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ON October 6, 1989, the East German Socialist Unity Party (SED) celebrated the fortieth anniversary of the German Democratic Republic (GDR) with official parades and orchestrated proregime demonstrations. Erich Honecker, the general secretary of the SED, proclaimed the founding of the republic a "historical necessity" and a "turning point in the history of the German people."[1] Twelve days later, on October 18, Honecker resigned. On November 9 the Berlin Wall fell. Less than a year later, on October 3, 1990, the GDR ceased to exist, when the five East German states acceded to its West German counterpart, the Federal Republic of Germany (FRG).

During this period of political turmoil, the city of Leipzig in Saxony became known as the *Heldenstadt* (city of heroes).[2] Mass demonstrations in Leipzig on thirteen consecutive Mondays between September 25, and December 18, 1989, triggered a wave of political protest throughout the GDR. The demonstrators expressed their demands for political liberalization, open borders, and, toward the end of the cycle, German unification. A second set of demonstrations began on January

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[1] Eleonore Baumann et al., eds., *Der Fischer Weltalmanach: Sonderband DDR* (The Fischer world almanac: Special volume GDR) (Frankfurt am Main: Fischer, 1990), 150. German expressions are translated by the author.

[2] Christoph Hein, cited in Wolfgang Schneider, ed., *Leipziger Demontagebuch: Demo Montag Tagebuch Demontage* (Leipzig dismantlingdiary: Demo Monday diary dismantling) (Leipzig: Gustav Kiepenheuer, 1990), 8.

8, and ended on March 12, 1990. The participants initially called for speedy unification. Later on political parties used the Monday demonstrations as a campaign platform for the first free national elections, held on March 18, 1990. Three more "cycles of protest" took place in fall 1990 and in early 1991.[3] At this time organized groups attempted to exploit the symbolic force of the earlier Monday demonstrations to protest the lack of public access to state security files, the Persian Gulf War, and the negative economic and social consequences of German unification. However, the early momentum was gone, and the demonstrations failed.

Western observers were initially stunned at the speed of the economic and political collapse of the East German regime. With hindsight, however, the regime's economic collapse seems to have been inevitable, given its outdated and obsolete industrial structure and the depleted state of its environment. Similarly, the political fate of the regime appears to have been sealed once its repressive state security network unraveled.

I propose that this peculiar combination of surprise and inevitability is due to the dispersed nature of information about the GDR's precarious economic and political situation. The East German populace was by and large discontent with its standard of living and lack of political freedoms, and it grew increasingly so in the period 1975–89. But this disaffection had no outlet: all avenues by which it could have been made public, and thereby induced political change, were blocked. While elections were held regularly, there was no opposition party, and election outcomes were manipulated. Periodic intraparty purges effectively eliminated any opposition within the ruling party. The freedom of press, radio, and television guaranteed in Article 27 of the GDR constitution was a farce: news publications and broadcasts were controlled by the department for agitation and propaganda of the central committee of the SED. The violent suppression of the 1953 mass uprising with the help of Soviet military forces rendered the cost of antiregime protest prohibitive for all but a small minority. Similarly, the construction of the Berlin Wall in 1961 eliminated the option of emigration for the vast majority of the population. Public opinion polls that indicated a dramatic decrease in public support for the regime in the late 1970s and throughout the 1980s were classified and not accessible to anyone but high-level functionaries. The people's silent dis-

[3] Sidney Tarrow, *Struggle, Politics, and Reform: Collective Action, Social Movements, and Cycles of Protest*, Western Societies Program Occasional Paper no. 21 (Ithaca, N.Y.: Center for International Studies, Cornell University, 1989).

content and lack of motivation contributed to the poor performance of the East German economy but failed to be reflected in the unrealistically rosy picture drawn by official aggregate economic statistics.

A number of critical events in the late 1980s finally brought to the fore the regime's heavy-handed and manipulative control of its people and contributed to the general sense of anger, bitterness, and frustration. In addition, the external constraints faced by the regime and its citizens changed dramatically. Gorbachev's political reforms in the Soviet Union sowed discontent among the East German people, as they cast doubt on the Soviet commitment to guarantee the existence of the East German regime and thereby lowered the cost of protest. They also liberalized a number of Eastern bloc countries that opened their borders to the West, thus creating a low-cost emigration opportunity for citizens of the GDR vacationing in those countries.

The hard-line leadership of the SED showed no signs of giving in to the pressures generated by the exodus of its citizens via other East European countries in the summer of 1989. But for those who remained trapped in the GDR, the emigration of their compatriots served as a signal. First thousands, then tens and hundreds of thousands of people took to the streets in Leipzig, triggering a wave of mass demonstrations in cities and townships all over the GDR. In response, a reform-minded faction emerged to succeed to the SED leadership and initiate a number of political reforms. The resulting political liberalization created its own dynamics. Once free from state control, the media fed public outrage with its reports on environmental damage, political repression, corruption, and the luxurious lifestyles of the SED elite. Similarly, the legalization of opposition groups and political parties created pressures for free elections. Most important, the official opening of the East German borders to the West led to a flood of additional emigration that ultimately unraveled the regime: German unification became necessary to bring the exodus down to manageable levels.

In this sequence of events, the Leipzig Monday demonstrations played a key role in the transformation and eventual collapse of the regime. This analysis interprets the demonstrations as an "informational cascade" that finally made public some of the previously hidden information about the nature of the regime.[4] With this information in the public domain the viability of the regime was undermined. The Monday demonstrations, too, subsequently died a slow death as their informational role declined.

[4] This expression comes from Sushil Bikhchandani, David Hirshleifer, and Ivo Welch, "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," *Journal of Political Economy* 100 (October 1992).

This article is organized as follows. Section I reviews several theories of mass political action. Section II examines the suppression of mass discontent in East Germany over the period 1949–89, as well as the critical events and external political changes of the late 1980s. Section III analyzes the East German revolution and its aftermath, covering forty-two Monday demonstrations in Leipzig over the period 1989-91. Section IV uses the evidence assembled in Sections II and III to evaluate the theories reviewed in Section I.

I. Theories of Mass Political Action

This section first summarizes two influential theories of how popular disaffection with a regime can translate into mass protest and induce political change: the theory of relative deprivation and the theory of political opportunity structure.[5] Then some traditional threshold and cascade models of collective action are outlined[6] and contrasted with an informational cascade model of mass political action.[7] Finally, the section reviews the work of several scholars who emphasize the role of social embeddedness, personal networks, organized groups, and political leadership for mass mobilization.[8]

[5] The theory of relative deprivation is developed by Ted Robert Gurr, *Why Men Rebel* (Princeton: Princeton University Press, 1970). The following is a partial list of works associated with the theory of political opportunity structure: Charles Tilly, *From Mobilization to Revolution* (Englewood Cliffs, N.J.: Prentice-Hall, 1978); Michael Taylor, "Rationality and Revolutionary Collective Action," in Taylor, ed., *Rationality and Revolution* (Cambridge: Cambridge University Press, 1988); Tarrow (fn. 3).

[6] Albert O. Hirschman, *Exit, Voice, and Loyalty: Response to Decline in Firms, Organizations, and States* (Cambridge: Harvard University Press, 1970); Mark Granovetter, "Threshold Models of Collective Behavior," *American Journal of Sociology* 83 (May 1978); Pamela Oliver and Gerald Marwell, "A Theory of the Critical Mass I: Interdependence, Group Heterogeneity, and the Production of Collective Action," *American Journal of Sociology* 91 (November 1985); Gerald Marwell and Pamela Oliver, *The Critical Mass in Collective Action: A Micro-social Theory* (Cambridge: Cambridge University Press, 1993); Timur Kuran, "Sparks and Prairie Fires: A Theory of Unanticipated Revolution," *Public Choice* 61 (April 1989); idem, "Now out of Never: The Element of Surprise in the East European Revolution of 1989," *World Politics* 44 (October 1991); James DeNardo, *Power in Numbers* (Princeton: Princeton University Press, 1985); Dennis Chong, *Collective Action and the Civil Rights Movement* (Chicago: University of Chicago Press, 1991).

[7] Susanne Lohmann, "Rationality, Revolution and Revolt: The Dynamics of Informational Cascades," Graduate School of Business Working Paper no. 1213 (Stanford, Calif.: Stanford University, December 1992).

[8] Anthony Oberschall, *Social Conflict and Social Movements* (Englewood Cliffs, N.J.: Prentice-Hall, 1973); Doug McAdam, "Micromobilization Contexts and Recruitment to Activism," in Bert Klandermans, Hanspeter Kriesi, and Sidney Tarrow, *International Social Movement Research*, vol. 1 (Greenwich, Conn.: JAI Press, 1988); John D. McCarthy and Mayer N. Zald, "Resource Mobilization and Social Movements: A Partial Theory," *American Journal of Sociology* 82 (May 1977); Carole J. Uhlaner, "Rational Turnout: The Neglected Role of Groups," *American Journal of Political Science* 33 (May 1989); Chong (fn. 6).

Traditional Models

A grievance-based theory provides the starting point for the literature review. According to Ted Robert Gurr's concept of relative deprivation, people become discontent when they perceive a discrepancy between their expectations and society's ability to ensure the standard of living to which they believe they are rightfully entitled. This type of discontent spurs revolution.

The theory of political opportunity structure is based on the notion that people become active not when they are most deprived, oppressed, or discontent, but when a closed system of opportunities opens up. Sidney Tarrow interprets cycles of protest as collective responses to expanding political opportunities that arise when exogenous events increase the expected payoffs from participation.

Whereas these two theories focus on political action as the primary mode for expressing mass discontent, Albert O. Hirschman's theory of exit, voice, and loyalty identifies several ways that popular disaffection with a regime can induce political change. In its original formulation, his theory is applied to the interaction between customers and a firm in the economic marketplace. Consumers can respond in two ways to a deterioration in the quality of the product: they can shift their demand to the products of another firm (exit); or they can file complaints with the management of the firm (voice). If a sufficiently large number of people take the exit option, the firm will go bankrupt unless it improves the quality of its products fast enough to reverse the exit behavior. The voice option also has a potential to induce an improvement of the firm's products but without threatening to drive the firm into bankruptcy. The likelihood of voice increases with the degree of customer loyalty to the firm's product.

Hirschman's framework sheds light on the situation in which people dissatisfied with the performance of their government can choose to emigrate (exit) or participate in an uprising against the regime (voice), thereby bringing about the collapse of the government or inducing political and economic reforms.[9]

A natural extension of Hirschman's framework allows for some interdependence between the customers' decisions. In many applications, the benefits any one individual derives from consuming the products of a firm increase with the number of other individuals who do likewise. If some customers shift their demand to the products of a

[9] Indeed, he applies the theory of exit, voice, and loyalty to the East German revolution; see Hirschman, "Exit, Voice, and the Fate of the German Democratic Republic: An Essay in Conceptual History," *World Politics* 45 (January 1993).

competitor, their exit actions may affect the behavior of other consumers who were initially satisfied with the firm's products. Similarly, if customer complaints about the firm's products become public, other consumers may take informational cues from the aggregate number of complaints to draw inferences about the quality of those products. As a result, they may join an exit or voice movement even though their own experiences with the products were positive. Interdependence and informational effects of this kind arguably arise in the context of two applications of Hirschman's theory, emigration and political protest.

The assumption that individual actions are interdependent underlies an extensive literature on behavioral cascades. Mark Granovetter's seminal model is relevant to the situation in which individuals can choose between two alternatives, and the net benefits derived from each alternative depend on the number of other individuals choosing that alternative.[10] The individuals are heterogeneous: each one is characterized by an individual-specific threshold denoting the number of other individuals who must choose an alternative before that individual finds it worthwhile to do so. For a given frequency distribution of thresholds, one individual's choice of an alternative has the potential to push another individual over her threshold; the second individual's action in turn may induce other individuals to follow; and so on until the cascade comes to a stop.

This model generates a number of implications. First, the cascade is monotonic; that is, the number of individuals who choose one alternative increases until it stagnates at some point. Second, the actions of extremists characterized by very low thresholds are crucial for the behavior of moderates with higher thresholds. Third, the triggering and the duration of a cascade depend in a highly sensitive way on the frequency distribution of thresholds.

Gerald Marwell and Pamela Oliver expand on the Granovetter framework. They argue that a cascade is triggered by the behavior of the "critical mass," the set of individuals that is most interested in the outcome of the collective enterprise or for other reasons has strong incentives to make an active contribution. Marwell and Oliver's analysis suggests that group heterogeneity may enhance the prospects for collective action, since the critical mass typically consists of individuals with extremist tendencies.[11]

[10] Thomas Schelling develops a similar model in *Micromotives and Macrobehavior* (New York: W. W. Norton, 1978), chap. 7.

[11] On the role of group heterogeneity for collective action, see also Mancur Olson, *The Logic of Collective Action* (Cambridge: Harvard University Press, 1965), chap. 2; Russell Hardin, *Collective Action* (Baltimore: Johns Hopkins University Press, 1982), chap. 5.

Timur Kuran develops a variant on the Granovetter model to analyze the dynamics of revolution. He examines the situation in which a status quo regime is replaced by an alternative regime when public opposition to the status quo exceeds a critical level. The cost of political action is assumed to decrease as the size of the protest movement increases. By reducing the cost of political action, one individual's action may encourage other individuals to express their opposition to the regime publicly. As in the Granovetter model, the dynamic path of public opposition in this model is simple: public opposition either increases monotonically or stagnates. The dynamics of the cascade are driven by monotonic changes over time in the external costs of taking action. Extremists turn out in the initial stages of the cascade, while moderates join later on. The unpredictability of revolutions is explained by the hypersensitivity of the path of the cascade to small perturbations in the frequency distribution of thresholds.

James DeNardo's richer model of mass mobilization and political change allows for some strategic interaction between a regime and its opponents. Each individual chooses to participate in a mass movement against the regime if the difference between the movement's demands and the policies of the incumbent regime exceeds an individual-specific critical level. Thus, the regime indirectly controls the size of the protest movement, since by implementing political reforms, it can shift its policies toward those demanded by its opponents and thereby reduce the size of the opposition. DeNardo also suggests, however, that there is a level of mass turnout, a "revolutionary threshold," beyond which reform attempts are futile and the regime collapses.[12]

A more complex version of DeNardo's model examines the situation in which people's participation incentives also depend on the degree of repression, another variable controlled by the regime. While repression deters and intimidates the opposition, it is also a double-edged sword that has the potential to produce a political backlash that may endanger the regime's survival.[13]

Dennis Chong models the dynamic interaction between a protest movement, a countermovement, and a regime. Depending on the parameters of the system that govern the relationship between the relative size of the two movements and the responsiveness of the regime, the time path of turnout may exhibit steady-state, explosive, abortive, or oscillating dynamics.

[12] DeNardo (fn. 6), 107.
[13] Ibid., 217.

An Informational Cascade Model

The models reviewed so far are based on the assumption that a regime responds to mass opposition in a mechanistic way, either by collapsing or by initiating political reforms. Implicit in many of these models is the notion that the status quo becomes unsustainable when mass protest activities reveal information about its malign nature and lack of public support. Such a process can be explicitly modeled as a signaling game.[14] A formal signaling model has the potential to further our understanding of the process to the extent that its empirical implications differ from those of traditional threshold and cascade models.

In its simplest form, a signaling game consists of two players: a sender and a receiver. The sender has information about the state of the world; the receiver makes a decision. The payoffs for each depend on the interaction between the state of the world and the decision. Thus, the sender has information pertinent to the receiver's decision, and both the sender and the receiver have a stake in allowing the sender's information to be used in the receiver's decision. In this situation, the sender may have incentives to signal her information to the receiver, and the receiver may have incentives to condition her decision on the sender's signal. In the standard signaling game, the following three features affect the degree to which the sender's information is revealed to the receiver: the mode of communication;[15] the cost of sending a message; and the conflict of interest between the sender and the receiver.

Susanne Lohmann applies the signaling approach to the analysis of mass political action.[16] Her dynamic threshold model interprets a sequence of mass protest activities as an informational cascade. (1) People take costly political action to express their dissatisfaction with the incumbent regime. (2) The public then takes informational cues from changes in the size of the protest movement over time. (3) The regime loses public support and collapses if the protest activities reveal it to be malign.

The Lohmann analysis modifies the standard signaling model in a

[14] Two seminal articles on signaling games are Michael Spence, "Job Market Signaling," *Quarterly Journal of Economics* 87 (1973); and Vincent P. Crawford and Joel Sobel, "Strategic Information Transmission," *Econometrica* 50 (November 1982). The application of signaling games to political settings in reviewed by Jeffrey S. Banks, *Signaling Games in Political Science* (Chur, Switzerland: Harwood, 1991).

