistance can be subject to error if not used correctly. Fear can be a motivating factor for collaboration with the controlling group if used accurately, but it can be counterproductive in certain circumstances. This potential recalls the Backlash hypothesis. If an occupying power chooses to demonstrate its control by punishing all members of the subdued group indiscriminately, it could find itself *creating*, rather than destroying, the incentives for resistance. The idea that increased use of force can spark resistance

in a group that was previously encumbered by the CAP appears counterintuitive until we observe the resulting payoff matrix.

A careful application of punishments and/or rewards can produce a CAP. Ruthless use of punishments may alter the game.

	Cooperate	Betray
Cooperate	4-?, 4-?	2-Z, 3 -R
Betray	3-R, 2-Z	1-? , 1-?

Figure 6 -- Ruthless Punishment Model

In this scenario, an individual risks punishment regardless of his or her actions. Instead of a reward for Betrayal of a fellow countryman, the individual risks receiving a random penalty with the expected value of R, reducing the expected payoff to 3-R. As this change in action means that there are no payments to those who "Betray those who Cooperate," the controlling group has altered the payoffs. If it does so in such a way that

$$4 - ? \; ? \; 3 - R,$$

then it will be in both players' interests to Cooperate with one another. The Nash equilibrium Cooperate/Cooperate re-emerges. So, by asserting too much power in the form of indiscriminate punishments, the interests of the regime are not served, and may be negated.[xx]

More rigorously, we may use comparative statics with the Ruthless Punishment Model to determine the impact of a change in the variables upon the level of partial resistance that we can expect to observe in a given individual. To obtain these computations, we must calculate the equation determining the level of partial resistance in this new game. This level is found when

$$q?4 ? ? ?? ?1 ? q??2 ? Z ?? ?3 ? R?q ? ?1 ? q??1 ? ? ?$$

or

$$q \; ? \; \frac{1 ? \; Z \; ? \; ?}{? \; R \; ? \; ? \;\; ? \; ? \;\; ? \; Z} . \quad \text{(Equation 2)}$$

To determine the effect of the variables upon the choice of partial resistance selected, we may use comparative statics again to provide the following table:[xxi]

	?>1+R	?<1+R
? >Z-1	increasing Z decreases partial resistance increasing f decreases partial resistance increasing R **increases** partial resistance increasing ? **increases** partial resistance	increasing Z **increases** partial resistance increasing f decreases partial resistance increasing R **increases** partial resistance increasing ? decreases partial resistance
? <Z-1	PD Nash equilibrium = Betray/Betray q=0	increasing Z **increases** partial resistance increasing f **increases** partial resistance increasing R decreases partial resistance increasing ? decreases partial resistance

Figure 7 -- Effects of Ruthless Punishment

Using a comparison of the results in Figures 4 and 7, the addition of the variable R as punishment for Betrayal is highlighted as having a negative effect upon the punishment strategies of the controlling group. Specifically, with the exception of the creation of a PD, in half of the cases, raising penalty levels can be detrimental to the goals of the controlling group. Intuitively, the lack of a means to gain through collaboration creates a disincentive to do so - prompting potential rebels to increase their dissident activity.

These results provide a theoretical explanation for the Backlash hypothesis in which brutal coercion results in increased protest. By approaching the problem from the perspective of this extension of the model, it becomes clear that repression in and of itself may not spark dissident

behavior. If it is indiscriminately applied, the effect may be to change the payoffs – and thus the optimal strategies – of the dissident players. If rebels are damned if they do and damned if they don't, their best response may be to fight.

From these results it is clear that the issue of punishment and reward is significant for both the controlling and the controlled. If punishments and rewards are carefully applied then the controlling group can create a situation in which individual self preservation can severely constrain the level of resistance in a society. In other words, a type of CAP can be instituted to the benefit of the controlling group. However, lest these results be misinterpreted as "more punishment equals less resistance," it is important to note that if punishment is meted out carelessly in terms of both targets and levels, then the opposite is likely to occur, "more punishment equals more resistance."

The same model allows us to understand how a controlling group could rectify the resistance problem it had created. Through a more precise application of rewards and punishments, specified in the original Punishment/Reward model, the regime can re-create a CAP.

Organized Resistance

The above models demonstrate the ability of the controlling group to manipulate the payoffs and, hence, the strategies of the controlled. However, we can imagine that the tools of one group may also be used by another. There is no reason to assume that the stronger group will be unique in its use of tactics to induce preferable outcomes. An interesting question, then, addresses what circumstances would arise if both groups tried to use punishment strategies in order to "persuade" individuals to comply with competing goals.

