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Exclusive Organziations

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EXCLUSIVE ORGANIZATIONS

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I. INTRODUCTION

There are many instances in which an individual's decision to patronize a firm depends, not just upon the quality and price of the goods or services offered by the firm, but also upon the personal characteristics of the other patrons of the firm. Social clubs, such as country clubs, are conspicuous examples. The socioeconomic status and other personal attributes of a country club's membership are likely to be quite as important to a prospective member as are the quality of the golf course, the tennis courts, and the food served in the club dining room. Private educational institutions provide another example. Students commonly select a college not only on the basis of the quality of the instructional program, but as well with an eye to the intelligence, previous education, social attractiveness, future promise, and perhaps even the athletic ability of its other students. In part the attraction of joining a club or attending a college with a particularly high-quality clientele lies in the opportunity to enjoy the other patrons' company or -- especially in the case of colleges -- to learn from them. In part also it is for the sake of developing contacts that will be useful elsewhere in life. And in part it is often for the sake not just of associating with such people, but of being associated with them in the eyes of others -- for the world often takes association with high-quality people as prima facie evidence of high quality itself.

Residential suburbs provide yet another example of the same phenomenon. Individuals have a strong incentive to patronize -- that is, to purchase a house and pay taxes in -- a community composed of people who build expensive residences. This incentive derives, not simply from a taste for attractive surroundings and affluent friends, but even more importantly from the fact that such neighbors help to raise the community's property tax base, and thus reduce the effective price of municipal services.

Such considerations can be important not only in cases in which consumers are purchasing services <u>from</u> a firm, but also where individuals are selling services <u>to</u> a firm. A scholar, for example, will commonly choose employment with a particular university not just, or even primarily, on the basis of work conditions such as salary and teaching load, but also on the basis of the professional accomplishments of the other members of the faculty. Similarly, a lawyer will typically seek to sell his services to a law firm in which the other lawyers are as competent as possible. In this latter case, as with residential suburbs, the motivation is in part directly pecuniary: since income within law firms is generally pooled to some extent, each lawyer's income is to a degree dependent upon the productivity of his colleagues.

In the discussion that follows, the term "status" will be used to refer to the degree to which an individual exhibits those attributes that make him desirable as a fellow patron in an organization such as those described above (and "patron" will be used here to refer to a seller to, as well as a purchaser from, a firm). For example, so far as law firms are concerned one's status is determined by, among other things, one's intelligence, education, and industry -- in short, by one's earning power as a lawyer. In the case of suburbs, one's status is determined largely by the value of the residence one is prepared to occupy. We are concerned here, then, with firms in which the attraction of patronage depends, at least in part, upon the status of the other members. For convenience, such firms will be referred to here in general as "associative firms" or "associative organizations."

Associative firms of all types are commonly characterized by a distinctive set of features. To begin with, they are typically <u>exclusive</u> in the sense that each organization establishes a minimum status level for patronage, a requirement that is imposed in addition to the price that is paid to or by the firm for services rendered. Thus, country clubs regularly establish membership criteria in terms of such characteristics as wealth, occupation, family background, religion, or race; colleges establish minimum academic requirements for admission; and suburbs require that their residents be prepared to occupy a lot of at least a given number of acres and build a house that conforms to certain minimal standards.

Furthermore, patrons tend to be <u>stratified</u> among associative firms in terms of their status. That is, the highest-status individuals typically patronize one firm, while the people in the next status range patronize a second firm, and so forth. Thus Eastern colleges, or Wall Street law firms, or Chicago suburbs, or Philadelphia Main Line country clubs can be assigned a rough ranking according to the status of their respective patrons. Seldom does a single organization have patrons who represent a broad range of status levels.

Finally, associative firms are commonly organized and operated on a cooperative basis. That is, rather than being owned and operated by profit-seeking entrepreneurs, they are typically controlled by their patrons through some form of democratic process, and their assets are either owned by the patrons collectively through a partnership (as in a law firm), or held by a nonprofit corporation (as in a country club or college[1/]) or a municipal corporation (as in a suburb) that is patron-controlled.[2/]

The class of associative organizations that exhibit these three characteristics of exclusivity, stratification, and cooperative control is extremely broad. For instance, in addition to the examples already mentioned, this class includes insurance companies,[3/] the medical staffs of metropolitan hospitals, and marriages.

Exclusivity, stratification, and cooperative control apparently arise in large part to deal with externalities deriving from the varying status levels of potential members. If an organization were willing to accept any individual as a patron, regardless of his status, at a given uniform price, then each patron's status level would have the character of an externality with respect to other patrons of the firm; by patronizing a given firm a high-status individual would cast an external benefit upon the other patrons, while a low-status individual would give rise to an external disbenefit by becoming a patron.

To some extent such potential externalities can be, and are, internalized by making the prices that are charged or paid patrons a function of each individual's personal status. Colleges, for example, sometimes offer merit scholarships, and the division of income among partners in a law firm is often done with an eye to the contribution that each individual has made to the firm's success. But more commonly than not the correlation between the price for patronage and a patron's individual status is imperfect or completely nonexistent. Social clubs, for example, generally charge the same dues to all members. Among educational institutions merit scholarships are the exception and not the rule; to the extent that aid is given it is generally based on financial need, a factor that is often correlated with status inversely, if at all. And even among law firms and other professional partnerships the division of income is generally only roughly geared to an individual's actual contribution to the prosperity of the firm.[4/]

One reason for this relative absence of discrimination in prices is probably that the feelings of camaraderie among patrons would be severely harmed by a system of charges that gives formal recognition to invidious distinctions. Another reason may be that, among patrons of any given firm, it is difficult to draw distinctions of sufficient refinement to support a system of differentiated fees. Legal constraints sometimes also play a role. Suburban municipalities, for example, generally lack the authority to set up a highly differentiated system of fees or taxes (Heyman and Gilhool).

In any case, the externality problem remains a real one for most associative firms. And it appears that exclusivity, stratification, and cooperative control are largely responses to it. The nature of this relationship, and its consequences for the formation and behavior of systems of associative organizations, is the subject of the remainder of this essay.[5/]

Because the social club is the prototypical example of an associative firm, we shall, for simplicity, focus on such clubs as the primary example in the analysis that follows, and we shall generally refer to associative firms simply as "clubs," and to their patrons as "members." As will be emphasized at various points, however, the analysis is easily generalizable to the other types of associative firms mentioned above. Moreover, the use of the term "club" here should not be taken to suggest more than a tangential relationship between this essay and the "economic theory of clubs" literature[6/], which has confined its attention largely to the economics of collective consumption goods and has generally neglected the associative phenomena that are the principal focus here.[7/]

Most of the analysis that follows focuses upon a single basic model, which is developed in Section II. Section III analyzes the structure and behavior of a system of clubs organized as cooperatives. Proprietary clubs are in turn analyzed in Section IV, which proceeds to consider the factors that lead clubs to adopt the cooperative as opposed to the proprietary form. Section V discusses clubs that vary their membership fees according to an individual's status. Section VI considers the socially optimal system of clubs. The consequences of changes in a club's applicant pool and cost structure are considered, respectively, in Sections VII and VIII. Section IX discusses the application of the model to suburbs, insurance companies, and professional partnerships. Finally, Section X offers some concluding qualifications and generalizations.

II. THE BASIC MODEL

Most of the analysis that follows focuses upon a single basic model. In that model, it will be assumed that there exists a total of N discrete individuals who are potential club members; this group will occasionally be referred to simply as "society." (Later on, we shall work with a minor variant of the model in which individuals are not discrete but rather are represented by points on the continuum $[0,N]$.) Each individual $n \in \{1, \ldots N\}$ has a status level $s(n)$ that is fixed and beyond his control. An individual's status can be immediately and costlessly recognized by any other individual. For convenience, individuals will be ordered in terms of their status, so that $s(n) \geq s(m)$ for $n < m$.

Individuals are assumed to join clubs exclusively for the purpose of associating with other individuals. The utility that an individual derives from membership in a given club depends upon only two factors: (1) the average status of the club's membership (including the individual in question), and (2) the membership fee that the individual is charged by the club. Holding these two factors constant, the individual is indifferent to the size of the club. Individuals can (or choose to) belong to only one club at a time.

All individuals have the same monetary income, y, and the same utility function. In particular, the utility enjoyed by an individual m who belongs to a club j that charges him a membership fee f_m^j, and whose members have an average status $\bar{s}^j$, is given by $U_m^j = U(y-f_m^j,\bar{s}^j)$, where $\partial U/\partial y > 0$, $\partial U/\partial \bar{s} > 0$, $\partial^2 U/\partial y^2 \leq 0$, and $\partial^2 U/\partial \bar{s}^2 \leq 0$. (Throughout, subscripts will refer to individuals and superscripts will refer to clubs.) Note that this assumes that a person's utility function does not depend directly upon his own status.

The cost of operating a club is taken to be a function only of the size of its membership. In particular, the <u>average</u> cost -- that is, the cost per member -- of operating a given club j with membership size n^j is given by $C(n^j)$, where $C'(n^j) \lesseqgtr 0$ as $n^j \lesseqgtr n^*$, and $C''(n^j) > 0$ everywhere. Thus there are limited economies of scale in operating a club, with $n^j = n^*$ being the point at which cost per member is minimized.

