behavior is attempted. When there is organized or coordinated effort in an inclusive group, as many as can be persuaded to help will be included in that effort.[60] Yet it will *not* (except in marginal cases, where the collective good is only just worth its cost) be essential that every individual in the group participate in the organization or agreement. In essence this is because the nonparticipant normally does not take the benefits of an inclusive good away from those who do cooperate. An inclusive collective good is by definition such that the benefit a noncooperator receives is not matched by corresponding losses to those who do cooperate.[61]

When a group seeks an exclusive collective good through an agreement or organization of the firms in the market—that is, if there is explicit or even tacit collusion in the market—the situation is much different. In such a case, though the hope is that the number of firms in the industry will be as small as possible, it is paradoxically almost always essential that there be 100 per cent participation of those who

60. Riker's interesting argument, in *The Theory of Political Coalitions*, that there will be a tendency toward minimum winning coalitions in many political contexts, does not in any way weaken the conclusion here that inclusive groups try to increase their membership. Nor does it weaken any of the conclusions in this book, for Riker's argument is relevant only to zero-sum situations, and no such situations are analyzed in this book. Any group seeking an inclusive collective good would not be in a zero-sum situation, since the benefit by definition increases in amount as more join the group, and as more of the collective good is provided. Even groups seeking exclusive collective goods do not fit Riker's model, for though the amount that can be sold at any given price is fixed, the amount the price will be raised and thus the gain to the group are variable. It is unfortunate that Riker's otherwise stimulating and useful book considers some phenomena, like military alliances, for which his zero-sum assumption is most inappropriate. See William H. Riker, *The Theory of Political Coalitions* (New Haven, Conn.: Yale University Press, 1962).

61. If the collective good were a "pure public good" in Samuelson's sense, the benefit the noncooperator receives would not only not lead to a corresponding loss to those who did cooperate; it would not lead to any loss whatever for them. The pure-public-good assumption seems, however, to be unnecessarily stringent for present purposes. It would surely often be true that after some point, additional consumers of a collective good would, however slightly, reduce the amount available to others. The argument in the text therefore does not require that inclusive collective goods be pure public goods. When an inclusive collective good is not a pure public good, however, those in the group enjoying the good would not welcome additional members who failed to pay adequate dues. Dues would not be adequate unless they were at least equal in value to the reduction in the consumption of the old members entailed by the consumption of the new entrant. As long as any significant degree of "jointness in supply" remains, however, the gains to new entrants will exceed the dues payment needed to ensure that the old members will be adequately compensated for any curtailment in their own consumption, so the group will remain truly "inclusive."

remain in the group. In essence this is because even one nonparticipant can usually take all the benefits brought about by the action of the collusive firms for himself. Unless the costs of the nonparticipating firm rise too rapidly with increases in output,[62] it can continually expand its output to take advantage of the higher price brought about by the collusive action until the collusive firms, if they foolishly continue to maintain the higher price, have reduced their output to zero, all for the benefit of the nonparticipating firm. The nonparticipating firm can deprive the collusive firms of all the benefits of their collusion because the benefit of any given supracompetitive price is fixed in amount; so whatever he takes the collusive firms lose. There is then an all-or-none quality about exclusive groups, in that there must often be either 100 per cent participation or else no collusion at all. This need for 100 per cent participation has the same effects in an industry that a constitutional provision that all decisions must be unanimous has in a voting system. Whenever unanimous participation is required, any single holdout has extraordinary bargaining power; he may be able to demand for himself most of the gain that would come from any group-oriented action.[63] Moreover, any one in the group can attempt to be a holdout, and demand a greater share of the gain in return for his (indispensable) support. This incentive to holdouts makes any group-oriented action less likely than it would otherwise be. It also implies that each member has a great incentive to bargain; he may gain all by a good bargain, or lose all in a bad one. This means much more bargaining is likely in any situation where 100 per cent participation is required than when some smaller percentage can undertake group-oriented activity.

It follows that the relationship among individuals in inclusive and

62. If marginal costs rise very steeply, and accordingly no firm has an incentive to increase output greatly in response to the higher price, a single holdout need not be fatal to a collusive agreement. But a holdout will still be costly, for he will tend to gain more from the collusion than a firm that colludes, and whatever he gains the collusive firms lose.