Olson states that if a community suffers from a CAP, then selective incentives are necessary in order to dissuade members from neglecting to contribute. The Punishment/Reward game creates enormous individual incentives to betray others. If a weaker group wished to overcome these odds, it would have to change the payoffs again.

	Cooperate	Betray
Cooperate	4-?, 4-?	2-Z , 3+T-D
Betray	3+T-D, 2-Z	1-? , 1-?

Figure 8 -- Counter-Force Model

Again, this change from the Reward/Punishment model may be effected by either rewards or punishments, or by a combination of both. For simplicity, only punishments (D) from the dissident group will be shown here. If a group applied selective incentives in such a way that the punishments imposed for Betrayal were greater than those given by the other group for Cooperation,

$$3+T-D \; ? \; 4-?,$$

then the new Nash equilibrium within the community would be Cooperation.

Comparative statics are helpful to determine the relative effects of the punishments levied by the opposing groups. Without them, the outcomes in this model could be difficult to predict. We might expect that as the strength of one type of punishment increases, the effects of adversarial punishments should diminish. In other words, we might expect that as the level of punishment, D, of the weaker group increased, then an increase in the punishment level of the controlling group would be less effective or counterproductive in deterring resistance. Similarly, we might expect that as the punishment levied by the controlling group grows stronger than that of the weaker group, then an increase in the level of punishment by the weaker group would be less effective in

prompting resistance. If this were, indeed, the case, then we would expect to observe an escalation in punishment levels from the opposing groups as each group tries to outdo the other in an attempt to wrest control of the situation.

With these expectations in mind we consider the effect of the resistance punishment, D, upon the level of partial resistance.

	?>1-T+D	?<1-T+D
? >Z-1	increasing Z decreases partial resistance increasing f decreases partial resistance increasing T decreases partial resistance increasing ? **increases** partial resistance increasing D **increases** partial resistance	increasing Z **increases** partial resistance increasing f decreases partial resistance increasing T decreases partial resistance increasing ? decreases partial resistance increasing D **increases** partial resistance
? <Z-1	PD Nash equilibrium = Betray/Betray q=0	increasing Z **increases** partial resistance increasing f **increases** partial resistance increasing T **increases** partial resistance increasing ? decreases partial resistance increasing D decreases partial resistance

Figure 9 -- Effects of Counter Force

In the upper right cell, we do see some potential for the escalation in punishment levels between the opposing groups predicted above. If the controlling group is punitive to cooperators, or rewarding to collaborators, such that ? + T-1 are below the dissident-inflicted penalty, D, then increases in ? , the mutual punishment for mutual Betrayal; ? the random penalty for cooperation; or T, reward for collaboration, will lead to a decrease in partial resistance.

Contrary to our expectations, however, we do not see benefits from an escalation in punishment in every case. Surprisingly, we note that an increase in punishment levied by the controlling group can, in many cases, lead to an increase in partial resistance. This result has the effect that the controlling group could undermine its own efforts. Perhaps, however, this result should be expected. In punishing Betrayers, the resistance group essentially recreates part of the Ruthless Punishment Model, thus inciting rebellion as a reaction to most types of punishment.

Essentially, by adding their own use of punishment and/or reward, the weaker group can establish circumstances in its favor in two ways. First, by using the penalty D to decrease rewards from collaboration, it gives incentives for its own members to increase their levels of resistance. Secondly, because it creates this particular situation itself, the weaker group may have another element of control over the game. We note from results in Figure 9 that if the weaker group is able to set a level of punishment, D, high enough (D??+T-1) then many of the strategies of the controlling group - raising penalties to decrease resistance - will be undermined.

The importance of this last point should be highlighted. The weaker group has potential to gain both from the Ruthless Punishment Model and from the Counter-Force Model because both provide motivations for resistance among members of the weaker group. However, the weaker group stands to gain more from instituting the Counter-Force Model, because this situation allows them an element of control; through manipulation of the levels of their own penalty, D, the group can cause the controlling group to undermine their own efforts. Additionally, because the weaker group, and not the controlling group, controls the level of D, it can be much more difficult for the controlling group to correct the problem and return to the more favorable circumstances of the Punishment/Reward Model.

The results are contrary to the initial expectations that each group would strive to outperform one another by successively raising penalty levels. Instead, increases in many of the levels of punishment levied by the controlling group have the potential to be counterproductive,

provided the weaker group sets its penalty sufficiently high. Thus, through counter-strategies, the weaker group may be able to gain some control over its own members and, to a limited extent, over the controlling group.

It should also be noted that the group's ability to reduce reward for collaborators can help them prevent -at least temporarily - the construction of a PD in which partial resistance is eliminated. Specifically, if the group can keep D ??+T-1, then the Betray/Betray outcome cannot be guaranteed. This result reflects Lichbach's (1995, 1996) conclusions.

