



Rational Revolutions

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Abstract This paper begins by asking if a rational choice explanation of revolution is possible. I note first and analyse critically the interesting recent literature on revolution developed mainly by sociologists with reference to the East German, Iranian and other contemporary revolutions. My own approach to this question starts by distinguishing between individual and collective rationality. In analysing revolutions (as distinct from riots, strikes, or other forms of collective action), I have argued that the second type is logically prior to the first, that is, one cannot look at the incentives facing an individual potential leader or follower of a revolutionary movement without considering first what type of state is being faced and whether it is strong or weak. The basic condition under which a rational revolution can occur is if the state has been weakened, so that the mechanisms which have sustained the ruler in office no longer function effectively. If the state is weak, then leadership of revolutionary movements will tend to occur spontaneously. This, in turn, tends to make individual participation in revolutionary activity rational, as dynamic collective processes (cascades or bandwagon effects) may be set in motion by the prospect of success in overthrowing the government. I illustrate these arguments with the French Revolution. Finally, I ask if revolution could be collectively rational, not only in the sense that the current state's ability to function is severely impaired, but in the sense that the regime which replaces it is expected to represent an improvement. I consider various criteria here – and ultimately suggest that one criterion may be adequate: that the revolution results in more democracy.

JEL Classification P0, K0, H0, H6

Keywords revolution, free riders, bandwagon effects

1. Introduction

It is commonplace in the modern analysis of revolutions to say that rational choice can't explain them. The rational choice approach is identified with the

line of thought initiated by Olson (1965), and applied to revolutions in detail by Tullock (1971). This analysis focuses on the free rider problem, that is, since the benefits of the revolution are a public good, available to every individual whether he participates in revolutionary activity or not, and since the contribution of any one individual to making the revolution happen is presumably trivial in any society of reasonable size, no rational person will decide to participate. Hence revolutions cannot occur unless some private benefit, which Olson termed “selective incentives” can be found to motivate participation. In turn, since it is hard to imagine how these could be provided at the mass level, revolutions do not occur.

However, revolutions do occur now and then, and this poses a problem for the theory. Moreover, in many of the classic revolutions such as the French revolution, as well as in modern revolutions such as those of 1989 in Eastern Europe, there seems to have been a great deal of mass participation, and no one, to my knowledge, has suggested that the problem of participation was resolved through the provision of mass selective incentives. Consequently, a number of writers have discarded the rational choice approach, proposing instead that participants were motivated by “norms”, morality or duty.

Of course, the problem of free riding occurs in many settings, and affects almost all forms of political participation. Recently, a number of writers have been preoccupied with problems of participation in social movements, elections and other forms of collective action. Many of these have stuck to the rational choice approach, but incorporated aspects of group behaviour and social interactions into the individual calculation of costs and benefits. These do not involve any form of *unselfish* behaviour, but consider the individual as a *social* being, i.e., in his relationship to other individuals or groups of which he may be a member. As discussed at length in my book-in-progress on the subject (Wintrobe 2004), I believe that this modification of rational choice theory is a most welcome and important departure from theories of the past, and should be sharply distinguished from models which incorporate altruistic or “dutiful” behaviour as a *deus ex machina* to be introduced when all other attempts at explanation have failed.

Aspects of group behaviour studied include leadership, the bandwagon effect, and the benefits of participation in a successful movement. On leadership, the classic contributions are Uhlaner (1989) and Morton (1991). Further refinement and some nice evidence is provided recently by Shachar and Nalebuff (1999). In these models, the group leader facilitates an exchange: he or she promises greater turnout at elections in a candidate’s favour if the candidate or party slants the policies of the party towards the preferences of the group. Individuals are motivated to vote by the leader in various ways. The leader may provide promises of direct, individualized consumption benefits from the policies provided as a result

of the increase in turnout. Alternatively, the leader may provide some sort of psychic or emotional support to the members in exchange for their participation. Thus, as Uhlaner puts it, "While individuals still vote because of consumption benefits arising from the act of voting, some of these consumption benefits are provided by group leaders out of collective benefits received by the group in return for its votes. The collective benefit comes from a candidate adopting policy positions closer to those of the group." (Uhlaner, p. 390)

For the model to work as specified, two conditions are necessary (Morton 1991): (1) candidates must choose distinct positions in electoral equilibrium (if they have the same position, members of groups have no more incentive to vote from a rational perspective than individual voters); (2) the groups in question must be large enough relative to the electorate to affect the turnout of other groups, and hence the probability of the preferred candidate winning. Under these conditions, each group calculates that, if others do not turn out, its own turnout may be decisive, just the way an individual would behave in a small group.

Chong (1991) proposed a related solution to the paradox of voting, and applied it to the American civil rights movement. In his model, people benefit from the act of participation in a social movement itself, *when that movement is successful*, as well as from the outcome (the provision of the public good which is the goal of the movement). Analytically, this converts the problem of the provision of the public good which is the goal of the movement from a "prisoner's dilemma" game into an "assurance" game. In the assurance game, the more others participate, the greater the incentive to each individual to participate. At some point (when enough others participate), there is a threshold or tipping point, beyond which participation is rational. In this model, then, the problem facing leaders of social movements who are trying to motivate participation is not, as Olson (1965) had suggested, that of providing selective private incentives to individuals to participate, but the "coordination" problem of creating a belief that enough others will in fact participate to make it in the individual's interest to do so.

So introducing groups or social interactions and a hierarchical incentive structure, consisting of interest group leaders and followers, with the leaders making greater efforts to stimulate the turnout of the followers under predictable circumstances – appears to hold the promise of at least partly resolving the mystery of political participation.

In addition, revolution is qualitatively different from other forms of collective action, such as strikes or protests in the sense that with a revolution the old "order" is replaced. As I will elaborate in more detail in the paper, revolutions occur under dictatorship when the old regime loses its capacity to defend itself. Roccur under democracy when the system is plagued by inaction (as in the Nazi

revolution¹), because dictators can act when democratic politicians cannot. But most revolutions occur against dictatorships. Roughly speaking (I will make this more precise later), in any “successful” dictatorship the mechanisms used by the regime to remain in office are sufficient to prevent a revolution from occurring, and it is only if something happens that makes the system incapable of raising sufficient money or maintaining sufficient power that the regime collapses. To put it differently the old regime, so long as it continues to function well, can always prevent a revolution from occurring. Only when the system does not have sufficient money to finance the power required to keep the people at bay, or only when it does not have sufficient power to raise the money to maintain its power over the people does the regime collapse. To illustrate, as Perrie has argued “the significant difference between the 1905 and 1917 revolutions in Russia lay not so much in the strength of the revolutionary movement as in the weakness of the state.” (Perrie, in Parker, 2000, p. 160)

Thus if something happens to substantially weaken the regime, the conditions for its collapse may appear. Once the regime is weak, then this immediately implies that the conditions for rational participation *by individuals* are partly met. Thus, if the system is weak, clearly it is more likely that a revolution to replace it will succeed. In turn, this motivates individuals to participate in the revolution, both as leaders and followers, and the weaker the regime appears to be, the more likely that a bandwagon effect will occur which brings it down. So if revolutions are collectively “rational” in the first sense – that the existing politico – economic system could no longer function effectively, this helps to explain how they could be *individually* rational as well.