An individual's own status can affect his utility only if he belongs to a club (where, as noted above, the individual's own status level is included in determining the average status level of the club). An individual who does not belong to a club has utility $U = U_{min}$, where U_{min} is the same for all individuals and is thus independent of the individual's own status. An individual can form a club consisting only of himself so long as he is capable of covering the cost, C(1). In that case, the individual can exploit his own status level without associating with others. In some situations, such one-person clubs are in fact quite familiar. For example, if the "clubs" we are talking about are law firms, then a one-person club is an individual who chooses to go into solo practice rather than enter into partnership with others. This might, in fact, be the most effective way for the individual to exploit his own status -- which in this case is his ability as a lawyer. In this example, U_{min} would then be the utility level that such a person would experience if he were not to practice law at all, and thus make no use of his status as a lawyer.

As a final matter, it will be assumed that, for reasons such as those discussed in Section I, clubs are constrained to be "intramurally egalitarian," by which we mean that all members of a given club are charged the same membership fee, regardless of their status. (The consequences of relaxing this last assumption will be explored later below.)

III. COOPERATIVE CLUBS

It is simplest to begin the analysis by considering a system of associative firms ("clubs") organized as cooperatives, and constrained to be intramurally egalitarian.

All members of an intramurally egalitarian club j that charges a (uniform) fee f^j will experience the same level of utility, $U^j = U(y-f^j,\bar{s}^j)$, regardless of their personal status. Thus all members of such a club will be in unanimity concerning the desirability of any action to be taken by the club.[8/] The members of a cooperative club can be assumed to choose to set its membership fee equal to its average cost, $f^j = C(n^j)$, since they have no incentive to operate the club at either a profit or a loss.

A. Equilibrium

Let us assume for the moment that club formation is costless. Then it is natural to define an equilibrium system of cooperative clubs as one in which no collection of individuals has an incentive to leave their current clubs and regroup themselves into a new club. More precisely:

Definition I: A system of cooperative clubs Φ constitutes an equilibrium in the weak sense if there exists no feasible non-empty club α such that all members of α would be better off in α than under system Φ.

(A club will be said to be feasible if fees are sufficient to cover costs.)

Proposition I: A cooperative-club equilibrium in the weak sense exists for any status distribution. Moreover, any such equilibrium system is strictly stratified.

(A system of clubs will be said to be strictly stratified if, for any two clubs i and j in the system, either (a) $s(m) \geq s(n)$ for all individuals m in club i and all individuals n in club j, or (b) $s(m) \leq s(n)$ for all individuals m in club i and all individuals n in club j.)

To prove Proposition I let us construct a system of clubs, labelled system $\hat{\Phi}$, as follows:

Form the first club, "club 1," by drawing from the individuals at the top of the status ordering, starting with individual 1. The average status $\bar{s}^1$ of this club will be a function of its size, n^1. Choose that value for n^1 that maximizes the utility of the club's members, $U^1 = U[y-C(n^1),\bar{s}^1]$. If there are two or more values of n^1 that yield the same maximal value for U^1, choose the largest. Denote this membership size for club 1 by $\hat{n}^1$.

Now form club 2 in a similar manner from the highest-status individuals among the remaining $N-\hat{n}^1$ individuals not in club 1. Denote the size of club 2 by $\hat{n}^2$. Continue this process for club 3, etc., until either (a) all N individuals belong to one or another club, or (b) there exist $\hat{n}^u$ individuals at the bottom of the status ordering who do not belong to a club, but who are so few in number or so low in status that no feasible club offers any subset of these individuals greater utility than U_{min}.

Such a system is illustrated in Figure 1. There, as elsewhere below, n_h^i and n_l^i denote, respectively, the highest-ranking and lowest-ranking (and therefore the highest-status and lowest-status) individuals who belong to club i. Equilibrium values in system $\hat{\Phi}$ are denoted by $\hat{n}_h^i$ and $\hat{n}_l^i$. Thus $\hat{n}_h^i = \hat{n}_l^{i-1}$ and $\hat{n}^i = \hat{n}_l^i - \hat{n}_h^i$.

The resulting system of clubs $\hat{\Phi}$, which clearly is strictly stratified, constitutes an equilibrium in the weak sense. For suppose there exists a non-empty club, club α, with membership size n^α and average status $\bar{s}^\alpha$, that is not in system $\hat{\Phi}$ and that would offer each of its members a utility level higher than that which they would enjoy under system $\hat{\Phi}$. It follows that club α cannot include any of the $\hat{n}^1$ members of club 1, since, by definition of $\hat{n}^1$,

$$(1)\quad U^1 = U(y-C(\hat{n}^1),\bar{s}^1] \geq U[y-C(n^\alpha),\tilde{s}] \geq U[y-C(n^\alpha),\bar{s}^\alpha] = U^\alpha$$

where $\tilde{s}$ is the average status of the n^α highest-status individuals in society (and where equality holds throughout only if the membership of club α is a subset of the membership of club

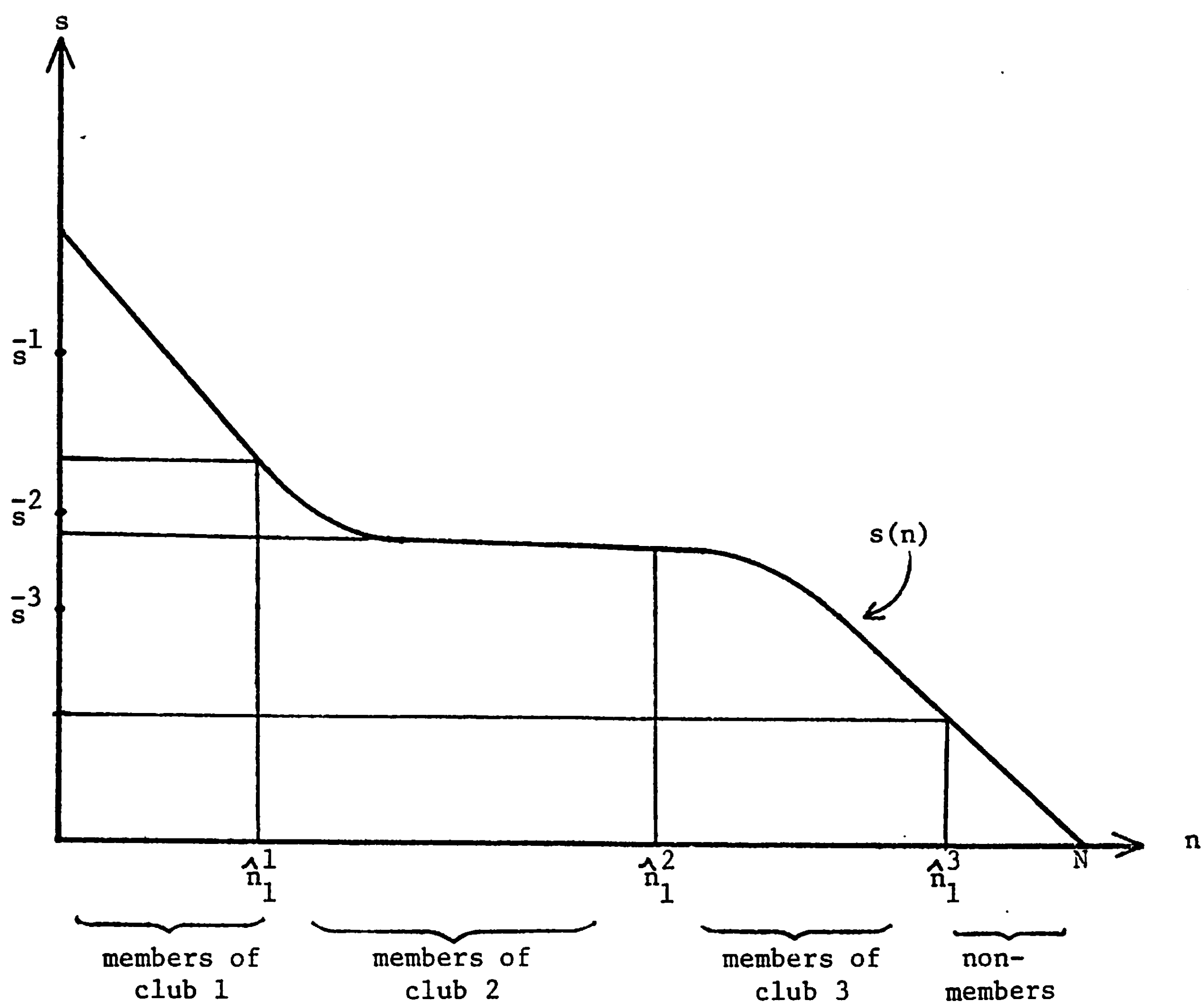

Figure 1: A Cooperative - Club Equilibrium With Three Clubs

1). But, if club α contains none of the $\hat{n}^1$ members of club 1, then by similar reasoning it must contain among its members none of the $\hat{n}^2$ members of club 2. Continuing this reasoning, club α must in fact include among its members none of the individuals who belong to clubs in system $\hat{\Phi}$. Nor can the membership of club α consist of any subset of the $\hat{n}^u$ individuals who do not belong to clubs in system $\hat{\Phi}$, by virtue of the defining characteristic of that group. Thus club α must be empty, contradicting its definition.