It is important to note a potential weakness for the dissident group. If, for any reason - e.g. lack of resources, information, manpower, etc...- this group is unable sustain the necessary level of punishment, D, then the Counter-Force situation will be reversed. In this case, the results will no longer be in the weaker group's favor. Once the level of D falls below the critical level, (D<?+T-1) then it will again be the case that an increase in punishment levied by the controlling group will most often lead to decreased resistance in the weaker group. The CAP will be restored.

The model bears resemblance to the case of the resistance movement in Estonia. Groups of Estonians organized and fought against Soviet occupation of their country using military force, guerrilla tactics, and any other means available to them. The most famous pro-independence guerrilla groups, ranging in size from 1 person to groups of several hundred, were the *metsavennad*, the Forest Brothers (Taagepera, 1993, 79). These groups were organized both by the intense need of one another for survival, and through the selective incentives, that Olson claims are necessary.[xxii] These tactics resembled those in the model. Through punishments, torture, deportation, and death, the Soviets had created a system in which individuals had a self interest in protecting themselves by Betraying others. The partisans responded by instituting punishment for collaboration, D. In so doing, they succeeded in changing the payoffs in such a way that many Estonians had incentives to Cooperate with and help the Forest Brothers.

Partisans in the Baltic states and in Ukraine killed many Soviet collaborators, creating disincentives to Betray the resistance movements or to help the occupiers (Laar, 1992, 27).

> Deliberate acts of political terror included the killing of specific individuals ... Targeted individuals were usually accused of collaboration with the occupation authorities. The partisans selected only those who demonstrated a desire for active cooperation with the authorities, and not those who simply fulfilled obligatory duties.(Laar, 1992, 92).

The partisans used brutal force, yet their tactics were strategic. The goal was to provide protection to the population and to encourage resistance. Had they harmed Cooperating Estonians, their goals would not have be obtained (Laar, 1992, 93).

The model indicates that the payoffs are determined by the resources available to each group. So long as the Estonians held sufficient resources, they could continue to impose the Counter-Force Model. Eventually, however, their resources and manpower declined. The superior numbers, armament, and mobility of the Soviets made them successful in breaking into and destroying the groups (Taagepera, 1993, 80).[xxiii]

Successful Resistance

We have observed how a decrease in the ability of the weaker group to maintain a sufficient level of punishment, D, can reduce that group's influence upon the game. This decrease in influence returns the situation and the control to the controlling group. Arguably, a similar failure, due to lack of resources or due to some other factor, on the part of the controlling group to maintain punishment at levels sufficient to deter resistance would result in that group's loss of control. Indeed, the results for the Punishment/Reward model reveal that a decrease in the level of punishment, Z, (for being Betrayed while Cooperating) results in an increase in partial resistance (see Figure 5). Similarly, depending on the relative values for Z and ? , a decrease in punishment,

?, for mutual Cooperation will also increase partial resistance. Although more careful analysis would be necessary to determine the factors that allow a weaker group to overthrow a controlling group, this examination provides a rough approximation of how this process could commence.

The above argument corresponds with Olson's insight regarding the breakdown of the Soviet regime. Olson (1995) claims that a lack of resources, resulting from the defective Communist economic system, hampered the Soviets' ability to levy punishments, or, indeed, to compel the enforcers to levy punishments. This breakdown in the system of command led to a deterioration of the respect for and obedience to the Soviet government. Olson's insight is consistent with the results of this model. If a loss of resources significantly decreases the ability of a controlling group to punish and reward, then we would expect to observe a surge in resistance activity in the weaker group, and a breakdown in the power of the controlling group.

Games and Characteristics

The results presented were derived from the premise that the original situation would be one in which members of the weaker group had initial preferences corresponding to Harmony, or Cooperation with each other. This assumption was made to demonstrate the potential difficulties faced by a controlling group when confronted with a united opposing group. Presenting these obstacles, the model revealed potential effects of tactics the controlling group might adopt attempting to gain control. While enlightening, these preferences cannot be expected to occur in all circumstances. It makes sense that if the original situation were different, then we could expect different tactics on the part of the controlling group and different outcomes.

This intuition is simple to demonstrate. Imagine, for instance, that the initial situation within the weaker group is represented by a CAP.

	Cooperate	Betray
Cooperate	3,3	1,4
Betray	4,1	2,2

Figure 10 -- Collective Action Problem

In this case, the controlling group's task of discouraging any potential Cooperation among members of the weaker group is facilitated. Cooperation is not expected in a one-shot PD game. Further, recall from the first section that if the controlling group can restrict information among members, then Cooperation will be severely hampered, even in repeated play. If, furthermore, the controlling group can slightly alter payoffs in such a way that rewards from Betraying and the penalties from Cooperating are increased, then the controlling group can succeed in reducing possibilities for Cooperation in the weaker group.