In this paper, I therefore first ask a different and much more complicated question: Are revolutions *collectively* rational? I will return to the meaning of this question shortly, but to begin with the question can be broken down into two sub-questions: “(1) Do revolutions occur only where there are deep problems which the old system cannot solve or are they random and possibly mistaken events? (2) Can the post-revolution society be expected to represent an improvement?” If the answer to both these questions is “yes”, then revolutions can be said to be collectively rational.

I then suggest that if the answer to the *first* question is “yes” then, this in turn, provides an important clue to the circumstances under which *individual* participation in revolutions is rational, that is, this is part of the answer to the free rider problem at the individual level. In doing so, I incorporate the ideas behind much of the recent work on bandwagon effects, leadership, and so forth.

Now let us turn to the second, more difficult question for collective rationality

¹ For details, see Wintrobe (1998), chapter 11.

– did (or could it be expected, *ex ante*, that) the revolution produce net gains from the point of view of the society, that is, were the people better off after the revolution in some sense than before? I consider various criteria but end up by suggesting there is one simple criterion which might command acceptance: if the revolution can be expected to result in democracy, it represents an improvement.

The outline of the paper is as follows. The next section looks at some recent work on the rationality of revolutions. Section 3 outlines the basic framework of dictatorship to be used here, and briefly looks at the revolutions in Iran and East Germany in the light of these models and a partial equilibrium version of my model of dictatorship. I then go on to sketch the full version of my (1998) model of dictatorship. Section 4 then shows what a rational revolution against dictatorship looks like in this model. Section 5 applies this analysis to the French revolution. Section 6 discusses various criteria for “rationality” of replacing the old order. Section 7 concludes the paper.

2. Some recent work on revolution

A central question in revolutionary theory is the relationship between the level of repression under a regime and the likelihood of revolution. Recently there has been a lot of interesting work, mainly by sociologists, but also by economists and political scientists, on this issue. These models are often rational choice in spirit but then incorporate social interactions, both among revolutionary groups and between them and the wider society. Thus the models incorporate bandwagon effects, model of critical mass, information cascades and critical threshold models. Each of these social interactions describes a chain reaction in which the initial participation of small numbers triggers the participation of much larger numbers over time, sometimes (as in East Germany or Iran) bringing down the government.

To explain how revolutions get started, many of the models begin with the idea that *leadership* of revolutionary groups is not difficult to explain, even on simple, Olsonian, grounds. A good example is Van Belle (1996), who shows that leadership of a revolutionary movement can be rational. He calls the benefits to potential leaders “leadership benefits”. These may be selective in nature and include the prestige of leadership, the chances of defining the direction and goals of the group, and the rewards that come with the possibility of becoming the leaders of the country. Leadership of a revolutionary movement may be risky, but many of the benefits to be derived therefrom, especially if the revolution succeeds, are purely private. So the participation of leaders is easily explained. However, these benefits drop off rapidly with the number of participants. To explain the participation of others, other factors must be added.

Rasler (1996), in her analysis of the Iranian revolution, summarizes the recent literature on these dynamic collective processes in terms of three types of interactions. The first is the *assurance* that people have about the willingness of others to engage in such actions. Social networks play a big role here because most decisions to protest are made jointly with others. A second factor is the protestors' *success* in achieving governmental concessions. Rasler argues that if the regime adopts conciliatory policies, the result may simply be more protest because successful collective action sustains the involvement of old participants and convinces sideliners to join in. Moreover, concessions may signal a regime's vulnerability. Finally, one factor that is often linked to successful revolution is a "*critical*" or "*triggering*" event that represents a turning point and galvanizes large segments of the population (Rasler, pp. 134–5).

Another strand in the literature concerns the effects of repression on dissidence. Opp and Ruehl (1990) have argued that, while repression clearly has a direct negative effect in impeding protest, it has an indirect effect which may stimulate protest in the longer run if repression leads to micro-mobilization processes that raise incentives for protest.

Ginkel and Smith (1999) argue that dissident activity is more likely to be successful in motivating large-scale protest when repression is high, because under those conditions those who do protest have more credibility and may be seen as "heroes" by the rest of the population, thus making mobilization more likely. Similarly, Rasler provides some empirical evidence for Opp and Ruehl's argument showing that increased repression by the Shah of Iran had the short run effect of lowering protest but a long term escalatory effect. So the Iranian revolution was partly caused by excessive repression. Other scholars (Olivier 1991, Khawaja 1993) distinguish the effects of different levels of repression and find on the basis of studies of collective action in the West Bank and South Africa that only severe levels of repression decrease collective action while low to median levels escalate it.

The 1989 revolution in East Germany has been subject to intensive scrutiny on the basis of these theories. With respect to the free rider problem, Opp and Ruehl have done important studies on the protests in Leipzig showing, on the basis of detailed interview data that most East Germans who demonstrated against the regime in 1989 somehow *believed* that their individual actions were important. Looking at these arguments, Thompson has suggested in his useful (1996) survey of the literature on the revolution in East Germany that Opp and Ruehl were attempting to "save" rational choice by incorporating these *beliefs* into people's action, and also incorporating norms and altruistic motives into an individual's calculus. But, he maintains, "without these new assumptions, a rational choice theory of revolution is not only falsifiable, *it has been falsified*" (Thompson, p. 270, italics in the original).

Obviously the relationship between repression, dissidence, and the likelihood of revolution is complicated. To sort them out, we need a model. Thus, many of the assertions that have been discussed here are inconsistent with each other, such as the idea that repression had a positive effect on protest in Iran while concessions by the regime also had a positive effect (Rasler). The idea that increased repression makes micro-mobilization more likely ignores the fear the rest of the population may experience as a result of the increased repression. Indeed, it could equally well be argued that mobilization would occur as a response to *decreased* repression, since this is naturally interpreted as a sign that the state is weak.

More generally, there is a central question which is ignored in this literature, which analyzes protests without taking into account what kind of regime is being considered. Basic to the issue of whether mobilization is likely is whether the population perceives the state as weak or strong. Thus increased repression, *coupled with the perception that the state is weak*, might have the effect of causing mobilization, but *if the state is perceived as strong*, this effect is unlikely.

