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A New Theory of Group Solidarity

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This paper examines previous conceptualizations of group solidarity and related concepts in the sociological and social psychological literatures. After identifying ambiguities in previous usages, we define solidarity in terms of relational patterns among actors. Specifically, solidarity is defined in terms of two network properties: the relative directness of ties among actors, and the homogeneity of those ties. In other words, solidarity exists for a given set of actors to the degree that they are directly connected to each other and there is an absence of subgroups or cliques. Although a variety of relational bases are conceivable, we illustrate our new conceptualization in a theory of emotion-based group solidarity. We further develop our formulation to account for the emergence of emotional bonds to the group *as a group* and the impact of vicarious experiences on emotional processes.

Our goal in this chapter is to analyze the idea of "group solidarity" and provide an alternative conceptualization that sidesteps problems in earlier usages. Two general literatures provide the background for our analysis: group solidarity and group cohesion. The solidarity literature consists primarily of theoretical analyses by sociologists (e.g., Durkheim 1956; Gamson, Fireman, and Rytina 1982; Hechter 1987; Coleman 1990), and the cohesion literature consists primarily of empirical analyses by psychologists (e.g., Festinger, Schachter, and Back 1950; Cartwright and Zander 1968; Forsyth 1990). These distinct literatures contain some common themes that are essential to our own effort, but both lack the conceptual rigor necessary for the development of cumulative theory. In fact, a critical problem that pervades both of these literatures is the lack of any clear and consistent distinction between the nature of group solidarity (or cohesion) per se and its ostensible determinants and consequences. We begin with an overview of each body of literature, highlighting ideas that will be useful in the subsequent presentation of our reconceptualization.

BACKGROUND

The Solidarity Literature

The study of solidarity has a long history in sociology, beginning with Emile Durkheim's (1956 [1893]) distinction between mechanical and organic forms. Mechanical solidarity occurs in groups that contain people who are similar in background, values, and beliefs. There is an emotion-based sense of community in such groups, and the norms that are part of the community constitute a strong force constraining individuals. In other words, there is a strong and specific

"collective conscience" that enhances uniformity of behavior across individuals. Organic solidarity, in contrast, develops out of differences rooted in divisions of labor. Durkheim indicated that as the division of labor and concomitant specialization grows, the interdependence of society's parts (e.g., individuals and the positions they occupy) becomes the primary foundation for social solidarity. Interdependence, however, produces a weaker collective conscience than mechanical solidarity and, relatedly, less individual uniformity and compliance.

In characterizing the types of groups in which mechanical or organic solidarity occurs, Durkheim (1956) sought necessary conditions for the development of each form of solidarity, for example, "similar members" is a necessary condition for mechanical solidarity, "specialization" is necessary for organic solidarity. These distinctions have proven useful by identifying two independent and complementary dimensions underlying group solidarity. However, Durkheim did not provide an unambiguous definition of solidarity, distinct from the determinants he discussed. We will return to this problem shortly.

Durkheim's distinction between organic and mechanical solidarity corresponds generally with two alternative approaches to social order found in contemporary sociological literature: utilitarian and emotional. The former begins with the assumption that social order is created and maintained because (and only if) interdependence makes cooperation a valued commodity. People join and remain in groups because groups provide rewards that are not available elsewhere. Groups then must develop systems of monitoring and sanctioning to maintain sufficient compliance to group norms and prevent members from "free-riding." Thus, the utilitarian approach views groups both as sources of reward and as agents of behavioral constraint.

The utilitarian approach to solidarity is illustrated in the recent work of Hechter (1984,1987) and Coleman (1990). Hechter cites (1) the extensiveness of corporate obligations, and (2) the probability that members fully comply with these obligations as "defining properties" (1987, p. 18) of solidarity, but also indicates that solidarity is a "joint product" of these factors (1987, p. 52). The extensiveness of corporate obligations is determined by the dependence of members on the group, and the degree of compliance with those obligations is given by the degree to which the group monitors and sanctions the behavior of members. Lacking monitoring and sanctioning, solidarity would be broken by the actions of "free-riders." Thus, dependence on the group and monitoring are the primary determinants of solidarity. Hechter does not clearly define solidarity independent of these determinants.[1] He does assert, however, that "solidarity varies with the proportion of members' private resources that are contributed to collective ends" (1987, p. 168), suggesting at least one operational definition that is distinct from dependence and monitoring.

