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RATIONAL CHOICE AND REBELLIOUS COLLECTIVE ACTION

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A basic problem for a rational choice theory of rebellious collective action is to explain why average citizens would participate in such behavior, since they have nothing to gain (they will receive benefits of successful rebellion, in terms of public goods, regardless of whether they take part or not), but much to lose (rebellious behavior may be quite costly). According to the conventional private interest or "by-product" theory, the incentive to participate must come from the expectation of receiving selective benefits; but since average citizens in a general case cannot expect substantial private material rewards, the relevant selective benefits must be psychological in nature. In contrast to the model of private interest theory, a public goods model is proposed, stipulating that the value of rebellion in terms of public goods can be a relevant incentive for participation. Using data from surveys conducted in New York City and Hamburg, West Germany, we investigate the relationship between participation in rebellious political behavior and measures of the incentives of public goods and private interest. The results do not support predictions of the private interest model in regard to nonmaterial selective incentives. Hypotheses of the public goods model are supported.

Consider the following situation: An individual, for whatever reasons, holds a very negative opinion of the political system under which he or she is governed, and there exists an opportunity to participate in a social movement that seeks to effect political change by means of rebellious collective action. This individual is faced with a decision between two courses of action: taking part in rebellious behavior, or staying at home while wishing the rebels well. Rational individuals will compare the benefits and costs of participation with those of inactivity, and choose the course of action in which their expected utility is maximized.

If rebellious collective action is stipulated by definition to refer to behavior by nonelites that (1) deviates from legal norms regarding acceptable forms of political participation, and (2) has broad political objectives of changing governmental structure, policy, or personnel, then it can be shown (Salert, 1976) that, under conventional assumptions, the rational choice of an average citizen in the general case is to be an inactive "free rider," reaping the public benefits of rebellious collective action should it be

successful, while avoiding the private costs. However, history of course shows that average citizens do take part in rebellious collective action, sometimes in quite large numbers. Therefore, from a conventional rational choice perspective, most participants in instances of rebellious collective behavior would appear to be acting nonrationally.

In this paper we review the motivational assumptions of a rational choice explanation of rebellious collective action, propose a public goods alternative to the conventional private interest model, and conduct empirical tests of the public goods argument versus the private interest argument by means of survey research.

Rational Choice Models of Rebellion

A simple benefit-cost model of the expected utility of participation versus inactivity may be stated as:

$$E(R) = (p_n + p_i)V - E(C_r) \quad (1)$$

$$E(I) = p_nV - E(C_i), \quad (1a)$$

where $E(R)$ is the expected utility of rebellious collective action; V is the value of rebellious collective action in terms of public goods; p_n is the probability of success of rebellious collective action given that the individual is neutral; p_i is the individual's estimation of the probability that participating in rebellious collective action will make a difference in the likelihood that public goods will be the result; $E(C_r)$ is expected private costs to the individual of participating in rebellious collective action; $E(I)$ is the expected utility of inactivity; and $E(C_i)$ is expected private costs to the individual of inactivity.

Now for a person who is not a leader of a social movement, p_i will be approximately equal to zero, since the participation of a single average citizen will have a negligible impact on the likelihood of success of rebellious collective action. Given that $p_i = 0$, the model reduces to

$$E(R) = p_nV - E(C_r) \quad (2)$$

$$E(I) = p_nV - E(C_i). \quad (2a)$$

Under this condition the public goods value of revellious collective action, V, cannot be an incentive to participate. Whether the outcome of successful rebellious collective action is a change in public policy or a transformation of the entire governmental structure (a revolution), this good will be provided to all citizens regardless of their participation. Consequently, unless the costs of inactivity exceed the costs of participation, the rational choice for any average citizen is to be an inactive free rider. The simple benefit-cost model thus reduces to the postulate that average citizens participate rationally in rebellious collective action only under the pressure of coercion.

A coercion model of rebellious collective action is implausible, however, since most dissident groups do not have sufficient resources to force very many average citizens to join the movement against their will. In the special case of a dissident group that controls territory, coercion could be an incentive; but in order to control territory the group must be relatively large, and the coercion model cannot explain how the movement initially attracted enough members to become relatively large. Therefore, if it is reasonable to assume that $E(C_i)$ will be approximately equal to zero in the general case, the simple benefit-cost model reduces further to

$$E(R) = p_nV - E(C_r) \quad (3)$$

$$E(I) = p_nV. \quad (3a)$$

According to this specification of an average citizen's decision calculus, in the general case there can be no incentive for such individuals, if they are rational, ever

to participate in rebellious collective action.

In order to explain why it might be rational for an average citizen to take part in rebellious collective action, Olson (1971), Tullock (1971), and Silver (1974) introduce the factor of selective incentives: private personal rewards that the individual can expect to receive only by participating. Olson and Tullock emphasize material inducements such as power and status rewards, as well as financial gain resulting from direct payments or looting. Tullock also includes an "entertainment" motive—enjoyment of the adventure of rebellious collective action for its own sake. And Silver (1974, pp. 64–65), in addition to private material rewards, expands Tullock's entertainment motive to include, under the rubric of "psychic income," "the individual's sense of duty to class, country, democratic institutions, the law, race, humanity, the rulers, God, or a revolutionary brotherhood as well as his taste for conspiracy, violence, and adventure." The private interest model of Olson, Tullock, and Silver may be written as:

$$E(R) = E(M) + E(P) - E(C_r), \qquad (4)$$

where $E(M)$ is expected private material benefits from rebellious collective action, and $E(P)$ is expected private psychological benefits from such behavior.