[15] In the standard signaling game the message space is given by the real line or a finite set of numbers, and the sender's message to the receiver consists of a real number or an element of the set.

[16] Lohmann (fn. 7); idem, "A Signaling Model of Informative and Manipulative Political Action," *American Political Science Review* 87 (June 1993); idem, "Information Aggregation through Costly Political Action," *American Economic Review* 84 (June 1994).

number of ways. First, information about the nature of the regime is dispersed among the members of the society. In their daily interactions with the regime, some people have positive experiences, others negative ones. Since these are private experiences, it is possible that the status quo regime is maintained by a sufficiently large number of people who are imperfectly informed, whereas it would collapse if some or all of the dispersed negative information were to become publicly known. There are then multiple senders and receivers. The set of senders coincides with that of the receivers, consisting of the entire population. Thus, although each sender and receiver has only imperfect information about the status quo regime, in the aggregate the population is well informed.

An individual receiver cannot unilaterally decide to overturn the status quo regime; this is the collective decision of a large number of people. Similarly, a single action taken by one individual sender does not generally have the potential to convince a sufficiently large number of people to shift their political support to an alternative regime. An individual takes action in hopes that others will participate, in which case their joint efforts may lead to a change in regime. Thus, people's incentives to participate depend on their expectations about how many others will turn out, and they revise their beliefs based on changes in turnout over time.

Second, people are limited in their abilities to articulate their personal experiences and opinions on complex policy issues or to understand other people's communications. The assumptions made about the mode of communication respect these limitations. People can choose to be physically counted as part of a protest movement. Their private information affects their participation incentives and thus influences the size of the protest movement. The masses take an informational cue from this simple signal: aggregate turnout.

Third, a costly political action can be thought of as a voluntary and costly contribution to a public good: information. In the case of multiple senders, the costly transmission of a signal is subject to a free-rider problem. The assumption of costly signaling and the analysis of the free-rider problem distinguish my model from other models of informational cascades that analyze the dynamics of public opinion polls and of fads, fashions, custom, and cultural change.[17]

[17] See Richard D. McKelvey and Peter C. Ordeshook, "Elections with Limited Information: A Fulfilled Expectations Model Using Contemporaneous Poll and Endorsement Data as Information Sources," *Journal of Economic Theory* 36 (June 1985); Bikhchandani, Hirshleifer, and Welch (fn. 4). These models are reviewed in more detail in Lohmann (fn. 7).

The free-rider problem identified by Mancur Olson is partially overcome even though individuals are assumed to be rational and self-interested.[18] Fundamentally, the probability that one individual's action will be decisive is strictly positive for some set of strictly positive costs of taking action, given that the alternatives are distinct and the population is of finite size. Thus, expected turnout is strictly positive for some range of cost parameters.[19] Moreover, in the signaling setting analyzed by Lohmann, the individuals' policy preferences are correlated. One individual's negative experience, if made public, can affect the regime preferences of a large number of people and may thus have a critical effect on the outcome. In addition, the dynamic setting allows for a multiplier effect. Each individual action has the potential to trigger an informational cascade that may bring about the downfall of the undesired regime. The action affects the information sets of other individuals who in the future may be either encouraged to take action or deterred from doing so.

Fourth, the receivers' interpretation of the signals transmitted by the senders depends on the conflict of interest between the senders and the receivers. The interests of any one receiver coincide with those of some activists and conflict with those of others. The receiver's Bayesian inference problem is complicated by the fact that she does not know whether the interests of any particular activist are aligned with hers: individual participants in mass political action are anonymous. Each receiver only observes the aggregate number of political actions. The information she infers from aggregate turnout is based on her knowledge about the distribution of the individuals' preferences and their participation incentives.

Against this background, the implications of the Lohmann model can now be described. The pattern of participation in any given demonstration is as follows.

1. *Anti-status quo extremists* take political action regardless of their private information.

2. *Activist moderates* take political action conditional on their private information.

3. *Apathetic moderates* may support a regime change but nevertheless abstain because they do not find it worthwhile to incur the cost of taking action.

4. *Pro-status quo extremists* abstain regardless of their private information because they do not wish to increase the likelihood that the status quo regime will collapse.

[18] Olson (fn. 11).

[19] John O. Ledyard, "The Pure Theory of Large Two-Candidate Elections," *Public Choice* 44, no. 1 (1984).

In each period individuals observe only a simple aggregate statistic: the realized number of political actions. While people know the distribution of individual preferences, they do not know the identity of any particular individual. It is impossible to distinguish whether an activist took political action because she is an anti–status quo extremist or because she has had negative experiences with the status quo regime. Similarly, the public at large does not know the motives of any particular individual who abstained. It cannot distinguish whether an individual abstained because she is a pro–status quo extremist, because she had positive experiences with the status quo regime, or because she considers the cost of taking political action to be prohibitive. However, since some individuals take political action conditional on their private information, some information can be extracted from aggregate turnout. The public discounts observed turnout for extremist political action. People also take into account the expected number of abstentions by apathetic moderates and pro–status quo extremists. Each individual forms an estimate of the number of activist moderates who had adverse experiences with the status quo regime. This estimate is based on her current information set, which contains the individual's private information and the publicly known number of political actions in the current and past periods. The higher the turnout relative to prior expectations, the higher this estimate, and the higher the number of people who favor a regime change.

In each period, the estimated number of activist moderates that turns out relative to the total number of activist moderates provides information about the number of individuals who had negative experiences with the status quo regime. Based on this information, individuals modify their expectations of the benefits to be derived from the status quo regime in the future, the probability that an action taken in the next period will be decisive, and the future costs generated by taking action or abstaining. As a consequence of this update, the identities of anti– and pro–status quo extremists and activist and apathetic moderates shift over time. If turnout in one period is unexpectedly high, for example, an individual who was an apathetic moderate in that period might turn into an activist moderate in the following period. The estimated number of the newly identified activist moderates provides information about the negative experiences of yet another set of individuals.

Even though the individuals who participate in the protest movement may not be representative of the population at large, the public can nevertheless extract some information from aggregate turnout.

The opinions expressed in the demonstrations will tend to lead public opinion, more so when many moderates turn out and less so when the demonstrations are dominated by extremists. As in the Granovetter and Kuran models, extremists have stronger incentives to participate than do moderates. However, extremist turnout does not per se induce the participation of individuals with more moderate preferences. People are responsive to the informative turnout of activist moderates, whereas they discount extremist turnout. Counter to Marwell and Oliver's claims, the "critical mass" consists of the set of activist moderates and not the set of extremists.

Moreover, in this informational setting, group heterogeneity affects the prospects for and effectiveness of collective action in a more complicated way than is postulated by Marwell and Oliver. On the one hand, due the costliness of political action, the subset of activist moderates who take informative political action may consist of individuals whose preferences are very different from those of the average member of the population. Thus, no individual in a relatively homogeneous population may have incentives to turn out, while the set of activist moderates may be nonempty in a more heterogeneous population. In this case, a higher degree of group heterogeneity is associated with a higher degree of information revelation. On the other hand, information held by extremists is not revealed. Thus, an increase in group heterogeneity beyond a certain level is counterproductive, since it increases the deadweight costs of political action without generating any informational gains. Overall, the maximum degree of information revelation is associated with the degree of group heterogeneity that maximizes the number of activist moderates.

Thus, one important difference between traditional and informational cascade models lies in their treatment of extremists. It is possible to discriminate between these models based on empirical measures of changes in the opinions held by demonstrators and by the population at large over the course of a sequence of mass demonstrations. According to traditional models, extremist turnout is critical in triggering the participation of moderates, and demonstrators' opinions converge over time toward the opinions held by the population. In contrast, the informational model implies that protest activities have little impact and quickly evaporate if demonstrators' opinions are relatively extreme compared with those of the population at large. Further demonstrations are triggered only if some people with relatively moderate opinions participate in the initial stages of a mass protest movement. In

this case, the population's opinions converge over time toward those held by the demonstrators.

Consider the case of a small number of extremists and activist moderates taking political action in one period, with the estimated number of activist moderates who participate being unexpectedly high. In this situation, a small number of political actions can have a large impact on public opinion. In another period, turnout might be very high, but the estimated number of activist moderates who turn out in this new sample might be so low that public opinion shifts dramatically in support of the status quo regime, and the movement collapses. The critical number of political actions is endogenous and hinges on actual versus expected turnout. Thus, the theory modifies the somewhat mechanistic notion that a regime may collapse in response to sheer numbers, as postulated by Kuran and DeNardo. (The logic of this argument also applies to the case in which a regime responds mechanistically to turnout numbers by initiating political reforms, as in the DeNardo and Chong models.)

The dynamics of the informational cascade model are generated endogenously by information revealed through changes in turnout over time. Given the random distribution of positive and negative experiences within the population, the experiences of the activist moderates in any one period will generally be unrepresentative of the experiences of the population at large, since the activists constitute a small sample. By chance, a high number of activist moderates in any one period may have had negative experiences with the status quo, while the population at large has had positive experiences, or vice versa. The specific dynamics of turnout are generated endogenously by the revelation of information over time, and turnout numbers will have a tendency to vacillate randomly. This implication contrasts with the monotonicity implication of the Granovetter and Kuran models. Moreover, the random dynamics of the Lohmann model differ from the oscillating dynamics that may arise in the Chong model. The latter are predetermined by exogenously fixed reduced-form parameters. Furthermore, the Chong model is also consistent with steady-state dynamics characterized by positive turnout, whereas zero turnout is the only possible steady-state solution in the Lohmann model: if the number of political actions remains constant over time, no further information will be revealed, and consequently no individual will have incentives to turn out.

The Kuran and Lohmann models can be synthesized to examine how the dynamic path of mass turnout over time is affected by uncertainty about the nature of the regime and the cost of participation,

where the latter varies over time as a function of turnout.[20] In this case, the dynamics of turnout are driven both by the revelation of information through changes in turnout over time, as implied by the Lohmann model, and by changes in the cost of participation induced by changes in turnout over time, as assumed in the Kuran model. By and large, the implications of the Lohmann model still hold. Individuals take into account the effect of their actions on the future path of the cascade and thus on the probability that the regime will collapse. The survival of the regime is determined primarily by the turnout of moderates, while extremist turnout is discounted. The political impact of a demonstration is not a matter of sheer numbers but is instead determined by actual turnout relative to expected turnout. Finally, the dynamic path of turnout over time may not be monotonic.

Similarly, the qualitative implications of the Lohmann model would not be affected if the analysis were extended to allow for a proregime countermovement as in the Chong model.[21] In this case, information would be transmitted by the relative turnout on each side.

The Lohmann framework can also be synthesized with the DeNardo model to provide an informational underpinning for DeNardo's intuition regarding the ambiguous effects of repression.[22] The dynamics of the cascade are then driven by changes in the cost of taking political action and in turnout over time that are induced by the strategic interaction between the regime and its people.

In this synthesis, the status quo regime is modeled as a strategic player who adjusts the degree of repression (and thus the cost of taking political action) in each period in response to past turnout in order to maximize the regime's probability of survival. In doing so, the regime trades off several potentially counteracting effects. First, the cost affects the expected number of activist moderates who take action conditional on their private information and thus influences the expected degree of information aggregation. Whether this informational effect is positive or negative depends on the type of the regime. A malevolent regime has more to lose from information revelation than has a benevolent regime. However, even a benevolent regime may prefer to stifle political action if a decisive subset of the population has priors that they are better off under the status quo. In this case, no information revelation implies that the status quo regime will remain in power for

[20] Such a synthesis is formally developed in section A of the mathematical appendix.

[21] Susanne Lohmann analyzes competitive political pressures in "A Signaling Model of Competitive Political Pressures," *Economics and Politics* (forthcoming).

[22] Such a synthesis is sketched in section B of the mathematical appendix.

sure, while there is some chance that it will be overturned if information is revealed through political action, due to the random nature of turnout. Second, if different regime types set different costs of taking political action, then the incumbent regime's choice of a cost reveals something about its type. If the benevolent type sets a low cost, then the malevolent type may choose to mimic the behavior of its benevolent counterpart to prevent the population from inferring its malign nature.[23]

The Social Environment of Political Action

Rational choice analyses of political participation are often criticized on the grounds that they provide an "undersocialized" explanation of political action and thus fail to account for the "embeddedness" of individuals in social relations.[24] The alleged failure of the rational choice approach to deal with the free-rider problem of political participation has led many scholars to propose that the social environments in which individuals make their participation decisions enhance the prospects for and effectiveness of collective action.

Anthony Oberschall argues that people who are well integrated into the collectivity are more likely to participate in popular disturbances than are socially isolated, atomized, and uprooted individuals. Similarly, Doug McAdams identifies interpersonal contacts and personal networks (in his words, "micromobilization contexts") as crucial for recruitment to high-risk activism.

The signaling framework presented in the previous section can be extended to interpret personal networks as groups of individuals who share correlated private information. Such information sharing may explain why socially connected people have stronger participation incentives than do socially isolated individuals.

Resource mobilization theory, developed by John D. McCarthy and Mayer N. Zald, emphasizes the importance of organizing activity and political leadership for mobilization. According to this approach, mass movements are driven by political entrepreneurs who gain access to financial and organizational resources and create professional social movement organizations. Similarly, Carole Uhlaner proposes that leaders of organized groups provide selective incentives for group members to become active in support of collective goals. And Chong

[23] A more complex model would allow individuals to make inferences about the repressiveness of the regime based on their interaction with police and state security forces during demonstrations.

[24] Mark Granovetter, "Economic Action and Social Structure: The Problem of Embeddedness," *American Journal of Sociology* 91 (November 1985), 481.

argues that dedicated activists must provide leadership, since spontaneous mass coordination does not occur.

Frances Fox Piven and Richard A. Cloward criticize the standard argument regarding the role of political entrepreneurship and organization on the grounds that movement leaders often act in ways that blunt or curb the disruptive force of mass movements.[25] In developing permanent mass-based organizations, leaders draw people away from the streets and into meeting rooms. To gain financial or other forms of support for their organizations, they are driven to interact with ruling elites, who in turn have incentives to encourage the channeling of diffuse mass protest into more predictable, more easily controllable, and thus less threatening political organizations.

The standard argument that political entrepreneurship and organization enhances the effectiveness of collective action is further undermined by the application of the signaling approach. If political action plays an informational role, then people will take into account that the members of organized groups or movements have stronger participation incentives, and they will appropriately discount organized activism. Thus, in an informational setting, the provision of selective participation incentives will not systematically bias political decision making in favor of organized interests. Ironically, like the extremists in the signaling model presented earlier, the leadership of an interest group may nevertheless be trapped into providing costly selective incentives in a futile attempt to bias a policy decision in its favor, given that the recipients of its pressures expect the members of the interest group to have stronger participation incentives.

II. Historical Background

This section argues that poor economic performance and extensive political repression led to widespread dissatisfaction with the East German regime, while the public revelation of this discontent was by and large effectively suppressed.[26] In the late 1980s a number of critical events coincided with a change in the external constraints faced by the regime and its people, preparing the way for the revolutionary events of 1989 and their revelation of mass discontent.

[25] Piven and Cloward, *Poor People's Movements: Why They Succeed, How They Fail* (New York: Pantheon, 1977).

[26] For a more detailed account of the history of the GDR as well as relevant references, see Susanne Lohmann, "The Dynamics of Informational Cascades: A Study of the East German Revolution" (Manuscript, UCLA, 1994).

Mass Discontent and Political Repression, 1949–89

Western businesspeople who swept into East Germany after German unification in 1990 were stunned at the outdated and obsolete state of the industrial structure and the depleted state of the environment. After the collapse of the GDR, journalists and researchers gained access to previously classified data and "oral history" information about daily life in East Germany. Official GDR pronouncements had drawn an unrealistically rosy picture of the East German economy. Perhaps more surprisingly, the performance of the GDR economy had been overestimated by Western journalists, scholars, and statisticians.

However misleading the official picture of the GDR economy, the people themselves were well aware of the contradiction between the slogans celebrating the GDR as a model of socialism and their own daily experience. As workers, they knew firsthand about the decrepit state of the industrial structure. As consumers standing in line for the limited range of low-quality consumer goods, they were all too aware of the stagnation in their standard of living. Nor could they escape the adverse health consequences of industrial pollution.

The East German economy was also performing badly relative to the West German economy. In 1967 East German GDP per employed person was 67 percent of West German GDP. This percentage steadily declined to 40 percent by the time of German unification in 1990.[27] Although East German citizens were by and large not aware of these economic statistics published by Western sources, they nevertheless easily made comparisons between the East and West German standards of living: a steady flow of information was provided by West German television and radio broadcasts that were widely received in the GDR and by the many West German relatives and tourists who visited East Germany each year, starting in the early 1970s. No one—neither the East German regime nor its citizens—could avoid the conclusion that the differences in economic performance between East and West Germany were due to the different potentials of the two economic and political systems. Certainly, the leverage of "cultural differences," often invoked in cross-country comparisons, would seem to be irrelevant in the German case.