Now consider a system of clubs Θ that is not strictly stratified. This system must contain two clubs i and j such that, for some individuals m and n in club i and some individuals u and v in club j, $s(m) > s(u)$ and $s(n) < s(v)$. Clearly either $U^i \geq U^j$ or $U^j \geq U^i$; assume the former, without loss of generality. Now consider a club i′ that is identical to club i except that it contains individual v as a member and does not contain individual n. Then $U^{i'} > U^i \geq U^j$, and hence all individuals in club i′ are better off in club i′ than under system Θ. Therefore system Θ does not constitute an equilibrium in the weak sense. Consequently, any system of clubs that is an equilibrium in the weak sense must be strictly stratified. Q.E.D.

A somewhat stronger result than proposition I is available if we confine ourselves to situations in which no two individuals have the same status. In this case we can use a stronger definition of equilibrium, as follows.

Definition II: A system of cooperative clubs Φ constitutes an equilibrium in the strong sense if there exists no feasible non-empty club α such that (a) all individuals in club α would be at least as well off in club α as they are in system Φ, and (b) at least one member of club α is better off in club α than under system Φ.

Proposition II: If none of the N individuals in society exhibit the same status, then there exists a system of cooperative clubs that constitutes an equilibrium in the strong sense. Moreover, any such equilibrium system is strictly stratified.

To establish the first part of this proposition, it again suffices to consider the system of clubs $\hat{\Phi}$ that is formed as described above. If that system does not constitute an equilibrium in the strong sense, then there must exist a club α satisfying the conditions of Definition II. But such a club α cannot include any of the members of club 1. For again relationship (1) holds. And if club α is to contain any of the members of club 1, then (1) must hold with equality. But, since no two individuals are of the same status, we can have $U[y-C(n^{\alpha}),\tilde{s}] = U[y-C(n^{\alpha}),\bar{s}^{\alpha}]$ only if the members of club α comprise the n^{α} highest-status individuals in society. From the definition of $\hat{n}^1$, the membership of club α must then constitute a subset of the membership of club 1. Therefore, by virtue of (1), no member of club α can be better off in club α than under system $\hat{\Phi}$, contradicting the definition of club α.

By similar reasoning, if club α does not include any of the members of club 1, then it cannot include any of the members of club 2. And, by continued extension of this logic, club α must therefore be empty, contradicting condition (b) of Definition II. Thus system $\hat{\Phi}$ constitutes an equilibrium in the strong sense.

The second statement in Proposition II can be established by the same logic employed above to prove the analogous statement in Proposition I.

Note that if, in constructing system $\hat{\Phi}$, there is only one value of n^i that maximizes U^i for each i (as will generally be the case), then the equilibrium system in Proposition II will be unique.[9/] Under the same condition, the equilibrium system in Proposition I will also be unique, except for the possibility that there will exist two (or more) equilibrium systems that have the same number of clubs, and in which corresponding clubs are identical in terms of the number of their members and the distribution of status among those members, but in which, for some of the corresponding clubs, the identity of the individual members is different. Indeed, it is only this possibility that prevents extension of Proposition II to all distributions of status among society, thus obviating the need for the weaker Proposition I.

From here on, system $\hat{\Phi}$ will be referred to as "the cooperative-club equilibrium" without being precise as to which of the two definitions of equilibrium just offered is intended, and without concern for the fact that there may be other equilibria aside from system $\hat{\Phi}$ and that system $\hat{\Phi}$ itself may not be uniquely defined in terms of the identity of individual club members. This should cause no confusion, since in a broad range of cases the two definitions of equilibrium coincide and are satisfied only by system $\hat{\Phi}$, and since the special cases of multiple equilibria present no particularly interesting or troublesome problems.

The model predicts, then, that associative firms operated as cooperatives will stratify much as such clubs do in reality.[10/] Note also that, at least if no two individuals are of the same status, then the equilibrium system $\hat{\Phi}$ can be sustained if each club i simply adopts the practice of offering membership to anyone of status $s(\hat{n}_1^i)$ or better. This is, of course, the administrative practice adopted by colleges and other types of associative organizations that have large memberships with relatively rapid turnover.

It is worth noting that the hierarchical ranking of clubs that characterizes the equilibrium system is quite stable, in that there is no simple incremental process by which a club can improve its position in the hierarchy. Because, in general, each club in the equilibrium system offers a utility level that is substantially lower than that offered by the club just above it in the hierarchy, it is in a poor position to compete with such a club (or any other higher-status club) for high-status members. Moreover, the addition of just one member of unusually high status will typically have only a small effect on the average status of a club, and will not improve substantially its ability to compete for other high-status individuals; a club will be able to move up the hierarchy only by a wholesale substitution of new, high-status members for its old membership, and this is likely to be difficult to accomplish, particularly if, as is common in reality, the membership of the club turns over only gradually, causing substantial overlap between new and old generations of members. Presumably this is an important reason why the pecking order among many types of real-world associative organizations, including country clubs, elite colleges, residential suburbs, and prestigious law firms, is remarkably constant over time.

B. A Continuous Model

For the remainder of this essay it will be convenient to ignore indivisibilities and to assume that society consists of a continuum of individuals represented by points on the interval [0,N], ordered as before according to their status, so that s(n) is a nonincreasing function for $n \in [0,N]$. (Use of the discrete-individual model above simplified the proofs of Propositions I and II by eliminating the need to make exceptions for sets of measure zero.) Then, if club i is strictly stratified (like those in system $\hat{\Phi}$), we have $n^i = n_l^i - n_h^i$ and

$$(2) \qquad \bar{s}^i = \frac{1}{n_l^i - n_h^i} \int_{n_h^i}^{n_l^i} s(n)dn \; .$$

A club i in system $\hat{\Phi}$ will choose its lowest-ranking member, $\hat{n}_l^i$, to maximize $U^i = U[y-C(n^i),\bar{s}^i]$. If s(n) is a differentiable function, and assuming an interior solution,[11/] $\hat{n}_l^i$ will satisfy the first-order condition

(3) $$\frac{dU^i}{dn_1^i} = -\frac{\partial U^i}{\partial y}C'(n^i) + \frac{\partial U^i}{\partial \bar{s}}\frac{d\bar{s}^i}{dn_1^i} = 0$$

or equivalently,

(4) $$C'(n^i) = \left[\frac{\partial U^i/\partial \bar{s}^i}{\partial U^i/\partial y}\right]\frac{d\bar{s}^i}{dn_1^i} .$$

Since $d\bar{s}^i/dn_1^i \leq 0$, it follows from (4) that $C'(\hat{n}^i) \leq 0$ and thus $\hat{n}^i \leq n^*$ (with equality in each of these relations just in case all members of club i are of the same status). That is, club size will be less than or equal to the size n^* that minimizes cost per member, and will be strictly smaller whenever $d\bar{s}^i/dn_1^i < 0$, which is the general case. The intuitive reason for this is, of course, that the savings in cost per member involved in expanding club size toward n^* will, beyond some point, be outweighed in the members' eyes by the decline in the club's status that such expansion of membership entails.

IV. <u>PROPRIETARY CLUBS</u>

To understand the incentive for forming clubs as cooperatives, it is instructive to compare the cooperative-club equilibrium just described with that which would result if clubs were owned and operated by profit-maximizing entrepreneurs.

A. <u>With Concerted Behavior Among Members</u>

Consider first the case in which the individuals in our hypothetical society can form coalitions costlessly among themselves for the sake of dealing with club owners. In this case we would expect an equilibrium system of proprietary clubs to be the same as that described in Section III for cooperative clubs, namely $\hat{\Phi}$.

To see this, note first that, in equilibrium, pure profits would presumably be zero for every club. If it were otherwise for some club, then there would be an incentive for an entrepreneur to steal away that club's members as a whole by offering them a new club with a slightly reduced membership fee. Thus each club j would, in such a competitive equilibrium, charge a membership fee equal to its average cost $C(n^j)$. Furthermore, we would expect the clubs to be perfectly stratified, and in precisely the same manner as that described for the cooperative clubs. The logic behind this result parallels that outlined in Section III. Thus, if the $\hat{n}^1$ highest-status individuals in society were not in a club of their own, then they would be willing to pay dues somewhat in excess of $C(\hat{n}^j)$ to belong to such a club, and consequently there would be an incentive for an entrepreneur to offer them such a club. The argument can then be repeated for the $\hat{n}^2$ individuals next highest in status ranking, and so forth. In short, the process of reaching equilibrium is not significantly altered by interposing entrepreneurs as the agents of club formation rather than simply leaving the process to the individual club members to arrange for themselves.

In fact, the clubs in such a system are in essence really cooperatively controlled. The members, acting in concert, are effectively hiring the management through a system of competitive bidding. And if the members are sufficiently well organized to undertake such collective bargaining, it seems natural to expect them to take the final step of establishing formal ownership of the club, and thus avoid the burden of negotiating in the future with an independent management.

The important issue, therefore, is the strength of the incentive for forming coalitions among club members. That is, how much worse off would the individual club members be if they did not cooperate in exercising control over their clubs?

B. Without Concerted Behavior Among Members

If the members of a proprietary club do not act cooperatively, but rather deal with the owner of the club on their own, independently of the other club members, then the owner of the club will be in a position to extract pure profits from them, and leave the members substantially worse off than they would be in a cooperatively-controlled club.