Neither Olson nor Tullock attach much causal significance to the $E(P)$ term in equation (4). However, as Salert (1976, p. 44) points out, the problem with a private interest theory which emphasizes the $E(M)$ term is that if an average individual's expectation of receiving material benefits is assumed to be reasonable, power and status incentives must be assumed to be negligible, leaving income rewards as the principal private material benefit. But it is implausible a priori to postulate that most participants in rebellious collective action are either mercenaries or else are taking part in the hope of personal gain from pillage and plunder. This is why Mueller (1979, p. 146) concludes that "the economic theory of revolution based on the individual maximizing calculus seems much better suited to explaining the coup d'état, where the number of actors is small, the odds calculable, and the stakes seemingly large, than it is at explaining 'grass roots' revolutions."

The dilemma of the private interest theory is that if $E(M)$ and $E(P)$ are negligible in the general case, then individually rational, average citizens will be free riders. And if average citizens choose to be free riders, then rebellious collective action is likely to fail, resulting in a continuation of the status quo. Thus what is individually rational is collectively irrational, since individuals who attach a high public goods value to rebellious collective action and choose to free ride are likely to obtain a less preferred outcome than if they all behave irrationally and participate.

It follows that collectively rational individuals might estimate p_i to be significantly greater than zero because they recognize that free riding is collectively irrational in the case of rebellious collective action, where group size and cohesion can be a factor of critical importance. And if p_i cannot be assumed necessary to be negligible, then the public goods value of rebellious collective action becomes a relevant consideration in the decision calculus of a rational average citizen.

An alternative way of reintroducing the public goods component, V, into a rational choice model is to stipulate an additional p term, derived from social learning theory. Bandura (1973, p. 206) states that vicarious reinforcement—perception of positive outcomes accruing to others—is a powerful source of motivation, and that "observational incentives play an especially important role in social activism, for here the chances of quick success are poor, but protest behavior is

partly sustained by the long-range attainments of groups that have persevered in their efforts." The individual responding to contingencies of vicarious group reinforcement can be likened to a "calculating Kantian" for whom, as Hardin (1978, p. 5) argues, "the issue will not be whether he himself benefits more from his own contribution than the latter costs him (as in Olson's logic), but whether he and the group of like-minded activists benefit more from their group actions than those actions cost." This introduces the possibility that the influence of the group on the provision of public goods, denoted p_g, may play a role in the decision calculus by which a rational individual chooses whether to participate in rebellious collective action.

Returning to the simple benefit-cost model of equation (3), rejection of the assumption that $p_i = 0$ and introduction of group influence on the provision of public goods, p_g, results in the following specification:

$$E(R) = (p_n + p_g + p_i)V - E(C_r) \quad (5)$$

$$E(I) = p_n V. \quad (5a)$$

According to utility theory, R occurs if $E(R)$ is greater than $E(I)$; that is, if $[E(R) - E(I)] > 0$. If $E(R) - E(I)$ is replaced by the right-hand sides of equations (5) and (5a), we obtain

$$[(p_n + p_g + p_i)V - p_n V - E(C_r)] > 0. \quad (6)$$

Solving the brackets, we obtain

$$[p_n V + p_g V + p_i V - p_n V - E(C_r)] > 0. \quad (7)$$

Since $p_n V$ is irrelevant, we get as a condition for performing R

$$[(p_g + p_i)V - E(C_r)] > 0. \quad (8)$$

Thus, the higher the value of $(p_g + p_i)V$ and the lower the value of $E(C_r)$, the more often R is expected to occur in a population. This is a model for a public goods theory of rebellious collective action.

Now let us expand the model to include selective incentives. We assume that for average citizens in the general case, expected private material benefits, $E(M)$, are negligible. This leaves expected private psychological benefits. Tullock's entertainment motive is one example of intrinsic psychological gratification derived from rebellious collective action. Silver's shopping list of "psychic income" is essentially a residual factor that encompasses anything conceivably intangible. We focus more specifically on a class of "soft" nonmaterial selective incentives that entail social rewards (see Opp, 1986). In particular, individuals may expect to receive (1) affiliation rewards such as meeting new friends and feeling solidarity with a group, and (2) psychological gratification from conforming to the expectations of reference persons about how they should behave, if such expectations are subjectively important. The full model, including public goods and soft selective incentives may be written as

$$E(R) = (p_g + p_i)V + E(F) + E(A) + E(O) - E(C_r), \quad (9)$$

where $E(F)$ is the expected entertainment or "fun" value of participation in rebellious collective action; $E(A)$ is the expected social affiliation value of participation; and $E(O)$ is the expected value of conforming to behavioral norms of important others.

Research Design

Empirical evaluation of rational choice models of rebellious collective action requires a research design in which the individual is the unit of analysis. Experimentation under controlled laboratory conditions would be the most appropriate method for testing rational choice hypotheses, but, since rebellious collec-

tive action is illegal and may involve the use of violence, an experimental design is not feasible due to problems of verisimilitude and ethical constraints. Thus the realistic alternatives are either to engage in armchair speculation using anecdotal evidence (e.g., Tullock, 1971), or to test hypotheses by means of survey research.

The disadvantage of survey research is that the context of particular choice situations is uncontrolled. An interview schedule can be designed to collect data on respondents' current assessments of the value of public goods, their current estimation of individual and group influence on the provision of public goods, their current expectation of receiving soft rewards from rebellious collective action, and their current expectation of the cost of such behavior. However, it must be assumed that the values and expectations measured at the time of the interview are applicable to past behavioral decisions and future decision potentials, regardless of variation in the context of the choice situation. This is a well-known and much-debated general problem inherent to survey research on the relationship between attitudes and behavior, for which there is no satisfactory solution. Therefore, while acknowledging that survey-based tests of the relationship between attitudes and behavior never can be decisive, due to the problem of uncontrolled situational factors, we use the survey method on the grounds that, in the absence of a more feasible alternative, survey evidence is better than no evidence.

Assuming that one does not reject the survey method per se, the study of rebellious collective action by means of survey research still must overcome two basic obstacles. First is the problem of variation. Acts of rebellious political behavior are rare events in societies not actually undergoing a mass rebellion, yet the population chosen for the survey must be one in which rebellious behavior has occurred with sufficient frequency to permit statistical analysis. Second, the environment of the survey must be conducive to free expression.

