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INTRAORGANIZATIONAL INFLUENCE RELATIONS AND THE OPTIMALITY OF COLLECTIVE ACTION

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ABSTRACT

Collective action, though often superior to anarchy, tends to be socially suboptimal even when the proclivity of free riders to defect is fully controlled and an organization for collective action is set up. An effective organization for collective action involving many participants will likely feature a coordinating center and peripheral participants. Even if the overall group objective is fully internalized by the center, the organizational equilibrium is suboptimal as it reflects the influence of narrowly rational peripheral participants. The efficiency loss is particularly evident in collective action over time, where group choices even within a single generation are likely to be myopic—a propensity further exacerbated by the center's short planning horizon.

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INTRAORGANIZATIONAL INFLUENCE RELATIONS AND THE OPTIMALITY OF COLLECTIVE ACTION

1. INTRODUCTION

Collective action, whether imposed by governments or undertaken voluntarily, is induced by a variety of causes; the search for a remedy to market failure being one principal cause. Yet, collective action as a remedy may also fail, as illustrated by the following two examples.

A. Due to asymmetric information structures, suppliers of capital effectively limit its supply to farmers. Sharing in equity capital is precluded because critical information on the farm operator is hidden from would-be investors; and effective decision control by outside equity shareholders is impractical, since critical operator's actions are hidden. For the very same reasons, credit is also rationed [Stiglitz and Weiss (1981)]. To overcome this market failure, farmers resort to collective action. They form a credit cooperative and replace private borrowing by group borrowing secured by joint liability. However, joint liability creates incentives for overborrowing and default, as the attendant costs are externalized to the entire membership while benefits of successful investments are fully captured by the individual borrower. Often, the cooperative's internal controls prove to be inadequate and, consequently, the cooperative collapses financially.[1]

B. Like other utilities, water suppliers enjoy a potential natural monopoly position. Furthermore, water resource utilization ordinarily involves various important externalities, such as pumping from a common aquifer. To prevent the potential serious market failures, the government passes legislation enabling it to regulate water delivery, quality, and pricing. It also sets up the regulatory organization. It turns out, subsequently, that regulated water prices were set at relatively low levels

> and that water utilization rates exceeded natural replenishment and often led to progressive resource deterioration. This has been the experience in Israel in the last three decades [Mosenson (1990)], but the general phenomenon has been observed in other countries as well [Knutson, Penn, and Boehm (1983), p.342, report similar phenomena in the United States of America].

These two accounts are not unique, and in some sense they represent a rather broad class of accounts relating the failure of collective action to achieve optimal outcomes. Especially important in this respect is the case where participants in the collective activity view future aggregate outcomes of present group actions as collective goods (or bads).

Extant literature dealing with the logic of collective action focuses primarily on the related incentive structure which entails strong propensities to free ride or easy ride. [e.g., Olson (1965), Hardin (1982)]. Collective action to remedy market failure often comes about through direct governmental intervention; but, as Ostrom (1988) emphasized in the context of the commons dilemma, voluntary collective action is also likely to provide the sought-after remedy. Whatever the nature of the collective action, appropriate organization and institutional arrangements are prerequisites for success.

The present paper is concerned with the institutional structure of collective action. The main thrust of our argument is that, whenever numerous participants are involved, there is an inherent and universal tendency toward suboptimal group action. This phenomenon derives from the distorted incentive structure and the nature of the influence equilibrium structure dictated by a rather general organizational imperative. However collective action is achieved; through voluntary explicit agreement, contract by convention, legal compulsion or direct government action, it is asserted that the underlying logic is conducive to suboptimal action. This is not a result of defection by potential participants as Olson's (1965) logic of collective action proposes. Rather, the failure stems from a particular intraorganizational influence structure.

This particular failure, which appears to be ubiquitous and sizable has largely been ignored in the economic literature. Efficiently functioning organizations for collective action have, consequently, been assumed [see, for instance, Cornes and Sandler (1986)].

In this respect, it is emphasized that to be effective in achieving the group's goal in the presence of numerous actors, group action must be organized in a particular fashion with the resulting organizational structure affecting the nature of interaction among the participants. While the original objectives of the narrow self-interested individuals are retained under the required organizational structure, new principal actors emerge and the pattern of intragroup influence relations is restructured. Group choices are then determined by the influence equilibrium structure which reflects the underlying power structure.