Coleman's (1990) theory is similar to Hechter's in its general approach and in certain of its details. (See Turner 1992 for analyses and an integration of the two theories.) Arguments in his theory are much more formalized than Hechter's, however, articulating as it does with an earlier mathematized theory (e.g., Coleman 1986). Briefly, that theory bases various social phenomena on patterns of actors' interests in goods over which others have control, and in those actors' levels of control over goods in which others have interests. The system coheres to the degree that these interests result in exchange relations and, further, to the degree that actors act upon their interest in controlling free-riding. A "second-order free rider problem" must then be solved: it is in the rational actor's interest to both promote norms and sanctioning systems against free-riding, but also to avoid contributing to it. If all did so, then the normative and

sanctioning systems would collapse. An interesting solution that Coleman proposes is an escalation into zealotry, whereby actors develop prescriptive norms and informal systems of mutual rewards for desired behaviors. The result of this cycle of positive action and reward is that group members become zealots in pursuit of a common goal, and the need for second-order monitoring and sanctioning is eliminated. A caveat is that such zealotry is only possible in densely connected networks.

Hechter's theory provides further specificity to Durkheim's organic (or utilitarian) dimension. His approach recognizes that the ties which bind members to groups may be rooted in their dependence on the group for valued resources, and that monitoring and sanctioning systems contribute to the maintenance of group viability and the fulfillment of obligations. Coleman's (1990) theory does not focus on group solidarity per se (and thus sheds no new light on the definitional issue), but its problem focus is nevertheless virtually identical to Hechter's. Exchange relations are maintained through time with the aid of behavioral sanctions and interest-induced dependence. Unlike Hechter, however, under certain conditions Coleman's theory allows for the possibility of a reward-based, as opposed to a strictly cost-based, sanctioning system.

The determinants specified by Hechter and Coleman seem quite reasonable to us, at least as *sufficient conditions*, even if we are still working with only an implicit notion of group solidarity. However, perhaps due to a bit of zealotry of their own, both theorists seem to implicitly treat their determinants as the exclusive routes to solidarity, that is, as sufficient *and necessary* conditions. In contrast, we assert that a clearer definition—one that more clearly demarcates determinants from defining properties—will facilitate the opening of theoretical routes to group solidarity other than those based on material exchange. For example, solidarity

may be characterized by relations of dependence, compliance, or threat of negative sanction, *or* by bonds enacted in the spirit of voluntarism (as distinct from zealotry), *or*, as we shall see, by other means.

In contrast to the utilitarian approaches, the "emotional" approach to solidarity owes more debt to Durkheim's notion of mechanical solidarity. It begins with the assumption that social order is created and maintained by the affective ties of individuals to groups. People join and stay in groups because of their emotional attachments to groups and their members. From this general standpoint, group activities foster positive sentiments, enjoyable relations, and a sense of belonging that becomes objectified in collective objects, symbols, rituals and the like (Durkheim 1956; Berger and Luckmann 1966; Collins 1981; Lawler 1992).

Although they incorporate some utilitarian notions, Gamson and his associates exemplify the emotional approach by focusing on the more socio-emotional side of group memberships. Specifically, Fireman and Gamson (1979, pp. 21-22) identified five factors that constitute the basis for a "person's solidarity with a group": the member (1) has friends and relatives that are in the group, (2) acts collectively with other members, (3) has his "design for living" shared and supported by other members, (4) shares with other members the same set of subordinate and superordinate relations with outsiders, and (5) believes that exit from the group would be difficult. These group ties generate a sense of common identity, shared fate, and general commitment to defend the group. Solidarity is essentially a product of a collective identity and the strength of interpersonal ties (Gamson, Fireman, and Rytina 1982, p. 22).