The structural condition most conducive to freedom of expression is the presence of a democratic political system. The frequency of rebellious collective action has been comparatively low, however, in most contemporary democracies. If one is effectively restricted to democratic nations, the United States and West Germany are appropriate sites because of the relatively high levels of political protest that occurred in the former country from the mid-1960s until the mid-1970s, and in the latter country from the late 1960s, with ebbs and flows, until the present.

Appropriate populations to study within the United States are residents of urban areas, especially nonwhites, and students and faculty at large universities. The general public of New York City and students and faculty at Columbia University and New York University (NYU) were considered to be suitable instances of city and campus because of their past history of comparatively frequent political protest. Our American data were collected by Response Analysis Corporation of Princeton, New Jersey, a survey research firm with expertise in designing and implementing surveys on sensitive topics (e.g., drug use, violence in the home). During the spring and summer of 1978 personal interviews were conducted with a probability sample of 778 adults residing in the five boroughs of New York City;[1] also, a random sample of 240 undergraduates, graduate students, and faculty in the College of Liberal Arts at Columbia and NYU completed a supervised, self-administered version of the same questionnaire in May and June of that year (for complete details of the sampling procedure see Muller, Jukam, and Seligson, 1982).

In the Federal Republic of Germany an

appropriate group to study is opponents of nuclear power. Especially since 1974, numerous legal and illegal protest actions have occurred against particular atomic power stations and against the utilization of nuclear energy in general.

We expected opponents of nuclear power to live mainly in large cities and in the vicinity of atomic power stations. The sampling sites selected were Eimsbüttel, a district of Hamburg where many counterculture people reside, and Geesthacht, a small town near Hamburg with an atomic power station in the neighborhood. A random sample was drawn from the populations of the two locations. If the respondent expressed a positive general attitude toward nuclear energy, only personal background data were collected. Full interviews were conducted with 187 opponents of nuclear energy, who were asked to give addresses of other opponents of nuclear power. The additional snowball sample consisted of 211 respondents. Differences between the random and snowball samples with respect to the demographic characteristics of the respondents were not sufficiently large to warrant separate analyses (for complete details of the sampling procedure and the analyses of the subsamples see Opp et al., 1984).

The Hamburg interviews ($N=398$) were conducted by students from the University of Hamburg who were carefully trained. To test for the existence of agreement bias, each variable used in the following analysis was correlated with a social desirability scale. Bivariate correlations were all within the range of $\pm.10$. Also, no significant correlations were found between properties of the interviewers (e.g., gender, attitude toward nuclear energy) and responses of the interviewees.

Measurement of the Dependent Variable: Rebellious Collective Action

The concept of rebellious collective action entails acts of aggressive political participation (see Muller, 1979, pp. 4–7). Aggressive political participation in the New York City study is measured following a procedure developed by Muller (1979, pp. 37–68). Respondents were questioned about their past performance of and future intention to perform a series of behaviors, legal and illegal, described as actions that people may take to accomplish their political goals and objectives.[2] The set of aggressive behaviors includes (1) participating in an unofficial or "wildcat" strike, (2) participating in a group that refuses to pay taxes, (3) seizing factories, offices, or other buildings, (4) participating in fights with police or other demonstrators, (5) participating in a group that wants to overthrow the government by violent means. A composite Aggressive Participation Potential scale (R_p) was constructed by summing participation weighted by intention across the five behaviors.[3] A simple Aggressive Behavior index (R_b) is the sum of the number of aggressive behaviors performed in the past by the respondent.

The correlation between Aggressive Participation Potential and Aggressive Behavior is $r = .72$. Weighting participation by intention thus produces a somewhat different measure than the index of past participation. The principal difference is that some respondents who have not previously taken part in aggressive activity express intention to perform one or more of the behaviors in the future, and many of these respondents receive intermediate scores on Aggressive Participation Potential, despite their zero score on Aggressive Behavior.

The range of the Aggressive Participation Potential scale is 0–21,[4] with a mean of 2.2 and a standard deviation of 2.7. Thirty-three percent of the respondents score zero on Aggressive Participation Potential. In comparison, the range of the Aggressive Behavior index is only 0–4, and fully 87.6% of the respondents receive a score of zero on this variable.

Because of the restricted range and extreme skewness of the index of past behavior, explanatory variables can be expected, *ceteris paribus*, to correlate less strongly with it than with the measure of participation potential. However, the pattern of relationships should not be affected. Inclusion of both indicators of rebellious collective action thus affords a useful consistency check in the testing of hypotheses. In particular, a hypothesis that holds for the prospective measure of aggressive participation potential at the time of the interview, but not for the retrospective index of previous aggressive participation, will be suspect in regard to its validity as a causal explanation.

In the Hamburg survey the referents of aggressive participation are (1) participation in a demonstration which is forbidden, (2) engaging in resistance if the police attack demonstrators, (3) breaking through barricades and the like during demonstrations, (4) painting slogans against nuclear plants and the like on walls of houses, (5) participation in an occupation of a construction site for nuclear power plants, (6) attacks and sabotage against nuclear power plants, and (7) attacks on individuals responsible for the construction of nuclear power plants. Aggressive Participation Potential and Aggressive Behavior variables were constructed according to the same procedure as that used in the New York City study.[5] The correlation between Aggressive Participation Potential and Aggressive Behavior in the Hamburg study is $r = .88$.

Measurement of the Independent Variables

The Hamburg interview schedule, designed in 1981 and administered in 1982, contains a more complete set of measures of the independent variables than the New York City interview schedule. The New York City interview schedule is limited to an indirect indicator of p_i, the influence of the individual on the provision of public goods; and measures of p_g, the influence of the group on the provision of public goods, and V, the public goods value of rebellious collective action. The Hamburg interview schedule includes measures of p_i and V, as well as measures of $E(F)$, the entertainment value of rebellious collective action, $E(A)$, the social affiliation benefit of such behavior, $E(O)$, the benefit of conforming to behavioral norms of important others, and $E(C_r)$, the costs of performing rebellious collective action.