Similarly, if the original preferences are such that members of the weaker group were largely antagonistic towards one another, then the controlling group would have little problem imposing control.

	Cooperate	Betray
Cooperate	2,2	1,4
Betray	4,1	3,3

Figure 11 -- Antagonism

In this case, due to prejudice, hatred, or some other reason, members of the weaker group are worse off if they Cooperate with one another than if they mutually Betray one another. The dominant strategy for these players is Betray, and the Nash equilibrium, Betray/Betray, is Pareto optimal.[xxiv] In this type of situation, no incentives on the part of the controlling group would be necessary to persuade members of the weaker group to collaborate. In fact, the British colonization of Nigeria was facilitated by jealousies among the three main ethnic groups. These rivalries served to minimize the chances of a unified rebellion.[xxv]

From these simple examples, it is clear that the original circumstances may be critical in determining the tactics used by each group as well as the outcomes. We can imagine that the original situation could be shaped by characteristics of the weaker group. For instance, it is easy to envision that if a group is united by a common bond - such as a shared ethnicity, religion, language, culture, or other trait - then that group might be cohesive. In this scenario, the group's preferences might be more likely to resemble those of the harmony model. This type of group, as we have seen, poses more problems for a controlling group and is more likely to successfully resist control.

This last statement lends weight to intuition suggested by Olson. Olson hypothesized that a common ethnicity and/or language would facilitate efforts of a weaker group to resist a controlling group.

> When the center is a system of extraction, it is only natural to want to escape it. To the extent that a group had a distinctive ethnic loyalty or language, it was better able to conspire and collude against the huge implicit taxes imposed by the center. Ethnic grievances and mutual trust within the group facilitate cooperation, and a separate language reduces the chances that the center will learn of a collusive discussion. (Olson, 1995, 28).

This analysis demonstrates that if, indeed, a factor such as common ethnicity or language can unite a group, then Olson's intuition is correct.

If, in contrast, due to circumstances that could include linguistic or ethnic differences, class, distance between group members, or lack of information, a weaker group is fragmented in such a way that its members face a CAP, then the task of the controlling group is made easier. [xxvi] If, further, due to divisions that could stem from religion, class, ethnicity, culture, or some other factor, there exists large-scale antagonism within a weaker group, then the controlling group's job is easier still. In both cases, the risk of resistance on the part of members of the weaker group is reduced significantly.

This last result should not be interpreted as meaning that a controlling group would have free reign over the latter two groups. Appealing to intuition found in the Ruthless Punishment model, it is simple to show that abuse of power could spark cohesion and resistance even in members of the antagonistic group. If penalties and hardship are imposed on the weaker group to such an extent that the payoffs are altered, then it may become in the players' interest to resist.

	Cooperate	Betray
Cooperate	2-?,2-?	1,4-?
Betray	4-?,1	3-?,3-?

Figure 12 -- Antagonism with Ruthless Punishment

If the controlling group allows the power exerted over the weaker group to escalate to the extent that,

2-??4-?,

such that individuals gain more from mutual Cooperation than from Betraying a Cooperator, then the Ruthless Punishment Model will be recreated. As we have learned in this model, resistance may increase with increases in punishments, and members of the weaker group will have an incentive to overcome their differences and Cooperate with one another against the controlling group. Through this result, we see that even in the best case scenario for the controlling group, treatments of the weaker group should be handled with caution.

Conclusion

The models presented here are simple representations of the potential circumstances facing opposing groups. The power of these models lies in the fact that they suggest how tactics taken by opposing groups in a power struggle can alter the game in favor of one group or another. In cases of control or resistance, decisions and actions can tend to be reactionary or based on emotion. These models serve to indicate why some tactics may be beneficial for the goals of one group, whereas others may be counterproductive.

These models additionally highlight the importance of the CAP in analysis of power struggles. As Olson and Lichbach suggest, the CAP does play a role in undermining the amount of resistance offered to the advances of a controlling group. I demonstrate that if this type of hindrance to action does not already exist among members of the weaker group, the controlling group can use a system of rewards and punishments to create a CAP. Once this situation has been attained, however, the controlling group must avoid being over-zealous in its punishments, or it could actually produce incentives to resist.

Finally, these models demonstrate the effect of original circumstances upon strategies and outcomes in the game. If the weaker group originally holds preferences corresponding to Harmony, or total cooperation, then the controlling group must strive to suppress resistance and must concern itself with the possibility of counter-force activity from the weaker group. If, in contrast, the

weaker group originally holds preferences corresponding to a CAP or to antagonism, then the task of the controlling group is facilitated, and the weaker group will tend to be less likely to attempt resistance activity.