[27] Deutsches Institut für Wirtschaftsforschung Berlin, ed., *Handbuch DDR-Wirtschaft* (Handbook GDR economy), 4th ed. (Hamburg: Rowohlt, 1984), 141; Thomas Mayer and Günther Thumann, "German Democratic Republic: Background and Plans for Reform," in Leslie Lipschitz and Donogh McDonald, eds., *German Unification: Economic Issues*, International Monetary Fund Occasional Paper no. 75 (Washington, D.C.: International Monetary Fund, December 1990), chap. 3.

During the crisis experienced by the GDR economy in the second half of the 1970s and throughout the 1980s, standards of living stagnated and popular discontent increased. Classified public opinion polls conducted by the Central Institute for Youth Research in Leipzig indicate that the identification with Marxism-Leninism and with the SED dropped dramatically among students, apprentices, and young workers between 1975 and 1989; similarly, young people lost faith in the historical perspective of socialism (see Table 1).[28] Given the SED's massive attempts to indoctrinate young people, these numbers are indicative of a serious legitimacy problem. Public opinion poll data of this kind were accessible only to high-level SED functionaries. The people themselves were of course aware of their own increasing disillusionment with the regime, but they did not know how widespread the feeling was.

Together with the state of the economy, the extent of political repression that became known after the East German revolution of 1989 surprised Western observers and even many East Germans. The *Stasi* (short for *Staatssicherheitsdienst*, or state security police) consisted of a network of about eighty-five thousand full-time employees and over one hundred thousand informers who collected vast amounts of information used to intimidate the citizens of the GDR and eliminate any active opposition against the regime.

An effective political opposition did not exist. The noncommunist parties and mass organizations that formed the National Front together with the SED were de facto subservient peons. Voters could express their opposition to the official slate only by abstaining from the vote or by invalidating their ballots, but as participation in elections was systematically monitored and enforced, they were generally disinclined to do so. An individual could choose between voting openly or casting her vote in the secrecy of a voting booth, but the presumption was that a loyal supporter of the SED would have no need to be secretive. Unsurprisingly, the National Front typically won about 99 percent of the vote, with participation rates running at about 99 percent.

In a political system dominated by one party, competition between various factions within the ruling party may serve as a partial substitute for party competition in a multiparty system. In East Germany, how-

[28] The Leipzig data are documented in Walter Friedrich, "Mentalitätswandlungen der Jugend in der DDR," *Aus Politik und Zeitgeschichte* (supplement to *Das Parlament*) B16–17/90 (1990). The polls of the Central Institute for Youth Research were typically conducted in written form and in groups to guarantee anonymity. The polls were not representative by the standards of Western public opinion research; but they usually involved large samples (>1,000) and random selection within large units such as large state enterprises, school districts, and the like.

TABLE 1
POLLING DATA OF YOUNG PEOPLE'S ATTITUDES TOWARD THE REGIME, 1970–89
(PERCENTAGE)

	Identification with Marxism-Leninism						*Belief in Historical Perspective of Socialism*								
Date of	*Apprentices*			*Students*			*Apprentices*			*Young Workers*			*Students*		
Poll	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*
1970	—	—	—	—	—	—	46	36	18	35	41	18	65	27	8
1975	46	40	14	61	34	5	63	28	9	56	35	9	78	20	2
1979	33	49	18	57	35	8	50	35	15	39	43	18	66	20	2
1981	28	50	22	—	—	—	—	—	—	—	—	—	—	—	—
1983	—	—	—	—	—	—	47	45	8	45	47	8	68	31	1
1984	—	—	—	—	—	—	50	42	8	44	46	10	—	—	—
1985	14	40	46	—	—	—	—	—	—	—	—	—	—	—	—
1986	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1988	13	46	41	—	—	—	10	32	58	6	30	64	—	—	—
May 1989	9	35	56	35	46	19	—	—	—	—	—	—	15	39	46
Oct. 1989	6	32	62	—	—	—	3	27	70	—	—	—	—	—	—

Date of Poll	Identification with SED														
	Apprentices			*Young Workers*			*Students*			*SED Members*			*Nonmembers*		
	Strong	*Weak*	*None*	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*	*Strong*	*Weak*	*None*
1970	24	53	23	23	52	25	32	48	20	87	13	0	20	55	21
1975	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1979	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1981	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1983	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1984	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1985	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1986	26	53	21	26	52	22	45	48	7	81	19	0	22	58	20
1988	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
May 1989	10	37	53	21	35	44	24	40	36	48	44	8	8	37	55
Oct. 1989	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

SOURCE: Friedrich (fn. 28), 25, 27, 29.

ever, periodic intraparty purges effectively eliminated any active opposition to the hard-line course.

Another potential source of public information—a free press—was not available in the GDR. The department for agitation and propaganda of the central committee of the SED prescribed how topical issues and events were to be reported. The overall policy was to glorify the conditions of living in the GDR relative to the prevailing conditions in West Germany.

Until over five million people took to the streets in the fall of 1989, there had been only one instance of large-scale protest against the regime. On June 16, 1953, construction workers in Berlin spontaneously went on strike to protest an increase in work norms that amounted to a substantial decrease in their real wages. Their strike triggered other strikes and demonstrations in Berlin, and the wave of protest subsequently spread to the provinces. The character of the protest movement changed along the way, as people began to demand free elections, unrestricted rights to form political parties, and freedom for all political prisoners. On June 17, 500,000 workers were involved in strikes, and 408,000 people, mostly blue-collar workers, took part in demonstrations. While the protest in Berlin quickly dissipated, protest activities flared up in the provinces through June 23 and 24. The intensity and scale of the protest took the authorities by surprise, but the uprising was eventually suppressed with the help of the Soviet military.

Fifty-two people died in the uprising. This number includes seven court-martialed and shot by the Soviet military; three sentenced to death by GDR courts; three people crushed to death by Soviet tanks; one heart attack; one prison suicide; four police and security forces who died in the line of duty; and one security guard tortured to death by demonstrators. Most of the remaining victims died of gunshot wounds inflicted by GDR police and security forces and by Soviet military forces.[29]

Between 1949 and 1961, 2.7 million people reacted to the dismal economic situation and the political repression in the GDR by emigrating to the West. The East German economy suffered from this loss of

[29] These numbers are provided by Torsten Diedrich, *Der 17. Juni 1953 in der DDR* (June 17, 1953, in the GDR) (Berlin: Dietz, 1991), 293–96. The officially announced number of deaths was twenty-five. Archive materials that became available after German unification suggest that hundreds may have died; see *Der Spiegel*, "SED Akten über den 17. Juni 1953 entdeckt: 'Der mit dem Bart muß weg,'" June 14, 1993, pp. 65–69; and Armin Mitter and Stefan Wolle, *Untergang auf Raten: Unbekannte Kapitel der DDR-Geschichte* (Decline in installments: Unknown chapters of the history of the GDR) (Munich: C. Bertelsmann, 1993), chap. 1.

people, most of them young workers, students, and professionals, and the massive discontent revealed by this exodus hurt the reputation of the regime. Once again, the Soviet military saved the regime. During the night of August 12/13, 1961, the borders to the West were closed as construction of the Berlin Wall began. Thereafter, few East German citizens chose either to risk being shot while illegally fleeing the country or to endure the hardships associated with legal forms of emigration.

Critical Events and External Political Change, 1988–89

In the late 1980s a number of critical events contributed to the general sense of anger, bitterness, and frustration. At the same time, changes in the domestic political situation in the Soviet Union indirectly led to a decrease in the costs of emigration and mass protest in East Germany.

Gorbachev's reforms in the Soviet Union enjoyed considerable popularity among East Germans, including many members of the SED, whereas the party leadership reacted with hostility. The party loyalties of many members of the SED suffered when in November 1988 the Soviet magazine *Sputnik* was banned in East Germany because of its sympathetic reports on the political liberalization in the Soviet Union. Similarly, resentment built up among the East German people when the SED leadership publicly defended the bloody June 1989 massacre of the Chinese democracy movement in Tiananmen Square in Beijing.

The regime's heavy-handed control of its people was also apparent in the vote manipulation in the local council elections of May 1989. For the first time a relatively large number of people abstained or invalidated their ballots. According to official results, the National Front received 98.85 percent of the vote, with a turnout of 98.77 percent, but it is now estimated that 10–15 percent were abstentions, which were counted for the SED. The East German authorities were determined to show that the number of voters who refused to cast their ballots for the official slate was lower than the corresponding number in the 1985 elections. Apparently the SED leadership felt sufficiently threatened by the signaling value of abstentions and invalidated ballots that it was willing to take the political risk of engaging in electoral fraud.[30]

One important side effect of Gorbachev's political reforms was the resulting Soviet tolerance for political liberalization in Eastern Europe,

[30] Stephen Kinzer, "Ex-East German Leader Convicted of Vote Fraud but Not Punished," *New York Times*, May 18, 1993, p. A4.

where hard-line East Germany was one of the last holdouts. While ordinary East Germans had very limited visitation rights to the West, many of them routinely vacationed in other East European countries. When some of these countries opened their borders to the West in the summer of 1989, thousands of East Germans used this low-cost opportunity and emigrated. The refugees were mostly young and well-trained professionals whose absence was severely felt by the GDR economy. Since all of these events were faithfully documented by West German television and radio broadcasts, citizens of the GDR were well-informed.

Observing the unhesitating response of East German tourists to the exogenous decrease in the costs of emigration, other East Germans inferred that the emigrants must have been very dissatisfied with their situation in East Germany. The exodus, by publicly revealing some of the disaffection with the regime, served as a signal to the East German population. The impact of this signal was all the stronger because these tourists were a fairly representative sample of the East German population. The average East German was more likely to take a cue from the exit actions of these vacationers than from the protest activities of nonconformist citizens whose "alternative" lifestyles dominated the oppositional subculture.

The political liberalization in the Soviet Union was an immediate threat to the SED's power for another reason: the very existence of the GDR was guaranteed by four hundred thousand Soviet troops stationed in East Germany. After the failure of the 1953 revolt and the construction of the Berlin Wall in 1961, the population knew that the SED regime was there to stay as long as the Soviet Union was committed to protect and defend the "historical achievements of socialism" in East Germany. Now, given the changes in the internal politics of the Soviet Union, it was doubtful whether Gorbachev would intervene if the SED regime faced a new threat to its existence in 1989. Indeed, at the official celebration of the GDR's fortieth anniversary on October 6, 1989, Gorbachev publicly warned Honecker: "Life will punish latecomers."[31] Many people interpreted this statement as a signal that the Soviet military forces would not intervene if the people took to the streets to demand political reforms.[32]

[31] Baumann et al. (fn. 1), 151.

[32] Empirical support for the argument that the Gorbachev-induced change in the political opportunity structure lowered the costs of protesting in the GDR is provided by Carsten Johnson, "Massenmobilisierung in der DDR im Jahre 1989: Der Wandel der politischen Opportunitätsstruktur und die Dynamik des Massenprotestes" (M.A. thesis, Free University of Berlin, 1992).

III. The East German Revolution

This section analyzes the East German revolution and its aftermath, covering the period 1989-91.[33] Forty-two Monday demonstrations that took place in Leipzig over this time period are related to the transformation of the communist regime and its subsequent collapse, as well as to the economic and social consequences of German unification. The study focuses on the dynamics of changes in turnout, the issues raised by the demonstrators, the composition of the participants, the role of organized groups, and the political impact of the demonstrations.

Mass Mobilization, 1989–90

The number of public protests that took place in the GDR from January 1989 to September 1990 is given in Table 2, together with the average number of participants. Up to August 1989 both numbers vary erratically at fairly low levels, with a small peak after the controversial May 1989 elections. The numbers increase in September, accelerate in October, and peak in November. On November 4, only days before the fall of the Berlin Wall on November 9, one million people demonstrated in East Berlin; seven hundred thousand GDR citizens took to the streets on November 6; and six hundred thirty thousand on November 7. The number of protest events and turnout then subsided, only to pick up again in January and subsequently settle down at a lower level (albeit still higher than the levels experienced prior to September 1989).

In the fall of 1989 Leipzig was the center of protest. The Monday demonstrations that took place in September and October served as a

[33] For general background, I rely on a special edition of Baumann et al. (fn. 1) and the day-by-day account of the events of fall 1989 in Christoph Links and Hannes Bahrmann, *Wir sind das Volk: Die DDR im Aufbruch: Eine Chronik* (We are the people: The breaking up of the GDR: A chronicle) (Berlin: Aufbau; Wuppertal, Germany: Peter Hammer, 1990). The Leipzig Monday demonstrations are documented and described in Forum Verlag Leipzig, ed., *Von Leipzig nach Deutschland* (From Leipzig to Germany) (Leipzig: Forum, 1991); Neues Forum Leipzig, ed., *Jetzt oder nie: Demokratie Leipziger Herbst '89* (Now or never: Democracy fall in Leipzig '89) (Munich: C. Bertelsmann, 1990); Schneider (fn. 2); Reiner Tetzner, *Leipziger Ring: Aufzeichnungen eines Montagsdemonstranten* (Leipzig Ring: Records of a Monday demonstrator) (Frankfurt am Main: Luchterhand, 1990); Christoph Wielepp, "Montags abends in Leipzig," in Thomas Blanke and Rainer Erd, eds., *DDR: Ein Staat vergeht* (GDR: A state vanishes) (Frankfurt am Main: Fischer, 1990); and Uwe Breitenborn and Dieter Rink, "Die Leipziger Montagsdemonstrationen: Wandlungen einer basisdemokratischen Institution," *Blätter für Deutsche und Internationale Politik* (May 1991). I also utilize newspaper articles published in *Frankfurter Allgemeine Zeitung*, *Frankfurter Rundschau*, *Leipziger Volkszeitung*, *Süddeutsche Zeitung*, and *The Week in Germany*, as well as newspaper articles documented in *taz* [*tageszeitung*], ed., *DDR Journal zur Oktoberrevolution: August bis Dezember 1989* (GDR journal on the October

TABLE 2
NUMBER OF PUBLIC PROTEST EVENTS AND TURNOUT IN THE GDR
(JANUARY 1989–SEPTEMBER 1990)

Date		*No. of Events*[a]	*Turnout*[b]		*Average Turnout*[c]
1989	Jan.	1	800	(1)	800
	Feb.	3	40	(1)	40
	Mar.	2	300	(1)	300
	Apr.	2	25	(1)	25
	May	3	1,650	(3)	550
	June	6	2,450	(6)	408
	July	5	1,050	(2)	553
	Aug.	2	200	(2)	100
	Sept.	7	16,500	(5)	3,300
	Oct.	32	1,431,050	(29)	49,347
	Nov.	28	3,268,900	(24)	136,204
	Dec.	21	903,082	(16)	56,443
1990	Jan.	26	1,782,567	(22)	81,026
	Feb.	20	464,346	(13)	35,719
	Mar.	4	97,000	(4)	24,250
	Apr.	11	359,600	(8)	44,950
	May	7	46,600	(4)	11,650
	June	12	69,500	(7)	9,929
	July	9	72,800	(7)	10,400
	Aug.	10	259,151	(9)	28,795
	Sept.	12	5,666	(10)	567

SOURCE: Unpublished data obtained from Carsten Johnson, Wissenschaftszentrum Berlin.

[a] Demonstrations, rallies, blockades, memorial vigils.

[b] In parentheses: number of protests for which participation was recorded.