The approach employed in the present analyses views an organization as a nexus of contracts'; a view shared by many organizational economists [e.g., Fama and Jensen (1983a, 1983b), Aoki (1984), and Eggertsson (1990)]. The influence equilibrium structure is, accordingly, characterized as a solution to a bargaining game among participants in the organization. The bargaining power of the narrowly self-interested participants then leads to suboptimal solutions.

In the following, the characteristics of the organizational structure are first explored and the suboptimality of group choices under the influence equilibrium structure is indicated. The argument is then illustrated by examining a market failure due to common property rights and the attempt to remedy its undesirable consequences through collective action. Finally, the implications for economic efficiency are explored.

2. ORGANIZATION FOR COLLECTIVE ACTION

Collective action by numerous individuals under conditions of uncertainty, complexity, bounded rationality, and imperfect information structures requires an appropriate

organization. Efficient flows of information, effective-group decision processes, the indispensability of coordination, and the need to monitor individual and group actions and enforce collective decisions call for a particular organizational structure. Williamson (1975) considered the organizational implications of these requirements which ordinarily lead to some form of hierarchy. As argued by Williamson (p.51), a simple wheel network consisting of a center linked with many subordinate peripheral participants "can yield saving in both information transmittal and decision-making respects." The organizational alternative involving a all-channel network may perform satisfactorily only when the number of participants is small. Hence, effective organizations for collective action with numerous participants is likely to involve some form of a wheel network. The organization then consist of a "center," which directs the group actions, and peripheral participants, who are controlled by the center.[2] Casual empiricism suggests that it is a rather strong organizational imperative which many organizations follow irrespective of the specific collective choice rules which they employ.

The notion of a wheel network as employed in the present analysis is best understood by considering concrete examples. Thus, in the case of water resource management in Israel, the regulatory center consists of a "water commissioner," established by the Israeli water law as the chief water resource regulating agency and the minister of agriculture to whom the water commissioner reports. The peripheral participants are all water users in the country. In the case of credit cooperatives cited in the introduction, the centers consist of the cooperatives' elected executive bodies [Zusman (1988)]. The peripheral participants are the cooperatives' members.

Supplanting an all channel network by a wheel network leads to a major restructuring of the social interactions among group members. In particular, what has been essentially an n-person, Prisoner's Dilemma game is transformed into an $n+1$-person bargaining game played by the center and the n-peripheral participants where the bilateral relationship between the center and each of the other players is especially important. Individual strategy spaces and

the payoff functions are transformed as well. Various selective incentives are often made possible, and authoritative as well as legal enforcement actions are added to the strategy space. Cooperation is thus fostered.[3]

The emergence of a differentiated structure consisting of an authoritative center and subordinated peripheral participants is crucial. The center's choices affect individual well-being so that the objective functions of the peripheral participants are to some extent expressed in terms of the center's decision variables. Individual peripheral participants will, therefore, strive to influence the center's choices. However, the center also consists of individuals with their own private interests; and, while it is not unreasonable to expect central decision agents to fully internalize the group's goals, it would be unrealistic to ignore their personal interests. The decision agents constituting the center seek to advance their own personal material well-being, social status, political power, etc. Consequently, the center is exposed to potential influence attempts by peripheral participants who are in a position to reward or penalize the center, in terms of these interests.

Peripheral participants may exercise influence as individuals or through pressure groups especially formed in order to enhance their social power. They reward the center by extending material benefits and political support, say, when the center's choices further their own interests and penalize the center—e.g., by withholding material benefits or by supporting the center's political opponents—when these choices are contrary to the peripheral participants' interests.[4] Competition among potential candidates for central policymaking positions, though not explicitly modeled in the present analysis, is implicitly included. Appropriately interpreted, the influence relations also involve threats of political support to opposing contenders for the central positions. As indicated elsewhere [Harsanyi (1962); Zusman (1976)], in this setting an $n+1$-person bargaining game is created whose cooperative solution constitutes the organizational equilibrium. The equilibrium group choice is, in fact, a compromise among the peripheral participants' and the center's interests, reflecting the participants' relative social power. The upshot of the present analysis is that, while the

center may fully internalize the common group interest, peripheral participants are narrowly self-interested and, thus, narrowly rational in their influence attempts. Consequently, the resulting influence equilibrium structure is suboptimal. This is illustrated in the following section by examining a case of market failure ordinarily referred to as the "tragedy of the commons."