63. On the implications of a unanimity requirement, see the important book by James M. Buchanan and Gordon Tullock, *The Calculus of Consent: Logical Foundations of Constitutional Democracy* (Ann Arbor: University of Michigan Press, 1962), especially chap. viii, pp. 96–116. I believe that some complications in their useful and provocative study could be cleared up with the aid of some of the ideas developed in the present study; see for example my review of their book in the *American Economic Review*, LII (December 1962), 1217–1218.

exclusive groups usually is quite different, whenever groups are so small one member's action has a perceptible effect on any other member, so that individual relationships matter. The firms in the exclusive group want as few others in the group as possible, and therefore each firm warily watches other firms for fear they will attempt to drive it out of the industry. Each firm must, before it takes any action, consider whether it will provoke a "price war" or "cut-throat competition." This means that each firm in an exclusive group must be sensitive to the other firms in the group, and consider the reactions they may have to any action of its own. At the same time, any group-oriented behavior in an exclusive group will usually require 100 per cent participation, so each firm in an industry is not only a rival of every other firm, but also an indispensable collaborator in any collusive action. Therefore, whenever any collusion, however tacit, is in question, each firm in the industry may consider bargaining or holding out for a larger share of the gains. The firm that can best guess what reaction other firms will have to each move of its own will have a considerable advantage in this bargaining. This fact, together with the desire of the firms in an industry to keep the number in that industry as small as possible, makes each of the firms in any industry with a small number of firms very anxious about the reactions other firms will have to any action it takes. In other words, both the desire to limit the size of the group, and the usual need for 100 per cent participation in any kind of collusion, increase the intensity and complexity of oligopolistic reactions. The conclusion that industries with small numbers of firms will be characterized by oligopolistic interaction with mutual dependence recognized is of course familiar to every economist.

It is not however generally understood that in inclusive groups, even small ones, on the other hand, bargaining or strategic interaction is evidently much less common and important. This is partly because there is no desire to eliminate anyone from the inclusive group. It is also partly because nothing like unanimous participation is normally required, so that individuals in the inclusive group are not so likely to try to be holdouts in order to get a larger share of the gain. This tends to reduce the amount of bargaining (and also makes group-oriented action more likely). Though the problem is extremely complex, and some of the tools needed to determine exactly how much bargaining there will be in a given situation do not now exist, it nonetheless seems very likely that there is much less strategic

interaction in inclusive groups, and that the hypothesis of independent behavior will frequently describe members of these groups reasonably well.

F. A TAXONOMY OF GROUPS

To be sure, there can also be many instances in inclusive or nonmarket groups in which individual members do take into account the reactions of other members to their actions when they decide what action to take—that is, instances in which there is the strategic interaction among members characteristic of oligopolistic industries in which mutual dependence is recognized. In groups of one size range at least, such strategic interaction must be relatively important. That is the size range where the group is not so small that one individual would find it profitable to purchase some of the collective good himself, but where the number in the group is nonetheless sufficiently small that each member's attempts or lack of attempts to obtain the collective good would bring about noticeable differences in the welfare of some, or all, of the others in the group. This can best be understood by assuming for a moment that an inclusive collective good is already being provided in such a group through a formal organization, and then asking what would happen if one member of the group were to cease paying his share of the cost of the good. If, in a reasonably small organization, a particular person stops paying for the collective good he enjoys, the costs will rise noticeably for each of the others in the group; accordingly, they may then refuse to continue making their contributions, and the collective good may no longer be provided. However, the first person could realize that this might be the result of his refusal to pay anything for the collective good, and that he would be worse off when the collective good is not provided than when it was provided and he met part of the cost. Accordingly he might continue making a contribution toward the purchase of the collective good. He might; or he might not. As in oligopoly in a market situation, the result is indeterminate. The rational member of such a group faces a strategic problem and while the Theory of Games and other types of analyses might prove very helpful, there seems to be no way at present of getting a general, valid, and determinate solution at the level of abstraction of this chapter.[64]

64. It is of incidental interest here to note also that oligopoly in the marketplace is in some respects akin to logrolling in the organization. If the "majority" that vari-