This work extends the coercion-protest literature by accounting for a wide range of behavioral responses to repression with one simple model and its extensions. The use of repression is approached as an explicit tool - one that is distinguished from the preferences of the dissident group. By doing so, we learn that the effects of repression can vary with variations in amount and direction of repression, and also according to the organization of potential dissidents. From this knowledge, we derive a greater understanding of how repression can deter dissident behavior. Importantly, we also gain an understanding of how repression can fail. These results allow us to revisit the literature through a new perspective and to explain the large discrepancies in theory and evidence regarding the relationship between repression and dissent.

References

Bicchieri, C., R. Jeffrey, and B. Skyrms, eds. 1997. *The Dynamics of Norms*, Cambridge University Press.

Davenport, Christian. 1995. "Multi-Dimensional Threat Perception and State Repression: An Inquiry Into Why States Apply Negative Sanctions." *American Journal of Political Science*, Vol. 39, No. 3:683-713.

Duvall, Raymond, and Michael Stohl. 1988. "Governance by Terror." In Michael Stohl, ed. *The Politics of Terrorism*. Second Edition. New York: Marcel Dekker Inc.

Episcopo, Jo. 1999. "ETA's bloody record." BBC News. World: Europe. December 2.

Francisco, Ronald A. 1996. "Coercion and Protest: An Empirical Test in Two Democratic States." *American Journal of Political Science*, Vol. 40, No. 4:1179-1204.

Francisco, Ronald A. 1995. "The Relationship Between Coercion and Protest: An Empirical Evaluation in Three Coercive States." *Journal of Conflict Resolution*, Vol. 39:263-82.

Goldstein, Robert J. 1978. *Political Repression in Modern America: From 1870 to the Present*. Schenckman/G.K. Hall, Boston.

Gupta, D.K., H. Singh, and T. Sprague. 1993. "Government Coercion of Dissidents: Deterrence Or Provocation?" *Journal of Conflict Resolution*, vol. 37:301-39.

Gurr, Ted R. 1970. *Why Men Rebel*. Princeton University Press, Princeton.

Jeffrey, Simon. 2002. "Batasuna and Basque separatism in Spain." *Guardian Unlimited*, August 28.

Keohane, Robert O., and Joseph S. Nye. 1989. *Power and Interdependence*, Second Edition, Harper Collins Publishers.

Khawaja, Marwan. 1993. "Repression and Popular Collective Action: Evidence from the West Bank." *Sociological Forum*, Vol. 8:47-71.

Laar, Mart. 1996. "Estonia's Success Story," *Journal of Democracy*, Vol. 7, January, :96-101.

Laar, Mart. 1992. *War in the Woods: Estonia's Struggle For Survival 1944-1956*, Translated by Tiina Ets, The Compass Press, Washington DC.

Lichbach, Mark I. 1987. "Deterrence or Escalation? The Puzzle of Aggregate Studies of Repression and Dissent." *Journal of Conflict Resolution*, Vol. 31:266-97.

Lichbach, Mark I. 1995. *The Rebel's Dilemma*. Ann Arbor: University of Michigan Press.

Mason, T.D., and D. Krane. 1989. "The Political Economy of Death Squads: Toward a Theory Of the Impact of State-Sanctioned Terror." *International Studies Quarterly*, 33 :175-98.

McAdam, D., J.D. McCarthy, and M.N. Zald, eds. 1996. *Comparative Perspectives on Social Movements*. Cambridge University Press, New York.

Melson, Robert, and Howard Wolpe. 1970. "Modernization and the Politics of Communalism: A Theoretical Perspective," *American Political Science Review*, Vol. 64:1112-1130.

Milgrom, P. R., D.C. North, and B.R. Weingast. 1990. "The Role of Institutions in the Revival of Trade: The Merchant, Private Judges, and the Champagne Fairs," *Economics and Politics*, Vol. 2, No. 1, March, :1-23.

Moore, Will H. 1998. "Repression and Dissent: Substitution, Context, and Timing." *American Journal of Political Science*, Vol. 42, No. 3:851-873.

Murrell, Peter, and Mancur Olson. 1991. "The Devolution of Centrally Planned Economies," *Journal of Comparative Economics*, Vol. 15, :239-265.

Myerson, Roger B. 1991. *Game Theory: Analysis of Conflict*, Harvard University Press, Cambridge, Massachusetts, London, England.

Olson, Mancur. 1995. "The Devolution of Power and the Societies in Transition: Therapies for Corruption, Fragmentation, and Economic Retardation", April.