[c] Turnout divided by number of protests for which participation was recorded.

revolution: August to December 1989), 2d ed. (Berlin: S.d., 1990); and *taz*, ed., *DDR Journal Nr. 2: Die Wende der Wende: Januar bis März 1990* (GDR journal no. 2: The turning point of the political change: January to March 1990) (Berlin: S.d. 1990). Public opinion poll data are documented in Peter Föster and Günter Roski, *DDR zwischen Wende und Wahl: Meinungsforscher analysieren den Umbruch* (GDR between political change and elections: Public opinion researchers analyze the radical change) (Berlin: LinksDruck, 1990); Michael Gerth and Robert Grahl, "Zur quantitativen Auswertung der Demo-Befragung vom 8.10.1990" (Manuscript, Leipzig, 1990); Uwe Breitenborn, "Auswertung Demo-Umfrage in Leipzig (März 1991)" (Manuscript, Leipzig, 1991); and *Der Spiegel*, ed., *Das Profil der Deutschen: Was sie vereint, was sie trennt* (The profile of the Germans: What unites them, what separates them), special issue of *Der Spiegel*, no. 1 (1991). East German election results are provided in Thomas R. Cusack and Wolf-Dieter Eberwein,, "The Endless Election: 1990 in the GDR," International Relations Research Group Working Paper no. P91-302 (Berlin: Wissenschaftszentrum Berlin für Sozialforschung, 1991). A more detailed analysis of the Leipzig demonstrations and further references are provided in Lohmann (fn. 26).

signal for the mass mobilization of the GDR.[34] Mass demonstrations erupted in Leipzig before they spread to other cities, and turnout in Leipzig far exceeded the turnout elsewhere.[35]

There are several reasons for Leipzig's prominent role. First, compared with other cities of the GDR, Leipzig and its environs labored under a particularly moribund industrial structure and more severe environmental problems. Second, the Stasi apparatus was centered in Berlin so that the citizens of Leipzig had marginally more breathing space than did their compatriots in the capital. Third, the *Leipziger Messe* (Leipzig trade fair) regularly brought Western businesspeople and television crews to Leipzig, guaranteeing international media coverage for dramatic protest events. Fourth, the timing and geographical location of events in Leipzig provided a focal point for frustrated people who were willing to participate in mass protest but somehow had to coordinate their individual decisions without knowing or being able to identify one another.[36]

Since 1982 the Nikolai Church had been conducting peace prayers on Mondays from 5 to 6 P.M. In the course of 1989 small-scale protests occurred in connection with the peace prayers, leading to a number of arrests. By mid-1989 the church and the peace prayers were firmly established in the minds of the people as an "institution" of protest associated with the local oppositional subculture.

It was commonly known that each Monday at about 6 P.M. a large number of people would come streaming out of both the Nikolai Church and other nearby churches that held late afternoon services. Many of these people would cross the Karl-Marx-Platz, the central town square. We know from the diary of one of the regular demonstrators that small groups of friends typically met on Monday afternoons in the city center, where they would join churchgoers and other strangers to form a demonstration.[37] They would then proceed along

[34] Wielepp (fn. 33), 72; Links and Bahrmann (fn. 33), 140.

[35] The largest single demonstration took place in East Berlin on November 4; however, in the fall of 1989, turnout in Leipzig was highest, both in the aggregate over time and in terms of percentage of local population mobilized.

[36] Opp and his coauthors suggest that the Leipzig setting is a perfect example of a focal point in a coordination problem; see Karl Dieter Opp, "DDR '89: Zu den Ursachen einer Spontanen Revolution," *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 43, no. 2 (1991); idem, "Spontaneous Revolutions: The Case of East Germany in 1989," in Heinz D. Kurz, ed., *United Germany and the New Europe* (Cheltenham, England: Edward Elgar, 1993); Karl Dieter Opp and Christiane Gern, "Dissident Groups, Personal Networks, and Spontaneous Cooperation: The East-German Revolution of 1989," *American Sociological Review* 58 (October 1993); and Karl Dieter Opp, Peter Voß, and Christiane Gern, *Die volkseigene Revolution* (The revolution owned by the people) (Stuttgart: Klett-Cotta, 1993).

[37] Tetzner (fn. 33), 16.

the Ringstraße, which encircles the center of the town, picking up additional people along the way (see Figure 1). Thus, the unique timing and the convenient layout of the city center facilitated the spontaneous coordination of thousands and later tens and hundred of thousands of individual participation decisions.

Political entrepreneurship and organization played a secondary role

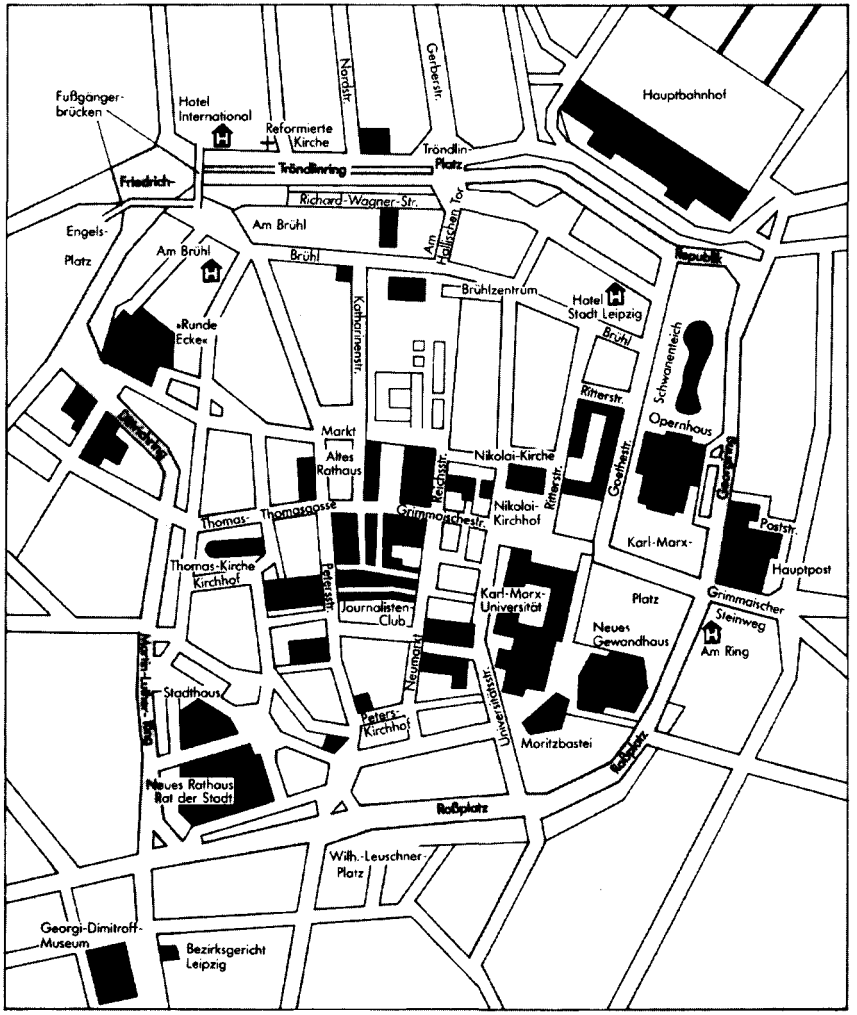


FIGURE 1
THE RINGSTRASSE IN LEIPZIG

SOURCE: Tetzner (fn. 33), 6.

in the mass uprising of 1989. While the formation of new opposition groups and political parties was centered in Berlin, the citizens of Leipzig expressed their political preferences, opinions, and attitudes through spontaneous, unorganized mass demonstrations. The decentralized character of the Leipzig demonstrations arguably contributed to their strength vis-à-vis the regime: "Since the demonstrations [were] unorganized, there [was] no possibility of appealing to someone to intervene and prevent something from happening."[38]

Social embeddedness and personal networks do, however, appear to have influenced individual participation decisions. A poll of thirteen hundred Leipzig citizens conducted by Karl Dieter Opp and Peter Voß a year after the first cycle, in November and December 1990, suggests that participants in the 1989 protest were more likely than were nonparticipants to be members of various social groups.

The average turnout numbers for the Leipzig Monday demonstrations are provided in Table 3; the dynamic path of turnout over time (averaged across sources) is shown in Figure 2.

On September 25, 1989, a first cycle consisting of thirteen demonstrations began. Initially the demonstrators called for political liberalization and open borders; later on, for German unification. Over six thousand people participated in the first demonstration. This number increased to almost eighteen thousand on October 2. Both demonstrations were peaceful; but a dozen or so people were arrested in the first demonstration, and the authorities used violence to break up the second one.

On October 9 a third demonstration took place against the background of an ominous rumor that spread quickly through Leipzig (and was later confirmed): Honecker himself had signed the *Schießbefehl* (order to shoot) for a Chinese solution to the protest. On that day large containers of tear gas were unloaded in the Leipzig freightyard. The hospitals prepared for a bloodbath by setting up extra beds and acquiring additional blood reserves. Helmets, shields, riot sticks, and gas masks were distributed to the police. A unit of the National People's Army from the southern GDR was equipped with lethal munitions. *Betriebskampfgruppen* (military units staffed with workers from the state enterprises) were assembled. In short, "the GDR faced the possibility of civil war."[39]

At 5:45 P.M., just fifteen minutes before the end of the peace prayers, the police and the military withdrew, and about sixty thousand

[38] Links and Bahrmann (fn. 33), 30.
[39] Ibid., 88.

TABLE 3
TURNOUT AT THE LEIPZIG MONDAY DEMONSTRATIONS

	Demonstration Number	*Date*	*Turnout* [a]
FIRST CYCLE	1	Sept. 25, 1989	6,500
	2	Oct. 2, 1989	17,938
	3	Oct. 9, 1989	60,300
	4	Oct. 16, 1989	105,000
	5	Oct. 23, 1989	245,000
	6	Oct. 30, 1989	284,545
	7	Nov. 6, 1989	325,000
	8	Nov. 13, 1989	209,000
	9	Nov. 20, 1989	201,429
	10	Nov. 27, 1989	192,000
	11	Dec. 4, 1989	183,214
	12	Dec. 11, 1989	114,688
	13	Dec. 18, 1989	163,333
SECOND CYCLE	1	Jan. 8, 1990	127,857
	2	Jan. 15, 1990	136,250
	3	Jan. 22, 1990	111,250
	4	Jan. 29, 1990	101,667
	5	Feb. 5, 1990	97,857
	6	Feb. 12, 1990	65,714
	7	Feb. 19, 1990	40,000
	8	Feb. 26, 1990	10,500
	9	Mar. 5, 1990	17,000
	10	Mar. 12, 1990	48,143
THIRD CYCLE	1	Sept. 10, 1990	1,000
	2	Sept. 17, 1990	1,000
	3	Sept. 24, 1990	2,050
	4	Oct. 3, 1990	750
	5	Oct. 8, 1990	1,000
	6	Oct. 14, 1990	1,000
	7	Oct. 22, 1990	1,000
FOURTH CYCLE	1	Jan. 21, 1990	6,500
	2	Jan. 28, 1990	6,000
	3	Feb. 4, 1990	1,375
	4	Feb. 11, 1990	925
	5	Feb. 18, 1990	525

TABLE 3 (*cont.*)

	Demonstration Number	*Date*	*Turnout* [a]
FIFTH CYCLE	1	Mar. 4, 1991	55,000
	2	Mar. 11, 1991	22,000
	3	Mar. 18, 1991	70,000
	4	Mar. 25, 1991	70,000
	5	Apr. 8, 1991	27,500
	6	Apr. 15, 1991	10,000
	7	Apr. 22, 1991	300

SOURCES: Baumann et al. (fn. 33); Breitenborn and Rink (fn. 33); Forum Verlag Leipzig (fn. 33); Links and Bahrmann (fn. 33); Neues Forum Leipzig (fn. 33); Schneider (fn. 33); *tageszeitung* (fn. 33); *Frankfurter Allgemeine Zeitung*, September 26, October 10, 17, 24, 31, November 7, 14, 21, 28, December 5, 12, 19, 1989, January 9, 16, 23, 30, February 6, 13, 20, 27, March 6, 13, 1990; *Frankfurter Rundschau*, September 26, October 10, 17, 24, 31, November 7, 14, 21, 28, December 5, 12, 19, 1989, January 9, 16, 23, 30, February 6, 13, 20, 27, March 6, 13, 1990; *Leipziger Volkszeitung*, September 26, October 10, 17, 24, 31, November 7, 14, 21, 28, December 5, 12, 19, 1989, January 9, 16, 23, 30, February 6, 13, 20, 27, March 6, 13, September 11, 18, 25, October 9, 15, 23, 1990, January 22, 29, February 5, 12, 19, March 5, 12, 19, 26, April 9, 16, 23, 1991; *Süddeutsche Zeitung*, September 26, October 10, 17, 24, 31, November 7, 14, 21, 28, December 5, 12, 19, 1989, January 9, 16, 23, 30, February 6, 13, 20, 27, March 6, 13, 1990; *The Week in Germany*, March 22, 29, April 12, 1991.

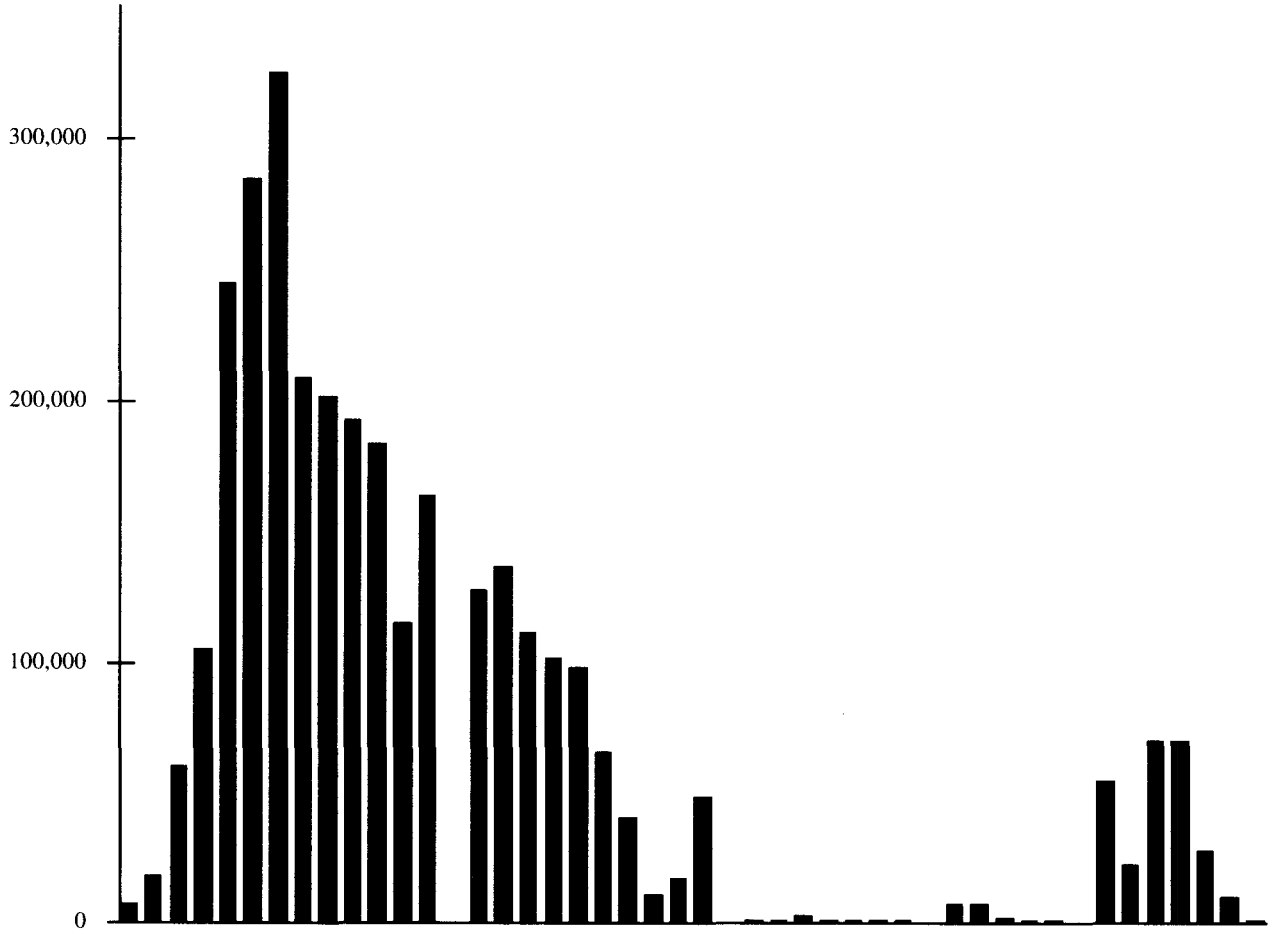
[a] The turnout numbers in the table are calculated as an average across sources. The turnout numbers reported by each source are documented in Lohmann (fn. 26).

unarmed, frightened, and yet very determined people demonstrated peacefully along the Ringstraße:

> The solidarity of the demonstrators was impressive; every one of them had made the decision for himself in spite of the threats made in the press, and his only protection was given by the presence of other demonstrators. When the police chains on the Ring[straße] were opened, and the demonstration passed through unobstructed, its surprising and almost frightening discipline offering no opening for *agents provocateurs*, it became clear that there was no going back to the old GDR, either way. Either civil war in Central Europe or some other, unknown development. We are experiencing the end of the GDR.[40]

The demonstration broke the back of the regime: "On this day, the ninth of October in Leipzig, the German Democratic Revolution of 1989 was victorious."[41] The *Leipziger Herbst* (Leipzig fall) exploded. Over 100,000 people demonstrated on October 16; 245,000 on October 23; about 285,000 on October 30; and 325,000 on November 6. Meanwhile, mass demonstrations erupted all over the GDR.