To develop these ideas further, we need a model of the “strength” of the state, and of the rational responses of individuals to changes in the level of repression, and how the two are related. I beg the indulgence of the reader if I briefly outline some aspects of my own (1990, 1998) model of dictatorship, which provides a clear analytical approach to these issues. I first outline this model and then return to the issues discussed in these papers.

3. The behaviour of dictators

3.1 *The dictator's dilemma*

The standard view of the difference between democracy and dictatorship in political science (eg, Friedrich and Brzezinski 1965) is that dictators can use the tool of repression to stay in power.

However, the use of repression creates a problem for the autocrat. This is the Dictator's Dilemma (Wintrobe 1990, 1998) – the problem facing any ruler of knowing how much support he has among the general population, as well as among smaller groups with the power to depose him. The use of repression of course breeds fear on the part of a dictator's subjects, and this fear breeds a reluctance on the part of the citizenry to signal displeasure with the dictator's policies. This fear on their part in turn breeds fear *on the part of the dictator*, since, not knowing what the population thinks of his policies, he has no way of knowing what they are thinking and planning, and of course he suspects that what they are thinking and planning is his assassination. The problem is magnified the

more the dictator rules by repression, i.e., through fear. The more his repressive apparatus stifles dissent and criticism, the less he knows how much support he really has among the population.

Consequently, all dictators seek loyal support as well. In general the easiest way to overcome the problem of obtaining support is to “overpay” supporters, that is, to give them goods at subsidized prices, subsidize their wages or capital projects, and so on.

In sum, while there is always a class of people who are repressed under a dictatorship, there is also, in any successful dictatorship, another class – *the overpaid*. As far as the people in the middle are concerned, the sad thing is that they can side with either group. The general population may be repressed in that their civil liberties may be taken away, but other aspects of the regime may compensate for this as far as they are concerned.

However, *the use of repression doesn't mean that dictators aren't popular*. Indeed, it sometimes appears from the historical record that the more repressive they were, the more popular they became! All the evidence indicates that Hitler was very popular. Communism was *popular* at one time; when it became unpopular, the regimes fell. Reports in the newspapers suggested that Castro and Saddam Hussein were often popular with their peoples.²

That dictatorships use two instruments – repression and loyalty or popularity – to stay in power suggests a useful classification of regimes. Four types can be distinguished: tinpots (low repression and loyalty), tyrants (high repression, low loyalty), totalitarians (high levels of both), and timocrats (low repression, high loyalty). Thus, totalitarian regimes combine high repression with a capacity to generate loyalty. Under tyranny, the regime stays in power through high repression alone and loyalty is low. A tinpot regime is low on both counts. And timocracy implies that loyalty is high even at low levels of repression. These four types or *images* have tended to recur over and over in the literature on dictatorship.³

The interrelationships between repression and loyalty, however, are complex. The main complication is that while loyalty and repression both use up resources (and in that sense are alternative “inputs” into the creation and maintenance of political power), their levels are not independent of one another: the level of repression affects the supply of loyalty. In order to sort out the various relationships involved, I use a simple model of the equilibrium levels of repression and political loyalty.

² See for example, John Deutsch, “Options: Good and Bad Ways To Get Rid of Saddam”, *The New York Herald Tribune*, February 24, 1999, p. 8 on Saddam Hussein's popularity.

³ For more details, see Wintrobe (1998), chapter 1.

3.2 Equilibrium loyalty and repression

First, I assume that the relationship between the inputs of loyalty and repression and their output (power) can be represented by the production function

$$\pi = \pi(L, R) \quad (1)$$

The production function for power (π) is assumed to be “well-behaved”, i.e., $\pi_L, \pi_R > 0$, $\pi_{LR} > 0$, $\pi_{LL}, \pi_{RR} < 0$. These relationships imply diminishing returns in the production of power to the continued use of either instrument alone. This production function is represented by a set of iso-powerlines, where higher iso-powerlines denote higher power. One of these is shown in Figure 1.

Secondly, I assume that the amount of loyalty available to the dictator is, like any capital good, fixed in the short run, but variable in the long run. On the other hand, the level of repression is variable in the short as well as in the long run.

Now let us assume the dictator is a tinpot. The objective function of a tinpot dictator is to maximize consumption only. In Figure 1, the tinpot dictator seeks no more power over the population than represented by the lowest iso-powerline in the Figure, π_{\min} . At any lower level of power, the tinpot will be deposed. Should the tinpot obtain more resources than required to attain $\pi = \pi_{\min}$ (resource constraints will be discussed shortly) he does not spend them on repression or loyalty, but on his own personal consumption or that of his family. Since the tinpot always remains on π_{\min} (as long as he stays in office), it immediately follows that there is an inverse relationship between the amounts of L and R demanded by the tinpot: An increase in R results in a fall in the level of L demanded.

Now consider the supply of loyalty to a tinpot dictator. I assume that while the tinpot may have a monopoly of formal political office, he does not monopolize political power in the country, but faces opposition in the sense of potential alternatives to his government. Citizens and interest groups may establish (possibly covert) ties with these potential opposition leaders. What happens to the supply of loyalty to the tinpot if the level of political repression is increased? To analyze a typical citizens' response, it is useful to assume that loyalty to the government or to opposition leaders is a capital asset which is accumulated in order to facilitate political exchanges. Each citizen may be viewed as accumulating an optimum “portfolio” of these assets, taking into account their expected rates of return and their risk. As in the standard theory of portfolio choice (see, for example, Arrow (1971) for an exposition) a change in the riskiness or rate of return of any asset will lead the investor to change his desired portfolio, and this change may be decomposed into the usual income and substitution effects.