To see this, it suffices to consider the behavior of a single proprietary club operating in an environment otherwise composed exclusively of cooperative clubs. To this end, begin by considering the cooperative club equilibrium, system $\hat{\Phi}$, described in Section III. Now assume that the highest-status club in the system, club 1, is acquired by a profit-maximizing owner who has the authority to alter the club's price and membership requirements at will -- subject to the necessity to attract and retain members and to cover costs -- and who adjusts these variables to maximize the club's profits. The rest of the clubs in the system, meanwhile, remain cooperatives and behave as such, setting price equal to cost and choosing the membership size (i.e., the level of exclusivity) that maximizes utility for the members.

Finally, assume that both present and prospective members of club 1 contract with the owner of that club as individuals, and not collectively. To capture this notion formally, assume that an individual will prefer to be a member of club 1 rather than another club, club j, if and only if, given the current membership and fees of those clubs, $U^1 \geq U^j$.[12/]

We wish now to characterize what the new equilibrium system of clubs will look like with club 1 operated as a proprietary firm. For this purpose, it is natural to define a (Nash) equilibrium as a system of fees and of allocations of members to clubs such that (a) given the behavior of the other clubs in the system, no club wishes to change its membership requirements or fee, and (b) given the current membership and fees of the various clubs, no individual wishes to join a club of which he is currently not a member, and that is willing to admit him to membership. Label the new equilibrium system $\tilde{\Phi}$.

The profit-seeking owner of club 1 will set status requirements for membership (and hence a membership size $\tilde{n}^1$), and a membership fee $\tilde{P}^1$, that maximize profits

(5) $$\Pi^1 = \tilde{n}^1[\tilde{P}^1 - C(\tilde{n}^1)]$$

subject to the condition that $\tilde{U}^1 \geq \tilde{U}^j$ for all clubs j, where $\tilde{U}^j$ is the utility offered by club j in equilibrium in system $\tilde{\Phi}$.

To see clearly the incentives facing the owner of club 1, suppose for the moment that club 1, and all other clubs as well, maintain the same membership that the corresponding clubs would have in the all-cooperative system $\hat{\Phi}$. Holding its membership thus constant at size $\hat{n}^1$, club 1 will maximize profits by raising its fee, P^1, just to the point at which $U^1 = \hat{U}^2$, where $U^1 = U(y-P^1,\bar{s}^1(\hat{n}^1))$ and $U^2 = U(y-C(\hat{n}^2),\bar{s}^2(\hat{n}^2))$. That is, P^1 will be raised just to the point at which members of club 1 are indifferent between remaining in club 1 and joining the next-lowest-status club, club 2. Label this value of P^1 as P^*. Notice that it is only the utility level offered by club 2 that need be considered by the owner of club 1 in setting that club's price. This is because members of club 1 will choose to defect to club 2 sooner than to any other lower-status club since, in the cooperative-club equilibrium, $U^2 \geqslant U^i$ for all $i \geqslant 3$. In other words, club 2 is club 1's only important competition, and the utility level offered by club 2 is the lower bound on the level to which the owner of club 1 can drive the utility of that club's members when setting the club's fee.

So long as not all members of clubs 1 and 2 are of the same status (an assumption we shall maintain for the rest of Section IV), we have $U(y-C(\hat{n}^1),\bar{s}^1(\hat{n}^1)) > U(y-C(\hat{n}^2),\bar{s}^2(\hat{n}^2))$. It follows that $P^* > C(\hat{n}^1)$, yielding a pure profit to the owner of club 1. The resulting fee and membership size, $(P^*,\hat{n}^1)$, will not, however, in general be an equilibrium allocation for club 1. So long as club status is a normal good and the second-order condition for a profit maximum is satisfied throughout the relevant range, club 1 can increase its profits further by "raiding" high-status members from club 2 -- that is, by lowering its price marginally below P^* (so that $U^1 > U^2$) and lowering its admission requirements, thereby expanding the club's size by attracting to it the highest-status members of club 2. (See Appendix A.) In response to such a loss of high-status members to club 1, club 2 will then have an incentive to alter its own membership (and fee), generally by taking the highest-status members from club 3. Equilibrium will be reached for these two clubs when (5) is maximized subject to the condition that $\tilde{U}^1 = \tilde{U}^2$, where $\tilde{U}^1 = U(y-\tilde{P}^1, \bar{s}^1(\tilde{n}^1))$ and $\tilde{U}^2 = U(y-C(\tilde{n}^2), \bar{s}^2(\tilde{n}^2))$, and where tildes above variables indicate that the variables have achieved their equilibrium values in system $\tilde{\Phi}$. Once equilibrium has been achieved for clubs 1 and 2, clubs of lower status than club 2 will adjust to new equilibrium memberships and fees, allocating among themselves the individuals not taken by the higher-status clubs in the same fashion as they would in an all-cooperative-club equilibrium.

In the final equilibrium, system $\tilde{\Phi}$, the proprietary club will operate at a pure profit, and will accomplish this by operating with a larger (and thus less exclusive) membership size, and at a higher price, than the (highest status) members of club 1 would choose if they were to run the club as a cooperative. (See Appendix A.)

Note that the proprietary club is able to earn pure profits here even though all the other clubs with which it competes are setting price equal to cost. Such profits can be maintained because the competing clubs are not offering a homogeneous product. Rather, the product being sold -- the opportunity to associate with people of a given status -- is highly differentiated. The highest-status club has a degree of monopoly power that derives from the fact that there is a scarcity of high-status individuals in society, and that no other club can offer a membership of comparably high status.

Two other factors, in addition to the scarcity of high-status individuals in society, are also important here in permitting a proprietary club to exploit its monopoly position. The first is the inability of any given club to vary its membership fee according to the status of the individual involved, a limitation that prevents a person of high status from negotiating as an individual with different clubs over his membership fee, and thus capturing for himself a larger share of the value to others of his high status. (See Section V below.) The second factor is that, in contrast to the behavior explored in Section IV.A above, individuals are here assumed not to form coalitions for purposes of negotiating with the owner of a proprietary club.

It is not important, on the other hand, that club 1, rather than some lower-status club, was chosen here to be the one club owned and operated by a profit-seeking entrepreneur. The analysis would be much the same if, starting with the all-cooperative-club equilibrium system $\hat{\Phi}$, any arbitrarily chosen club k were to be acquired by a profit-seeking owner, leaving the other clubs to operate as cooperatives.[13]

Moreover, it is not important that the other clubs with which our hypothetical proprietor competes were here assumed to be organized as cooperatives, rather than as proprietary clubs. By assuming that the competing clubs operate as cooperatives, we not only simplify exposition and analysis, but also provide maximum competition for the proprietary club, in that the cooperatives by assumption always set price equal to cost and choose the membership size that maximizes utility for the club members. If the competing clubs were organized as proprietary firms, they could offer no greater competition, and might well offer less, thus allowing club 1 to exploit its members even more than it does in the model analyzed above. (For a sketch of a competitive equilibrium with only profit-seeking clubs, see Appendix B.)

C. Incentives For Forming Cooperatives

A comparison of system $\hat{\Phi}$, in which club 1 is operated as a cooperative, with system $\tilde{\Phi}$, in which it is proprietary, shows clearly the incentives for operating such clubs as cooperatives. All of the members of club 1 are better off when it is operated as a cooperative than when it is operated as a proprietary firm.[14/] By acting collectively, the members can avoid the monopolistic exploitation to which they would be subject if they were to deal as individuals with a proprietary club. This is entirely in keeping with the role that cooperatives play in other sectors of the economy, for -- at least if we except those cases in which cooperatives are primarily a response to specially legislated subsidies or exemptions -- both consumer and producer cooperatives typically arise where their patrons would otherwise face a monopolist or a monopsonist. (See Heflebower.) The only novel element where associative organizations are concerned is that the thing that a proprietary firm is selling to its patrons at a monopoly price is the patrons' <u>own</u> high status -- which undoubtedly makes such an arrangement particularly galling.

All of this suggests that here, as in other situations where cooperatives provide an alternative to monopolistic exploitation, the costs of organizing the patrons constitute a crucial factor. We would expect the cooperative form to arise only where such costs are low relative to the benefits to be obtained from avoidance of exploitation. The members of a country club, for example, are relatively easy to organize, since the members generally live near each other, the club occupies a substantial part of the members' time and finances, and the membership changes only slowly over time. Thus it is not surprising that country clubs are commonly operated on a cooperative basis. In contrast, resorts, restaurants, and night clubs are sometimes exclusive, but are generally operated as proprietary firms, presumably because the cost to the patrons of organizing themselves would be excessive relative to the gains they would derive.

V. CLUB FEES THAT VARY WITH AN INDIVIDUAL'S STATUS

So far we have assumed that all clubs are constrained to be intramurally egalitarian. It was noted in Section I that this constraint gives rise to an externality among club members, and it was suggested in Section III that this externality is important in fostering stratification among cooperative clubs. Such stratification is not, however, entirely the product of this externality. Even if cooperative clubs are free to charge different members different fees depending upon their respective statuses it is still possible that they will tend to stratify;

whether or not they do depends upon the structure of their members' preferences.

To demonstrate the factors involved, it suffices to consider some simple examples. In particular, assume that there are only two different statuses of people in society, s_1 and s_2, with $s_1 > s_2$. Assume also, for convenience, that the number of individuals of status s_i in society is a multiple γ_i of n^* (the size that minimizes cost per member), where γ_i is an integer.