It should be emphasized, in this respect, that the structure and implications of the following analysis are not restricted to the commons dilemma, but apply whenever numerous, narrowly rational actors partake in a collective activity designed to remedy the potentially inefficient outcome of uncoordinated private action. The inefficiency of collective action arises because narrowly rational individual participants ignore the effects of their behavior in the private and group arena on certain aggregate state variables which they regard as collective goods (bads). The commons dilemma case explored in the following analysis merely serves as a convenient illustration of a far more general phenomenon.

3. INFLUENCE EQUILIBRIUM STRUCTURE AND GROUP ACTION: AN ILLUSTRATION

Consider the case of a commonly-owned pasture offered by Shubik (1982, pp. 300-301) as a model of Hardin's (1968) tragedy of the commons.

There are n identical shepherds, all of whom enjoy open access to a commonly-owned pasture. In the steady state of the pasture, the payoff to the i^{th} player (shepherd) is

$$P_i = q_i(K - Q) \qquad i = 1, 2, \ldots, n$$

where q_i is the grazing intensity by shepherd i, K is a parameter representing the carrying capacity of the pasture; and $Q = \sum_{i=1}^{n} q_i$ is the aggregate grazing intensity by all shepherds together.

Note that Shubik's model ignores individual time preferences which, given a steady state, in fact, is superfluous. Intuitively, though, the determination of the steady state itself within a dynamic framework must somehow depend on individual time preference, too—a relationship suppressed in Shubik's model. Nevertheless, we may ignore this aspect as it does not impinge on the following analysis.

As indicated by Shubik, the resulting game is an n-person Prisoners' Dilemma game yielding an inefficient equilibrium. The dominant strategy of player i satisfies the following first-order conditions (FOC) for maximum P_i,

$$\frac{\partial P_i}{\partial q_i} = K - Q - q_i = 0. \tag{1}$$

As all players are assumed identical, the dominant strategy of each and every player, $q_i^0 = q^0$ for all i, is

$$q^0 = \frac{K}{n+1} \tag{2}$$

and the individual equilibrium payoff, $P_i = P^0$ for all i, is

$$\begin{aligned} P^0 &= q^0\left[K - Q^0\right] \\ &= \left(\frac{K}{n+1}\right)^2. \end{aligned} \tag{3}$$

The socially optimal individual strategy, q^{00}, is obtained by maximizing

$$P^{00} = q^{00}\left[K - nq^{00}\right].$$

Thus, solving the FOC, $\partial P^{00}/\partial q^{00} = 0$, yields

$$q^{00} = \frac{K}{2n} \tag{4}$$

and the socially optimal individual payoff is

$$P^{00} = \frac{K^2}{4n}. \tag{5}$$

Hence, for n > 1,

$$q^{00} < q^{0} \text{ and } p^{00} > p^{0}. \tag{6}$$

That is, in the steady state, the uncoordinated individual grazing intensity is greater than the socially optimal; and the individual payoff is, consequently, smaller. This is the "tragedy of the commons".

Collective Action to Ameliorate Market Failure

Once the nature of the problem is recognized, a remedy through collective action may be sought either by direct government intervention or through voluntary organization with or without government support. Whichever organization is set up to achieve this end, it is likely to feature a center and peripheral participants. In the present illustration, the center may consist of an elected management committee while the peripheral participants are the *n* shepherds. The center decides, monitors, and enforces the grazing intensity by every participant while every peripheral participant seeks to maximize his/her own private interest.

The nature of the interaction between the center and the peripheral participants is critical for characterizing the organizational equilibrium, and different approaches to this issue have been proposed by students of collective choice processes. Thus, students of regulatory and rent-seeking behavior have opted for various versions of a Stackelberg equilibrium [e.g., Peltzman (1976); Appelbaum and Katz (1987);[5] and Ursprung (1990)]. According to this

view, interest groups are essentially unorganized. While group members extend support or offer opposition to contending politicians (regulators) in the voting booth, or via other means (e.g., contribution to campaign funds), these interest groups are not capable of coordinated group action, neither can they enter binding agreements with policymakers. Group reactions are, consequently, restricted to uncoordinated individual responses by group members to the adopted policies. Under the circumstances, policymakers act as Stackelberg leaders, choosing policies that would maximize their own objective functions, given the reaction functions of the unorganized interest groups.