What is the range of this indeterminateness? In a small group in which a member gets such a large fraction of the total benefit that he would be better off if he paid the entire cost himself, rather than go without the good, there is some presumption that the collective good will be provided. In a group in which no one member got such a large benefit from the collective good that he had an interest in providing it even if he had to pay all of the cost, but in which the individual was still so important in terms of the whole group that his contribution or lack of contribution to the group objective had a noticeable effect on the costs or benefits of others in the group, the result is indeterminate.[65] By contrast, in a large group in which no single individual's contribution makes a perceptible difference to the group as a whole, or the burden or benefit of any single member of the group, it is certain that a collective good will *not* be provided unless there is coercion or some outside inducements that will lead the members of the large group to act in their common interest.[66]

ous interests in a legislature need is viewed as a collective good—something that a particular interest cannot obtain unless other interests also share it—then the parallel is quite close. The cost each special-interest legislator would like to avoid is the passage of the legislation desired by the other special-interest legislators, for if these interests gain from their legislation, often others, including his own constituents, may lose. But unless he is willing to vote for the legislation desired by the others, the particular special-interest legislator in question will not be able to get his own legislation passed. So his goal would be to work out a coalition with other special-interest legislators in which they would vote for exactly the legislation he wanted, and he in turn would give them as little in return as possible, by insisting that they moderate their legislative demands. But since every potential logroller has this same strategy, the result is indeterminate: the logs may be rolled or they may not. Every one of the interests will be better off if the logrolling is done than if it is not, but as individual interests strive for better legislative bargains the result of the competing strategies may be that no agreement is reached. This is quite similar to the situation oligopolistic groups are in, as they all desire a higher price and will all gain if they restrict output to get it, but they may not be able to agree on market shares.

65. The result is clearly indeterminate when F_i is less than C/V_g at every point and it is also true that the group is not so large that no one member's actions have a noticeable effect.

66. One friendly critic has suggested that even a large pre-existing organization could continue providing a collective good simply by conducting a kind of plebiscite among its members, with the understanding that if there were not a unanimous or nearly unanimous pledge to contribute toward providing the collective good, this good would no longer be provided. This argument, if I understand it correctly, is mistaken. In such a situation, an individual would know that if others provided the collective good he would get the benefits whether he made any contribution or not. He would therefore have no incentive to make a pledge unless a completely unanimous set of pledges was required, or for some other reason his one pledge would decide whether or not the good would be provided. But if a pledge were required

The last distinction, between the group so large it definitely cannot provide itself with a collective good, and the oligopoly-sized group which may provide itself with a collective good, is particularly important. It depends upon whether any two or more members of the group have a perceptible interdependence, that is, on whether the contribution or lack of contribution of any one individual in the group will have a perceptible effect on the burden or benefit of any other individual or individuals in the group. Whether a group will have the possibility of providing itself with a collective good without coercion or outside inducements therefore depends to a striking degree upon the number of individuals in the group, since the larger the group, the less the likelihood that the contribution of any one will be perceptible. It is not, however, strictly accurate to say that it depends solely on the number of individuals in the group. The relation between the size of the group and the significance of an individual member cannot be defined quite that simply. A group which has members with highly unequal degrees of interest in a collective good, and which wants a collective good that is (at some level of provision) extremely valuable in relation to its cost, will be more apt to provide itself with a collective good than other groups with the same number of members. The same situation prevails in the study of market structure, where again the number of firms an industry can have and still remain oligopolistic (and have the possibility of supracompetitive returns) varies somewhat from case to case. The standard for determining whether a group will have the capacity to act, without coercion or outside inducements, in its group interest is (as it should be) the same for market and non-market groups: it depends on whether the individual actions of any one or more members in a group are noticeable to any other individuals in the group.[67] This is most obviously, but not exclusively, a function of the number in the group.

of every single member, or if for any other reason any one member could decide whether or not the group would get a collective good, this one member could deprive all of the others in the group of great gains. He would therefore be in a position to bargain for bribes. But since any other members of the group might gain just as much from the same holdout strategy, there is no likelihood that the collective good would be provided. See again Buchanan and Tullock, pp. 96–116.