Will the individuals of status s_1 prefer to form cooperative clubs that consist only of individuals of their own status? If so, the clubs they form will all clearly be of size n^* and the system will be strictly stratified, with the individuals of status s_2 left with no recourse but to form clubs among themselves, which again can be expected to be of size n^*. In this case all individuals, regardless of status, will pay dues of $C(n^*)$. The utility of the members of the γ_i clubs of status s_i will then be $U(y-C(n^*),s_i)$.

Such a strictly stratified system of clubs will develop (or, more precisely, will constitute the cooperative-club equilibrium in both of the senses defined in Section III) if and only if it would not be worthwhile for a group of low-status individuals to "bribe" a group of high-status individuals, by means of reduced dues, to join the low-status individuals in a mixed club that has a status level between s_1 and s_2. If α is the fraction of the members of such a mixed club who are of status s_1, then the average status of the club will be $\alpha s_1 + (1-\alpha)s_2$. Let f_i be the fee that is charged to individuals of status s_i who belong to the mixed club. We can confine our attention to clubs of size n^*

since that is the size that will be most attractive to a club's members whether the club is mixed or stratified, and, given our assumptions, it is possible to form at least one club of size n^* with any given status between s_1 and s_2. It follows that, for such a mixed club, $\alpha f_1 + (1-\alpha)f_2 = C(n^*)$.

A mixed club will be at least as satisfactory as a strictly stratified club for individuals of both statuses when both

$$(6) \qquad U(y-C(n^*),s_1) \leq U(y-f_1,\alpha s_1+(1-\alpha)s_2),$$

$$(7) \qquad U(y-C(n^*),s_2) \leq U(y-f_2,\alpha s_1+(1-\alpha)s_2).$$

Consequently, a system of strictly stratified clubs can be expected to develop if and only if there is no α, f_1, and f_2 such that $0 < \alpha < 1$ and $\alpha f_1 + (1-\alpha)f_2 = C(n^*)$, and such that both (6) and (7) are satisfied.

The incentive for stratification here depends upon the rates at which marginal utilities decline. For example, it is easy to establish (see Appendix C) that if the marginal utility of status is declining ($\partial^2U/\partial\bar{s}^2 < 0$), while the marginal utility of income is constant ($\partial^2U/\partial y^2 = 0$, as might effectively be the case if expenditures for club membership are a relatively small fraction of an individual's income), then for any α we can find values for f_1 and f_2 that satisfy (6) and (7). In these circumstances, there are mutual gains to be had if high-status individuals trade some of their status to low-status individuals for money. Thus, mixed clubs will be preferred by everyone to stratified clubs. On the other hand, if $\partial^2U/\partial y^2 < 0$ while $\partial^2U/\partial\bar{s}^2 = 0$, there exist no values for f_1 and f_2 that will satisfy (6) and (7), and therefore strictly stratified clubs will always result even though the clubs involved are free to adjust their fee according to each member's personal status.

VI. IS STRATIFICATION SOCIALLY DESIRABLE?

Having described the factors that tend to give rise to systems of cooperative clubs, and the characteristics that such systems are likely to exhibit, it remains to consider the welfare implications of this form of organization.

The analysis in Section V makes it clear that in some cases (as where $\partial^2 U/\partial y^2 = 0$) the cooperative-club equilibrium described in Section III for intramurally egalitarian clubs may be Pareto inferior to other systems that could be formed if clubs were capable of price discrimination. Yet if in fact a substantial degree of price discrimination is not a real possibility -- as seems often to be the case with associative organizations -- this observation is not particularly helpful. Let us consider, therefore, whether there are other systems of feasible intramurally egalitarian clubs that might be superior, from a welfare standpoint, to the cooperative-club equilibrium.

It is clear that the cooperative-club equilibrium $\hat{\Phi}$ described in Section III represents a Pareto optimum once we impose the restriction that clubs be intramurally egalitarian. Under the circumstances, however, Pareto optimality is an extremely weak criterion. A natural alternative here is a Benthamite social welfare function with all individuals' utilities weighted equally.

With such a social welfare function, a system of strictly mixed clubs -- that is, one in which all clubs have the same average status -- is generally preferable to <u>any</u> stratified system of clubs, including in particular the intramurally egalitarian cooperative-club equilibrium of Section III.

To see this, consider any system consisting of M clubs, with club i characterized by size n^i and average status $\bar{s}^i$, in which there are at least two clubs i and j such that $(n^i,\bar{s}^i) \neq (n^j,\bar{s}^j)$. If the $N = \sum_{i=1}^{M} n^i$ members in these clubs were rearranged into a system of equal-sized strictly mixed clubs, the resulting clubs would each be of size $\bar{n}$ = N/M and of average status $\bar{s} = (1/N)\sum_{i=1}^{M} n^i \bar{s}^i$. Such a strictly mixed system of clubs will be inferior to the original system, in terms of the Benthamite social welfare function, if and only if

$$(8) \qquad NU[y-C(\bar{n}),\bar{s}] < \sum_{i=1}^{M} n^i U[y-C(n^i),s^i].$$

Using a second-order Taylor series to expand the right-hand side of this inequality around $U[y-C(\bar{n},\bar{s})]$, it becomes, after rearranging terms,

$$(9) \qquad 0 < \frac{\partial U}{\partial y}\left[NC(\bar{n}) - \sum_{i=1}^{M} n^i C(n^i)\right] + \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\sum_{i=1}^{M} n^i\left[C(\bar{n})-C(n^i)\right]^2$$

$$+ \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}\sum_{i=1}^{M} n^i\left[\bar{s}^i-\bar{s}\right]^2 + \frac{\partial^2 U}{\partial y \partial \bar{s}}\sum_{i=1}^{M} n^i C(n^i)\left[\bar{s}-\bar{s}^i\right].$$

The coefficient of $\partial U/\partial y$ in this expression is nonpositive since $C''(n) > 0$. The second and third terms on the right-hand side are also clearly nonpositive. Only the last term can possibly be positive.

It therefore follows from (9) that (8) can hold only when $\partial^2U/\partial y\partial\bar{s}$ is relatively large. It is possible to construct examples in which (8) is satisfied, though they appear to be extreme cases.[15]

The intuition behind this result is as follows: Declining marginal utility of income leads to gains from averaging the costs (and hence the sizes) of clubs, and declining marginal utility of status likewise leads to gains from averaging the status of different clubs; these effects are reflected in the second and third terms of (9), respectively. Further, since $C''(n) > 0$, the total cost of operating the club system will decrease if club sizes are averaged, and this is reflected in the first term of (9). But if, for example, $\partial^2U/\partial y\partial\bar{s} << 0$, then there may be gains to be derived from isolating the highest-status individuals into a small (and relatively expensive) club of their own. Only when such cross effects are strong enough to dominate the other factors will clubs of unequal status be socially optimal.[16]

In this connection it is interesting to note that colleges and universities that are publicly owned and operated tend to be considerably larger and less stratified than their privately-operated counterparts. Since the same technology presumably applies in both cases, it seems possible that the difference can be attributed at least in part to the fact that while private institutions tend toward the cooperative-club equilibrium described in Section III, public institutions are more sensitive to the broader welfare considerations just discussed.

This welfare analysis is limited, however, by our assumption that an individual has no control over his own status. If in fact a person can undertake investments to enhance his status, then a policy prohibiting stratified clubs would reduce or eliminate the incentive to make such investments. The resulting costs would then also need to be considered in determining whether net welfare gains could be derived from eliminating stratification.

VII. CLUB STATUS AND CLUB SIZE

We commonly think of elite institutions as being small ones. But if, in fact, the most exclusive clubs usually also have the fewest members, this may be in large part simply because there are relatively fewer high-status than low-status people in society. If individuals were uniformly distributed across all status levels, then, in the model developed here, high-status clubs would in general actually have an incentive to maintain a larger membership than low-status clubs.

To compare the size of high-average-status clubs with that of low-status clubs, we can examine what happens to the size of any given cooperative club i when n_h^i decreases -- that is, when the club gains access to higher-ranked, and thus higher-status, applicants for membership. (This method also permits us to explore the incentives for increasing or decreasing total enrollments that face, for example, a private educational institution when the quality of its applicants increases.) Differentiating the first-order condition (3) by n_h^i, solving for

dn_l^i/dn_h^i, and then solving for dn^i/dn_h^i by means of the relationship $dn^i/dn_h^i = dn_l^i/dn_h^i - 1$ gives

$$(10)\qquad \frac{dn^i}{dn_h^i} = \frac{1}{\partial^2 U^i/\partial(n_l^i)^2}\left(\left[\frac{s(n_h^i)-s(n_l^i)}{n^i}\right]\left[C'(n^i)\frac{\partial^2 U^i}{\partial y\partial \bar{s}} + \frac{\bar{s}^i - s(n_l^i)}{n^i}\frac{\partial^2 U^i}{\partial \bar{s}^2}\right] + \frac{1}{n^i}\left[\frac{s(n_h^i)-s(n_l^i)}{n^i} + \frac{ds(n_l^i)}{dn_l^i}\right]\frac{\partial U^i}{\partial \bar{s}}\right).$$

The denominator in (10) is negative so long as the second order condition is satisfied. Thus we see that, if the number of individuals exhibiting any given status level is constant, or increases as the status level increases (so that $ds(n_l^i)/dn_l^i \leq -[s(n_h^i)-s(n_l^i)]/n^i$), then $dn^i/ds_h^i > 0$ (that is, clubs will increase in size as they increase in status) unless $\partial^2 U^i/\partial y\partial \bar{s} \ll 0$.