An alternative approach, viewing most, if not all, interest groups as organized entities capable of reaching joint group decisions and entering binding agreements with policymaking centers, has also been employed in modeling collective choices. According to this view, the intra-organization strategic interaction is portrayed as a bargaining game rather than a Stackelberg equilibrium. The bargaining theoretic framework was also adopted by Harsanyi (1962) as the foundation of a theory of social power—a theory subsequently adopted by Zusman (1976) for the formulation and analysis of social power relations in political-economic systems. In the more general case of endogenous policy formation, modeling should be based on the actual interest group configuration in the analyzed political-economy, and one expects the resulting model to combine the Stackelberg equilibrium approach with the bargaining theoretic view. However, in characterizing the organizational equilibrium, which is our present aim, the bargaining theoretic framework is evidently more compatible with the contractual conception of organizations. Hence, a formulation such as Zusman's (1976) model of social power is adapted to the present situation. Thus, let $i = 0$ index the center and $i = 1, 2, ..., n$ index the n peripheral participants. Assuming that the social goal is fully internalized by the center and recognizing the reciprocal power relationships in the organization, one may model the participants' influence relationships as follows. The center's objective function is

$$U_o = V + \sum_{i=1}^{n} s_i(c_i, \delta_i), \tag{7}$$

where

$$V = \sum_{i=1}^{n} P_i = \sum_{i=1}^{n} q_i\left(K - \sum q_i\right)$$

may be interpreted as the group objective function, and $s_i(c_i, \delta_i)$ is the "strength of power" of the i^{th} peripheral participant over the center; c_i is the "cost of power" to the participant, i; and δ_i is an indicator of whether a "reward" or "penality" strategy is pursued by peripheral participant, i, in the attempt to influence the center. Thus,

$$s_i(c_i, \delta_i) = \begin{cases} \alpha_i(c_i) & \text{when a reward strategy is selected} \quad (\delta_i = \alpha) \\ -\beta_i(c_i) & \text{when a penalty strategy is selected} \quad (\delta_i = \beta) \end{cases}$$

Note that while c_i is expressed in terms of the utility of the i^{th} peripheral participant, $\alpha_i(\cdot)$ and $\beta_i(\cdot)$ (> 0) are expressed in terms of the center's objective function. It is also reasonable to assume that $\alpha_i', \beta_i' > 0$ and $\alpha_i'', \beta_i'' < 0$.

The peripheral participants' objective functions are

$$\begin{aligned} U_i &= P_i - c_i \\ &= q_i\left[K - \sum q_i\right] - c_i \qquad i = 1, 2, \ldots, n \end{aligned} \tag{8}$$

where the effect of changes in q_i on the payoff to the other n-1 players is ignored by the individual peripheral participant.[6]

Thus, even if the center fully internalizes the group interest, V, the private interests of central decision agents expose them to potential rewards and/or penalties, $s_i(c_i,\delta_i)$, by peripheral participants. The latter may reward the former by contributing votes and financial resources, by expressing support, by rejecting the opposition, etc. Peripheral participants may penalize central decision agents by offering support to the latter political opponents, by

withdrawing material contributions from central decision agents, by expressing disapproval of policies promoted by the particular decision agents, etc., $\alpha_i(c_i)$ and $-\beta_i(c_i)$, respectively, denote the valuation by identical decision agents of the rewards and penalties imposed by the i^{th} peripheral participant; c_i denotes the cost to peripheral participant i of the combination of rewards or penalties required to produce α_i or $-\beta_i$, respectively, from the point of view of the i^{th} peripheral participant. Political competition is thus taken into account by the model. The contractual approach implies that in the organizational equilibrium the center and the peripheral participants reach some agreement concerning the center's policy choices and the rewards offered by peripheral participants. The resulting cooperative solution reflects the bargaining power of the parties as determined in a potential conflict situation arising under disagreement in which each party employs its optimal threat policy.

In drawing out the implications of the model, a solution concept must be introduced. Here we follow the earlier work of Zusman (1976) who employed a $n + 1$ person bargaining game to derive a cooperative solution reflecting the social power and influence of various interest groups. The influence equilibrium structure is found by applying the Nash-Harsanyi solution to the simple bargaining game in which the parties' disagreement payoffs are given [Harsanyi (1977)]. This solution maximizes the product of the differences between the cooperative value of each actor's objective function U_i ($i = 0, 1, ..., n$) and its corresponding disagreement value, $\tilde{U}_i$, specifically the product,