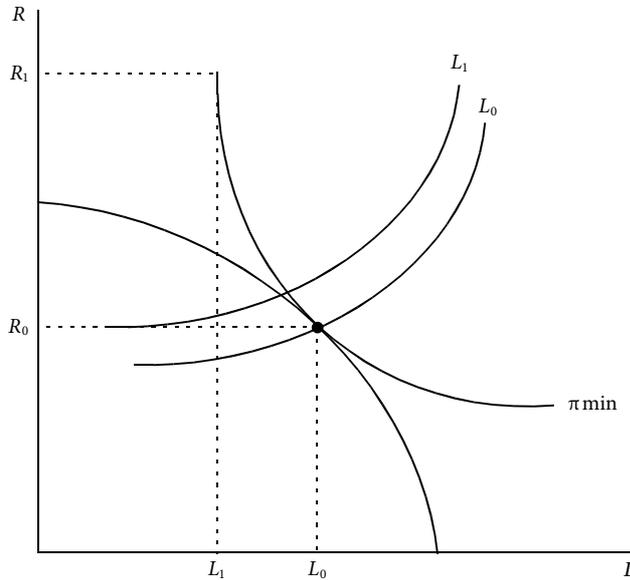


Figure 1 Optimal repression and loyalty under a tinpot dictatorship

The increase in repression means that the risks of disloyalty to the citizenry are increased, and its expected rate of return diminished. Consequently the attractiveness of dealing with the opposition decreases, and the relative attractiveness to citizens and interest groups of exchanges with the dictator, or with his representatives, increases. This substitution effect implies that a typical citizens' loyalty – and hence the aggregate supply of loyalty to the dictator – will be positively related to the level of repression. However, there is an income effect that works in the opposite direction: An increase in repression either increases the likelihood for any individual that he will himself be the victim of a sanction or the size of the sanction imposed even if he or she is for the most part "loyal". This reduces the individual's wealth, and, so long as investments in political loyalty are a normal good, it reduces investments in political loyalty to the regime (as well as to the opposition). At low levels of repression, this effect will be small for most individuals. For example if, as in the early years of Nazi Germany, repression is directed mainly at obvious opponents of the regime, and at Jews, the loyalty of these groups would obviously be reduced, but persons who fell into neither of these categories could reasonably assume that they would not be the victim of the regime's repressive policies. Consequently, so long as the level of repression is relatively low, it seems reasonable to assume that the substitution effect dominates the income effect for most citizens. If this is the case, the aggregate supply of political loyalty is initially positively related to the level of repres-

sion, as depicted by the L curves in Figure 1.

In a totalitarian regime on the other hand, I assume that the dictator (Hitler, Stalin, Mao) uses the instruments of repression and loyalty to maximize power over the population under his or her control. The classic historical examples are Nazi Germany and Stalin's Russia in the 1930s. This conception of totalitarian regimes is useful in that it places them at the opposite extreme from tinpots. Most real world dictatorships undoubtedly lie somewhere in between.

From an economic point of view, the central question is not so much the maximand, but the nature of the constraint on the totalitarian Leader's maximization of power. Is there any other constraint on the totalitarian Leader's maximization of power? So long as the aggregate supply of loyalty curve is upward sloping, the dictator can increase his or her power over the population by increasing the level of repression. Consequently if the supply of loyalty L were upward sloping throughout its range, the only possible equilibrium would be a corner solution involving the perfect repression of the population. However, theoretical considerations suggest that there is a conflict between perfect repression and the maximization of power over the population.

To see this, recall that an increase in repression induces opposing effects on the supply of loyalty to the regime. The substitution effect (the change in the amount of loyalty supplied as a result of a fall in the return or increase in the risk of disloyalty) always favors the regime. On the other hand, an increase in the probability of being discovered for having links to actual or potential opposition movements, or an increase in the sanction imposed for this offense reduces expected wealth, and this reduction in wealth has an income effect which leads an individual to reduce all investments in political loyalty, including those with the regime. At low levels of repression, it is reasonable to assume that the income effect is small for most people so that is dominated by the substitution effect (as argued earlier in the context of our analysis of tinpot dictatorships). However, as the level of repression increases, the income effect gets larger. In addition, as the level of repression increases, the number and the size of groups which are opposed to the regime become smaller, and at very high levels of repression, opposition to the regime tends to get wiped out. Consequently the substitution effect becomes vanishingly small as the level of repression becomes very large. Ultimately, then, a point must be reached where the income effect overwhelms the substitution effect for most citizens, causing the aggregate supply of loyalty to the regime to bend backwards (not depicted in Figure 1).

It follows that to calculate the effects of increased repression on the population, it is crucial to know what type of regime we are dealing with i.e., *whether repression is high or low to begin with*. To look at the Iranian revolution, it seems reasonable to suppose that we are dealing with a tinpot. Among the indicators of this we may consider that repression was generally low, there was no mass party,

and the main purpose of the regime seemed to be to finance the lifestyle of the Shah and his family (see the description in Arjomand 1986 and elsewhere).

Suppose then that there is some exogenous event that reduces the supply of loyalty on the part of the population, which occurred as the economic performance of the regime had deteriorated throughout the 1970s.⁴ If the regime is a tinpot, it is in danger of collapsing, as a fall in loyalty will reduce power below the minimum level of power required to stay in office.

The Shah's optimal response to the deterioration of economic conditions and the emergence of protest was therefore to raise repression in order to stay in office. Thus repression should immediately have been raised to R_1 in Figure 1.

In the short run, this is not cost-minimizing; but in the long run the supply of loyalty will *expand* (along the supply of loyalty curve L_1) and the regime can relax repression and still remain in office. As long as the regime is a tinpot, *the optimal response to a fall in loyalty is to expand repression in the short run.*

3.3 *The East German and Iranian revolutions*

Consequently, the model does not support the analyses of Rasler (1996) and others that the result of increased repression will simply cause a micro-mobilization of protest and result in regime downfall. Indeed, it is not clear at all that repression did increase, the measures suggested by Rasler are ambiguous, and even Rasler regards the policies of the regime as at best inconsistent. Others have suggested that, on balance, the Shah relaxed repression over this period (Arjomand 1986) and a number of events that occurred and are discussed by Rasler are consistent with this interpretation. Thus, mobilization occurred because the regime appeared weak, and its inconsistent policies on repression in response to the various crises over the period (admirably analyzed by Rasler) reinforced this interpretation.

There is also a general theoretical point to be made. As long as repression is low to begin with, it is difficult to argue that an increase in repression will lower power by so much that it will destroy the regime. This implies that the supply of loyalty is backward bending (negatively sloped) even at low levels of repression. But if that were generally the case, no dictatorship could survive for very long. As soon as repression was raised sufficiently, micromobilization responses implying a fall in loyalty (increase in dissidence) would occur and the regime would collapse. But there have been many stable and long lasting dictatorships in the real world.

⁴ For more details, see Wintrobe (1998), chapter 3.

What about a totalitarian leader? In general, the optimum response to a fall in loyalty here is, from the point of view of *long run power maximization*, to relax repression.⁵ The totalitarian leader is in no immediate danger of being deposed, since power is normally more than sufficient to stay in office. And repression had indeed been steadily relaxed in Eastern Europe in response to the collapse in the functioning of the bureaucratic economy⁶ and deteriorating economic conditions throughout the 1970's and 1980's without precipitating a revolution.⁷

However, *this analysis ignores the possibility of cascades or bandwagon effects in response to critical events which might be able to bring even a totalitarian dictator down.*⁸

Hence I believe that the comments of Przeworski are essentially correct: "the entire event was one single snowball" (quoted in Thompson 1996, p. 273.). Once the Hungarian regime dismantled its border controls, between June and September 1989, the rebellion in East Germany was, as Thompson puts it, a "prison revolt" once the Hungarians had organized a huge "jail break" (Thompson, 1996, p. 274). So the East German protest was essentially one against a state that had already been fatally weakened, and its collapse part of a chain of collapses. Looked at in that light, there need be nothing irrational about individual participation in the East German demonstrations in Leipzig. The probability of success was high, since the regime was no longer capable of survival in the long run. Its ultimate collapse was entirely foreseeable by that point, and revolution was only necessary because neither the regime nor the leaders of the various reform movements were willing to recognize that fact and negotiate its demise. And the response of the East German police of not shooting the demonstrators was not, in my view, a mystery or an illustration of an improper totalitarian response to a fall in loyalty, but simple acquiescence in the inevitable collapse of the regime.⁹ After all, if the regime did collapse subsequently, what actions could the post-revolution regime be expected to take against a police force which did respond in this manner?