The public goods value of rebellious collective action. A person who is proud and respectful of the political institutions under which he or she is governed, and who believes that they operate to promote justice and protect the basic rights of citizens, would be unlikely to consider acts of rebellious behavior as being in the public interest—indeed, such a loyal citizen would be likely to regard change resulting from rebellious behavior as a public "bad." By contrast, a person who is fundamentally alienated from the existing government and political institutions would be likely to regard change resulting from rebellious behavior as a public good. Thus a very basic indicator of the public goods value of rebellious collective action is the extent to which an individual is hostile to or alienated from the political system in general. In addition, for opponents of nuclear power, the utilization of nuclear energy is a public bad and less or no utilization is a public good.

In the New York City and Hamburg surveys, an indicator of the public goods value of rebellion, denoted V_s, is measured by responses to a series of questions about the extent to which the individual supports the political system.[6] In the Hamburg survey, an indicator of the extent to which the existing utilization of nuclear energy is considered to be a

public bad, denoted V_n, is measured by yes-no responses to statements such as "I personally feel threatened by atomic power stations" and "to be sure, I am against atomic power stations, but they really do not concern me that much."[7]

Perceived influence on the provision of public goods. Respondents in the Hamburg survey were presented with a battery of questions designed to measure the p_i term, perceived influence of the individual on the provision of public goods, that included items such as "After all, it is superfluous that I am active against the construction of atomic power stations because I have no influence," and "Everyone who is active against atomic power stations makes a small contribution."[8] The Personal Influence scale, with a range of 0–1, has a mean of .73; thus, the average respondent in the Hamburg study estimates that he or she has considerable personal influence on the provision of public goods.

The New York City interview schedule did not include a direct measure of the perceived influence of the individual on the provision of public goods. As an indirect indicator of p_i we used a question that measures perceived importance of participation in general, denoted p_i*.[9] We assume that individually rational respondents will tend to believe that participation by people like themselves is unimportant because the participation of a single person makes little or no difference in the probability of the success of collective political behavior, except in the case of very small groups. By contrast, we assume that collectively rational respondents, who are cognizant of the dilemma arising from individually rational free riding, will tend to believe that participation by people like themselves is indeed important. The mean of the Importance of Participation variable is .65 on a scale of 0–1.

The influence of the group on the provision of public goods—the p_g term—is measured in the New York City survey by a question about the extent to which dissident groups are perceived to have helped or hurt their cause by engaging in rebellious collective action. Six rebellious actions were evaluated in regard to whether they (*a*) had definitely helped the cause of the groups involved, (*b*) had helped the cause somewhat, (*c*) had neither helped nor hurt the cause, (*d*) had hurt the cause somewhat, or (*e*) definitely had hurt the cause.[10] The Efficacy of Group Aggression scale constructed from these items, when transformed to a range of 0–1, has a mean of .25. Thus, the average New York City respondent estimates that aggressive tactics by dissident groups in the past have not enhanced the provision of public goods.

The entertainment motive. The F term is measured by three items with which a respondent could more or less agree: (1) "If I protest against the construction of atomic power stations, this activity is fun for me"; (2) "although I am an opponent of nuclear energy, I find it somehow unpleasant being active against atomic power stations"; and (3) "I feel inhibited to show that I am against atomic power stations." A factor analysis (principal components) reveals unidimensionality (the first component explains 60% of the variance). We did not seek to determine a subjective probability of receiving entertainment from rebellious behavior because we assumed that respondents already know with certainty what entertainment value such behavior has for them.

Behavioral norms of important others. Measurement of the $E(O)$ term entailed a complex procedure. Respondents first were asked to state what most people whose opinion is important to them (like friends and relatives) think about their participation in the anti-nuclear move-

ment. The possible responses were that such people (1) consider participation in the movement to be rather good (positive reference persons); (2) consider participation in the movement to be rather bad (negative reference persons); (3) hold differing opinions (mixed reference persons); and (4) are indifferent. Respondents choosing the positive or negative options were asked how important the opinions of the reference persons are, using a five-point scale ranging from "does not matter at all" to "matters very much." They were then asked to state whether, among the persons whose opinions are important, there are also persons who hold the opposite opinion. If the response to this question was affirmative, the importance question was repeated in regard to reference persons with the opposite opinion. If respondents chose the option of mixed reference persons they were asked how much they care about conforming to the opinion of each of the two sets of reference persons (positive and negative).

From the answers to this battery of questions we constructed a scale measuring the utility of following the expectations of important others with regard to being active. For respondents indicating only reference persons who expect activity (positive others), the more these expectations mattered to them, the higher their scores were. For respondents indicating only reference persons who expect inactivity (negative others), the less these opinions mattered, the higher their scores were. If respondents indicated mixed expectations, we first assigned scores for following the expectations of positive reference persons, and then for following the expectations of negative reference persons; the more respondents cared about following expectations of being active, and the less they cared about following expectations of being inactive, the higher their scores were. The second score was then subtracted from the first score.

Finally, we weighted the utility of following the expectations of important others by the respondent's subjective probability that the reference persons hold the perceived expectations. This was determined by asking how certain respondents were (in regard to five categories of certainty scored 0, .25, .5, .75, and 1.0) that the reference persons in question are positive, negative, hold mixed opinions, or are indifferent.