$$\Gamma = \prod_{i=0}^{n}\left(U_i - \tilde{U}_i\right), \tag{9}$$

is maximized with respect to $q_1, ..., q_n, c_1, ... ,c_n$, where a universal reward structure prevails. Note that, by symmetry, $q_i = q$ and $c_i = c$ for all i. This is, of course, equivalent to maximizing $\ln\Gamma$ since the latter measure is monotone increasing in Γ. Hence, maximizing

$$\ln\Gamma = \ln\left(V + \sum_{i=1}^{n} s_i(c_i, \alpha_i) - \tilde{U}_0\right) + \sum_{i=1}^{n} \ln\left(P_i - c_i - \tilde{U}_i\right) \tag{10}$$

yields the following FOC assuming an interior solution,

$$\frac{\partial \ln \Gamma}{\partial q_i} = \frac{1}{\left(U_o^* - \tilde{U}_o\right)} \frac{\partial V}{\partial q_i} + \sum_{i=1}^{n} \frac{1}{\left(U_i^* - \tilde{U}_i\right)} \frac{\partial P_i}{\partial q_i} = 0 \quad i = 1, 2, \ldots, n \tag{11}$$

and

$$\frac{\partial \ln \Gamma}{\partial c_i} = \frac{1}{\left(U_o^* - \tilde{U}_o\right)} \frac{\partial s_i}{\partial c_i} - \frac{1}{\left(U_i^* - \tilde{U}_i\right)} = 0 \qquad i = 1, \ldots, n \tag{12}$$

where U_1^* is the solution value of U_i (i = 0, 1, 2, ..., n).

Multiplying all first-order conditions by $(U_o^* - \tilde{U}_o)$, it is found that equation (11) is also the FOC for maximum

$$W = V + \sum_{i=1}^{n} b_i P_i \left(q_i; \sum_{j \neq 1} q_j \right) \tag{13}$$

with respect to $q_1, \ldots, q_n$, where

$$b_i = \frac{U_o^* - \tilde{U}_o}{U_i^* - \tilde{U}_i} = \frac{\partial s_i\left(c_i^*, \alpha_i\right)}{\partial c_i} \geq 0. \tag{14}$$

c_i^* is the equilibrium cost to peripheral participant i of rewarding the center. The influence equilibrium structure follows directly from the maximization of equation (13) treating the equilibrium values of the b_i's as given nonnegative constants. Equation (14) provides for two possible interpretations of the power coefficient, b_i. First, the power coefficient can be interpreted as the utility gain to the center from cooperation (compared to disagreement) relative to the corresponding utility gain to the i^{th} peripheral participant. Second, the b_i may be interpreted as the marginal strength of the power of the i^{th} peripheral participant over the center in equilibrium.

What are the steady-state grazing intensities in the organizational equilibrium? Imposing a uniformity assumption where all peripheral participants or interest groups are

assumed to be equally powerful over the center—i.e., $b_i = b$ for all i—and recalling that in the organizational equilibrium W is maximized with respect to $q_1, \ldots, q_n$, the FOC for maximum W are

$$\frac{\partial W}{\partial q_i} = K - 2\Sigma q_j + b_i\left[K - \Sigma q_j + q_i\right] = 0 \qquad i = 1, 2, \ldots, n. \tag{15}$$

Introducing symmetry considerations so that $q_i = q$ and $b_i = b$ for all i and rearranging, equation (15) yields the steady-state, common, individual grazing intensity in the organizational equilibrium, $\hat{q}$,

$$\hat{q} = \frac{K(1+b)}{2n + (n+1)b}. \tag{16}$$

Note that

$$q^0 \geq \hat{q} \geq q^{00} \text{ for } n > 1 \text{ and } b > 0, \tag{17a}$$

$$\frac{d\hat{q}}{db} = \frac{K(n-1)}{\left[2n + (n+1)b\right]^2} > 0 \text{ for } n > 1 \text{ and } 0 \leq b < \infty, \tag{17b}$$

$$\hat{q} \rightarrow q^0 \text{ as b } \rightarrow \infty, \tag{17c}$$

and

$$\hat{q} \rightarrow q^{00} \text{ as b } \rightarrow 0. \tag{17d}$$

Equation (17a) implies that when the center internalizes the group's objective, V, and with peripheral participants having some power over the coordinating center ($b > 0$), the organizational equilibrium yields an improved (lower) grazing intensity, $\hat{q}$, when compared to the grazing intensity under uncoordinated private action, q^0. However, the organizational equilibrium grazing intensity still exceeds the socially optimal grazing intensity, q^{00}.