As (10) indicates, the declining marginal utility of status is important in driving this result. Since all individuals in this model have the same income, after-club-dues income is affected only by club size, not by club status. Consequently, as a club's status increases, members become more willing to trade off some of the club's status for lower dues by increasing the club's membership. If, alternatively, persons of high status also had higher incomes than low-status individuals (as may often be the case in reality), then declining marginal utility of income would tend to lead high-status individuals to prefer especially small (and hence especially exclusive) clubs.

VIII. CHANGES IN COSTS

The model also permits us to consider the effect on club structure of changes in costs. To this end, assume that cost per member is now given by $C(n) = \delta\tilde{C}(n)$, where δ is a constant. The utility level of a member of club i is then $U[y-\delta\tilde{C}(n^i),\bar{s}^i]$. Using a comparative statics approach of the type just employed for status changes, we obtain

$$(11) \quad \frac{dn^i}{d\delta} = \frac{\tilde{C}'(n^i)\frac{\partial U^i}{\partial y} - \delta\tilde{C}'(n^i)\tilde{C}(n^i)\frac{\partial^2 U^i}{\partial y^2} - \tilde{C}(n^i)\frac{\left[\bar{s}^i - s(n_1^i)\right]}{n^i}\frac{\partial^2 U^i}{\partial\bar{s}\partial y}}{\partial^2 U^i/\partial(n_1^i)^2} .$$

Since $\partial^2 U^i/\partial(n_1^i)^2 < 0$ by virtue of the second-order condition, it follows that $dn^i/d\delta > 0$ unless $\partial^2 U^i/\partial\bar{s}\partial y >> 0$. Thus we can generally expect an increase in costs to induce a club to increase its membership and lower its average status -- the obvious response to an increase in the effective cost of status.[17/] This result seems consistent with the recent behavior of financially pressed educational institutions, many of which have expanded enrollments (and hence lowered admission standards) in an effort to cope with rising costs.

IX. FURTHER APPLICATIONS

The preceding sections have focused on social clubs and educational institutions as the most obvious applications of the model. As observed earlier, however, many other types of organizations exhibit the characteristics captured by the model. By way of further illustration, we shall note here briefly how the model can be interpreted to apply to suburban municipalities, professional partnerships, and insurance companies.

IX.A. Residential Suburbs

Residential suburbs provide a relatively obvious example of the phenomena discussed above. It is, however, slightly awkward to interpret the particular model developed here to fit suburban communities, because of the special complications that arise from the fact that the fiscal externality that gives rise to the incentives for exclusivity and stratification in such communities derives from taxation of real estate. Nevertheless, at least one reasonably natural interpretation of the model in this context is available.

Let the variable s in the model represent the amount of property taxes that an individual contributes to the community in which he resides. In assuming that s is fixed for each individual and not dependent upon the community he joins, as we have done in the model as developed above, we are essentially assuming that the product of the local property tax rate and the value of the individual's residential property will be the same for all communities -- as will be the case, for example, if all communities have the same tax rate and the value of the house chosen by an individual is not affected by his choice of community. We then need to assume further that the average property tax contribution, $\bar{s}$, determines the level of local public services enjoyed by residents, which enters directly into each resident's utility function.[18/]

We can then interpret the variable y in the model as an individual's income net of his property tax contribution (or, alternatively, net of both that and the amount spent on housing[19/]). Further, we can take C(n) to represent the cost of private services whose expense is a function of urbanization. The assumption that $C'(n) < 0$ over some range reflects the fact that, at least up to a point, increasing the size of a city decreases the costs (in particular, the shopping and other transactions costs) of obtaining many private goods and services.

Finally, the suburbs in our model establish their exclusivity by setting the minimum level of s required to become a resident.

In a proprietary suburb, such as a privately-operated retirement community or a company town, the owner has the opportunity of charging an entrance fee for residents that is high enough to capture for himself any consumer surplus that would otherwise accrue to the residents owing to the community's relative level of exclusivity (and associated large tax base). A natural way of exacting such a fee, for example, might be through high prices or rents for land in the community, over which the proprietor presumably has monopoly control.

Suburbs organized in what we have termed the "cooperative" form are those that are controlled by their residents via ordinary municipal corporations. Note, however, that if our model is to reflect the behavior of such municipalities it must also be the case that land within the suburbs is in relatively elastic supply -- as would be the case, for example, if there were more land available within the suburb than was demanded at the level of exclusivity chosen by the residents, and if that undeveloped land were in the hands of a multiplicity of competing sellers. Otherwise the value of a community's exclusivity might come to be capitalized in land values, thus reducing the effective distinction between the proprietary and cooperative communities.

If we are willing to indulge in the foregoing assumptions -- which, even taken together, do not seem so wide of the mark in important respects as to make this interpretation uninstructive -- then the model developed in the preceding sections can be taken as a fair representation of the incentives facing suburban communities, and of their likely responses.

However, other models can be developed that apply more directly to the particular case of suburban communities while still reflecting the incentives for exclusivity, stratification, and cooperative control embodied in the model presented above. For example, just a small modification of that model affords a somewhat different interpretation. Thus, assume again that s represents an individual's property tax contribution, and that this is invariant across communities as before. But now assume that C(n) represents the average cost of providing community services, so that the service level enjoyed by a resident is given by $\bar{s}/C(n)$. We can now drop any assumptions about economies in the provision of private services, though we need to retain most of the other assumptions spelled out in the immediately preceding paragraphs. Residents of cooperative suburb i will seek to maximize $U^i = U[y, \bar{s}^i/C(n^i)]$, which will lead them to the point where

$$(12) \qquad \frac{C'(n^i)}{C(n^i)} = \frac{d\bar{s}^i/dn^i}{\bar{s}^i} .$$

Assuming that C(n) retains the form imputed to it in Section II, this model behaves in all essential respects like the one developed above.[20/]

IX.B. Partnerships And Other Producer Cooperatives

The model presented here applies directly to law firms and other forms of income-sharing enterprise. The simplest approach is just to adopt a special form of the utility function in which

$$(13) \qquad U^i = U[y-C(n^i),\bar{s}^i] = G[y-C(n^i)+\bar{s}^i]$$

where $G' > 0$, $G'' < 0$, s is the income produced by a given partner, y is the partner's income from sources outside the firm (here presumed equal for all -- it can be set at zero for simplicity), and C(n) is the average business expense (including secretaries, office rental, etc., but exclusive of the amounts disbursed to partners) incurred by a firm with n partners. The firm will then choose to operate at a size n^i such that

$$(14) \qquad C'(n^i) = \frac{d\bar{s}^i}{dn^i} .$$

Note that these firms exhibit many of the characteristics of Ward-Domar type producer cooperatives.[21/] For example, it follows from (IX-3) that the firms will generally operate at a scale that is below the level that minimizes average cost. Furthermore, the short-run supply response to changes in costs and demand will be perverse.22/

IX.C. Insurance

The model developed here may also help to explain the structure of the insurance industry.

In this interpretation, we can take a person's status, s, as representing the expected loss that the person is likely to incur (so that $s \leq 0$ for everyone, and persons with high algebraic values of s represent the best insurance risks). The "clubs" in our model are now (risk neutral) insurance companies, which offer full compensation for all losses suffered by their members. C(n) can be taken to represent the cost of administering an insurance company (that is, all costs except the costs of paying claims). Then the utility of a person who purchases insurance from company j is $U^j = U(y-f^j,\bar{s}^j) = U(y-f^j+\bar{s}^j)$, where the premium charged by company j is $f^j-\bar{s}^j$.23/ In the case of a company organized as a cooperative (i.e., a mutual insurance company), $f^j = C(n^j)$; for a for-profit (stock) insurance company, $f^j \geq C(n^j)$.

Assume that all of a company's policyholders must be charged the same premium, regardless of the risk of loss, s, that they present (as is in fact the case, at least within broad rate categories). Then, if companies are organized as mutuals, they will have the incentives for exclusivity and stratification discussed in Section III above. (Exclusivity in this context involves unwillingness to sell insurance to some persons who are within a given nominal rate category and who are willing to pay the stated premium for that category, but who are perceived as presenting higher risks than others falling within the same category.) Moreover, there will be incentives for the formation of mutual rather than stock insurance companies as described in Section IV.

X. CONCLUSION

Even among the particular types of organizations invoked here as examples -- social clubs, schools, law firms, etc. -- exclusivity, stratification, and cooperation are not entirely attributable just to the externalities deriving from the associative phenomena explored above. Undoubtedly schools are exclusive and stratified at least in part because there are economies involved in educating students who are all of roughly similar abilities and background. Presumably social clubs are sometimes run as cooperatives simply because the management of the club is a consumption good for the members. And at least some law firms would probably not be run as lawyers' cooperatives if it were not -- for reasons combining ethics and self-interest -- illegal in every state to organize them in any other way (Hansmann, 1981, pp. 543-45).