Social affiliation rewards and costs of rebellious collective action. Respondents were presented with a list containing seven positive reactions and seven negative reactions of other persons or institutions that might be incentives or disincentives for participation in the antinuclear movement. The positive sanctions entailed social rewards such as receiving social approval from other opponents of nuclear power, feeling solidarity with other opponents of nuclear power, and getting to know interesting people. The negative sanctions entailed costs such as being labeled "leftist" or "crazy," being injured by the police, and *Berufsverbot* (prohibition from employment in the public sector). Respondents were asked, for each of the 14 sanctions, first to evaluate them on a five-point scale of very bad to very good, scored from −1 to +1; and second, to state the likelihood that they would occur (using the five-point certainty scale mentioned above). The utility of each sanction then was multiplied by the subjective probability of its occurrence.

A factor analysis (principal components) of the expected utilities of positive and negative sanctions yielded four factors with eigenvalues greater than 1. Most of the positive sanctions loaded highly on the first factor and most of the negative sanctions loaded highly on the second factor. Another factor analysis was performed, limiting the number of factors to two. Under this constraint all of the positive sanctions loaded on the first factor

and all of the negative sanctions loaded on the second factor. An Expected Utility of Positive Sanctions scale, the indicator of the $E(A)$ term, was constructed from the factor scores of the first factor, and an Expected Utility of Negative Sanctions scale, the indicator of the $E(C_r)$ term, was constructed from the factor scores of the second factor. These variables are standardized to have a mean of 0 and a standard deviation of 1. Since most respondents assign a positive utility to positive sanctions (i.e., social rewards), scores in the high range of the Expected Utility of Positive Sanctions scale indicate a subjective probability that positive sanctions are likely to occur, whereas scores in the low range indicate a subjective probability that positive sanctions are unlikely to occur. By contrast, most respondents assign a negative utility to negative sanctions (i.e., costs), so high scores on the Expected Utility of Negative Sanctions scale (which are mostly around 0) indicate a subjective probability that negative sanctions are unlikely to occur, whereas low scores (which are negative) indicate a subjective probability that negative sanctions are likely to occur. Thus it should be kept in mind that if negative sanctions are a disincentive for performance of rebellious political behavior, there should be a *positive* correlation between the Expected Utility of Negative Sanctions scale and the Aggressive Participation Potential and Aggressive Behavior variables.

Results

The private interest model predicts a lack of association between rebellious collective action and its public goods value because of individually rational free riding. People who attach high public goods value to rebellious collective action are expected to realize that they will receive the public goods of successful rebellion regardless of whether they participate or not; therefore, they should be no more likely to score high on indicators of R than people who attach low public goods value to rebellious collective action.

The public goods model allows for the possibility that group rather than individual influence on the provision of public goods may be a relevant factor in a rational citizen's decision calculus, and that collectively rational individuals also may estimate individual influence to be non-negligible because they believe individually rationally free riding will reduce the likelihood of success. Empirically, the expectation of the public goods model is to observe nontrivial correlations between R and V as weighted by p_i and/or p_g; moreover, weighting V by p_i and/or p_g should improve the correlation in comparison to V alone.

The predictions of the private interest and public goods theories were tested across four subpopulations of the New York City survey: whites and nonwhites from the general public and from the universities. We controlled for these subpopulations in order to determine if results hold across individuals who (1) have differing objective social background characteristics (white versus nonwhite), and (2) reside in differing community contexts (general public versus university) that might be more or less conducive to rebellious collective action.

Correlations between the two indicators of rebellious collective action, the Aggressive Participation Potential scale, denoted R_p, and the Aggressive Behavior index, denoted R_b, and the public goods component variables and product terms are listed in Table 1.[11] Comparison of the fourth row with the first row shows that the correlations between $(p_g + p_i^*)V_s$ and R_p and R_b exceed those between V_s and R_p and R_b in every case except that of R_b among whites in the university context, where the correlation is unchanged. Since p_i^*, the Importance of Participation variable, is only an indirect indicator of

Table 1. Correlations between Rebellious Collective Action and (1) The Public Goods Value of Rebellion and (2) Influence on Provision of Public Goods: New York City Sample

Scales	General Public				University			
	Whites		Nonwhites		Whites		Nonwhites	
	Aggressive Participation Potential (R_p)	Aggressive Behavior Index (R_b)	Aggressive Participation Potential (R_p)	Aggressive Behavior Index (R_b)	Aggressive Participation Potential (R_p)	Aggressive Behavior Index (R_b)	Aggressive Participation Potential (R_p)	Aggressive Behavior Index (R_b)
Political Support/ Alienation V_s:	.36	.24	.40	.19	.40	.26	.72	.63
Importance of Participation p_i*:	.10	.02*	.13	.10	.08*	.05*	.46	.32
Efficacy of Group Aggression p_g:	.31	.21	.17	.06*	.46	.20	.18*	.08*
Product Terms $(p_g + p_i^*)V_s$:	.38	.26	.46	.24	.44	.26	.77	.66
$p_g V_s$:	.39	.30	.42	.26	.45	.26	.65	.52
Number of Cases	349	361	316	327	202	207	23	24

*Not significant at the .05 level (for table entries).

individual influence on the provision of public goods, the fifth row gives the product term for group influence only. Comparison of the fifth row with the first row shows that for the general public and for whites in the university context, the correlations between $p_g V_s$ and R_p and R_b exceed those between V_s and R_p and R_b in every case except one, R_b among whites in the university context, where the correlation is unchanged. For the small subsample of nonwhites in the university context, weighting V_s by p_g reduces the correlation with R_p and R_b. In sum, in line with the specification of the public goods model, weighting the public goods value of rebellious collective action by individual and group influence on the provision of public goods results in nontrivial correlations with indicators of participation in rebellious behavior; and the magnitude of these correlations is usually greater than that observed for the unweighted public goods value, a finding consistent with general rational choice theory.

The results from the Hamburg survey are presented in Table 2, where we have two public goods variables, V_s and V_n,[12] and a direct measure of the p_i term. The correlations between the public goods variables and the indicators of rebellious collective action are nontrivial and, as the public goods model specifies, multiplying the public goods variables by perceived individual influence on provision of the public goods again raises the magnitude of the correlations.