A problem with this approach is the relative lack of both rigorous definitions of concepts—especially solidarity—and explicit statements of assumptions. It is not clear which, if any, of the bases of solidarity are primary, and which are assumed to work through those primary

determinants. Finally, it is unclear whether Gamson and his associates consider solidarity to be an emergent property of groups, or whether it consists of the distribution of individual sentiments. Using the phrase "a person's solidarity with the group" (Fireman and Gamson 1979, p. 21) may suggest the latter, distinguishing this approach from others which view solidarity as an emergent, group level property. Overall, the work of Gamson and associates, though insightful, reveals conceptual difficulties similar to those found in the utilitarian approach.

Parsons' (1951) analysis of instrumental and expressive action suggests a useful distinction for understanding both the solidarity and cohesion literature. Specifically, he contrasted the relationship of members to each other in a group (e.g., interpersonal ties) and the relation of members to the collectivity as an object of perception (e.g., person-collectivity ties). He portrayed solidarity as institutionalized loyalty involving these two types of relations. First, the cathectic-expressive integration of ego with alter, where alter serves as the source of an organized system of gratifications, and the relation is embedded in a system of established role relations; second, the ego-collectivity relation which he describes as follows:

> By extension of this conception of expressive loyalty between individual actors we derive the further important concept of the loyalty of the individual actor to a collectivity of which he is a member. The collectivity may be treated as an object of attachment ... it is clearly the collectivity, not its members as individuals, which is the significant object (1951, pp. 77-78).

Thus, the collectivity is itself an object in Parsons' formulation.

Parsons' (1951) distinction between the collectivity and other group members as objects of attachment seems crucial for understanding solidarity. The attachment to the collectivity as an object, distinct from its particular members, may distinguish groups with high solidarity from those with low solidarity, although such person- to-group ties may ring hollow without some degree of interaction among members of the collectivity. The institutionalized role structure

makes the collectivity salient to actors (i.e., objectifies the collectivity) and facilitates interpersonal ties during role enactments. These micro ties typically develop within multiple, small subsets of group members.

More recently, Scheff (1990, p. 201) has defined solidarity in terms of social "attunement." In his words, attunement is "mutual understanding; joint attention to thoughts, feelings, intentions, and motives between individuals but also between groups" (p. 199) and "long-range considerations involving intention and character" (p. 201). By definition, a social bond exists between people to the degree that there is mental and emotional attunement between them, and "the same kind of attunement between groups is referred to as solidarity" (p. 201). Scheff's original thesis mainly focuses on an emotion-based process assumed to create and maintain bonds. This is tantamount to an explanation of social *cohesion*, as defined here, whereas solidarity appears to be defined as a simple aggregation of bonded or attuned actors. Scheff's greatest potential contribution is in his conceptualization of the social bond-formation process. His conceptualization of solidarity per se does not add significantly to prior work, nor was it so intended. However, to the degree that one wishes to pursue the study of emotion-based paths to group solidarity, Scheff's micro-interaction theory may be well worth considering.

To summarize our review of group solidarity literature, we find that despite the evident interest and obvious centrality of the solidarity concept to sociologists, the amount of research is vanishingly small. One looks in vain for a cumulative, ever-improving body of theoretical and empirical knowledge about group solidarity. We believe this failure is attributable to a lack of emphasis on developing precise, testable theories. Though general ideas abound, researchers have had few explicit propositions to test and no systematic framework for connecting the many

ad hoc hypotheses derivable from the rather loose theorizing about solidarity. The cohesion

literature, though more empirically oriented, reveals somewhat similar problems.