Olson, Mancur. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard Economic Studies, Vol. CXXIV, Harvard University Press, Cambridge.
Olson, Mancur. 1982. *The Rise and Decline of Nations*, Yale University Press, New Haven and London.
Opp, Karl-Dieter, and Wolfgang Roehl. 1990. "Repression, Micromobilization and Political Protest." *Social Forces*, Vol. 69:521-47.
Oye, Kenneth A. 1986. *Cooperation Under Anarchy*, Princeton University Press, New Jersey.
Powell, Robert. 1991. "Absolute and Relative Gains in International Relations Theory," *American Political Science Review*, Vol. 85, December, :1303-1321.
Putnam, Robert. 1988. "Diplomacy and Domestic Politics," *International Organization*, Vol. 42, No. 3, Summer, :427-461.
Saari-Sieberg, Katri K. 1998. "Applications of the Collective Action Problem for Political Science Dilemmas. Ph.D. Dissertation. New York University.
Schelling, Thomas. 1960. *The Strategy of Conflict*, Harvard University Press.
Schweimler, Daniel. 1999. "Proud Basques defend ancient culture." BBC News: World, Europe, December 6.
Sieberg, Katri K. 2003b. "Dissent and Survival: A Formal Analysis of Estonian Activity Under Soviet Occupation." Unpublished paper.
Steinbeck, John. 1942. *The Moon is Down*. Dramatists Play Service Inc.
Straffin, Philip D. 1993. *Game Theory and Strategy*, The Mathematical Association of America.
Taagepera, Rein. 1993. *Estonia: Return to Independence*, Westview Press, published in cooperation with the Harriman Institute, Boulder, San Francisco, Oxford.
Taagepera, Rein. 1984. *Softening Without Liberalization in the Soviet Union: The Case of Jüri Kukk*, University Press of America, Lanham, New York, London.
Tsebelis, George. 1989. "The Abuse of Probability in Political Analysis: The Robinson Crusoe Fallacy." *American Political Science Review*, Vol. 83; 77-91.
Tsebelis, George, and John Sprague. 1989. "Coercion and Revolution: Variations on a Predator-Prey Model," *Mathematical and Computer Modelling*, Vol. 12:547-59.
Val del Olmo, Eloy. 2001. "A balance sheet of the 13th May Basque election In Defence of Democratic Rights." www.marxist.com/Europe/basque.
Waltz, Kenneth N. 1979. *Theory of International Politics*, McGraw Hill Publishing Company, New York.
Wintrobe, Ronald. 1998. *The Political Economy of Dictatorship*. Cambridge University Press.
Ziegenhagen, Eduard. 1986. *The Regulation of Political Conflict*. Praeger, New York.

Appendix

Comparative Statics results for Partial Resistance Model:

The effect of the level of penalty, Z, for being "Betrayed while Cooperating" (BC) is:

$$\frac{?q}{?Z} ? \frac{?1?T ?? \;?? ?Z?? ?1?Z ?? \;?}{?T ?? \;?? ?Z?^2} ? \frac{1?? ?T}{?T ?? \;?? ?Z?^2} \qquad \frac{?q}{?Z} ?? 0 \text{ as long as } ?>1\text{-}T.$$

An increase in the penalty Z will decrease the level of partial resistance chosen by a given player. If ?<1-T, then an increase in Z will increase resistance

The effect of the penalty for "mutual Betrayal" (BB) upon the level of partial resistance is:

$$\frac{?q}{??} ? \frac{?T ?? \;?? ?Z?? ?1?Z ?? \;?}{?T ?? \;?? ?Z?^2} ? \frac{? ?1?T}{?T ?? \;?? ?Z?^2}.$$

If ??1-T, this equation is >0, an increase in mutual penalty will increase the level of resistance.

The effect of an increase in the level of random punishment for "mutual Cooperation" (CC) is:

$$\frac{?q}{??} ? ??1?Z ?? \;?T ?? \;?? ?Z?^2 ? \frac{?1?Z ?? \;?}{?T ?? \;?? ?Z?^2}.$$

If Z-1 ?? , then $\frac{?q}{??} ? 0$. An increase in the level of punishment for mutual cooperation will result in a decrease in partial resistance.

If the game is a PD only pure strategies will be selected, and the Nash equilibrium is Betray/Betray.

If Z-1?? , but T<1-?, $\frac{?q}{??} < 0$.

Finally, the effect of the level of reward for collaboration, (BC), upon the level of resistance is:

$$\frac{?q}{?T} ? ??1?Z ?? \;?T ?? \;?? ?Z?^2 ? \frac{?1?Z ?? \;?}{?T ?? \;?? ?Z?^2}.$$

If Z-1?? , then $\frac{?q}{?T} ? 0$. An increase in the level of reward for collaboration will result in a decrease in partial resistance.