The predictions of the public goods theory thus are supported cross-nationally as well as across subpopulations of New York City. Weighting the public goods value of rebellious collective action by perceived individual and/or group influence on the provision of public goods enhances (consistently but not dramatically) the correlations with current potential for performing rebellious collective action and past performance. This result is in accordance with an expected utility model of decision making, and lends empirical support to our

Table 2. Correlations between Rebellious Collective Action and (1) The Public Goods Value of Rebellion and (2) Influence on Provision of Public Goods: Hamburg Sample

Scales		Aggressive Participation Potential (R_p)	Aggressive Behavior Index (R_b)
Political Support/Alienation,	V_s:	.47	.43
Discontent with Nuclear Energy,	V_n:	.33	.29
Personal Influence,	p_i:	.27	.23
Product Terms,	p_iV_s:	.49	.45
	p_iV_n:	.39	.35
Number of Cases		398	398

contention that there is indeed a p in such participation.[13]

The data of Tables 1 and 2 indicate that public goods are an incentive for performing rebellious political behavior. Now we turn to the question of whether selective soft incentives and expected costs also are determinants of such behavior. In this regard we focused on the following selective incentives: F, intrinsic psychological gratification derived from rebellious collective action because it is "fun"; $E(O)$, the expected reward of performing rebellious behavior because it conforms to behavioral norms of important reference persons; and $E(A)$, expected social affiliation benefits of rebellious behavior (positively valued reactions of the social environment). We also take into account the disincentive of $E(C_r)$, the expected value of costs (negatively valued reactions of the social environment, especially the police). Since the New York City survey did not include measures of selective incentives and costs, we use only data from the Hamburg survey.

The first equation of Table 3 shows the ordinary least squares (OLS) regression of current potential for performing rebellious political behavior against (1) the public goods variables, (2) the indicators of soft selective incentives, and (3) the expected utility of negative sanctions (costs). As anticipated from the bivariate correlations, the public goods variables, p_iV_n and p_iV_s, are estimated to have significant positive effects on R_p. With respect to selective incentives, the entertainment value of rebellious collective action, F, and expected positive sanctions in the form of social affiliation rewards, $E(A)$, are statistically nonsignificant; only the expected value of conforming to behavioral norms of important others, $E(O)$, shows a small (in terms of the standardized coefficient) but statistically significant effect. Surprisingly, the expected utility of negative sanctions, $E(C_r)$, is estimated to have a significant negative instead of positive effect. Since costs generally are negatively valued, this means that respondents who attach a relatively high probability to the occurrence of negative sanctions are somewhat more likely to have a high rebellious behavior potential than those who attach a low probability to the occurrence of negative sanctions.

When the explanatory variables are compared in regard to their relative importance, the dominant predictor of potential for performing rebellious political behavior is the public goods value of rebellion as indexed by generalized hostility toward the political system weighted by perceived personal influence on the provision of public goods. This also is the case in regard to the equations

Table 3. Rebellious Collective Action Regressed Against Rational Choice Variables: Hamburg Survey

Equations	Intercept	p_iV_n	p_iV_s	F	$E(O)$	$E(A)$	$E(C_r)$
(3.1) R_p =	5.24	0.70*	0.02**	1.02	2.90*	0.25	-1.22**
		(2.26)[a]	(5.00)	(0.80)	(2.15)	(0.57)	(-3.13)
$\hat{R}^2$=.28		*0.12*[b]	*0.31*	*0.04*	*0.10*	*0.03*	*-0.14*
(3.2) R_b =	-0.45	0.07	0.003**	-0.01	0.29	0.08	-0.11
		(1.75)	(5.00)	(-0.05)	(1.47)	(1.33)	(-1.89)
$\hat{R}^2$=.22		*0.09*	*0.32*	*0.00*	*0.07*	*0.07*	*-0.09*
(3.2a) R_b =	-0.54	0.09*	0.003**				-0.12*
		(2.09)	(6.25)				(-2.05)
$\hat{R}^2$=.21		*0.12*	*0.35*				*-0.09*
Number of cases = 398							

Note: R_p: Aggressive Participation Potential
R_b: Aggressive Behavior
V_n: Discontent with Nuclear Energy
V_s: Political Support/Alienation
p_i: Personal Influence
F: Entertainment Value
$E(O)$: Expected Behavioral Norms of Important Others
$E(A)$: Expected Social Affiliation Rewards (positive sanctions)
$E(C_r)$: Expected Costs (negative sanctions)

[a] t-ratio in parentheses.

[b] Standardized regression coefficients in italics.

*$p < .05$
**$p < .01$

for past performance of rebellious political behavior, R_b, where the standardized regression coefficients of p_iV_s are .32 and .35, a magnitude similar to the estimate obtained for future performance in equation (3.1). Indeed, in equation (3.2), p_iV_s is the only statistically significant explanatory variable. The indicators of p_iV_n and $E(C_r)$ are of borderline significance in equation (3.2), however, and when the nonsignificant soft selective incentives variables are trimmed from the prediction equation, (3.2a) shows that p_iV_n and $E(C_r)$ achieve significance at the .05 level, although the standardized coefficient of $E(C_r)$ is of trivial magnitude (less than .1). Thus the multivariate analysis shows that, in contrast to conventional rational choice models of rebellion, the public goods variables, not selective incentives, appear to be the most important incentives for performing rebellious political behavior. Expected costs do not appear to be a disincentive, and they may even have some weak incentive value. This latter result is inconsistent with rational choice theory in general.