Equations (17b) implies that the excessive grazing intensity under the organizational equilibrium is greater the greater the social power of peripheral participants over the center. Finally, equations (17c) and (17d) assert that at the limit, when peripheral participants' social power over the center is indefinitely large ($b \rightarrow \infty$), the outcome realized under uncoordinated private action will prevail in the influence equilibrium structure whereas a socially optimal outcome will obtain when peripheral participants have no power over the center ($b = 0$), provided, again, that the center fully internalizes the social objective function, V. Note that the power coefficient, b, is greater the smaller the subjective value of the social goal to the center relative to the value attached by decision agents in the center to their private personal gains.

It is worth noting, also, that the preceding results were obtained under the assumption of identical peripheral participants. This simplification was adopted in order to facilitate the analysis, but it seems plausible that the principal findings would still hold true when participants are diverse.

Since Olson's (1965) analysis of the logic of collective action, failure to mobilize narrowly rational individuals to support a common endeavor should surprise no one. Still, the preceding analysis sheds light on a particular mechanism yielding such failure—i.e., the group's organization and choice process. Not only does the present theory predict a suboptimal outcome, it also explains the deviation from optimality in terms of the rate of distortion in peripheral participants incentives structure and their power over the center, i.e, their ability to penalize or reward decision makers in the center, and the latter's strength of commitment to the overall group's goals. (For further discussion see section 5). In the following, our theory is employed in exploring a major constitutional issue—namely, the relationship between the length of the center's planning horizon and the extent of departure from optimality.

4. THE PLANNING HORIZON OF THE CENTER AND THE EFFICIENCY OF COLLECTIVE ACTION

The thrust of the preceding argument is that an effective organization for collective action is likely to involve a particular restructuring of the participants' internal influence relationships while retaining individual narrow rationality. Hence, the resulting influence equilibrium structure may actually lead to socially suboptimal solutions. In what follows we show that the situation may be further exacerbated when the planning horizon of decision agents in the center is too short. The principal reasons for the planning myopia of central decision agents are legal and constitutional restrictions on the terms of public offices[7] and/or stiff political competition over these offices.

To illustrate the effect of the center, short planning horizon, we resort again to the tragedy of the commons example. As indicated in our introduction of Shubik's model of the tragedy of the commons, individual time preferences had been ignored by him. Arguably, discounting is superfluous when dealing with steady-state solutions. However, considering the center's short planning horizon problem, it is immediately evident that the peripheral participants and the center have different planning horizons so that time preferences cannot be ignored anymore. Denote the center's planning horizon by T. T is finite, while the peripheral participants' planning horizon is infinite. Consequently, the individual peripheral participant's objective function, v_i, is now represented by the present value of the infinite stream, P_i. That is,

$$v_i = \int_0^{\infty} P_i e^{-rt} dt = q_i\left[K - \Sigma q_i\right] / r,$$

where r is the rate of time discount.

Because of its finite planning horizon, the center internalizes the present value of the steady stream, $V = \Sigma P_i$. That is,

$$V(T) = \int_0^T (\Sigma P_i) e^{-rt} dt = (\Sigma P_i)(1 - e^{-rT}) / r,$$

and

$$W = V(T) + \sum_{i=1}^{n} b_i v_i.$$

The organizational equilibrium is a solution to the following FOC for maximum (rW),

$$\frac{\partial(rW)}{\partial q_i} = \left[K - 2\Sigma q_j\right](1 - e^{-rT}) + b_i\left[K - \Sigma q_j - q_i\right] = 0 \qquad i = 1, 2, \ldots, n. \tag{18}$$

Due to symmetry considerations, we may set $q_i = q_T$ and $b_i = b$ for all i. Equation (18) then yields the grazing intensity in the influence equilibrium structure, $\hat{q}_T$, which is

$$\hat{q}_T = \frac{K\left[1 - e^{-rT} + b\right]}{2n(1 - e^{-rT}) + (n+1)b} \tag{19}$$

Hence,

$$\hat{q}_T > \hat{q} \text{ for } n > 1, b > 0 \tag{20A}$$

$$\hat{q}_T \to q^0 \text{ as } T \to 0 \tag{20b}$$

and

$$\hat{q}_T \to \hat{q} \text{ as } T \to \infty. \tag{20c}$$

According to equation (20a), the center's short planning horizon induces a higher grazing intensity in the influence equilibrium structure—so much so that, as the center's planning horizon approaches zero (i.e., T $\to$ 0), the equilibrium grazing intensity converges to the one prevailing under uncoordinated private action [i.e., $\hat{q}_T \to q^0$ in equation (20b)].