⁵ See Wintrobe (1990, or 1998, chapters 3 and 10)

⁶ See Wintrobe (1990, or 1998, chapter 10)

⁷ See Wintrobe (1990, or 1998, chapter 9)

⁸ The different responses of the Chinese and the Russian governments are analyzed in my 1998 book, but without reference to the possibility of cascades or bandwagon effects. When this possibility is taken into account, the Chinese response in Tienamen square of a sudden, sharp increase in repression and subsequent decentralization of power was the correct one, from the point of view of short run and long run survival in office. Thus the main change that the possibility of bandwagon effects suggests for my model is that even totalitarians might respond to a short run fall in loyalty by raising repression (while relaxing it in the long run). The analysis of tinpots is unchanged, and indeed, the conclusion I drew that survival dictates an *increase* in repression is strengthened by the inclusion of the possibility of micro mobilization.

⁹ Nor were the Russian troops signalling any support for a repressive action, as has been pointed out to me by Ekkart Zimmermann.

To analyze revolutions properly, therefore, it is best to look first at the condition of the state and not at the incentives of individuals within an abstract state. To do this, we need to look at the full model of dictatorship and not at the partial aspect of it depicted in Figure 1.

3.4 Equilibrium power and budget

To begin with, we need to note that Figure 1 rests on a simplification. It shows the equilibrium levels of loyalty and repression for a fixed level of the price of loyalty P_L . However, the price of loyalty, P_L , is a variable under the dictator's control. An increase in P_L would bring forth a larger supply of loyalty, L , for any given level of R , i.e., it would shift L to the right (not shown).

A second simplification is that the tinpot ruler also represents the special or "corner" solution where the sole aim is to maximize consumption. On the other hand, the leaders of tyrannies and totalitarian regimes represent the opposite extreme of dictators who maximize power.

To generalize the approach, assume first that all dictators have the same utility function, where the arguments are consumption (C) and power (π).

$$U = U(\pi, C) \quad (2)$$

Power may be desired either for its own sake, or because dictators wish to impose their ideas of the common good on society.

Combining this utility function with a constraint which shows how money can be converted into power and power into money provides an explanation of the limits to a dictator's power.

More precisely, the dictator is constrained in two ways. The first constraint – the costs of accumulating power – is governed by the political institutions of the regime, and the second – the capacity to use his power to increase revenue – by the dictator's economy. These constraints are combined in equation:

$$B(\pi) = P_\pi \pi (B - C) + C \quad (3)$$

The left-hand side of the constraint (3) shows the dictator's budget B as a function of power (π), i.e., it shows how the dictator's power may be used (through taxation, regulation or the provision of public goods) to obtain budgetary resources. The right-hand side shows how the funds are "spent": either on consumption, C , or accumulating power π via the money-to-power relation $\pi(B - C)$, with each unit of π multiplied by P_π – the "price" of power in terms of money.

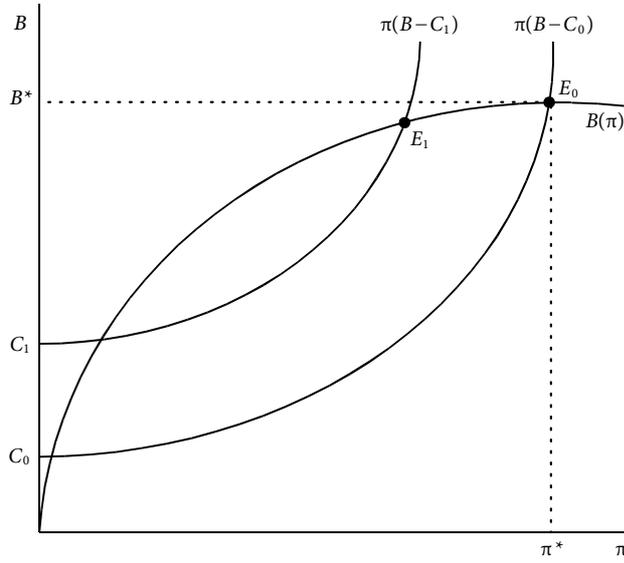


Figure 2 Equilibrium power and budget and how they respond to increased consumption by the dictator

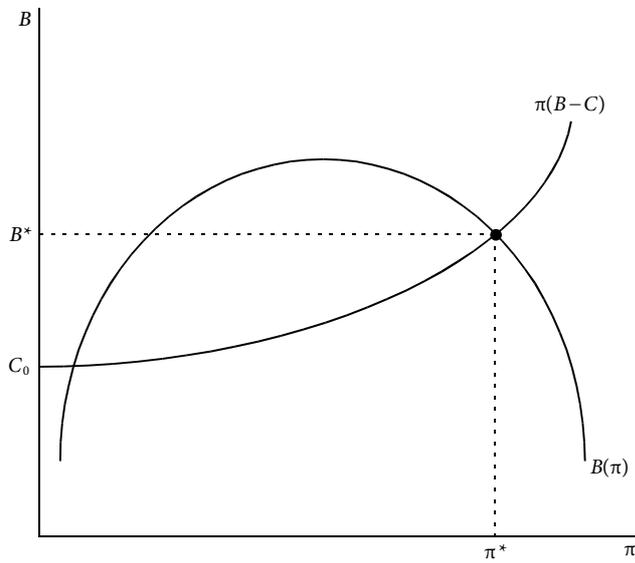


Figure 3 Equilibrium power and budget when power decreases budget at the margin

These constraints are illustrated in Figures 2 and 3. Figure 2 implies a positive relationship between the resources spent on accumulating power, $(B - C)$, and the level of power (π) . This relationship is displayed in Figure 2 as the $\pi(B - C)$ curve. This curve in effect shows how the dictator can convert *money* into *power*. The upward-sloping $\pi(B - C)$ curve in Figure 2 thus implies a positive relationship between the amount of money spent accumulating π (the dictator's total budget B , minus expenditures on C), and the level of π obtained, with "diminishing returns" to these expenditures.