67. The noticeability of the actions of a single member of a group may be influenced by the arrangements the group itself sets up. A previously organized group, for example, might ensure that the contributions or lack of contributions of any member of the group, and the effect of each such member's course on the burden and benefit for others, would be advertised, thus ensuring that the group effort

It is now possible to specify when either informal coordination or formal organization will be necessary to obtain a collective good. The smallest type of group—the group in which one or more members get such a large fraction of the total benefit that they find it worthwhile to see that the collective good is provided, even if they have to pay the entire cost—may get along without any group agreement or organization. A group agreement might be set up to spread the costs more widely or to step up the level of provision of the collective good. But since there is an incentive for unilateral and individual action to obtain the collective good, neither a formal organization nor even an informal group agreement is indispensable to obtain a collective good. In any group larger than this, on the other hand, no collective good can be obtained without some group agreement, coordination, or organization. In the intermediate or oligopoly-sized group, where two or more members must act simultaneously before a collective good can be obtained, there must be at least tacit coordination or organization. Moreover, the larger a group is, the more agreement and organization it will need. The larger the group, the greater the number that will usually have to be included in the group agreement or organization. It may not be necessary that the entire group be organized, since some subset of the whole group may be able to provide the collective good. But to establish a group agreement or organization will nonetheless always tend to be more difficult the larger the size of the group, for the larger the group the more difficult it will be to locate and organize even a subset of the group, and those in the subset will have an incentive to continue bargaining with the others in the group until the burden is widely shared, thereby adding to the expense of bargaining. In short, costs of organization are an increasing function of the number of individuals in the group. (Though the more

would not collapse from imperfect knowledge. I therefore define "noticeability" in terms of the degree of knowledge, and the institutional arrangements, that actually exist in any given group, insetad of assuming a "natural noticeability" unaffected by any group advertising or other arrangements. This point, along with many other valuable comments, has been brought to my attention by Professor Jerome Rothenberg, who does, however, make much more of a group's assumed capacity to create "artificial noticeability" than I would want to do. I know of no practical example of a group or organization that has done much of anything, apart from improve information, to enhance the noticeability of an individual's actions in striving for a collective good.

members in the group the greater the total costs of organization, the costs of organization per person need not rise, for there are surely economies of scale in organization.) In certain cases a group will already be organized for some other purpose, and then these costs of organization are already being met. In such a case a group's capacity to provide itself with a collective good will be explained in part by whatever it was that originally enabled it to organize and maintain itself. This brings attention back again to the costs of organization and shows that these costs cannot be left out of the model, except for the smallest type of group in which unilateral action can provide a collective good. The costs of organization must be clearly distinguished from the type of cost that has previously been considered. The cost functions considered before involved only the direct resource costs of obtaining various levels of provision of a collective good. When there is no pre-existing organization of a group, and when the direct resource costs of a collective good it wants are more than any single individual could profitably bear, additional costs must be incurred to obtain an agreement about how the burden will be shared and to coordinate or organize the effort to obtain the collective good. These are the costs of communication among group members, the costs of any bargaining among them, and the costs of creating, staffing, and maintaining any formal group organization.

A group cannot get infinitesimally small quantities of a formal organization, or even of an informal group agreement; a group with a given number of members must have a certain minimal amount of organization or agreement if it is to have any at all. Thus there are significant initial or minimal costs of organization for each group. Any group that must organize to obtain a collective good, then, will find that it has a certain minimum organization cost that must be met, however little of the collective good it obtains. The greater the number in the group, the greater these minimal costs will be. When this minimal organizational cost is added to the other initial or minimal costs of a collective good, which arise from its previously mentioned technical characteristics, it is evident that the cost of the first unit of a collective good will be quite high in relation to the cost of some subsequent units. However immense the benefits of a collective good, the higher the absolute total costs of getting any amount of that good, the less likely it is that even a minimal amount of that good could be obtained without coercion or separate, outside incentives.