[40] Wielepp (fn. 33), 76.
[41] Schneider (fn. 2), 8.


300,000
200,000
100,000
0

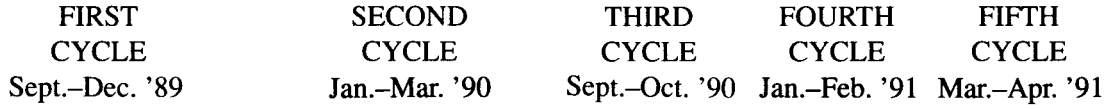


FIGURE 2
TURNOUT AT THE LEIPZIG MONDAY DEMONSTRATIONS
(SEPTEMBER 1989–APRIL 1991)

SOURCES: See table 3.

The regime gradually responded to the ongoing mass mobilization of its people. A reform-minded intraparty opposition emerged to replace hard-line SED functionaries in party and government. Policy reforms were initiated. Opposition groups and parties were legalized, and free elections were scheduled for 1990. Most importantly, the borders to the West were opened in early November.

The newly critical media fed public outrage and mass protest with reports on Stasi repression, industrial pollution, corruption, and the luxurious lifestyles of high-level SED functionaries. One indicator of the media's responsiveness to the political changes is the coverage of the Monday demonstrations in the local Leipzig daily. Up to mid-October the turnout numbers reported by the *Leipziger Volkszeitung* were systematically biased downward. They then quickly converged toward the numbers reported by other sources.[42] In a short article buried inside the newspaper, the first demonstration in September was described as a "mob . . . with obvious anti-socialist tendency."[43] Subsequent demonstrations were reported at greater length and on the front page. By mid-October the *Leipziger Volkszeitung* celebrated the "dialogue" initiated by the demonstrators and commented favorably on their "constructive proposals" for improving socialism.[44]

After the fall of the Berlin Wall on November 9, turnout in Leipzig on subsequent Mondays steadily fell to a low of about 115,000 on December 11. It then increased again when over 160,000 people responded to the call issued by prominent Leipzig citizens and church representatives to attend the last Monday demonstration before Christmas on December 18 and light candles in celebration of the *Leipziger Herbst.*

In the meantime the composition of the demonstrators and the issues they raised had changed. Until early November many had demonstrated for the right to emigrate. Once the borders were opened, those people left for the West and thus dropped out of the demonstrations. East Germans whose economic prospects in West Germany were good—men, skilled workers and professionals, educated and middle-aged people—were overrepresented among the emigrants.

Thus, in November and December a higher proportion of the participants were people planning to stay in East Germany and therefore hoping for further changes in the political and economic situation. The theme of the demonstrations changed accordingly. The rallying

[42] See Lohmann (fn. 26).
[43] *Leipziger Volkszeitung*, September 26, 1989, p. 10.
[44] Ibid., October 17, 1989, p. 1.

cry *Wir wollen 'raus!* (We want to leave!) was replaced by the defiant slogan *Wir bleiben hier!* (We will stay!).

Among the East Germans who chose to remain in the GDR, three groups can be distinguished. First, many SED members remained loyal to socialist ideals and demonstrated in favor of party reform; the size and importance of this group declined steadily over time, however. A second group consisted of people who had opposed the SED regime in the years prior to 1989—often at great personal cost. They were also attached to the idea of socialism, albeit with a more humane and democratic face. This set of demonstrators called for a reform of the SED regime that would leave the idea of socialism intact, and they strongly opposed unification, anticipating that a capitalist social and economic system would be imposed on East Germany. These people tended to organize as opposition groups and parties and thus attained considerable political influence in late 1989 and early 1990 by virtue of their ongoing dialogue with the SED and West German politicians: they were the only available spokespeople for the opposition.

However, their attempts to take over the Monday demonstrations were by and large confounded. Beginning in early November, representatives of the opposition citizens' group New Forum and reform-minded members of the SED who delivered speeches at the Monday demonstrations in favor of a "democratic socialist alternative" were greeted with boos and hisses. The unorganized masses participating in the demonstrations clearly had their own ideas about the direction their country should take—ones that differed from those held by many of the opposition groups and parties that claimed to represent them. In November and December the pro-unification forces began to dominate the Monday demonstrations: the slogan *Wir sind das Volk!* (We are the people!) was replaced by *Wir sind ein Volk!* (We are one people!), and the German national anthem was sung as a matter of course. By some measures, the demonstrations became more organized over time: the number of prefabricated banners increased, public address systems were set up, and various groups publicly called on the population to attend the demonstrations. Nevertheless, the Leipzig demonstrations continued to serve as a forum for the expression of the opinions of large numbers of people who were not organized or otherwise politically represented.

This third group of unorganized demonstrators was by and large not loyal to the regime. Many had chosen not to emigrate because they lacked the self-confidence to make a fresh start in the West, anticipating with good reason that their economic prospects in West Germany

were bad.[45] For these people the best feasible alternative was to push for unification in the hope that their standards of living would then rise to West German standards, a reasonable expectation given the philosophy of income equalization underlying the West German wage-setting, tax, and transfer system.

On January 8, 1990, a second cycle consisting of ten Monday demonstrations began. The demonstrators polarized on the issue of unification. The unified Left favored a reformed socialism and strongly opposed unification, calling for *Selbstbestimmung, keine Fremdbestimmung* (self-determination, not external determination). Other people called for the gradual integration of East Germany into the political and economic system of the FRG. But a large majority demanded immediate unification. Turnout peaked at about 136,000 on January 15, then steadily decreased to 10,500 on February 26, and increased again to 17,000 on March 5. Representatives of the old and newly formed political parties and groups called upon the population to attend the grand finale of the Monday demonstrations on March 12, 1990. But at about 48,000, the turnout was disappointing.

From mid-January on, various political parties used the demonstrations as a campaign platform for the first free national elections in March, giving rise to complaints that the Leipzig demonstrations were being taken over by partisan electoral politics. The last demonstration on March 12 was swamped in importance by the 300,000 people who turned out for West German Chancellor Helmut Kohl's campaign visit to Leipzig on March 14.

Although the party preferences and political opinions and attitudes held by the demonstrators in the first and second cycles were not representative of the East German people as a whole, the demonstrators were not extremists. The sentiments expressed at the Monday demonstrations were a seismograph of future developments in public opinion. Over time, the political preferences, opinions, and attitudes of the population converged to those held by the demonstrators.

This conclusion is based on public opinion poll data compiled con-

[45] This conclusion is supported by public opinion polls conducted in September and October 1990, according to which 42% of East Germans lacked the confidence to make a fresh start by moving to West Germany; see *Der Spiegel* (fn. 33), 15. Similarly, a sample of GDR citizens who emigrated between August and November 1989 was questioned in December 1989 and January 1990, revealing some of the risks involved in moving to the West; 35% of the emigrants seeking a job had failed to find employment at the time of the poll; in 22% of the cases the emigrants' jobs were unrelated to their GDR qualifications; and 19% of the sample was considering returning to the GDR sometime in the future; see Anne Köhler, "Ist die Übersiedlerwelle noch zu stoppen?" *Deutschland-Archiv* 23 (March 1990), 428–29.

currently with the demonstrations of the first and second cycles by members of the Central Institute for Youth Research and documented by Peter Förster and Günter Roski. Between late November 1989 and late April 1990 four samples of the GDR population were polled, ranging in size from 1,307 to 1,769; and in December 1989 and February 1990 three samples of Monday demonstrators were questioned, ranging in size from 1,147 to 1,405 (see Tables 4 and 5). The polls examined the respondents' attitudes toward unification, their party preferences, their confidence in several East and West German political leaders, and their opinions on other topical issues. These data provide a unique, dynamic picture of the changing sentiments of the population and the demonstrators.[46]

Table 4 shows that the percentage of demonstrators who supported unification was larger than the corresponding percentage in the popu-

TABLE 4
SUPPORT FOR UNIFICATION AMONG DEMONSTRATORS AND GENERAL POPULATION
(NOVEMBER 1989–MARCH 1991)

Poll[a]	*Date*	*Number of Respondents*	*% Supporting Unification*
POP I	Nov. 20–27, 1989	1,578	48
DEMO I	Dec. 4, 1989	1,405	75
POP II	Jan. 29–Feb. 9, 1990	1,769	79
DEMO II	Feb. 12, 1990	1,147	92
POP VI	Sept.–Oct. 1990	2,250	88
DEMO III	Oct. 8, 1990	100	25
DEMO IV	Mar. 4, 1991	94	52
DEMO IV	Mar. 4, 1991	94	52

Poll[a]	*Date*	*Number of Respondents*	*% Supporting Speedy Unification*[b]
POP II	Jan. 29–Feb. 9, 1990	1,769	39
DEMO II	Feb. 12, 1990	1,147	67
POP III	Feb. 26–Mar. 6, 1990	1,307	50

SOURCES: Förster and Roski (fn. 33), 164: POP I, DEMO I, POP II, DEMO II, POP III; *Der Spiegel* (fn. 33), 21: POP IV; Gerth and Grahl (fn. 33), 1–2: DEMO III; Breitenborn (fn. 33), 2: DEMO IV.

[a] Public opinion polls of the general population and of demonstrators are labeled POP and DEMO, respectively.

[b] Percentage of those supporting unification.

[46] An informational cascade argument suggests that these poll results could have provided an additional source of information for the general public and thereby affected the path of the East German revolution. However, I believe that such informational effects are negligible: the mass public was by and large unaware of these poll results.

TABLE 5

PARTY PREFERENCES OF DEMONSTRATORS AND GENERAL POPULATION

(NOVEMBER 1989–MARCH 1991)

Poll[a]	*Date*	*Poll*	*Number of Respondents*	*Percentage of Party Supporters*				
				CDU	*SPD*	*FDP*	*SED*[b]	*CM*[c]
POP I	Nov. 20–27, 1989	public opinion poll	1,578	10	6	—	31	17
DEMO I	Dec. 4, 1989	public opinion poll	1,405	12	37	—	6	18
POP II	Jan. 29–Feb. 9, 1990	public opinion poll	1,769	13	53	—	12	6
DEMO II	Feb. 12, 1990	public opinion poll	1,147	21	40	1	4	9
POP III	Feb. 26–Mar. 6, 1990	public opinion poll	1,307	22	34	1	17	2
POP IV[d]	Mar. 18, 1990	people's parliament election[g]	11 million	40.85	21.87	5.28[f]	16.36	4.88
POP V[d]	May 6, 1990	local council elections[g]	9 million	30.59	21.05	6.39	13.99	2.42
DEMO III[e]	Oct. 8, 1990	public opinion poll	96	2	13	3	31.5	88.5
POP VII[d]	Oct. 14, 1990	regional state elections[g]	8 million	43.95	25.36	7.81	11.50	6.67
POP VIII[d]	Dec. 2, 1990	federal parliament election[g]	9 million	41.80	24.30	12.90	11.10	6.10
DEMO IV	Mar. 4, 1991	public opinion poll	94	3.1	31.9	5.3	24.4	46.8

SOURCES: Förster and Roski (fn. 33), 166: GDR I, DEMO I, GDR II, DEMO II, GDR III; Cusack and Eberwein (fn. 33), 12: GDR IV, GDR V, GDR VII, GDR VIII; Gerth and Grahl (fn. 33), 1–2: DEMO III; Breitenborn (fn. 33), 2: DEMO IV.

[a] Polls of the general population and of demonstrators are labeled POP and DEMO, respectively.

[b] SED/PDS, PDS or Left List for some public opinion polls and elections.

[c] Citizens' Movements: includes Union 90, New Forum, Greens, and for some public opinion polls and elections Democracy Now, Independent Womens' Union, and Initiative for Peace and Human Rights.

[d] Party vote shares in East Germany are reported

[e] Percentage numbers add up to over 100% because respondents were allowed to express support for more than one party.

[f] Vote share of the Union of Free Democrats (FDP, LDP, DFP).

[g] For elections, the number of respondents refers to the number of valid votes in East Germany.

lation. The support for unification increased over time among both demonstrators and the population at large, with the demonstrations leading public opinion (see Figure 3). Similar results were obtained when the demonstrators and the population were asked whether they preferred speedy or gradual unification: a majority of demonstrators came down firmly on the side of the former, and the population subsequently followed suit.

Large majorities of the demonstrators and the population were in agreement regarding the desirability of free elections, which were eventually scheduled for March 1990. Table 5 summarizes the percentages of demonstrators and of the population that express support for the Christian Democrats (CDU), the Social Democrats (SPD), the Communists (SED, later renamed PDS), and other parties in a sequence of public opinion polls and elections. The CDU became increasingly popular among demonstrators, and this trend was subsequently replicated in the population, culminating in the CDU's unexpectedly large electoral success in March 1990 (see Figure 4). Similarly, the demonstrators anticipated the rise and decline of the SPD's popularity in the population. Not surprisingly, sympathizers of the SED/PDS were highly underrepresented at the demonstrations. The demonstrators and the population shared similar preferences for the smaller parties and groups.

The demonstrations also led public opinion with regard to the rise and decline of the popularity of several East and West German political leaders. Demonstrators were relatively more suspicious of Hans Modrow, the popular and apparently squeaky-clean chief communist administrator in Dresden who briefly succeeded to the prime ministership prior to unification but subsequently lost popular confidence. The demonstrators' suspicions were confirmed ex post when Modrow was later convicted of participating in the vote fraud of May 1989. Similarly, demonstrators were more distrustful of the representatives of the SED's former vassal parties, such as Manfred Gerlach and Günther Maleuda. Their distrust was confirmed by further revelations about the subservient and self-serving behavior of these parties, and the population subsequently followed the demonstrators' lead.

Helmut Kohl was vastly more popular among demonstrators than among the population at large, as was Lothar de Maizière, the leader of the East German CDU. The Social Democrat Oscar Lafontaine was more or less equally popular among demonstrators and in the population. Overall, the 1990 participants in the demonstrations were more conservative (in terms of their party preferences), compared with both the 1989 demonstrators and the 1990 population.

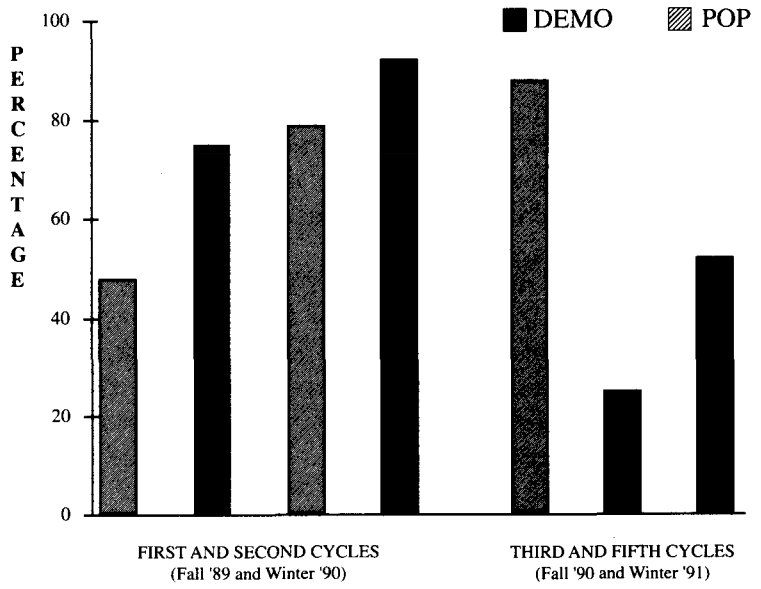


FIGURE 3
SUPPORT FOR UNIFICATION AMONG DEMONSTRATORS AND GENERAL POPULATION
(NOVEMBER 1989–MARCH 1991)

SOURCES: See table 4.

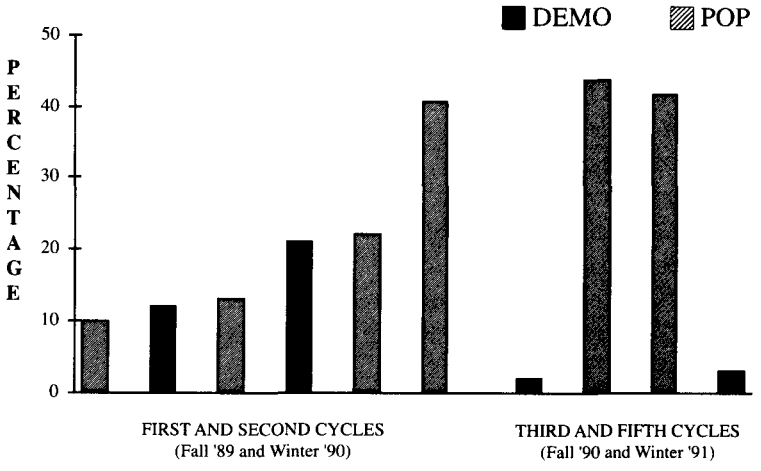


FIGURE 4
SUPPORT FOR THE CHRISTIAN DEMOCRATIC PARTY AMONG DEMONSTRATORS AND GENERAL POPULATION
(NOVEMBER 1989–MARCH 1991)

SOURCES: See table 5.