Of course, diminishing returns to the accumulation of loyalty implies that successive increases in P_L will increase L by less and less. But so long as there is no limit to the dictator's capacity to finance the accumulation of loyalty, there is no obvious limit to the dictator's power, loyalty, or level of repression. In brief, if there is no limit to his resources, there is no limit to his power, since resources can always be transformed into power by the process we have just outlined. Is there any limit to the dictator's resources? It would be arbitrary to specify that the dictator's power is limited by a revenue-maximizing tax. For, so long as the dictator has sufficient power, he can raise more funds by imposing new tax bases and by finding other ways to raise money. In short, if there is no limit to his power, there is no limit to his resources either.

It follows that the limits to budgetary resources and to power must be simultaneously determined. We now turn to the dictator's economy, as summarized by the $B(\pi)$ curve in Figure 2. This curve describes the relationship between the exercise of political power, and its consequences for the dictator's budget, i.e., the conversion, in effect, of *power* into *money*. Although there are diverse forms of the economy under dictatorship, all of them suggest that this curve, too, displays diminishing (and sometimes negative) returns.

In general, then, the power-to-money curve $B(\pi)$ may be either positively or negatively sloped. It seems reasonable to assume that, initially, it must be positively sloped: starting from very low (or zero) levels of power the provision of basic public infrastructure or the imposition of simple taxes at low rates must raise revenue. Beyond this, however, there is little to be said at a general level.

No matter what the slope of $B(\pi)$, however, equilibrium in Figure 2 is at the intersection of the $B(\pi)$ and $\pi(B - C)$ curves, or at E_0 , implying a (total) budget of B^* , and power equal to π^* .¹⁰

Note that this equilibrium depends on the dictator's consumption C ; if the ruler were willing to reduce this below C_0 , for example, the money-into-power curve $\pi(B - C)$ would shift to the right, implying an equilibrium at the intersection of this new curve with $B(\pi)$. There is obviously a limit to the extent to

¹⁰ See Wintrobe (1998), chapter 5 for a proof.

which any ruler is willing to reduce consumption. But the dependency of π^* on B^* and on C^* just underlines the fact that, in general, Figure 2 must be considered along with the dictator's utility function. In general, the ruler will choose a combination of C and π , depending on his preferences for the two. So Figure 1 and Figures 2 or 3, combined with the dictator's utility function (equation 2) jointly determine the dictator's optimal levels of R^*, L^*, C^*, B^* , and π^* .¹¹

4. Revolution

In equilibrium, so long as $\pi > \pi_{\min}$, the dictatorship has enough power to remain in office and there is no revolution. The dictator can choose a system of penalties for disobedience of various laws which deter revolutionary action. Thus, penalties will typically be higher for organizing than for participating in revolutionary acts. At the same time, the dictator needs loyalty, as discussed. Every "successful" dictatorship solves these problems in a particular way, that is by choosing a particular mechanism that rewards supporters and another one that punishes disloyalty (sometimes the same system fulfills both functions). In particular, the ruler will want to put in place a mechanism that "overpays" the army and other forces charged with the task of maintaining order, and he or she may also wish to introduce checks such as competing security systems so that each one acts as a check on the other, as is commonly done in most successful dictatorships. For the rest of the population, the cost-minimizing combination of loyalty and repression will be chosen, but in general, the ruler must bear in mind that "winning hearts and minds" will better ensure long term survival.

However, a change can occur which reduces the effectiveness of the reward or punishment mechanisms. If the change involves a deterioration in the dictator's capacity to accumulate power or to raise resources, this means that the equilibrium budget and power fall (as shown in Figure 2 and ultimately in Figure 3 as well). If they fall far enough, the system no longer has sufficient power to stay in office, i.e., there is a revolution. Such a revolution is "rational" in the sense that the dictatorship no longer has the capacity to defend itself. Thus the essential reason for *collectively* rational revolution is that a change or a series of changes occurs which weakens the state.¹² In turn, the weaker the state becomes, the more that any *individual* potential dissident will come to believe that successful

¹¹ The first order conditions for a solution, along with a more comprehensive exposition of the model, can be found in Wintrobe (1998), chapters 3 and 5.

¹² It is worth noting that Goldstone's paper (this volume) essentially tests the hypothesis that revolutions occur fundamentally as a result of the weakness of the state, and finds robust evidence in favour of this hypothesis.

revolution is possible. Hence the free rider problem at the individual level also tends to be solved, since the essential condition for rational participation in rebellion is more likely to be fulfilled when the probability of successful revolution increases. This is the basic (but, as we shall see, not the only) flaw in the traditional emphasis on the free rider problem.

5. An illustration: the French revolution

In his magisterial *The History of Government*, Samuel Finer refers to the French Revolution as “the most important single event in the history of government.” (Finer (1997), p. 1517). He analyzes the origins of the revolution by stressing that three crises occurred simultaneously in France in the years 1787–1789:

1. The King could no longer get loans and the government was “desperate” for new money.
2. There was a constitutional crisis, with the *parlements* seeking to rein in the king, in which they were supported at this stage by the people, who perceived the king’s rule as despotic.
3. There was a “violent” economic crisis, with the price of bread soaring at the same time as hundreds of textile workers were being thrown out of employment. (Finer (1997), p. 1525). Thus, as Sutherland also emphasizes, “the constitutional crisis coincided with economic calamity.” (Sutherland 2003, p. 41)

The first factor has been analyzed by North and Weingast (1989) in their account of the Glorious Revolution in England. The Glorious Revolution made it possible for the English King to obtain loans as the English parliament controlled the purse and therefore could make the King’s promise to repay credible. No such revolution had occurred in France. One interpretation of this “Irony of Absolutism” is that the fewer constraints on the King’s power, the less power he may actually have. Interpreted this way, their analysis can be applied to the French monarchy with the help of my Figure 4. In order to get loans, it was necessary to devolve power onto an institution with the capacity to enforce repayment, i.e., to make the King’s promise to repay credible. So the King needed to give up power in order to raise resources, i.e., he was on the downwards sloping part of the $B(\pi)$ curve in Figure 4 and needed to move up along it to sacrifice power for revenue. This was the reason for the calling of the Estates General in 1788. In brief the King needed to give up power to get money. This had already been done in the past with the sale of offices (Sutherland 2003, p. 7) but the regime seemed to teeter at the edge of bankruptcy nevertheless by the late 1780s.