Conclusion

A fundamental problem for a rational choice theory of rebellious collective action is to explain why average citizens might choose to take part in such behavior. According to the private interest theory of collective action in general, formulated by Olson (1971) and applied specifically to the case of politically rebel-

lious behavior by Tullock (1971), the public goods value of rebellion cannot be an incentive to participate because of free riding. Consequently, the private interest theory predicts that the rational average citizen will participate only if coerced to do so or if private material rewards are offered, such as direct payment or proceeds of looting. The coercion and material gain factors, however, can be incentives for average citizens only under special circumstances, such as when a dissident group already is sufficiently powerful to control territory or when rebellious collective action takes the form of land seizures.

The dilemma of the private interest theory in regard to behavior of average citizens is recognized explicitly by Salert (1976, p. 49), who concludes that "the problem with this theory stems from its relative neglect of psychological factors or from the conception of rationality on which it is based, or both." In this paper we pursue the two lines of investigation suggested by Salert as ways of developing a rational choice theory of rebellion: modification of core assumptions and more precise specification of the nature of psychological incentives.

In contrast to the private interest theory, we assume that average citizens may adopt a collectivist conception of rationality because they recognize that what is individually rational is collectively irrational—that if people like themselves were individually rational free riders, the likelihood of the success of rebellious collective action would be very small, and that, therefore, it is collectively rational for all to participate, even though the objective probability of a single individual influencing the outcome is negligible. Thus we reject one of the core assumptions of the private interest theory, namely, that the public goods value of rebellious collective action necessarily drops out of an average citizen's utility calculus.[14]

According to our model for a public goods theory, two perceived influence variables are stipulated as relevant: (1) the subjective probability of individual influence on the provision of public goods, and (2) the influence of the group as an undifferentiated whole. In regard specifically to the latter, we postulate that the perceived influence of the group as a whole will be a function of observation of the success or failure of dissident groups in the past: if dissident groups are perceived to have been generally successful, then perceived group influence on the provision of public goods will be high; if dissident groups are perceived to have been generally unsuccessful in the past, then perceived group influence on the provision of public goods will be low.

Postulation of relevant perceived influence variables allows us to introduce the multiplicative interaction of influence and public goods incentive into a model of an average citizen's decision calculus. With respect to operational definition of the public goods incentive, we expect that it will be a function in general terms of a citizen's overall evaluation of the political system—"diffuse support" in the terminology of Easton (1965); "legitimacy" in the terminology of Lipset (1963); "system affect" in the terminology of Almond and Verba (1963)—and a function in specific terms of a citizen's evaluation of particular governmental policies—an important aspect, in the respective terminology of these scholars, of "specific support," "effectiveness," and "incumbent affect." The weakness of previous theorizing about determinants of rebellious collective action on the basis of diffuse/specific support, legitimacy/effectiveness, or system/incumbent affect is that it is individually rational to free ride instead of rebel, regardless of the extent to which diffuse/specific support, legitimacy/effectiveness, or system/incumbent affect are low or negative. Our public goods theory provides a plausible causal rationale for

linking such traditional political support variables, as indicators of preferences for public goods, to the decisions of average citizens about whether or not to take part in rebellious collective action.

Apart from public goods incentives, we also take into account the expected utility of a variety of nonmaterial selective incentives, as well as expected costs. Olson (1971) is skeptical about the role of nonmaterial rewards as a determinant of collective action in general. Tullock (1971) argues that although a particular kind of nonmaterial selective incentive, the entertainment value of rebellion, is an important motive of "pseudo-rebellious" behavior engaged in by students in advanced democracies, the entertainment motive is not an important incentive in "serious" rebellion. Silver (1974) expands upon the entertainment motive to include a long but vaguely defined list of "psychic income." We measure the entertainment value of rebellious political behavior, as well as two kinds of psychic income: expected benefits of conforming to behavioral expectations of important others, and expected social affiliation rewards.

The principal results of our tests of rational choice models of rebellious collective action are, first, that selective incentives appear for the most part to be irrelevant. This runs counter to the spirit of Olson's general theory, which, as Barry (1978, pp. 23–46) has argued, may have a somewhat narrow range of applicability; and it contradicts directly the arguments of Tullock and Silver in regard to private psychological gratification. Second, we find that public goods incentives—the variables assumed to be irrelevant in the private interest or "by-product" models of Olson, Tullock, and Silver—consistently are estimated to have significant impact on participation in rebellious collective action. These variables are components of a public goods model that is predicated on the assumption that, in regard to an average citizen's choice of whether or not to rebel, considerations of what is collectively rational can override the individually rational logic of the private interest theory.

A finding that goes against the grain of rational choice theory is the observation of a small but statistically significant negative relationship between the expected utility of negative sanctions and rebellious collective action. Respondents who believe that rebellious behavior is likely to be costly show a somewhat greater tendency to participate than those who believe that it is unlikely to be costly. The solution of this anomaly is an important priority of future research on the formulation and testing of rational choice theories of rebellion. One possibility is that the unexpected sign of the costs variable reflects the presence of a "martyr" syndrome, which would need to be measured independently and controlled for. Alternatively, high expected costs may be closely intertwined with a high public goods value of rebellion, stemming from perception of the existing regime as extremely repressive. If so, this raises the question of how to separate costs from public goods, theoretically and empirically.

Notes

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1. Of 2425 potentially eligible households, 928 refused to give the information necessary to determine eligibility. Of the remaining 1297 known eligible households, the completion rate was 60%. Of all potentially eligible households, the completion rate was 32%. Response Analysis developed a complex weighting procedure that can be used to compensate for the problem of low response rate. We do not use the weighting procedure, however, since our interest

is in testing general hypotheses rather than describing distributions.

2. Respondents were asked first whether they approved of each behavior, and second, to estimate how large a percentage of citizens in the United States would approve of each behavior. These were intended principally as "warm-up" questions. Respondents then were asked to report their intention to perform each behavior in the future ("would do; might do, depending on the circumstances; would not do") and whether they had performed the behavior in the past. Special precaution was taken to ensure anonymity. For the behavioral intention question a deck of preshuffled cards (each listing a particular behavior) was given to the respondent, who was instructed to circle the appropriate response option on each card and place it in an envelope, which then was sealed in his or her presence upon completion of the series. This procedure was repeated for the question about actual participation.