AFTERMATH, 1990–91

Three further cycles of protest took place in late 1990 and early 1991 (see Table 3 and Figure 2). The seven demonstrations of the third cycle coincided with the period of German unification, September and October 1990. Turnout averaged about one thousand, peaking at two thousand on September 24. These demonstrations were organized by opposition citizens' groups, in particular the New Forum and the Initiative for Peace and Human Rights, and they were attended primarily by activists and sympathizers from these groups. The demonstrators were protesting the negative social and economic consequences of speedy unification and the lack of public access to Stasi files. The organizers had deliberately chosen to start on *Messemontag* (the first day of the Leipzig trade fair) to exploit the presence of Western television crews. They were also hoping to link their protest symbolically with the fall 1989 demonstrations.

However, their protest failed: German unification on October 3, the *Land* (state) elections in East Germany on October 14, and further instances of right-wing extremist unrest dominated the attention of the people and the media. Indeed, these demonstrations were not even mentioned by the *Leipziger Volkszeitung*, whose coverage of the Monday demonstrations is otherwise complete.

A poll of one hundred demonstrators taken October 8 by Michael Gerth and Robert Grahl suggests that this set of demonstrations was dominated by extremists. The support for mainstream parties was minuscule: 2 percent for the CDU, 13 percent for the SPD, and 3 percent for the FDP. A stunning 88.5 percent of the participants expressed support for the Union 90, New Forum, and Greens, 31.5 percent for the Left List and PDS.[47] These numbers can be compared with the vote shares the parties received in the *Land* elections that took place one week later: CDU 43.95 percent, SPD 25.36 percent, FDP 7.81 percent, Union 90, New Forum, and Greens 6.67 percent, Left List and PDS 11.50 percent. Clearly, the demonstrators were highly unrepresentative in terms of their party preferences (see Table 5).

Similarly, 75 percent of the demonstrators had a negative attitude toward German unification, compared with 12 percent of the East German population. While 92 percent of the demonstrators claimed to have participated in at least one of the demonstrations of the first

[47] The percentage numbers add up to more than 100% because the respondents were allowed to express support for more than one party.

and second cycles, only 8 percent said they had demonstrated in favor of speedy unification. In contrast, 67 percent of the demonstrators on February 12, 1990, had favored speedy over gradual unification (see Table 4).

The first all-German elections were held on December 2. The SED's successor organization, PDS, did fairly well (given the circumstances), by getting 11.10 percent of the East German vote. The Social Democrats, initially favored as the most popular party in East Germany, received a disappointing 24.30 percent of the vote. The SPD's candidate for the chancellorship, Oscar Lafontaine, was partly responsible for this electoral disaster. His warnings about the social and economic costs of unification and his call for a gradual transition to unification were unpopular positions in East Germany at the time. Moreover, his opponent was Helmut Kohl, the popular architect of speedy unification, who had suggested that East German standards of living would soon converge to West German standards, requiring little hardship or unemployment in the transition period. With an East German vote share of 41.80 percent, the CDU/CSU did extremely well (see Table 5).

The groups and parties that had formed the organized opposition to the regime prior to and in the course of the GDR's revolution fared badly. Their devastating defeat in the first free elections revealed that the political preferences, opinions, and attitudes of these self-appointed spokespeople for the East German people were not in line with those of the large majority of East Germans.

A fourth cycle consisting of five demonstrations began on January 21, 1991, to protest the Gulf War. Initially, a large number of students participated, and the first demonstration was attended by sixty-five hundred. This number quickly dissipated, until by February 18 only a hard core of about five hundred activists and sympathizers of the citizens' groups remained. Clearly, the momentum was gone. While these demonstrations were considered newsworthy by the *Leipziger Volkszeitung*, their overall political impact was insignificant.

East German industry underwent a severe crisis in the political turmoil of 1989, and the industrial decline gathered momentum in the course of 1990 and 1991. At the time of German unification on October 3, 1990, about one-fourth of the labor force was either registered as unemployed or on reduced-time work. Against this background, a fifth cycle of seven demonstrations began in Leipzig on March 4, 1991. Organized labor attempted to revive the symbolic force of the earlier Monday demonstrations, this time to protest the dismal economic and social consequences of the crashlike structural changes to industry in

Leipzig and its environs. The demonstrations were also supported by various citizens' and peace groups, church organizations, and the local branch of the Social Democratic Party. Over fifty thousand people participated in the first demonstration, many of them wholly or partially unemployed. Turnout subsequently decreased to twenty-two thousand on March 11, then increased to seventy thousand on March 18 and 25. After a one-week pause due to the timing of the traditional Easter march for peace that ended in Leipzig on Sunday, March 31, another demonstration was scheduled for April 8. When about twenty-seven thousand people turned out on that day, a speaker of the union of metalworkers attributed the dramatic drop in participation to the "growing resignation" of the population.[48] In contrast to the optimistic atmosphere that had marked the demonstrations of the first two cycles, the prevailing mood was now a mix of bitterness, desperation, and frustration.

After the failed demonstration of April 8, the demonstrations were put "under new management":[49] the citizens' group New Forum took responsibility for organizing future demonstrations. Participation subsequently dropped to ten thousand on April 15. The Leipzig Monday demonstrations drew to a pitiful close when only a few hundred turned out one week later on April 22. (Thereafter Monday demonstrations were staged for the benefit of tourists visiting Leipzig.)

A poll by Uwe Breitenborn of ninety-four demonstrators conducted concurrently with the first demonstration of the fifth cycle suggests that the demonstrators' party preferences were far more extreme than those expressed by Leipzig voters a few months earlier, but less extreme than those of the demonstrators who participated in the third cycle (see Figure 4). Only 3 percent of the demonstrators were favorably disposed toward the CDU; in comparison, 41.80 percent of the East German voters had cast their vote for the CDU in the first all-German national elections on December 2, 1990. The corresponding numbers are 31.9 percent and 24.30 percent for the SPD, 5.3 percent and 12.90 percent for the FDP, 24.4 percent and 11.10 percent for the PDS, and 46.8 percent and 6.10 percent for the citizens' groups and the Greens (see Table 5).

Given the relatively high turnout, the demonstrators' apparently unrepresentative party preferences can be interpreted as an indicator of increasing disaffection with the promises of mainstream political par-

[48] German Information Center, ed., "Monday Demonstrations to Continue 'Under New Management,'" *Week in Germany*, April 12, 1991, p. 2.

[49] Ibid.

ties rather than as evidence of extremism. Nevertheless, this set of demonstrations had little political impact.

SUMMARY

In the course of the first two cycles of the Leipzig protest turnout fluctuated at overall high levels. The (expected) costs of participation were initially very high, attaining a maximum on October 9, 1989, and then they dropped dramatically.[50] This set of demonstrations was dominated by unorganized masses whose relatively moderate preferences, opinions, and attitudes led public opinion. Their protest was hugely successful in bringing about "revolutionary change," that is, major changes in political personnel and in the structure of the political and economic system.

Turnout fluctuated at very low levels in the third and fourth cycles and at a somewhat higher level in the fifth cycle. The costs of participation were low. Political entrepreneurs and organized groups played an important role. The demonstrations of the third and fourth cycles were dominated by extremists and failed to rouse the people, the media, and political decision makers. While the demonstrators of the fifth cycle were more representative, their protest also had little political impact.

IV. EVALUATING THE EVIDENCE

I now examine the empirical contribution of the competing theories reviewed in Section I on the basis of the evidence assembled in Sections II and III. The conclusions must be regarded as tentative, however, due to data limitations. The relationship between changes in any two variables is easily confounded, because there is considerable variation in a number of variables over the course of five cycles of protest. Subject to this qualification, the main conclusion drawn on the basis of the evidence is that our understanding of the East German revolution is enhanced if traditional theories of mass political action are supplemented by Lohmann's signaling framework.

GDR citizens experienced the dismal economic situation, the deterioration of the environment, and political repression in their daily lives. Moreover, they were fixated on the increasing gap between East and West German standards of living, which was indicative to them of

[50] The claim that the expected cost of participation attained a maximum in this demonstration is based on the subjective assessments of participants revealed in diaries and documentation covering the Leipzig demonstrations.

the different potentials of the two economic and political systems. This situation fits Gurr's theory that such relative deprivation spurs revolutionary political action and change. However, this theory fails to explain why mass discontent translated into mass political action and revolutionary change only in 1989. The existence of deprivation, grievances, or oppression is clearly not a sufficient condition for revolutionary action.

The theory of political opportunity structure put forth by Tarrow and others sheds some light on the timing of the East German revolution. Gorbachev's perestroika reforms in the late 1980s led to a rise in the level of discontent in East Germany and a decrease in the costs of protest, thereby preparing the way for the mass mobilization of 1989.

The theories of relative deprivation and political opportunity structure are usefully complemented by an informational approach. Prior to 1989 all channels by which mass discontent could have been publicly revealed were closed: free elections, intraparty opposition, a free press, mass political action, emigration, public opinion polls, and aggregate economic statistics. Critical events and external political change triggered the 1989 explosion of mass protest that gave public expression to the long-standing disaffection with the regime and served as a signal for the citizens of the GDR.

As a first pass, Hirschman's theory of exit, voice, and loyalty provides an organizing framework for our understanding of the East German revolution; but this theory is usefully supplemented by the interdependence and informational effects postulated by other threshold and cascade models. As suggested by Hirschman's theory, the East German people's discontent found expression in emigration and political action. Moreover, the minority of East German citizens who were loyal to the SED or to the idea of a democratic socialist alternative rejected the possibility of emigrating. Instead, they took political action in hopes of exerting pressures for political liberalization and reform.

Hirschman's theory suggests that emigration has the potential to induce regime collapse, whereas political action exerts pressures for political reform. In fact, in East Germany emigration and political action complemented each other in a more complex way.[51] The emigration of thousands of East German citizens in the summer of 1989 did not by itself lead to the downfall of the regime or, for that matter, to its reform. The SED leadership showed no signs of giving in to the pressures

[51] The complementary role played by exit and voice in the East German revolution is also noted by Detlef Pollack, "Das Ende einer Organisationsgesellschaft," *Zeitschrift für Soziologie* 19 (August 1990).

created by the emigration of thousands of its citizens. Arguably, other countries would not have gone to war to force political reforms or regime change in the GDR. Thus, the political pressure for change had to come from within the GDR, and the summer exodus was one of several critical events that prepared the way for the indigenous mass protest movement that emerged in the fall of 1989. The regime responded only when significant numbers of its people took to the streets. The resulting political liberalization created its own dynamics. Most important, the opening of the East German borders to the West further reduced the costs of emigration so much that the resulting flood of emigrants undermined the economic viability of the regime and ultimately made German unification inevitable. Thus, exit was a necessary but not sufficient condition for the collapse of the East German regime.

Cascade models by and large fail to capture the rich empirical dynamics of mass political action and political change. The demonstrators' objectives did not remain constant over time; indeed, the protest movement eventually polarized over the desired alternative to the old regime. Similarly, the addressee of the people's protest activities changed over time, as did the nature of the information conveyed by mass political action.

The dynamic interaction between the ongoing mass protest and the step-by-step reform attempts of the communist regime in late 1989 and early 1990 also casts doubt on the empirical descriptiveness of another assumption underlying many cascade models, namely, that a regime will "collapse" if turnout exceeds a critical level. While the relatively large turnout in the critical demonstration of October 9 played an important role in triggering political change, it did so indirectly by changing the future cost of protest. After this demonstration, people continued to participate in mass political action because their protest activities generated ongoing pressures for political liberalization and reform. The eventual collapse of the regime was not a direct consequence of mass political action; instead, it followed from the regime's response to the pressures generated by mass mobilization, and specifically from the regime's decision to open the borders.

Furthermore, the evidence undermines the somewhat mechanistic notion that the effectiveness of mass political action is a matter of sheer "power in numbers,"[52] as postulated by DeNardo, Kuran, and Chong. Instead, it supports Tarrow's insight that attention should be

[52] DeNardo (fn. 6).

paid to what is "*considered* disruptive, challenging and efficacious" relative to prior expectations, as is also implied by Lohmann's signaling theory.[53] The first three demonstrations in Leipzig were characterized by relatively low turnout, yet they played a critical role in triggering protest throughout the GDR. When many more people demonstrated all over the GDR in November 1989, the momentum for political change was already established.

Kuran's cascade model is based on the assumption that the costs of publicly opposing the regime decrease as the number of protesters increases. The evidence suggests, however, that the costs of protest did not decrease in a mechanistic and commonly known way as a function of turnout. Instead, it supports the synthesis of the Lohmann, Kuran, and DeNardo models sketched in Section I.[54] The costs of protest, or the degree of repression, were endogenously determined by the strategic interaction between the regime and its opponents. Potential participants were uncertain about the willingness of the regime to massacre its people. Similarly, the regime faced considerable uncertainty in assessing the ambiguous effects of repression on the size of the active opposition and on its legitimacy and mass support.

For example, the regime chose to back down prior to the critical demonstration on October 9, 1989, after two intraparty factions fought over the relative importance of two counteracting effects. On the one hand, a Chinese solution had the potential to suppress the protest, thereby removing the threat to the SED's power. On the other hand, the regime depended on the active support of at least some of its citizens: the technology of repression, neutralization, and indoctrination is, after all, quite labor-intensive. The negative information about the SED regime that would have been conveyed by a violent crackdown also had the potential to undermine its legitimacy and mass support. A reform-minded faction in the SED argued that the party would lose the support of a large majority of its citizens if it resorted to violence, and this faction took over the leadership.

The erratic path of turnout over time is inconsistent with the implication of Kuran's model that turnout increases monotonically (see Table 3 and Figure 2). Kuran's model might be saved by defining November 9, 1989—the day the Berlin Wall fell and the East German borders were opened—as the date of the collapse of the regime. In this interpretation, Kuran's model would apply only to the preceding pe-

[53] Sidney Tarrow, "'Aiming at a Moving Target': Social Science and the Recent Rebellions in Eastern Europe," *Political Science and Politics* 24 (March 1991), 17.

[54] See also section B of the mathematical appendix.

riod, and his monotonicity implication would be consistent with the data. However, Kuran's model assumes that the monotonic path of turnout is driven by decreases in the cost of taking political action over time. This assumption is inconsistent with the evidence. The expected costs of political action attained a maximum for the critical demonstration of October 9, when the regime threatened a Chinese solution to the protest, and yet turnout was relatively high on that day and higher than in the previous, lower-cost demonstrations. Thus, the Kuran model is rejected. At first blush, the empirical time path of turnout would appear to be consistent with the Chong model, given that this model allows for steady state, oscillating, explosive, and abortive dynamics depending on the reduced-form parameters of the system. However, the Chong model is inconsistent with qualitative changes in the relationship between mass turnout and the regime's response over time: in his model the parameters of the system are exogenously fixed. In contrast, in a signaling model the regime's response changes endogenously over time as people's participation incentives fluctuate. Traditional and informational cascade models differ in their implications regarding the role of extremists and moderates. By and large, the evidence supports the signaling model developed by Lohmann, according to which the turnout of moderates is crucial for the success of a protest movement, both in terms of its size and its political impact. The preferences, opinions, and attitudes held by the unorganized demonstrators of the first and second cycles were fairly moderate, and these demonstrations were characterized by high turnout numbers and significant political impact. The demonstrations of the third and fourth cycles were dominated by extremists and organized groups, and they were associated with low turnout numbers and little political impact. The demonstrators of the fifth cycle were more representative, and they turned out in larger numbers, but these organized demonstrations also failed. Thus, extremism was positively correlated with low turnout, as suggested by the Lohmann model; the observed correlation between the turnout of moderates and the political impact of their protest has the theoretically predicted sign for the first four cycles though not for the fifth one.

One change in the political environment may partly explain the negligible impact of the last set of demonstrations. East Germany is now integrated into a Western-style democracy in which participation is "cheap" and public protest events compete with multiple other information sources for public attention. Mass demonstrations have more potential under a repressive regime—even if turnout is relatively low

by the standards of a free society—because the costliness of political action is part of the "message" conveyed by a protest movement, and this message is received by an informationally starved, highly attentive public. While the openness of a system may be conducive to protest, the political impact of protest activities is muted.