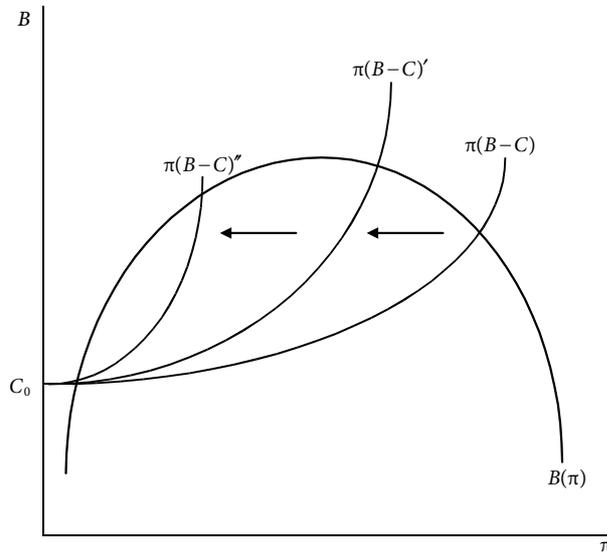


Figure 4 The French Revolution

The third factor – the rise in the price of bread can be analyzed in a similar fashion. The loyalty of the general population can be thought of as inversely related to the price of bread. Since bread made up over 75% of the typical person’s diet, a rise in its price could mean starvation. In 1789, this figure had risen to 88% for the typical Parisian working man (Sutherland, p. 51). The willingness on the part of the urban mobs and the people in the countryside to demonstrate and to riot in order to restore price controls on bread whenever these were lifted, and the success of these strategies on previous occasions is well documented (See Finer 1997, Sutherland 2003, Perrie 2000).

Thus a rise in the price of bread means a leftward shift in the supply of loyalty and therefore a rise in the price of loyalty. This in turn implies a leftward shift in the $\pi(B-C)$ curve, further reducing equilibrium power (and budget if $B(\pi)$ is upwards sloping).

To these three crises we should add a number of other things which amplified the seriousness of the crises. The first is the well-documented incompetence of the King. Finer’s judgement is typical:

The miserable Louis XVI, who acceded in 1774, made the indolent Louis XV look like a thunderer from heaven: and it is owing to Louis XVI, personally, that the disaffection which unquestionably existed all over France between 1787 and 1789 turned into full blooded revolution. (Finer, p. 1520).

Other factors in the revolution included the dubious loyalty of the troops (Sutherland, pp. 56–61) some of whom were attracted by revolutionary ideas, and the fact that the war (with Austria and then Prussia) was going badly in 1792 (Finer, p. 1527). And there was obviously considerable resentment and anger in the population towards the Old Regime and its overpaid clients, the Church and the nobility.

Less obviously, the communication problems of the regime, amply documented in histories of the revolution, had the effect of amplifying the Dictator's Dilemma. To illustrate, the budget crisis was commonly interpreted by the population as due to the profligacy of the regime. This problem was compounded by the fact that its public finances were a mystery; "the ... fiscal system ... was both a mystery and accountable to no one. Indeed the government itself had no idea what its resources or expenditures were." (Sutherland p. 18). Thus

One of the resentments of the people was how much the court cost. No matter that most of its expenditures were entirely routine: meager sums conferred on widows of military officers and on the relatives of other modest former state servants. No matter that the court budget was so small relative to overall expenditures. *No one knew this at the time.* There were too many spectacular examples of the Crown underwriting the debts of favourites; too many examples of far too much extravagant spending for the acquisition or construction of new chateaux like St Cloud and the Bagatelle for the public to forgive the lush expenditures. After all, the Parlement of Paris itself told the public, in documents that could not be censored, that the source of the public debt was extravagant public spending. (Sutherland (2003), p. 11, italics added).

Diagrammatically, larger consumption by the King (C) shifts the $\pi(B-C)$ curve upwards from its origin at a point like C_0 to a point like C_1 . The effect is the same as that of a rise in the price of bread: equilibrium power falls, and equilibrium budget falls if $B(\pi)$ is upwards sloping. Even if the King's consumption is not C_1 but C_0 , if the population thinks it is C_1 , the effect on the *perceived* power of the regime, which is crucial to the revolutionary calculus, is the same.

Other problems amplified the Dictator's Dilemma. According to Sutherland,

Fantastic rumours were inherent in Old Regime political culture. Partly because communication networks were so primitive and partly because no one in the government thought they had any consistent responsibility to explain themselves to the public, the most amazing urban legends could take on a vivacious life. Thus in the 1740's the rumour went round that the government intended to deport all street urchins to New France....Thus, people feared the aristocracy and clergy would stop at nothing to retain their privileges." (Sutherland, p. 54). Later it is suggested that one of the most important factors explaining the peasant rebellion in 1789 was the visit of Louis XVI to Paris after the fall of the Bastille. This was designed to assuage opinion in Paris. "... but almost everywhere in the provinces, the King's journey was taken to be an endorse-

ment of popular rebellion. Country people knew that the Third Estate had achieved a great victory and assumed they had the King's sanction to take matters into their own hands." (Sutherland, p. 66). "Most alarming because it was so irrational was the Great Fear, a vast panic which spread over the entire country ... between 20 July and 6 August." (Sutherland (2003), p. 68).

Another important consideration was the multiple directions in which the country headed at various times over the revolutionary years – first Right (constitutional monarchy), then far Left (the Committee of Public Safety), then middle (the Directory) (Finer 1997, p. 1527) – as one or another of the different groups involved gained the upper hand.

In all these ways, the communication problems of the regime amplified the Dictator's Dilemma and not only reduced the loyalty of the public but caused them to participate in revolutionary action as much out of fear about what was going on as dislike of the Old Regime.

In brief, the mechanisms that the regime had used to survive – the privileges of the Nobility and the Church, price controls on bread to contain the urban mob, and the lack of restrictions on the freedom and secrecy of the crown – had come to haunt it. The King himself remained safe only because it was popularly believed that he supported the revolution. (Sutherland, p. 116). After the flight to Varennes, this idea could no longer be supported, paving the way for the downfall of the monarchy itself (Sutherland, pp. 116, 148–52).

In addition, from standard accounts such as Sutherland's or Perrie's however, one thing is undeniable; protests, outbreaks of insurrection, rebellions, riots and every imaginable form of collective action were commonplace, and largely spontaneous not only in the years leading up to 1789 but from 1789 to 1792 as well. The free rider problem is not a good starting point for explaining the course of events leading up to or during the French revolution. On the contrary, *individual* revolutionary (or counter-revolutionary!) action may be entirely rational under the circumstances mentioned: the weakness and incompetence of the King, the fact that the regime was essentially financially bankrupt, its vast communication problems, the weak hold of the regime on the loyalty of its troops, the economic and constitutional crisis, and the multiple directions and contradictory programs of the various groups.