5. THE EFFICIENCY OF COLLECTIVE ACTION

The preceding analysis suggests that, although under market failure collective action yields efficiency improvements, over uncoordinated private action an overall group optimum should not be expected. The externalization of social costs and benefits by the narrowly-rational, self-interested, peripheral participants; the internalization of group goals by the center; and the social power of the peripheral participants over the center are crucial assumptions for this conclusion. Evidently, if the center does not internalize the group goals, then the raison d'etre of the collective action is defeated. Conversely, if the center does internalize the group's goals and peripheral participants do not externalize social effects and/or have no power over the center (i.e., $b_i=0$ for all i), then V is maximized and group action is optimal. (In the example, $\hat{q} = q^{00}$). Recall that, in terms of the present model and assuming full internalization of the group goal (V) by the center, in the organizational equilibrium we have

$$b_i = \beta_i'(\tilde{c}_i) = \alpha_i'(\hat{c}_i) = \frac{\partial V}{\partial \hat{q}_i}\left(-\frac{d\hat{q}_i}{d\hat{c}_i}\right) \qquad i = 1, 2, \ldots, n$$

where $\tilde{c}_i$ is the equilibrium cost to peripheral participant i of his/her conflict strategy; $\hat{c}_i$ is the equilibrium cost to peripheral participant i of a reward strategy; and $(d\hat{q}_i/d\hat{c}_i)$ is the center's marginal rate of substitution between the agreed upon grazing intensity of the i^{th} peripheral participant, $\hat{q}_i$, and the cost to i of rewarding the center. Thus, b_i depends on the center's subjective valuation of the group's goal in terms of the marginal utility of the reward/penality it gets from peripheral participants. The lower the value attached by the center to the overall group objective relative to the reward/penality cost, the greater b_i and the greater the shift away from group optimality and toward the individual, narrowly self-interested equilibrium. In the extreme case, when the personal interests of the center fully dominate the group's goal,

the system is completely corrupted and an uncoordinated private action prevails. (In the example, $\hat{q} = q^0$.) Evidently, ethical behavior of public agents (the center) is crucial to successful collective action,[8] so that, with highly ethical central decision agents whose policy choices cannot be influenced by peripheral participants rewards or penalties (i.e., $b = 0$), collective action will be socially optimal. A similar outcome obtains if constitutional constraints effectively counteract peripheral participants' influence attempts.

The efficiency implications of the center's planning horizon arise in situations involving collective action over time. The analysis of this problem in the context of the illustrative example clearly suggests that a short planning horizon entails efficiency losses. As expected, when choosing among policy time trajectories is concerned, a short planning horizon causes group action to suboptimally favor the immediate over the distant. This finding bears on the constitutional choice of terms of policymaking offices in the organization.

It is worth noting that the influence relations also entail costs and benefits and, therefore, should be included in the welfare calculus on top of the resource use considerations. Because the conflict strategies are essentially unrealized threats, the welfare calculus should be concerned primarily with the cooperative reward strategies. When considered in isolation from the effects on collective action, do the equilibrium reward strategies contribute to or detract from the group's welfare? The answer is not unambiguous. Social power theory implies that, in the influence equilibrium structure, the choice of collective action maximizes W while the choice of reward strategies maximizes $\sum_{i-1}^{n} \alpha_i(c_i) - \sum_{i=1}^{n} b_i c_i$ where the α_i and c_i are expressed in income terms (i.e., α_i and c_i are money metric utility indices). This follows from equations (12) and (14). Hence, if side payments are permitted, group welfare is maximized because then for all i, $b_i = 1$; but this is a rather unlikely possibility. If, on the other hand, side payments are politically unacceptable, the cooperative equilibrium reward strategies need not be Pareto optimal.[9]

Finally, the bargaining cost and the cost of organizing for collective action should not be overlooked in the benefit-cost calculation of the collective activity. Bargaining is costly in terms of human relations, delayed actions, and open conflicts which, however rare, do occur.