If the game is a PD then the Nash equilibrium is Betray/Betray.

If Z-1?? , but T<1-?, then $\frac{?q}{??} > 0$.

Comparative Statics Results For Ruthless punishment Model:

$$\frac{?q}{?Z} ? \frac{?1?R ?? \;?? ?Z?? ?1?1?Z ?? \;?}{?R ?? \;?? ?Z?^2} ? \frac{1?? ?R}{?R ?? \;?? ?Z?^2}.$$

If R+1>?, then $\frac{?q}{?Z} ? 0$. An increase in penalty for being Betrayed while Cooperating will increase partial resistance.

The opposite effect occurs for an increase in penalty for mutual Betrayal upon the level of partial resistance.

$$\frac{?q}{??} ? \frac{?R ?? \;?? ?Z?? ?1?Z ?? \;?}{?R ?? \;?? ?Z?^2} ? \frac{?1?? ?R}{?R ?? \;?? ?Z?^2}.$$

If R+1<?, then $\frac{?q}{??} ? 0$.

The effect of the expected value of the random punishment allotted to Cooperators is affected by the relative values of Z and ? .

$$\frac{?q}{??} ? \frac{? 1 ? Z ??}{?? R ?? \ ?? \ ? Z ?^{?}}.$$

If R+1>? and Z-1 ?? then $\frac{?q}{??} ? 0$. An increase in ? will produce an increase in partial resistance.

If R+1<? and Z-1?? then the game is a PD, with a pure strategy equilibrium of Betray/Betray.
If Z-1?? , the derivative is negative; an increase in ? will lead to a decrease in partial resistance.

Comparative Statics for Counter Force Model

$$\frac{?q}{?D} ? \frac{? 1 ? Z ?? \ ?}{?T ? D ?? \ ?? \ ? Z ?^{?}}.$$

If ? ?Z-1, then $\frac{?q}{?D} ? 0$, increases in the level of punishment for Betrayal, D, will increase partial resistance.

If ? <Z-1, then $\frac{?q}{?D} ? 0$, an increase in D will lead to a decrease in partial resistance.

The effect of mutual punishment for Betrayal (BB) will be shown next.

$$\frac{?q}{??} ? \frac{T ? D ?? \ ?? \ ? Z ? 1 ? Z ??}{?T ? D ?? \ ?? \ ? Z ?^{?}} ? \frac{? 1 ?? \ ? T ? D}{?T ? D ?? \ ?? \ ? Z ?^{?}}.$$

The equation is positive if ?>1+D-T otherwise it is negative.
The impact of Z, punishment for Cooperation when Betrayed, (CB) is:

$$\frac{?q}{?Z} ? \frac{?? 1 ?? T ? D ?? \ ?? \ ? Z ?? ? 1 ? Z ??}{?T ? D ?? \ ?? \ ? Z ?^{?}} ? \frac{1 ?? \ ? T ? D}{?T ? D ?? \ ?? \ ? Z ?^{?}}.$$

In this case, the level of D can have an impact upon the effect of punishment, Z. If D?? +T-1, then an increase in Z will lead to an increase in partial resistance. However, if D<?+T-1, then an increase in Z, will decrease partial resistance.
The equation for the effect of random punishment, ?, has the following results.

$$\frac{?q}{??} ? \frac{?? 1 ? Z ?? \ ?}{?T ? D ?? \ ?? \ ? Z ?^{?}}.$$

If ? <Z-1, and D>?+T-1, then an increase in ? will lead to an increase in partial resistance.
If ? <Z-1, and D<?+T-1, then the NE in pure strategies will be Betray/Betray.
If ? >Z-1, then an increase in ? will have the effect of decreasing resistance.
The equation for the effect of reward for collaboration, T, has similar results.

$$\frac{?q}{?T} ? \frac{?? 1 ? Z ?? \ ?}{?T ? D ?? \ ?? \ ? Z ?^{?}}.$$

If ? <Z-1, and D>?+T-1, then an increase in T will lead to an increase in partial resistance.
If ? <Z-1, and D<?+T-1, then the NE in pure strategies will be Betray/Betray.
If ? >Z-1, then an increase in T will have the effect of decreasing resistance.

[i] See, among others, Lichbach (1987, 1995), Gupta, Singh, and Sprague (1993), Francisco (1996), and Tsebelis and Sprague (1989).

[ii] See, among others, Francisco (1995, 1996), Davenport (1995), Moore (1998), Gupta, Singh, and Sprague (1993).

[iii] For an in-depth analysis, see Lichbach, 1995.