A better starting point is the weakness of the state at that time. In Figure 4, therefore, the French revolution may be interpreted as follows. All parties (including the King) wished to move to a new constitution which would put limits on the King's power, i.e. to move the $\pi(B-C)$ curve back along the downward sloping portion of $B(\pi)$ to $\pi(B-C)'$ in Figure 4. By giving up power the King hoped to gain revenue in the same way that the English King had. However, a bandwagon effect developed, possibly due to the constitutional crisis and the economic crisis, amplified by the uncertainties about which direction the regime

was moving, and opposition to the regime snowballed. As a result, the $\pi(B-C)$ curve shifted further and further left, further reducing both power *and* revenue as well as it moved along the upwards sloping part of $B(\pi)$ to $\pi(B-C)$ in Figure 4 until the regime collapsed.

6. The rationality of replacing the old order: the superiority of democracy

How can we judge whether revolutions produce a “better” society? If a revolution does not, then no matter how “rational” it may be to get rid of the old regime, the whole process cannot be said to be collectively rational, and many revolutions – Cambodia is one example which comes immediately to mind – cannot be said to be rational, at least *ex post*.

One definition of an improvement is the standard economic compensation test that the gainers could have compensated the losers as a result of the revolution. However, perhaps more than any other political event, revolution involves “winners and losers”. Thus it is even more difficult than usual to apply the standard compensation test criteria. Could the “winners” in the French, Russian, or Nazi revolutions have compensated the losers? To put it starkly, since many of the losers in any of these revolutions were dead as a result of the revolution, the standard criterion would appear to be a bit more difficult (but not impossible!!) to apply than usual.

Of course, there are other criteria. One of these is related to the criterion for judging efficient laws in the economics of law. A typical example of an efficient law is the law in automobile accident law that liability for an accident falls upon the party driving the vehicle which hits another car from behind. This law would obviously appear to be efficient compared to a law which specified that the party which is hit from behind is liable. If the second law were in force, drivers would spend much of their time gazing in the rear view mirror, rather than at the road in front of them!

The general principle is that liability should be placed on the party who can avoid the damaging interaction at least cost, no matter who may be said to “cause” the accident in some sense. Laws which satisfy this criterion are said to be *efficient* laws. Thus in Coase’s famous (1960) example of a railway train which emits sparks and destroys a farmer’s crops, liability should nevertheless be placed on the farmer if it is easier for him to relocate than the railroad, even though, obviously, it is the railroad that is “causing” the damages. Thus an *efficient* revolution would be one that replaced inefficient laws with efficient ones in this sense. The French revolution, governed in part by the Goddess of Reason, attempted to reorganize society on the principle of efficiency (although economic efficiency may not be what they had in mind): Hence the abolition of the entire system of

the old regime and the institution of the 10 day week, the revolutionary calendar, and of course, most famously, the declaration of the Rights of Man.¹³ Some (de Tocqueville 1998, Furet 1981) have, famously, suggested that the abolition of all the privileges of the old order led directly to the Terror.¹⁴

Yet another obvious criterion for judging successful revolutions is equality, and undoubtedly one of the great aims of the French and Russian revolutions was to improve equality. This suggests another test of rationality, that the new regime involves more equality than the old. Obviously, these criteria are not identical and conflict in many places.

However, there is one simple criterion which might command wide agreement, and that is the following. If the revolution results in more democracy, it represents an improvement. The reason is simply that democracy gives, if not to all of the people, to more of the people than is typical of non-democratic systems, control over their government. Thus the fundamental requirements of democracy are human rights and genuinely competitive elections. So if the people do not like the government, they can throw it out.

On the other hand, if the result of revolution is dictatorship, and the dictatorship does not turn out to be beneficial to the people in the way it might have been thought (eg, by Marx, Blanqui, Lenin, and others), then the problem is that the only way to get rid of the new regime is via another revolution, involving much higher “transactions” costs. The advantage of democracy is that it provides a means whereby efficient laws, more equality, economic policies which pass the compensation test, or any other aspects of a “good” society which might be thought desirable can be implemented by the electorate. The reason is because, under democracy, the electorate can always put into power at low cost (compared to any other system of government) a government which promises to implement these policies. Thus revolutions which replace dictatorships with democracies might be termed collectively “rational”. This is perhaps the commonsense behind Fukuyama’s (1992) oft cited “End of History” argument. Democracy, in some sense, gives the people, or at least enough of the people, control over their own history. Any other system does not.

7. Conclusion

¹³ In another paper (Wintrobe, 2002) I argue that human rights are indeed economically efficient.

¹⁴ However, a more natural interpretation of what happened is that it was the second principle embedded in the Rights of Man, that of the General Will, which was intellectually related to the ideology of the Terror. That is, it was Rousseau, not Voltaire, whose ideas were most amenable to the Terror.

This paper begins by asking if a rational choice explanation of revolution is possible. I began by noting the interesting recent literature on revolution developed mainly by sociologists with reference to the East German, Iranian and other contemporary revolutions from this point of view. I then put forth a new approach, which starts by distinguishing between individual and collective rationality. In analyzing revolutions (as distinct from riots, rebellions, or other forms of collective action), I argued that the second type is logically prior to the first, that is, one cannot look at the incentives facing an individual potential leader or follower of a revolutionary movement without considering first what type of state is being faced and whether it is strong or weak. In this paper, I considered revolutions against dictatorship only, using my model of dictatorship developed previously. The basic condition under which a rational revolution can occur is if the state has been weakened, so that the mechanisms which have sustained the ruler in office no longer function effectively. More precisely, a “weak” regime is one which lacks the power and the revenue to defend itself against insurrection. If the state is weak, then leadership of revolutionary movements will tend to occur spontaneously. And the leader will be more able to successfully stoke resentment against the regime’s repression and at its clients (“the overpaid”) under these conditions.

In turn, the weakness of the state, and leadership to take action against it tends to make individual participation in revolutionary activity rational, as these are the basic conditions for a bandwagon effect to take place. The likelihood of individual participation in mass actions is further enhanced if the shape of the outcome of a successful revolution is particularly unclear, that is, the “public good” which would result may take various forms, depending on which groups obtain power in the new regime. So individuals who do not participate take the risk that the revolution may occur, but the outcome will favour other groups and not theirs.

These conditions are magnified if the communications problems of the regime, always present in any dictatorship because of the Dictator’s Dilemma, are particularly serious. All of these arguments are, I believe, nicely illustrated by the French Revolution.

Finally, I asked if revolution could be collectively rational, not only in the sense that it occurs because the previous state’s ability to function had been severely impaired, but in the sense that the regime which replaces it is expected to represent an improvement. I considered various criteria here – economic compensation tests, the efficiency of law, and more equality – and suggested that one criterion may be adequate: that the revolution is expected to result in more democracy. Whether the French Revolution itself meets this test – it did, ultimately, result in more democracy, but only after taking the French people on a tour through various forms of dictatorship – is an interesting question, which I

leave to the reader to consider.

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