3. The participation potential variables are defined operationally as the product of behavior and intention, where behavior is scored 1 for lack of participation and 2 for participation, and intention is scored 1 for negative intention, 2 for conditionally positive intention, and 3 for unconditionally positive intention. Very little nonresponse was observed (only 3% of the respondents could not be scored on all five variables). When subjected to a factor analysis (principal components) the five participation potential variables load highly on a single factor, indicative of unidimensionality.

4. A constant equal to the number of items was subtracted from the total score in order to set the origin at zero.

5. As in the New York City survey, respondents in the Hamburg survey were presented with a list of legal and illegal behaviors (23 in all), described as actions people might take to protest against the construction of nuclear power plants. For each behavior respondents were asked to report whether they had engaged in it or not. Respondents also were asked about their intention to perform the action in the future, using five response categories ranging from "in no case" to "quite certain." The participation potential variables were constructed by multiplying past behavior (scored 1 for "have not done" and 2 for "have done") by future intention (scored from 1 to 5, where a high score means that the behavior will be performed with a high probability in the future). There were no missing values on the question about past behavior, but because of missing data on the intention question, only 85% of the respondents could be scored on the behavior times intention product variables. This can be explained in part by interviewer errors, as some of the interviewers wrongly assumed that they should ask the intention questions only for those actions previously performed by a respondent. For each intention variable the missing value was replaced by the mean. A factor analysis of the participation potential variables indicates unidimensionality.

6. Respondents in the New York City survey were asked to state the extent to which they (1) have respect for the political institutions in the United States, (2) think that the courts in the United States guarantee a fair trial, (3) feel that the basic rights of citizens are well protected by the political system, (4) are proud to live under the political system, (5) feel that the system of government is the best possible political system, and (6) feel that they should support the system of government. The response continuum was a seven-point scale. The average inter-item correlation was .57, and scale reliability (Alpha) was .89. Scores were reversed and summed to form a Political Support/Alienation scale (V_s). Respondents in the Hamburg survey were asked to respond on a five-point agree-disagree scale to the following statements: (1) "At present, I feel very critical of our political system"; (2) "In general, one can rely on the federal government to do the right thing"; (3) "The courts in the Federal Republic guarantee everyone a fair trial regardless of whether they are rich or poor, educated or uneducated"; (4) "I find it very alarming that the basic rights of citizens are so little respected in our political system"; (5) "Looking back, the leading politicians in the Federal Republic have always had good intentions"; (6) "I have great respect and affection for the political institutions in the Federal Republic." The average inter-item correlation was .40 and scale reliability was .80. Items were scored in the direction of negative evaluation and summed.

7. The series also included the following: "The existence of atomic power stations is a catastrophe for me"; "I am really afraid of atomic power stations"; "Sometimes I think about atomic power stations, but they do not play an important role in my life"; "It is sometimes difficult for me to fall asleep if I think about the problem of nuclear energy"; and "I am worried about the existence of nuclear power stations." A response was scored 1 if it indicated discontent with the existing utilization of nuclear energy; otherwise a score of 0 was assigned. The mean inter-item correlation was .26 and scale reliability was .71. Responses were summed across items to construct a Discontent with Nuclear Energy scale (V_n).

8. The series also included the following: "The anti-nuclear movement would lose influence if I were no longer active";* "The activity of a single person against the construction of atomic power stations cannot prevent the development of nuclear energy"; "The question of whether the anti-nuclear movement is successful or not because of my participation never occurs to me";* "I don't believe that my activity against atomic power stations has any weight." A five-point agree-disagree response format was used, scored to range from low to high per-

ceived personal influence. A factor analysis (principal components) yielded two factors with eigenvalues greater than 1. The starred items show low loadings on the first factor. A Personal Influence scale (p_i) was constructed from the factor scores of the first factor. Scale scores were transformed to a range of 0–1 according to the formula: $X_i' = (X_i - X_{min})/(X_{max} - X_{min})$, where X_i is the original scale value and X_i' is the transformed value.

9. Respondents were asked: "In your opinion, how important is it for people like yourself to be involved in politics today? Is it very important, somewhat important, somewhat unimportant, or very unimportant?" Responses were scored in reverse order, 0, .33, .67, and 1.

10. The six actions were (1) disrupting lectures and meetings, (2) staging illegal demonstrations or strikes, (3) obstructing traffic or preventing free access to schools, factories, or other buildings, (4) damaging or destroying rooms or furniture in universities, (5) taking over public buildings and fighting with the police, and (6) taking up guerrilla tactics such as bombing buildings, holding hostages, and hijacking airplanes. The mean inter-item correlation between responses (on a five-point scale scored from "hurt" to "helped") is .52, and scale reliability is .87. An Efficacy of Group Aggression scale (p_g) was constructed by summing scores across items and transforming them to range between 0 and 1.

11. Scores on the Political Support/Alienation scale are squared because the hypothesis of a positively accelerated function is more plausible theoretically than that of a linear function (see the discussion in Muller, 1979, pp. 83–88).

12. Scores on the Political Support/Alienation scale are squared; scores on the Discontent with Nuclear Energy scale are not squared because this transformation does not improve the correlation with R_p and R_b, perhaps because of the restricted range of the Discontent with Nuclear Energy scale, which is limited to eight values between 0 and 7.

13. Mixed evidence on the question of whether there is a p in conventional political participation (e.g., voting, campaign activity) is reported by Aldrich (1976); however, the indicators of p used by him are indirect.

14. Mason (1984) also rejects this assumption on the grounds that certain kinds of public goods—i.e., those that are inclusive and non-inferior—are not subject to free-riding. An implicit assumption of Mason's argument is that the influence of the individual or the group on the provision of public goods will not be negligible in the case of inclusive and non-inferior public goods.

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