This means that there are now three separate but cumulative factors that keep larger groups from furthering their own interests. First, the larger the group, the smaller the fraction of the total group benefit any person acting in the group interest receives, and the less adequate the reward for any group-oriented action, and the farther the group falls short of getting an optimal supply of the collective good, even if it should get some. Second, since the larger the group, the smaller the share of the total benefit going to any individual, or to any (absolutely) small subset of members of the group, the less the likelihood that any small subset of the group, much less any single individual, will gain enough from getting the collective good to bear the burden of providing even a small amount of it; in other words, the larger the group the smaller the likelihood of oligopolistic interaction that might help obtain the good. Third, the larger the number of members in the group the greater the organization costs, and thus the higher the hurdle that must be jumped before any of the collective good at all can be obtained. For these reasons, the larger the group the farther it will fall short of providing an optimal supply of a collective good, and very large groups normally will not, in the absence of coercion or separate, outside incentives, provide themselves with even minimal amounts of a collective good.[68]

68. There is one logically conceivable, but surely empirically trivial, case in which a large group could be provided with a very small amount of a collective good without coercion or outside incentives. If some very small group enjoyed a collective good so inexpensive that any one of the members would benefit by making sure that it was provided, even if he had to pay all of the cost, and if millions of people then entered the group, with the cost of the good nonetheless remaining constant, the large group could be provided with a little of this collective good. This is because by hypothesis in this example the costs have remained unchanged, so that one person still has an incentive to see that the good is provided. Even in such a case as this, however, it would still not be quite right to say that the large group was acting in its group interest, since the output of the collective good would be incredibly suboptimal. The optimal level of provision of the public good would increase each time an individual entered the group, since the unit cost of the collective good by hypothesis is constant, while the benefit from an additional unit of it increases with every entrant. Yet the original provider would have no incentive to provide more as the group expanded, unless he formed an organization to share costs with the others in this (now large) group. But that would entail incurring the considerable costs of a large organization, and there would be no way these costs could be covered through the voluntary and rational action of the individuals in the group. Thus,

Now that all sizes of groups have been considered, it is possible to develop the classification of groups that is needed. In an article that was originally part of this study, but which has been published elsewhere,[69] this writer and his co-author argued that the concept of the group or industry can be given a precise theoretical meaning, and should be used, along with the concept of pure monopoly, in the study of market structure. In that article the situation in which there was only one firm in the industry was called pure monopoly. The situation where the firms are so few that the actions of one firm would have a noticeable effect on some one other firm or group of firms was called oligopoly; and the situation where no one firm had any noticeable effect on any other firm was called "atomistic competition." The category of atomistic competition was subdivided into pure competition and monopolistic competition within the large group, and oligopoly was also divided into two subdivisions according as the product was homogeneous or differentiated.

For inclusive or nonmarket groups the categories must be slightly different. The analog to pure monopoly (or pure monopsony) is obviously the single individual outside the market seeking some noncollective good, some good without external economies or diseconomies. In the size range that corresponds to oligopoly in market groups, there are two separate types of nonmarket groups: "privileged" groups and "intermediate" groups. A "privileged" group is a

if the total benefit from a collective good exceeded its costs by the thousandfold or millionfold, it is logically possible that a large group could provide itself with some amount of that collective good, but the level of provision of the collective good in such a case would be only a minute fraction of the optimal level. It is not easy to think of practical examples of groups that would fit this description, but one possible example is discussed on page 161, note 94. It would be easy to rule out even any such exceptional cases, however, simply by defining *all* groups that could provide themselves with some amount of a collective good as "small groups" (or by giving them other names), while putting all groups that could not provide themselves with a collective good in another class. But this easy route must be rejected, for that would make this part of the theory tautologous and thus incapable of refutation. Therefore the approach here has been to make the (surely reasonable) empirical hypothesis that the total costs of the collective goods wanted by large groups are large enough to exceed the value of the small fraction of the total benefit that an individual in a large group would get, so that he will not provide the good. There may be exceptions to this, as to any other empirical statement, and thus there may be instances in which large groups could provide themselves with (at most minute amounts of) collective goods through the voluntary and rational action of one of their members.