Theories that emphasize the role of political leadership and organization in enhancing the prospects for and the effectiveness of collective action fare badly. Contrary to Chong's assertion, large numbers of individuals were able to coordinate their participation decisions spontaneously. Moreover, the successful Leipzig Monday demonstrations were dominated by unorganized individuals and small groups who made their participation decisions in a decentralized way. In contrast, the organized demonstrations of the third, fourth, and fifth cycles were failures. As suggested by the signaling approach, organized efforts appear to be discounted by the people, the media, and political decision makers.[55]

Political entrepreneurs and leaders of organized groups are typically not representative of the population; they usually have fairly extreme political preferences and opinions. The effect of political organization on the prospects for and effectiveness of collective action could thus easily be confounded with the effect of extremism. However, the evidence allows us to disentangle some of the effects of these two variables: political organization was negatively correlated with both turnout and political impact, while the evidence regarding the link between the turnout of moderates and extremists, on the one hand, and the political impact of their protest, on the other, is mixed, as noted above.

The argument that social embeddedness and personal networks enhance the likelihood that individuals become involved in collective action is supported by the finding that demonstrators were more likely to be members of various social groups.

It is perhaps appropriate to end this paper with a discussion of the rational choice approach to the analysis of individual participation in a mass uprising. Many scholars question the value of a benefit-cost analysis of high-risk activism. For example, Scott Corey suggests that the rational choice approach cannot deal with "the fact that one's life is

[55] Interestingly, a negative relationship between organization and the strength of protest also shows up in the Italian and West German protest data analyzed by Sidney Tarrow, *Democracy and Disorder: Protest and Politics in Italy, 1965–1975* (Oxford: Clarendon Press, 1989); and Ruud Koopmans, "The Dynamics of Protest Waves: West Germany, 1965–1989," *American Sociological Review* 58 (October 1993). In their data the peak in the total number of protests coincides with the peak in the number of unorganized protests.

at stake in joining a revolution. The 'expected value' (to adopt the vernacular) of death is not 'zero.' It is 'negative infinity.' No matter how small the risk, it will not outweigh that disutility in the equation."[56] The mystical notion that people assign the utility value "negative infinity" to their own death is contradicted by people's revealed preferences in their daily lives, when they choose to cross streets, accept employment in a hazardous workplace, or go hunting in their leisure time. For each of these activities, the probability that an individual will meet her death is very small but strictly positive. The product of negative infinity and an arbitrarily small but strictly positive probability is equal to negative infinity. If people truly derived negative infinity utility from their deaths, they would be paralyzed in making any but the most trivial decisions in their daily lives.

As an empirical matter, the risks taken by East German protesters were certainly not insignificant in size, but they were hardly on a qualitatively different plane as suggested by Corey. In the failed 1953 revolt, a few dozen East Germans out of 500,000 strikers and 408,000 demonstrators died. To my knowledge, there were no reported deaths caused by police or security forces for the 1989 East German revolution. Of course, participants in the critical demonstration of October 9, 1989, faced the very real possibility that their protest would end in a massacre; but even then they could reasonably expect that only a few dozen—in the worst case perhaps several hundreds—out of tens of thousands of participants would meet their death. For any one demonstrator, the implied probability of death is rather low.

Moreover, the rational choice approach is not inconsistent with the notion that individual participation decisions may be influenced by factors that are not traditionally included in a benefit-cost analysis—altruism, heroism, the desire for personal autonomy and integrity, and the like. A theory that invokes these factors as an explanation of costly collective action is bound to fare poorly. Applied to the East German experience, such a theory can "explain" the mass mobilization of 1953 and 1989, but it fails to motivate the passive acquiescence of the East German people in the thirty-six years that passed between these two dates. Nor can this theory shed much light on the dynamic path of turnout over the course of the 1953 revolt or the 1989 revolution.

In contrast, the benefit-cost approach is based on the idea that people respond systematically to changes in their incentive structures. The

[56] Scott Corey, "Crisis in the Study of Revolution" (Paper presented at the meetings of the American Political Science Association, September 1992), 8.

evidence assembled here supports this approach by demonstrating that individual participation did in fact vary in predictable ways with changes in the expected benefits and costs of political action. The contribution of this paper is to show that individual participation decisions may depend on changes in aggregate turnout over time because people extract benefit-cost information from turnout numbers.

In conclusion, this analysis interprets the Leipzig Monday demonstrations as an informational cascade that publicly revealed some of the decentralized information about the malign nature of the East German regime and that thereby created pressures for political liberalization and reform and eventually led to the collapse of the regime. The Monday demonstrations subsequently died a slow death as their informational role declined with their spontaneity, and the handlers came in.

Mathematical Appendix: An Informational Cascade Model of Mass Political Action

A. Synthesis of the Lohmann and Kuran Models

This section synthesizes the Lohmann and Kuran models to analyze the situation in which the dynamics of mass turnout over time are driven by uncertainty about the nature of the ruling regime and the cost of participation. The model consists of two stages, a political action stage (periods *1* to *T*) and a policy stage (period *T+1*). The society has n members, indexed by $i=1, \ldots, n$. Individual i's utility function is given by

$$U_i = -(p - p_i)^2 - \sum_{t=1}^{T} d_{i,t} c_t, \qquad (1)$$

where p is the policy set by the regime that is incumbent in period $T+1$; p_i is individual i's policy ideal point; $d_{i,t}$ is an index variable that takes on value one if individual i takes political action in period t, and value zero otherwise; c_t is the cost incurred by the individual if she takes political action in period t, $c_t > 0$.[57] The individuals' ideal points are assumed to be uniformly distributed between $-\bar{p}$ and $\bar{p}$, $\bar{p} > 0$. The distribution is common knowledge, but each individual is privately informed about her own ideal point.

[57] For simplicity, I assume that the individuals do not discount the future. The results of the analysis would not be affected qualitatively if this assumption were relaxed to allow for some discounting.

The first term in the utility function reflects the benefits generated by the policy implemented by the regime that is incumbent in period $T+1$:[58]

$$p = \begin{cases} Q - q & \text{if } R = 0, \\ A - a & \text{if } R = 1, \end{cases} \qquad (2)$$

where R is an index variable that takes on value zero if the status quo regime is maintained at the policy stage, and value one if the status quo regime is overturned in favor of the alternative regime; Q-q is the policy set by the status quo regime, while the policy A-a would be implemented by the alternative regime. Each of the two policies consists of a commonly known, fixed component, Q and A, $0 \leq Q < A \leq 1$. The random components q and a are independently drawn from a commonly known uniform distribution $\beta(.)$ over the unit interval.

The second term in the utility function captures the losses incurred due to the costliness of taking political action. The cost in period t, c_t, is assumed to be decreasing in the turnout in period t, m_t:

$$\partial c_t / \partial m_t < 0. \qquad (3)$$

This assumption can be motivated with the "safety in numbers" characteristic of the technology of suppression: given the amount of resources a regime devotes to suppressing mass protest, it is plausible that a higher number of activists is associated with a lower likelihood that any one activist will experience injury, death, or imprisonment and thus with a lower expected cost of taking political action.

At the beginning of period 1, Nature independently draws the values of q and a. Then each individual observes an independent realization of a binary signal σ. The probability that any individual observes the realization $\sigma=1$ is equal to q, while the probability of the realization $\sigma=0$ is given by $1-q$. Thus, the realization of σ is informative about the status quo policy Q-q. Given that the individual experiences are private information, each individual is very imperfectly informed about the value of q. In the aggregate, the population is better informed since it observes n independent draws of the signal σ. However, at this time,

[58] The loss function could be modified to include a term that reflects the losses generated by the incumbency of the status quo regime in periods $1, \ldots, T$. However, the addition of this term would not change the individuals' political action decisions, since their actions or abstentions cannot affect these losses.

no single individual is informed about the aggregate number of individuals of type $\sigma=0$ or $\sigma=1$. Moreover, since no information is revealed about the value of a, the expectation of the alternative policy is given by $A-1/2$.

Next, each individual chooses whether to take political action. The individuals are differentiated with respect to their ideal points p_i and their private information σ. Formally, their political action strategies in period 1 are given by $\pi_1(i,\sigma)\in\{0,1\}$. An individual who takes political action in period 1 ($\pi_1=1$) privately incurs the cost c_1. An individual who abstains ($\pi_1=0$) does not incur any cost. It is commonly understood that an individual who takes political action wishes to express her dissatisfaction with the status quo regime.[59]

At the beginning of periods $t=2, \ldots, T$, m_{t-1} individuals are publicly observed to take political action. Each individual chooses whether to take political action in period t, based on her ideal point p_i, her private information σ, and the public information $m_1 \ldots, m_{t-1}$. Her political action strategy is given by $\pi_t(i,\sigma,m_1 \ldots, m_{t-1})\in\{0,1\}$. In each period, an individual who takes action ($\pi_t=1$) incurs the cost c_t; an individual who abstains ($\pi_t=0$) does not.

In period $T+1$, the status quo regime collapses and is replaced by the alternative regime ($R=1$) if it is commonly known that the alternative regime is supported by more than k individuals, $0<k<n$. Otherwise the status quo regime is maintained ($R=0$).[60]

At this point in time, the game ends. The values of q and a are revealed. Each individual's payoffs are realized as a function of the policy set by the regime that is in power in period $T+1$ and of the total costs of taking political action incurred by that individual.

The structure of the game is common knowledge. The equilibrium concept employed is a refinement of sequential equilibrium.[61]

A refined sequential equilibrium of the game is given by the individuals' political action strategies in period 1, $\{\pi_1(i,\sigma)\}$, and in periods $t=2, \ldots, T$, $\{\pi_t(i,\sigma,m_1, \ldots, m_{t-1})\}$; and by their beliefs at the beginning of period 1, $\{\beta(q|i,\sigma)\}$, and of periods $t=2, \ldots, T+1$, $\{\beta(q|i,\sigma,m_1, \ldots, m_{t-1})\}$.

[59] Lohmann (fn. 21) develops a variant of the model in which proponents of the status quo may choose to take counteracting political action, albeit in a static setting.

This specification of the individuals' political action strategies restricts them to using pure strategies. The pure strategy cutpoint equilibrium characterized here does not exist for a subset of the parameter space. In this case, a mixed strategy equilibrium may arise. Lohmann (fn. 21) sketches the mixed strategy solution, albeit for a static setting.

[60] A more complex model would explicitly analyze the individuals' regime support strategies; compare Lohmann (fn. 16, 1994).

[61] David H. Kreps and Robert Wilson, "Sequential Equilibria," *Econometrica* 50 (July 1982). Lohmann (fn. 16, 1994) discusses the equilibrium concept in more detail.

The individuals' strategies and beliefs are consistent with each other and fulfill the following conditions:

(E1) Individual i's political action strategy in period 1, $\pi_1(i,\sigma)$ minimizes her expected loss $E(L_i|i,\sigma)$ given the information set $I(i,\sigma)$. The individual's political action strategy in periods $2, \ldots, T$, $\pi_t(i,\sigma,m_1, \ldots, m_{t-1})$, minimizes her expected loss $E(L_i|i,\sigma,m_1, \ldots, m_{t-1})$ given the information set $I(i,\sigma,m_1, \ldots, m_{t-1})$.

(E2) At the beginning of period 1, individual i uses Bayes' Rule to update that $\beta(q|i,\sigma)$ is the posterior density of the value q conditional on the information set $I(i,\sigma)$. At the beginning of periods $t=2, \ldots, T+1$, the individual uses Bayes' Rule to update that $\beta(q|i,\sigma,m_1, \ldots, m_{t-1})$ is the posterior density of the value q conditional on the information set $I(i,\sigma,m_1, \ldots, m_{t-1})$.

I now formally characterize the individuals' political action decisions in periods $1, \ldots, T$ and their beliefs in periods $1, \ldots, T+1$. To simplify the exposition, I restrict attention to the case of $T=2$.[62] Thus, the political action stage consists of periods 1 and 2, the policy stage of period 3.

Before the individuals observe the realizations of the signal σ, their preferences over regimes depend only on their ideal points p_i. An individual whose ideal point lies below the cutpoint $\hat{p}$ is a supporter of the status quo regime, while an individual whose ideal point lies above this cutpoint prefers the alternative regime. The cutpoint $\hat{p}$ is given by

$$\hat{p} = (Q+A)/2 - E(q) = (Q+A)/2 - 1/2. \tag{4}$$

At the beginning of period 1, people form posterior beliefs about the value q based on their private information σ:

$$\beta(q|i,\sigma) = \beta(q|\sigma) = \begin{cases} 2(1-q) & \text{if } \sigma=0, \\ 2q & \text{if } \sigma=1. \end{cases} \tag{5}$$

Individuals of type $\sigma=0$ tend to be more favorably disposed toward the status quo regime than are individuals of type $\sigma=1$. Moreover, all else being equal, an individual with a low ideal point will tend to prefer the status quo regime, and an individual with a high ideal point will tend to prefer the alternative regime.

Thus, the individuals' regime preferences are determined both by their ideal points p_i and their private information σ. An individual whose ideal point lies above the cutpoint $\hat{p}^{\sigma=0}$ unconditionally supports the alternative, while an individual whose ideal point lies below

[62] The intuition underlying the results can be conveyed by the analysis of this special case. The more general case of $0<T<\infty$ is analyzed in Lohmann (fn. 7), albeit in an otherwise simpler setting.

the cutpoint $\hat{p}^{\sigma=1}$ is an unconditional supporter of the status quo regime. The cutpoints $\hat{p}^{\sigma=0}$ and $\hat{p}^{\sigma=1}$ are given by

$$\hat{p}^{\sigma=0} = (Q+A)/2 - E(q|\sigma=0) = (Q+A)/2 - 1/3, \quad (6)$$

$$\hat{p}^{\sigma=1} = (Q+A)/2 - E(q|\sigma=1) = (Q+A)/2 - 2/3. \quad (7)$$

Individuals whose ideal points are located between the two cutpoints $\hat{p}^{\sigma=0}$ and $\hat{p}^{\sigma=1}$ prefer either the status quo or the alternative depending on their private information. They support the status quo if they are of type $\sigma=0$, and the policy alternative if they are of type $\sigma=1$. Equations (6) and (7) imply that $\hat{p}^{\sigma=0} > \hat{p}^{\sigma=1}$.

The individuals' political action decisions in period *1* depend both on their ideal points p_i and their private information σ. Each individual compares the expected benefits and costs of taking action.

The expected benefits are equal to the probability that the individual's action will be decisive in bringing about a collapse of the status quo regime, multiplied by the expected benefits from a regime change. The individual's action affects the likelihood that the status quo regime will collapse in a number of ways. Her action contributes to the public information about the regime. This information will be part of the individuals' information sets in period *3* and thus influence their support for the two regimes. Moreover, by affecting the information sets of other individuals, one individual's action may encourage others to take action in period *2* or deter them from doing so. Their future actions or abstentions will in turn have an effect on other individuals' regime preferences.

The individual's action also influences the cost of political action in the current period. In addition, her action changes the information set of other individuals and thus has an impact on expected turnout and the expected cost of taking action in period *2*, thereby affecting the degree to which further information is revealed.

In conclusion, individual *i* takes action in period *1* if

$$\iint \sum_{m_1=\underline{m}_1+1}^{\bar{m}_1} \sum_{m_2=\underline{m}_2}^{\bar{m}_2} \{[prob(R=1|m_1,m_2,q) - prob(R=1|m_1-1,m_2,q)] \cdot \quad (8)$$

$$b(m_1-\underline{m}_1-1;\bar{m}_1-\underline{m}_1-1,q)\, b(m_2-\underline{m}_2;\bar{m}_2-\underline{m}_2,q)\} \cdot$$

$$[(Q-q-p_i)^2 - (A-a-p_i)^2]\, \beta(q|\sigma)\, \beta(a)\, dq\, da \leq$$

$$\int \sum_{m_1=\underline{m}_1+1}^{\bar{m}_1} c_1(m_1)\, b(m_1-\underline{m}_1-1;\bar{m}_1-\underline{m}_1-1,q)\, \beta(q|\sigma)\, dq$$

$$+ \int \sum_{m_1=\underline{m}_1+1}^{\bar{m}_1} \sum_{m_2=\underline{m}_2}^{\bar{m}_2} \{[prob(\pi_2=1|i,\sigma,m_1,q) - prob(\pi_2=1|i,\sigma,m_1-1,q)]\cdot$$

$$c_2(m_2)\, b(m_1-\underline{m}_1-1;\bar{m}_1-\underline{m}_1-1,q)\, b(m_2-\underline{m}_2;\bar{m}_2-\underline{m}_2,q)\}\, \beta(q|\sigma)\, dq;$$

otherwise the individual abstains.