6. CONCLUDING REMARKS

The present paper deals with the failure of collective action to yield socially optimal outcomes and not with the question of how cooperation is at all achieved. It should be emphasized, in this respect, that the logic of collective action, which identifies a strong propensity to free-ride or easy-ride, underlies this failure as well. However, in the present case failure to achieve socially optimal outcomes takes on particular form dictated by the organizational imperatives; that is, intragroup influence by narrowly rational peripheral participants over central decision agents replaces free-rider defection. The theory of easy-riding through intra-group influence sheds light on the relationship between organizational performance and the participants incentive structure, their power over central office holders, the latter commitment to the group's goals and the constitutional structure of the organization for collective action. The theory points out a form of organizational failure which, despite its importance, has been largely ignored in the literature for lack of adequate characterization of the intraorganizational influence equilibrium structure. The failure of collective action to yield socially optimal results is evidently a familiar phenomenon, and the present paper offers an explanatory theory which allows one to explore the phenomenon and its determinants.

Although the organizational failure considered is by no means restricted to particular modes of collective activity, casual empiricism suggests that it is more likely to occur in situations involving group choice over time. There, early rather than late satisfaction is often revealed preferred by the group even within a single generation.[10] Intuitively, the group revealed time preference exceeds the individual actors' time preference.[11] The often observed

propensities to create budget deficits, to overutilize natural resources, to inadequately protect the environment, and to undermaintain social infrastructure are some of the generic instances.

The myopic bias of narrowly self-interested agents of the kind encountered in the illustrative example presented above along with the commonly met central officeholders short planning horizons help explain the widespread short-sighted group behavioral patterns.

It should also be remarked that, despite its failure to achieve optimal social outcomes, collective action may yield Pareto improvements compared to uncoordinated private action, and thus may still be advisable.

Finally, the present analysis dealt exclusively with the case in which the center internalizes the group's goal. Yet, failure to achieve socially optimal outcomes often occurs when central decision agents do not internalize the group's goal. This contingency must also be taken into account when selecting the institutional structure for collective action, a subject to which the present paper made a limited contribution.[12]

Footnotes

[1]This example reflects the experience with certain agricultural credit cooperatives in Israel [Zusman (1988) and Kislev, Lerman, and Zusman (1989)]. However, similar observation in other countries have also been reported [e.g., Youngjohns (1983); Robert (1983)].

[2]In most cases, the center is comprised of both the executive management and the governing apex of the organization.

[3]The reasons for enhanced cooperation under these circumstances are discussed in considerable detail by Olson (1965) and Hardin (1982).

[4]While the present analysis focuses on intraorganizational influence relations, it should be noted that, in general, all participants are also exposed to influence attempts by external interests as well. These are ignored in the present analysis.

[5]Appelbaum and Katz (1987) also analyze a case where firms cooperate and form a coalition.

[6]For a fuller and more detailed presentation of the model see Zusman (1976).

[7]As demonstrated subsequently, restricted terms of policymaking offices leading to short planning horizons have undesired effects on group action. However, short terms may still be constitutionally preferred as they may shun even less-desirable consequences of long incumbancies.

[8]For an extreme example of policy corruption, see Robert's (1983) description of the Agricultural Credit Cooperative movement in Madras (1893-1937).

[9]According to the presently employed theory of social power, intragroup influence is not considered a pure, directly unproductive, profit-seeking (DUP) activity as it is generally conceived in the rent-seeking literature [Bhagwati (1982)]. While conflict strategies and some other rent-seeking actions are pure DUP, reward strategies are often productive activities inasmuch as resources are used by peripheral participants to produce "outputs"

valued by the center. Because central officeholders are also members of the group, the outputs of influence attempts should be regarded as benefits in the group's welfare calculus.

[10]Thus, Cornes and Sandler (1986) attribute myopic behavior in a intergenerational club to intergenerational externalities (Chapter 15). Interestingly, the mechanism proposed by Cornes and Sandler in explicating the expression of intergenerational externalities in group myopic behavior is akin to the one offered in the present paper.

[11]Since Shubik's model is essentially stationary, the effects of individual actors time preference have been supressed in the analysis. The analyzed group revealed time preference is solely entailed by the intraorganizational influence relations and is, therefore, in addition to group choice effects originating from individual time preferences.

[12]In this respect, one should note the work reported by Ostrom (1988). Also, Orbell and Wilson II (1978) explored the relationship between social choice and constitutional struture. The constitutional arrangements considered included majoritarian democracy, "selfish dictatorship," and uncoordinated individualism. The present paper addresses the same issue, but deals with the social choice problem as a generalized bargaining game rather than particular constitutional arrangements.

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