69. Olson and McFarland (note 14 above).

group such that each of its members, or at least some one of them, has an incentive to see that the collective good is provided, even if he has to bear the full burden of providing it himself. In such a group there is a presumption[70] that the collective good will be obtained, and it may be obtained without any group organization or coordination whatever. An "intermediate" group is a group in which no single member gets a share of the benefit sufficient to give him an incentive to provide the good himself, but which does not have so many members that no one member will notice whether any other member is or is not helping to provide the collective good. In such a group a collective good may, or equally well may not, be obtained, but no collective good may ever be obtained without some group coordination or organization.[71] The analog to atomistic competition in the nonmarket situation is the very large group, which will here be called the "latent" group. It is distinguished by the fact that, if one member does or does not help provide the collective good, no other one member will be significantly affected and therefore none has any reason to react. Thus an individual in a "latent" group, by definition, cannot make a noticeable contribution to any group effort, and since no one in the group will react if he makes no contribution, he has no incentive to contribute. Accordingly, large or "latent" groups have no incentive to act to obtain a collective good because, however valuable the collective good might be to the group as a whole, it does not offer the individual any incentive to pay dues

70. It is conceivable that a "privileged" group might not provide itself with a collective good, since there might be bargaining within the group and this bargaining might be unsuccessful. Imagine a privileged group in which *every* member of the group would gain so much from the collective good that he would be better off if he paid the full cost of providing the collective good than he would be if the good were not provided. It is still conceivable that each member of the group, knowing that each of the others would also be better off if they provided the good alone than they would be if no collective good were obtained, would refuse to contribute anything toward obtaining the collective good. Each could refuse to help provide the collective good on the mistaken assumption that the others would provide it without him. It does not seem very likely that all of the members of the group would go on making this mistake permanently, however.

71. "The character of the numerically intermediate structure, therefore, can be explained as a mixture of both: so that each of the features of both the small and large group appears in the intermediate group, as a fragmentary trait, now emerging, now disappearing or becoming latent. Thus, the intermediate structures objectively share the essential character of the smaller and larger structures—partially or alternately. This explains the subjective uncertainty regarding the decision to which of the two they belong." (Simmel, *Sociology of Georg Simmel*, pp. 116–117.)

to any organization working in the latent group's interest, or to bear in any other way any of the costs of the necessary collective action.

Only a *separate and "selective" incentive* will stimulate a rational individual in a latent group to act in a group-oriented way. In such circumstances group action can be obtained only through an incentive that operates, not indiscriminately, like the collective good, upon the group as a whole, but rather *selectively* toward the individuals in the group. The incentive must be "selective" so that those who do not join the organization working for the group's interest, or in other ways contribute to the attainment of the group's interest, can be treated differently from those who do. These "selective incentives" can be either negative or positive, in that they can either coerce by punishing those who fail to bear an allocated share of the costs of the group action, or they can be positive inducements offered to those who act in the group interest.[72] A latent group that has been led to act in its group interest, either because of coercion of the individuals in the group or because of positive rewards to those individuals, will here be called a "mobilized" latent group.[73] Large groups are thus called "latent" groups because they have a latent power or capacity for action, but that potential power can be realized or "mobilized" only with the aid of "selective incentives."

The chances for group-oriented action are indeed different in each of the categories just explained. In some cases one may have some expectation that the collective or public good will be provided; in other cases one may be assured that (unless there are selective incentives) it will not; and still other cases could just as easily go either

72. Coercion is here defined to be a punishment that leaves an individual on a lower indifference curve than he would have been on had he borne his allocated share of the cost of the collective good and not been coerced. A positive inducement is defined to be any reward that leaves an individual who pays his allocated share of the cost of a collective good and receives the reward, on a higher indifference curve than he would have been had he borne none of the cost of the collective good and lost the reward. In other words, selective incentives are defined to be greater in value, in terms of each individual's preferences, than each individual's share of the cost of the collective good. Sanctions and inducements of smaller value will not be sufficient to mobilize a latent group. On some of the problems of distinguishing and defining coercion and positive incentives see Alfred Kuhn, *The Study of Society: A Unified Approach* (Homewood, Ill.: Richard D. Irwin, Inc. and the Dorsey Press, Inc., 1963), pp. 365–370.

73. Deutsch has also used the term "mobilization" in a somewhat similar context, but his use of the word is not the same. See Karl Deutsch, "Social Mobilization and Political Development," *American Political Science Review*, LV (September 1961), 493–514.

way. In any event, size is one of the determining factors in deciding whether or not it is possible that the voluntary, rational pursuit of individual interest will bring forth group-oriented behavior. Small groups will further their common interests better than large groups.

The question asked earlier in this chapter can now be answered. It now seems that small groups are not only quantitatively, but also qualitatively, different from large groups, and that the existence of large associations cannot be explained in terms of the same factors that explain the existence of small groups.