In period *1* there exist two types of informationally differentiated individuals, types $\sigma=0$ and $\sigma=1$. Their equilibrium political action strategies in period *1* are characterized by two type-specific political action cutpoints, $\tilde{p}^{\sigma=0}$ and $\tilde{p}^{\sigma=1}$.[63]

An individual of type (i,σ) whose ideal point is exactly equal to $\tilde{p}^{\sigma}$ is indifferent between taking political action and abstaining in period *1*:

$$\iint \sum_{m_1=\underline{m}_1+1}^{\bar{m}_1} \sum_{m_2=\underline{m}_2}^{\bar{m}_2} \{[prob(R=1|m_1,m_2,q) - prob(R=1|m_1-1,m_2,q)]\cdot \quad (9)$$

$$b(m_1-\underline{m}_1-1;\bar{m}_1-\underline{m}_1-1,q)\, b(m_2-\underline{m}_2;\bar{m}_2-\underline{m}_2,q)\}\cdot$$

$$[(Q-q-\tilde{p}^{\sigma})^2 - (A-a-\tilde{p}^{\sigma})^2]\, \beta(q|\sigma)\, \beta(a)\, dq\, da =$$

$$\int \sum_{m_1=\underline{m}_1+1}^{\bar{m}_1} c_1(m_1)\, b(m_1-\underline{m}_1-1;\bar{m}_1-\underline{m}_1-1,q)\, \beta(q|\sigma)\, dq$$

$$+ \int \sum_{m_1=\underline{m}_1+1}^{\bar{m}_1} \sum_{m_2=\underline{m}_2}^{\bar{m}_2} \{[prob(\pi_2=1|i,\sigma,m_1,q) - prob(\pi_2=1|i,\sigma,m_1-1,q)]\cdot$$

$$c_2(m_2)\, b(m_1-\underline{m}_1-1;\bar{m}_1-\underline{m}_1-1,q)\, b(m_2-\underline{m}_2;\bar{m}_2-\underline{m}_2,q)\}\, \beta(q|\sigma)\, dq.$$

This indifference condition implicitly defines the cutpoints $\tilde{p}^{\sigma=0}$ and $\tilde{p}^{\sigma=1}$.

All individuals whose ideal points lie strictly above the cutpoint $\tilde{p}^{\sigma=0}$ strictly prefer to take political action. Individuals of type $\sigma=0$ whose ideal points lie strictly below the cutpoint $\tilde{p}^{\sigma=0}$ strictly prefer to abstain from taking political action. In contrast, individuals of type $\sigma=1$ whose ideal points are adjacent to this cutpoint will take political action, since their private information makes them more favorably disposed toward a regime change. Thus, the cutpoint $\tilde{p}^{\sigma=0}$ separates anti-status quo extremists and activist moderates in period *1*. Anti-status quo extremists turn out independently of their private information, while activist moderates take action conditional on their private information.

Similarly, all individuals of type $\sigma=1$ whose ideal points lie strictly above the cutpoint $\tilde{p}^{\sigma=1}$ strictly prefer to take political action. Individu-

[63] I restrict attention to the case in which $\tilde{p}^{\sigma=0} > \tilde{p}^{\sigma=1}$. The alternative case in which $\tilde{p}^{\sigma=0} < \tilde{p}^{\sigma=1}$ is easily derived along the lines developed here.

als whose ideal points lie strictly below the cutpoint $\tilde{p}^{\sigma=1}$ strictly prefer to abstain from taking political action. Thus, the cutpoint $\tilde{p}^{\sigma=1}$ separates activist and apathetic moderates. In contrast to activist moderates, apathetic moderates are close to indifferent between the two regimes and thus do not find it worthwhile to pay the cost c_1 to publicly express their regime preferences.

Individuals whose ideal points are close to $-\bar{p}$ are pro–status quo extremists. They abstain independent of their private information because they do not wish to increase the likelihood that the status quo regime collapses.

Thus, the individuals' political action strategies in period *1* can be summarized by the following cutpoint rule:

$$\pi_1(i,\sigma) = \begin{cases} 1 & \text{if } p_i \in [\tilde{p}^{\sigma=0}, \bar{p}] \\ & \text{or if } p_i \in [\tilde{p}^{\sigma=1}, \tilde{p}^{\sigma=0}) \text{ and } \sigma=1, \\ 0 & \text{otherwise.} \end{cases} \tag{10}$$

Upon observing m_1 political actions, all individuals know that in equilibrium each individual who is a member of the separating set

$$\boldsymbol{S}_1=\{i|p_i \in [\tilde{p}^{\sigma=1}, \tilde{p}^{\sigma=0})\} \tag{11}$$

took political action conditional on being of type $\sigma=1$, and abstained otherwise. The actions and abstentions of the individuals who are members of the pooling set

$$\boldsymbol{P}_1=\{i|p_i \in [-\bar{p}, \bar{p}] \backslash \boldsymbol{S}_1\} \tag{12}$$

are uninformative. Regardless of their private information, all individuals whose ideal points lie in the pooling interval $[\tilde{p}^{\sigma=0}, \bar{p}]$ took political action, while all individuals whose ideal points lie in the pooling interval $[-\bar{p}, \tilde{p}^{\sigma=1})$ abstained.

The number of individuals whose ideal points lie in the separating interval is given by $\bar{m}_1$-$\underline{m}_1$, where $\bar{m}_1$ and $\underline{m}_1$ are defined to be the natural numbers of individuals whose ideal points lie in the intervals $[\tilde{p}^{\sigma=1}, \bar{p}]$ and $[\tilde{p}^{\sigma=0}, \bar{p}]$, respectively. These numbers are uniquely determined by the uniform distribution of the individuals' bliss points on the interval $[-\bar{p}, \bar{p}]$.

At the beginning of period *2*, it is publicly known that m_1-$\underline{m}_1$ individuals of type $\sigma=1$ have ideal points that lie in the separating set $\boldsymbol{S}_1$.

The posterior probability that m_1-$\underline{m}_1$ out of $\bar{m}_1$-$\underline{m}_1$ individuals are of type $\sigma=1$ if the status quo policy is given by Q-q is equal to the binomial probability that $\bar{m}_1$-$\underline{m}_1$ Bernoulli trials result in m_1-$\underline{m}_1$ successes if the probability of a success is given by q; that is, $b(m_1\text{-}\underline{m}_1; \bar{m}_1\text{-}\underline{m}_1, q)$.

There now exist four types of individuals, distinguished by their information sets $I(i,\sigma,m_1)$, where $i\in\{\boldsymbol{S}_1,\boldsymbol{P}_1\}$ and $\sigma\in\{0,1\}$. An individual of type (i,σ) forms the posterior density on the realization q

$$\beta(q|i,\sigma,m_1) = \begin{cases} b(m_1\text{-}\underline{m}_1; \bar{m}_1\text{-}\underline{m}_1, q)\,\beta(q|\sigma)/ & (13) \\ \quad [\int b(m_1\text{-}\underline{m}_1; \bar{m}_1\text{-}\underline{m}_1, q)\,\beta(q|\sigma)\,dq] & \\ \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad \text{if } i\in\boldsymbol{P}_1, & \\ b(m_1\text{-}\underline{m}_1; \bar{m}_1\text{-}\underline{m}_1\text{-}1, q)\,\beta(q|\sigma=0)/ & \\ \quad [\int b(m_1\text{-}\underline{m}_1; \bar{m}_1\text{-}\underline{m}_1\text{-}1, q)\,\beta(q|\sigma=0)\,dq] & \\ \qquad\qquad\qquad\qquad\qquad\qquad \text{if } i\in\boldsymbol{S}_1 \text{ and } \sigma=0, & \\ b(m_1\text{-}\underline{m}_1\text{-}1; \bar{m}_1\text{-}\underline{m}_1\text{-}1, q)\,\beta(q|\sigma=1)/ & \\ \quad [\int b(m_1\text{-}\underline{m}_1\text{-}1; \bar{m}_1\text{-}\underline{m}_1\text{-}1, q)\,\beta(q|\sigma=1)\,dq] & \\ \qquad\qquad\qquad\qquad\qquad\qquad \text{if } i\in\boldsymbol{S}_1 \text{ and } \sigma=1. & \end{cases}$$

In period *2*, the equilibrium political action strategies of the individual types are characterized by type-specific political action cutpoints, $\tilde{p}^{i,\sigma}$.[64] An individual of type (i,σ) whose ideal point is exactly equal to $\tilde{p}^{i,\sigma}$ is indifferent between taking political action and abstaining in period *2*:

$$\iint \sum_{m_2=\underline{m}_2+1}^{\bar{m}_2} \{[prob(R=1|m_1,m_2,q) - prob(R=1|m_1,m_2\text{-}1,q)]\cdot \quad (14)$$
$$b(m_2\text{-}\underline{m}_2\text{-}1;\bar{m}_2\text{-}\underline{m}_2\text{-}1,q)\}\,[(Q-q-\tilde{p}^{i,\sigma})^2 - (A-a-\tilde{p}^{i,\sigma})^2]\cdot$$
$$\beta(q|i,\sigma,m_1,m_2)\,\beta(a)\,dq\,da =$$
$$\int \sum_{m_2=\underline{m}_2+1}^{\bar{m}_2} c_2(m_2)\,b(m_2\text{-}\underline{m}_2\text{-}1;\bar{m}_2\text{-}\underline{m}_2\text{-}1,q)\,\beta(q|\sigma)\,dq.$$

This indifference condition defines the cutpoints $\tilde{p}^{i,\sigma=0}$ and $\tilde{p}^{i,\sigma=1}$ as a function of first-period turnout m_1.

All individuals whose ideal points lie above their type-specific cutpoints prefer to take political action; otherwise they strictly prefer to

[64] As before, I restrict attention to the case in which $\tilde{p}^{i,\sigma=0} > \tilde{p}^{i,\sigma=1}$. The alternative case in which $\tilde{p}^{i,\sigma=0} < \tilde{p}^{i,\sigma=1}$ is easily derived along the lines developed here.

abstain. Thus, the individuals' political action strategies in period *2* can be summarized by the following cutpoint rule:

$$\pi_2(i,\sigma,m_1) = \begin{cases} 1 & \text{if } p_i \in [\tilde{p}^{i,\sigma=0}, \bar{p}] \\ & \text{or if } p_i \in [\tilde{p}^{i,\sigma=1}, \tilde{p}^{i,\sigma=0}) \text{ and } \sigma=1, \\ 0 & \text{otherwise.} \end{cases} \tag{15}$$

At the beginning of period *3*, there exist eight types of individuals, characterized by their information sets $I(i,\sigma,m_1,m_2)$, where $i \in \{\boldsymbol{S}_1,\boldsymbol{P}_1\}X\{\boldsymbol{S}_2,\boldsymbol{P}_2\}$ and $\sigma \in \{0,1\}$. The separating set in period *2* contains the individuals who are activist moderates in period *2*:

$$\boldsymbol{S}_2 = \{i | p_i \in [\tilde{p}^{i,\sigma=1}, \tilde{p}^{i,\sigma=0})\}. \tag{16}$$

The pooling set in period *2* contains all remaining individuals:

$$\boldsymbol{P}_2 = \{i | p_i \in [-\bar{p}, \bar{p}] \backslash \boldsymbol{S}_2\}. \tag{17}$$

The natural number of individuals in the separating set $\boldsymbol{S}_2$ is given by $\bar{m}_2 - \underline{m}_2$, where $\bar{m}_2$ and $\underline{m}_2$ are defined to be the natural number of individuals whose ideal points lie in the intervals $[\tilde{p}^{i,\sigma=1}, \bar{p}]$ and $[\tilde{p}^{i,\sigma=0}, \bar{p}]$, respectively.

An individual of type (i,σ) forms the posterior density on the realization q

$$\beta(q|i,\sigma,m_1,m_2) = \tag{18}$$

$$\begin{cases} b(m_2-\underline{m}_2;\ \bar{m}_2-\underline{m}_2,\ q)\ \beta(q|i,\sigma,m_1) \,/ \\ \quad [\int b(m_2-\underline{m}_2;\ \bar{m}_2-\underline{m}_2,\ q)\ \beta(q|i,\sigma,m_1)\, dq] & \text{if } i \in \boldsymbol{P}_2, \\ b(m_2-\underline{m}_2;\ \bar{m}_2-\underline{m}_2-1,\ q)\ \beta(q|i,\sigma=0,m_1) \,/ \\ \quad [\int b(m_2-\underline{m}_2;\ \bar{m}_2-\underline{m}_2-1,\ q)\ \beta(q|i,\sigma=0,m_1)\, dq] \\ \qquad\qquad \text{if } i \in \boldsymbol{S}_2 \text{ and } \sigma=0, \\ b(m_2-\underline{m}_2-1;\ \bar{m}_2-\underline{m}_2-1,\ q)\ \beta(q|i,\sigma=1,m_1) \,/ \\ \quad [\int b(m_2-\underline{m}_2-1;\ \bar{m}_2-\underline{m}_2-1,\ q)\ \beta(q|i,\sigma=1,m_1)\, dq] \\ \qquad\qquad \text{if } i \in \boldsymbol{S}_2 \text{ and } \sigma=1. \end{cases}$$

For given realizations of m_1 and m_2, an individual of type (i,σ) whose ideal point is given by the cutpoint $\hat{p}^{i,\sigma}$ will be indifferent between the policy alternative and the status quo. The cutpoints $\hat{p}^{i,\sigma=0}$ and $\hat{p}^{i,\sigma=1}$ solve

$$\int (Q - q - \hat{p}^{i,\sigma})^2\, \beta(q|i,\sigma,m_1,m_2)\, dq = \int (A - a - \hat{p}^{i,\sigma})^2\, \beta(a)\, da. \tag{19}$$

All individuals whose ideal points are strictly greater than their type-specific cutpoints strictly prefer the alternative regime; all those whose ideal points lie below their cutpoints favor the status quo regime. Moreover, equations (18) and (19) imply that $\hat{p}^{i,\sigma=0} > \hat{p}^{i,\sigma=1}$.

The status quo regime collapses if it is commonly known that at least k individuals support the alternative regime. The set of individuals who favor the alternative regime independently of their residual private information in period 3 is given by $\{i | p_i \in \bigcup_i [\hat{p}^{i,\sigma=0}, \bar{p}]\}$. Let the number of individuals whose ideal points lie in this set be given by N, and note that this number is uniquely determined by the first- and second-period turnout, m_1 and m_2. Thus, the probability that the status quo regime will be overturned conditional on the realized sequence of political actions, m_1 and m_2, is given by

$$prob(R=1|m_1,m_2) = \begin{cases} 1 & \text{if } N(m_1,m_2) \geq k, \\ 0 & \text{otherwise.} \end{cases} \qquad (20)$$

B. Synthesis of the Lohmann and DeNardo Models

In practice, an incumbent regime can choose how much of its resources to allocate to the suppression of protest; whether to dissolve a protest movement in a violent or nonviolent manner; and how severely to punish demonstrators who are apprehended. Thus, a natural extension of the model would specify the cost of taking political action as a strategic choice variable controlled by the status quo regime.

Such an extension would integrate DeNardo's theory of political action and regime change into the signaling framework developed above. DeNardo's model allows for people's participation incentives to depend on the degree of repression, a control variable of the regime. This section sketches an extension that provides an informational underpinning for DeNardo's intuition regarding the ambiguous effects of repression. The status quo regime is modeled as a strategic player who adjusts the cost of taking political action over time in response to past turnout with the goal of maximizing its survival probability. The dynamics of the cascade are then driven by changes in the cost of taking political action and in turnout over time that are induced by the strategic interaction between the regime and its people.

Suppose the policy type of the regime is fixed; that is, the status quo regime sets the policy Q-q, the alternative regime the policy A-a. The status quo regime knows its own policy, and it expects the policy of the

alternative regime to be given by *A-1/2*. The people are incompletely informed about the policy type of the status quo regime, and they have the same expectation about the policy that would be set by the alternative regime, *A-1/2*. As before, if a sufficiently large number of individuals are commonly known to prefer the alternative regime, the status quo regime collapses. In each period, the status quo regime adjusts the cost of taking political action in order to maximize the likelihood of its survival. (This survival goal is derived from the regime's policy goals; that is, a policy-motivated regime prefers to remain in power to set policy in period *T+1* rather than have policy be set by the alternative regime.)

Formally, an equilibrium to this game is defined by the regime's decision rule that specifies the cost of taking political action in period t as a function of its true type and past turnout, $c_t(q, m_1, m_2, \ldots, m_{t-1})$; the individuals' Bayesian beliefs about the regime's type at the beginning of period t that are based on their private information, the private information of other individuals revealed by past turnout, and the information revealed by the regime's past cost choices, $\beta_t(q|i, \sigma, m_1, m_2, \ldots, m_{t-1}, c_1, c_2, \ldots, c_{t-1})$; and the individuals' political action strategies in period t that depend on their ideal points and their estimates of the regime's type and of the cost of taking political action, $\pi_t(i, \sigma, m_1, m_2, \ldots, m_{t-1}, c_1, c_2, \ldots, c_{t-1})$.