Moreover, incentives for exclusivity, stratification, and cooperation may be weakened if some of the simplifying assumptions employed in the model are relaxed. In particular, stratification among associative organizations is likely to become blurred to a greater or lesser degree if individuals differ in their preferences or income, and especially if such differences are uncorrelated with individuals' personal status.

Nevertheless, wherever the personal characteristics of one's fellow consumers or producers are an important source of utility, and cannot effectively be dealt with by intra-organizational variations in price, incentives for exclusivity, stratification, and cooperative control will be present. And these incentives help to explain the organizational structure of many otherwise dissimilar types of institutions.

APPENDIX A

We wish to establish that $\hat{n}^1$ (the equilibrium size for club 1 when the club is operated as a cooperative) is not an equilibrium membership size for club 1 when that club is operated to maximize profit.

For club 1, $n^1 = n_1^1$. Let $P(n^1)$ denote the membership fee for club 1 that maximizes that club's profits at any given membership size $n^1 = n_1^1$. For a given n^1, therefore, $P(n^1)$ satisfies

$$\text{(A1)} \qquad U^1 = U[y - P(n^1), \bar{s}^1] = U^2(n^1)$$

where $U^2(n^1)$ is the maximum utility level that club 2 can attain given that club 1 has taken the n^1 highest-status members of society. Total differentiation of (A1) by n^1 then gives:

$$\text{(A2)} \qquad \frac{dP(n^1)}{dn^1} = \left[\frac{\partial U^1/\partial \bar{s}}{\partial U^1/\partial y}\right]_P \frac{d\bar{s}^1}{dn^1} - \frac{dU^2/dn^1}{\left[\partial U^1/\partial y\right]_P}$$

(where the subscript P's indicate that utilities are computed where the membership fee equals $P(n^1)$).

We can write the profits of club 1 as $\Pi^1 = \Pi(n^1) = n^1[P(n^1) - C(n^1)]$. The effect on profits of increasing the club's size is

$$\text{(A3)} \qquad \frac{d\Pi(n^1)}{dn^1} = P(n^1) - C(n^1) + n^1\left[\frac{dP(n^1)}{dn^1} - C'(n^1)\right]$$

where $dP(n^1)/dn^1$ takes the value given by (A2). When $n^1 = \hat{n}^1$, $C'(n^1)$ takes the value given by (4) of Section III. Substituting (A2) and (4) in (A3), we have, when $n^1 = \hat{n}^1$,

$$(A4) \qquad \frac{d\Pi(\hat{n}^1)}{dn^1} = \left[P(\hat{n}^1) - C(\hat{n}^1)\right] - \hat{n}^1\frac{(dU^2/dn^1)}{\left[\partial U^1/\partial y\right]_P} + $$

$$+ \hat{n}^1\frac{d\bar{s}^1}{dn^1}\left(\left[\frac{\partial U^1/\partial \bar{s}}{\partial U^1/\partial y}\right]_P - \left[\frac{\partial U^1/\partial \bar{s}}{\partial U^1/\partial y}\right]_C\right)$$

where the subscript C indicates that utility is evaluated where the membership fee equals $C(n^1)$. When club status is a normal good, the expression in curved brackets in the last term in (A4) will be positive. Since the first two terms on the right-hand side of (A4) are also positive, (A4) as a whole must be positive. Thus, when $n^1 = \hat{n}^1$, the proprietary club can increase its profits by expanding its membership. So long as the second-order condition for profit maximization is satisfied throughout the relevant range, it follows that, in equilibrium, club 1 will have a larger (and less exclusive) membership when it is proprietary than when it is operated as a cooperative.

APPENDIX B

We shall here sketch briefly one approach to modelling the characteristics of a system of clubs in which all clubs are proprietary.

Assume that, to begin with, there are no clubs. The first entrepreneur who establishes a club, seeking to establish the most profitable club possible, admits as members the $\tilde{n}^1$ highest-status individuals in the society, and charges a fee $\tilde{f}^1$, where $\tilde{n}^1$ and $\tilde{f}^1$ maximize profits, $\Pi^1 = n^1[f^1 - C(n^1)]$, subject to $U(y-f^1,\bar{s}^1) \geq U_{min}$. Assume, for simplicity, that the values $(\tilde{f}^1,\tilde{n}^1)$ are unique.

Assume now that a second entrepreneur enters the market, forming a new club, club 2, from among the $N-\tilde{n}^1$ individuals who do not yet belong to a club. He admits $\tilde{n}^2$ of the highest-status of these individuals, at a fee of $\tilde{f}^2$, where $\tilde{n}^2$ and $\tilde{f}^2$ are chosen to maximize $\Pi^2 = n^2[f^2 - C(n^2)]$ subject to $U^2 \geq U_{min}$. Assume then that a third entrepreneur forms another club in like manner, and so forth, until either all individuals belong to clubs or it would not yield a profit to form a club for any subset of the individuals who remain unaffiliated with any of the existing clubs.

The resulting system of clubs, which we shall label system $\tilde{\Phi}'$, is strictly stratified. All individuals in the system, regardless of the club they belong to (or whether they belong to any club at all), experience the same utility level, namely U_{min}. For each $i < j$, $\Pi^i \geq \Pi^j$, with equality only in the case in which members of both clubs are of the same status.

By virtue of the fact that $U^i = U^j$ for all i and j, system $\tilde{\Phi}'$ satisfies condition (b) in our definition of a competitive equilibrium in Section IV.B. Under plausible assumptions concerning the competitive behavior of club owners, it will also satisfy condition (a). In particular, condition (b) will be satisfied so long as no club i is motivated to seek to take members away from a higher-status club j by means of predatory pricing -- that is, by lowering its fee so that $U^i > U^j = U_{min}$, drawing members from club j (and perhaps simultaneously expelling some of its own lower-status members), and then subsequently raising its fee back to the point where $U^i = U_{min}$. But in fact such predatory pricing seems likely to be an unattractive strategy in such a stratified system of clubs, since club i can be expected to lower its own fee in response to club j's tactics, and club i will generally have the advantage that it has a larger profit margin to draw on in any such price war.

Thus, system $\tilde{\Phi}'$ is a plausible equilibrium. And all club members will be even worse off under system $\tilde{\Phi}'$ than they would be under system $\tilde{\Phi}$ described in Section IV.C (in which only club 1 is proprietary, while all other clubs are cooperatives), and clearly much worse off than they would be in the all-cooperative-club equilibrium system $\hat{\Phi}$.

APPENDIX C

Using a Taylor series expansion around $U[y-C(n^*),\alpha s_1+(1-\alpha)s_2]$, we can approximate (6) and (7) by, respectively,

$$\text{(C1)}\qquad \frac{\partial U}{\partial \bar{s}}(1-\alpha)(s_1-s_2) + \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}(1-\alpha)^2(s_1-s_2)^2 \leq \frac{\partial U}{\partial y}\beta + \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\beta^2$$

$$\text{(C2)}\qquad -\frac{\partial U}{\partial \bar{s}}\alpha(s_1-s_2) + \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}\alpha^2(s_1-s_2)^2 \leq -\frac{\partial U}{\partial y}\left(\frac{\alpha}{1-\alpha}\right)\beta + \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\left(\frac{\alpha}{1-\alpha}\right)^2\beta^2$$

where $\beta \equiv C(n^*)-f_1$, and consequently $C(n^*)-f_2 = -[\alpha/(1-\alpha)]\beta$. With some manipulation these two inequalities can be rewritten as, respectively,

$$\text{(C3)} \qquad \frac{\partial U}{\partial \bar{s}}(1-\alpha)(s_1-s_2) - \frac{\partial U}{\partial y}\beta \leq \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\beta^2 - \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}(1-\alpha)^2(s_1-s_2)^2$$

$$\text{(C4)} \qquad \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}\alpha(1-\alpha)(s_1-s_2)^2 - \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\left(\frac{\alpha}{1-\alpha}\right)\beta^2 \leq \frac{\partial U}{\partial \bar{s}}(1-\alpha)(s_1-s_2) - \frac{\partial U}{\partial y}\beta.$$

Combining the latter two inequalities then gives

$$\text{(C5)} \qquad \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}\alpha(1-\alpha)(s_1-s_2)^2 - \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\left(\frac{\alpha}{1-\alpha}\right)\beta^2 \leq \frac{\partial U}{\partial \bar{s}}(1-\alpha)(s_1-s_2) - \frac{\partial U}{\partial y}\beta$$

$$\leq \frac{1}{2}\frac{\partial^2 U}{\partial y^2}\beta^2 - \frac{1}{2}\frac{\partial^2 U}{\partial \bar{s}^2}(1-\alpha)^2(s_1-s_2)^2 .$$

Thus strictly stratified clubs will develop if and only if there exist no $0 < \alpha < 1$ and $\beta \geq 0$ (and hence no values for f_1 and f_2) that satisfy (C5).

Consider first the case in which $\partial^2U/\partial y^2 = 0$ and $\partial^2U/\partial \bar{s}^2 < 0$. Then (C5) becomes

$$\text{(C6)} \qquad \frac{1}{2}\,\frac{\partial^2 U}{\partial \bar{s}^2}\alpha(1-\alpha)(s_1-s_2)^2 \leq \frac{\partial U}{\partial \bar{s}}(1-\alpha)(s_1-s_2) - \frac{\partial U}{\partial y}\beta$$

$$\leq -\frac{1}{2}\,\frac{\partial^2 U}{\partial \bar{s}^2}(1-\alpha)^2(s_1-s_2)^2.$$

If we choose β such that

$$\text{(C7)} \qquad \beta = \frac{(\partial U/\partial \bar{s})}{(\partial U/\partial y)}(1-\alpha)(s_1-s_2)$$

then the center term in (C6) will equal zero, and (C6) will be satisfied. Thus, for any α we can find a β that satisfies (C5).