[iv] Duvall and Stohl refer specifically to state terrorism. This paper includes state terrorism as a subset of the repressive tools available to a state. In that case, as Duvall and Stohl note, we continue to confront the problem that governments may restrict comprehensive information about its use of repression.

[v] For analysis of repression over forms of dictatorship, see Wintrobe, 1998. For analysis of state terrorism in various regime types, see Duvall and Stohl, 1988.

[vi] Examples include Putnam, "Diplomacy and Domestic Politics," 1988, Schelling, 1960, and Keohane and Nye, 1989.

[vii] Indeed, the members of the controlling group may face a collective action problem of their own.

[viii] For an insightful analysis of the optimal strategies for all types of dictators, see Wintrobe, 1998.

[ix] I am grateful to a reader of an earlier draft for bringing this point to my attention. However, in a similar model, Tsebelis, 1989, 83, shows that the results may be applicable to a sequential game. While a repeated game is valuable, what it does is model players expecting to be caught in the same situation forever; it is a game with an infinite horizon. My interest is to capture the behaviour of players who expect, perhaps unrealistically, that the tide may change and they will no longer be conquered. Such a game should be of finite horizon. For simplicity, a single shot game is used.

[x] See Lichbach, *The Rebel's Dilemma* 1995, and it's companion, The *Cooperator's Dilemma*, 1996.

[xi] For simplicity, the term cooperation will refer to members of the dissident group cooperating with each other in dissident behaviour.

[xii] This game represents the worst case scenario. Choosing a more 'realistic' game in which players prefer to avoid Cooperation if Betrayed does not change the results reported below.

[xiii] The potential for penalty for mutual Betrayers may be questionable. It was included to allow for all possible actions on the part of the controlling group. For an example of this type of punishment, a controlling group may decide that all economic investment in a given area be curtailed - thus Betrayers and Cooperators alike will receive some punishment.

[xiv] The relative values of the payoffs are not specified. This was done purposefully to allow for variation and flexibility in the actions of a controlling group. The effects of these variations will be made clear.

[xv] The effect of this control would be to destroy the possibility of an Adjusted Tit For Tat (ATFT) equilibrium, in which, if information is good (or perfect), it can be an equilibrium for members of a community to cooperate with a player who has played according to his or her ATFT strategy in the past. The strategy can lead to cooperation in a community. For more detail, see Saari-Sieberg 1998.

[xvi] Note that, as in the case of mixed strategies, the payoffs featuring in computing the equilibrium for player 1's optimal value of p are player 2's. The same situation applies for player 2. Because the payoffs are symmetrical, this fact is assumed to have no effect on the outcomes. For interpretation, player 1 may be willing to raise his or her level of partial resistance if player 2 is also doing so. This potential has some links with Tsebelis' notion of partition frequencies (1989, 89). I am grateful to H. Nurmi for bringing this point to my attention.

[xvii] Computations are shown in the appendix.

[xviii] A careful application of punishment and rewards can stifle resistance. The results appear grim for the hopes of a group that seeks to escape control by another, yet they need not be. Although increased levels of punishment may decrease partial resistance, it need not be the case that $q = 0$, or that players use no partial resistance whatsoever. The equation merely states that at higher levels of penalty, we would expect to observe lower levels of resistance. It should be noted, however, that if a PD is successfully created, then the dominant strategy for either player will be Betray.

[xix] For more detail on this case, see Saari-Sieberg, 1998 or Sieberg, 2003b.

[xx] One example of this type of phenomenon lies in the Basque region in Spain. In retribution for the Basques' actions during the civil war, Franco punished the entire region, restricting investment, imprisoning and torturing intellectuals, and denying rights to use the Basque language or culture. In

response, a resistance movement in the form of the group ETA emerged and, by assassination of Franco's heir apparent, was given some credit for the change in regime type after Franco's death. (Schweimler, 1999; Episcopo, 1999; Jeffrey, 2002.)

[xxi] The calculations for this table may be found in the Appendix.

[xxii] Olson's term selective incentives refers to a group's strategy of punishing defectors and rewarding cooperators in order to encourage cooperation. 1982.

[xxiii] For more on the Estonian-Soviet conflict see Saari-Sieberg, 1998 and Sieberg, 2003b.

[xxiv] The outcomes for Betray/Cooperate and Cooperate/Betray are Pareto optimal as well.

[xxv] Melson and Wolpe, 1970.

[xxvi] It is interesting to see that this potential is noted, with frustration, by the Communist Party in Spain when describing the politics of the Basque region. In the party's summary of the Batasuna (Basque separatist party) platform and history, the party complains bitterly of the tendency for upper class Basques to 'sell out' their working class counterparts and to betray the separatist movement because of the promise of rewards from alliance with the Spanish state. (Val del Olmo, 2001, 2-5)