Consider next the case in which $\partial^2 U/\partial \bar{s}^2 = 0$, $\partial^2 U/\partial y^2 < 0$. Then (C5) becomes (omitting the middle term)

$$\text{(C8)} \qquad -\frac{1}{2}\,\frac{\partial^2 U}{\partial y^2}\left(\frac{\alpha}{1-\alpha}\right)\beta^2 \leq \frac{1}{2}\,\frac{\partial^2 U}{\partial y^2}\beta^2$$

which fails unless $\beta = 0$. And if $\beta = 0$, then (C5) becomes

$$\text{(C9)} \qquad 0 \leq \frac{\partial U}{\partial \bar{s}}(1-\alpha)(s_1-s_2) \leq 0$$

which also fails. Thus, in this case there exists no β that satisfies (C5).

FOOTNOTES

1/ The board of trustees of a private college or university is typically elected (at least in part) by the school's graduates rather than by its current students. But then, perhaps the most important club one joins by going to Yale is the club of Yale graduates.

2/ The legal structure of such cooperative-type organizations is explored in Hansmann (1980, pp. 892-94; 1981, pp. 582-96).

3/ See section IX below.

4/ Frank (1983b) offers empirical evidence demonstrating that many firms have a salary structure that exhibits much less variation than can be found in the marginal products of their employees, and offers evidence for the conclusion that such intra-firm flatness in the wage structure can only be explained by employees' preferences concerning invidious intra-firm distinctions. See also Frank (1983a).

5/ Schelling's work on segregation and sorting (1971a, 1971b, undated) also deals with stratification deriving from externalities in interpersonal association. The preference patterns with which Schelling deals, however, are rather unlike those involved here, and he is largely unconcerned with the organizational issues that are the focus of this essay.

See also Gale and Shapley, who deal with the sorting problem from yet another standpoint.

6/ This literature, and the related literature on local public goods that follows in the tradition of Tiebout, is surveyed in Sandler and Tschirhart.

7/ The most conspicuous exception in this latter respect is De Serpa, who notes that preferences among club members concerning the personal characteristics of other members might create incentives for pricing or exclusion based on such characteristics, but does not develop an explicit behavioral model. See also Tollison.

8/ There is one exception to this: a member might differ with the other members concerning the desirability of his own expulsion. Assuming that the member or members to be expelled are in the minority, we need only assume that in those cases the wishes of the majority prevail.

9/ A sufficient condition for uniqueness is that the second order condition, given in note 11, be satisfied throughout the relevant range.

10/ Note that if, instead of desiring the club with the highest average status level, individuals desired to join clubs in which the minimum status level is highest, the cooperative-club equilibrium would still be a stratified system much as it is here. On the other hand, if individuals desired only to join clubs in which the highest-status member has the highest possible status, and were indifferent to the status of the other members, then it could be that there exist many unstratified systems that are equilibria under Definition I and, simultaneously, no systems that constitute equilibria in the sense of Definition II.

11/ The second-order condition for a utility maximum is

$$\frac{\partial^2 U^i}{\partial (n_1^i)^2} = - C''(n^i)\frac{\partial U^i}{\partial y} + [C'(n^i)]^2 \frac{\partial^2 U^i}{\partial y^2} - 2C'(n^i)\frac{d\bar{s}^i}{dn_1^i}\frac{\partial^2 U^i}{\partial y \partial \bar{s}} +$$

$$+ \frac{d^2\bar{s}^i}{d(n_1^i)^2}\frac{\partial U^i}{\partial \bar{s}} + \left[\frac{d\bar{s}^i}{dn_1^i}\right]^2 \frac{\partial^2 U^i}{\partial \bar{s}^2} < 0 \, .$$

This condition can fail only if $\partial^2 U^i/\partial y \partial \bar{s} < 0$ or $d^2\bar{s}^i/d(n_1^i)^2 > 0$ or both. From (2), we have $d^2\bar{s}^i/d(n_1^i)^2 > 0$ just in case $ds(n_1^i)/dn_1^i < 2[\bar{s}^i - s(n_1^i)]/n^i$ -- which is to say, roughly, just in case the density of applicants whose status puts them just at the margin of the club's minimum status requirement for membership is greater than the average density of individuals across the statuses represented by the club's current below-average-status members. Thus a relatively high density of applicants of marginal status will tend to make $\partial^2 U^i/\partial (n_1^i)^2$ positive. It follows that multiple local (or global) optima are most likely when the density of potential club members varies considerably over the relevant range of status levels.

12/ In assuming that an individual, in making this evaluation, compares the levels of U^i and U^j that prevail <u>prior</u> to a switch by him from one club to the other, rather than comparing the utility levels that would prevail after a switch, we are assuming some myopia on the part of the individuals involved. In the continuous-variable version of the model used here, however, in which members are infinitely divisible, the difference between the two choice rules is unimportant. Moreover, even in a discrete-individual version of the model the use of the myopic choice rule would have no qualitative effect on the resulting equilibrium.

13/ Clubs of higher status would be unaffected by the change in ownership of club k, and would continue to behave just as in system $\hat{\Phi}$, since club k would be unable to draw members from them at any feasible fee P^k, and since they would not be willing to admit any of the individuals originally belonging to club k regardless of the policies chosen by that club. Thus the analysis of this alternative system would proceed just as if club k were club 1 in a system in which its members are the highest-status members of society; the behavior of individuals and clubs of higher status than that of club k can simply be ignored.

14/ This is obviously true for the highest-status members of club 1 -- those who would be members of the club under both arrangements. But it is also true for those individuals who would be members of club 1 under proprietary ownership, but would be excluded from that club and would have to join club 2 if club 1 were operated as a cooperative. This is because the utility level of club 1 when operated as a proprietary firm would, in equilibrium, be less than $\hat{U}^2$, the utility offered by club 2 in equilibrium when club 1 is operated as a cooperative. (See Appendix A.)

15/ For example, consider the case in which $M = 2$, and the members of the two clubs are drawn from a total of N individuals who cover uniformly the status range s_{min} to $s_{min}+N$. Let the utility function be of the form

$$U^i = U[y-C(n^i), \bar{s}^i] = A[y-C(n^i)]^\alpha - [y-C(n^i)]^\alpha(\bar{s}^i)^\beta + B(\bar{s}^i)^\beta,$$

and let the cost function be of the form $C(n) = [(n-5000)/100]^4 + 100$ (so that $n^* = 5000$). Assume $N = 8000$, $y = 25{,}000$, $s_{min} = 5000$, $A = 5080$, $B = 25{,}000$, and $\alpha = \beta = .95$. Then the social welfare that results from two mixed clubs both of size $n = 4000$ and average status $\bar{s} = 5040$ is 790,076,000,000, whereas the social welfare that results from a system of two strictly stratified clubs is maximized at $n^1 = 3999$ and $n^2 = 4001$, and amounts to 790,078,000,000.

Note that the welfare-maximizing stratified system just described bears little relation to the cooperative-club equilibrium, which in this example has $n^1 = 4906$, $n^2 = 0$, and (if we assume that U_{min}, the utility level for non-club-members, is 0), social welfare $n^1U^1 = 535{,}844{,}000{,}000$.

16/ What has been shown here is that any system of stratified clubs is likely to be dominated, from a social welfare standpoint, by a strictly mixed system with the same number of clubs. Such a mixed system may, in turn, be dominated by another mixed system with a different number of clubs. In general, the optimal number M of clubs for a mixed system is that in which club size is closest to n^* (or, more precisely, that which minimizes C(N/M)).

17/ See Section IX.B where, in a simpler version of the model, the response to an increase in costs is unambiguous.

18/ This assumes that the local public services are actually just collective-consumption services whose cost of production is a linear function of both the number of residents and the service level provided to the residents.

19/ If the property tax rate is α, then gross income in the latter case would be $[(1+\alpha)s/\alpha]+y$.

20/ See Stiglitz (1974), Section 9, for another effort to model the factors involved in segregation of rich and poor among residential communities.

21/ See Ward, Domar, Vanek, and Meade.

22/ To see this, let the average revenue of firm i now be given by $P\bar{s}^i$, where P is the market price for its services, and let its average costs now be given, as in Section VIII, by $C(n^i) = \delta\tilde{C}(n^i)$. The first-order condition then becomes

$$\tilde{C}'(n^i) = \frac{P}{\delta}\frac{d\bar{s}^i}{dn^i} .$$

From this it follows that when demand for the firm's services increases, leading to an increase in P, the firm will seek to <u>reduce</u> its size rather than to expand. Conversely, when the firm's costs increase, as reflected by an increase in δ, the firm will seek to <u>increase</u> its size rather than to contract.

23/ Note that here, as opposed to our earlier interpretations of the model, it is unrealistic to assume that a person must belong to a club in order to derive utility from his status. Thus we can no longer assume that the utility of all individuals who do not join clubs is the same, namely U_{min}. This alteration requires only modest qualification of the results derived in previous sections.

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