The Cohesion Literature

Since the early work of Festinger and associates (Festinger et al. 1950), cohesion has

been a central focus of research in the group-dynamics tradition of psychology (e.g., Gross and

Martin 1952; Eisman 1957; Lott and Lott 1965; Shaw 1981; Kellerman 1981; Ridgeway 1983;

Drescher, Burlingame, and Fuhriman 1985). Nearly all of the work in this tradition starts from

the Festinger, Schachter, and Back (1950) field-theoretical definition of cohesion as *the sum total*

of forces which act on members to remain in the group. Others have offered more specific

definitions that stress particular "forces," for example, the attraction of group members to each

other, the attraction of members to the group (i.e., to its activities, goals, or leaders), the

motivation of members to remain in the group, and the degree to which the group mediates

valued outcomes (Gross and Martin 1952; Eisman 1957; Piper, Marrache, Lacroix, Richardson,

and Jones 1983; Evans and Jarvis 1980; Drescher et al. 1985). In some instances, authors have

intended these more specific forces to be operational indicators of the larger concept and, in

others, they have proposed substituting the more specific concept or variable for the original one

(Gross and Martin 1952). In any case, the most frequent conceptual or operational indicator of

cohesion has been the level of interpersonal attraction, often measured by sociometric choices

(Lott and Lott 1965; Gross and Martin 1952; Evans and Jarvis 1980; Shaw 1981).

Psychologists have conducted much more research on cohesion than sociologists have on

solidarity, and so there is an extensive empirical literature on the consequences of cohesion (see

Drescher et al.'s 1985 review). Varied definitions and operationalizations prevent firm

conclusions, but some implications may be drawn (e.g., Shaw 1981; Ridgeway 1983; and

Drescher et al. 1985). For example, there is evidence that groups with higher cohesion produce

greater interaction among members, more compliance to group norms, higher satisfaction with

the group, and lower levels of absenteeism (Festinger et al. 1950; Keller 1983). The link between

cohesion and productivity is more complex, but groups with higher cohesion are generally more

effective at achieving whatever goals the group adopts (Goodacre 1951; Norris and Niebuhr

1980), whether this entails higher or lower levels of productivity in a work setting (Seashore

1954). Extreme levels of cohesion, however, may impair decision processes by producing

"groupthink" (Janis 1972) or "deindividuation" (Zimbardo 1969).

Determinants of cohesion have been shown to include attitude similarity (Newcomb

1961), intergroup tension (Sherif and Sherif 1953; Tajfel and Turner 1979), self disclosure by

members (Stokes, Feuhrer, and Childs 1983), and the degree to which the group meets its

members' needs (Shaw 1981; Ridgeway 1983; Nixon 1979; Palazzolo 1981). Despite the

accumulation of empirical findings, however, cohesion research has shown minimal theoretical

development over time. It is more the case that lists of factors that have operated as determinants

and consequences in various empirical settings continue to grow, while cohesion theories fail to

benefit in any systematic fashion.

Several conceptual and measurement problems have plagued this literature, many

traceable to the classic work of Festinger, Schachter, and Back (1950). From the original

formulation, one could argue either that cohesion is a multidimensional phenomenon capturing

the field of forces acting on individuals, or that cohesion is the resulting impact of these forces

on group members (see especially Gross and Martin 1952). Early evidence indicated that various

standard measures of cohesion are not highly correlated (Eisman 1957), but later work has not been able to resolve the multidimensionality problem, theoretically or empirically (see Feldman 1968, 1973; Piper, Marrache, Lacroix, Richardson, and Jones 1983; Drescher et al. 1985). Efforts to develop a unidimensional concept or unitary measure of cohesion as a result of the force field have tended to settle on the attraction of members to the group or some variant of this (Eisman 1957; Piper et al. 1983).

Recent arguments suggest a distinction between cohesion (as bonds tying individuals together) and attraction to the group (Evans and Jarvis 1980). For instance, these dimensions were identified in a factor-analytic study by Hagstrom and Selvin (1965). It is noteworthy that the basic distinction between the interpersonal and person-group dimensions of solidarity have a parallel in the cohesion literature. Overall, however, it is hardly an understatement to say that within this literature there is little agreement or uniformity in any respect. The issues debated in the early 1950s are of the most basic sort, and it is arguable whether any of them have been resolved.

The two literatures most relevant to this paper—solidarity and cohesion—reveal complementary problems. The solidarity literature contains broad conceptualiza tions and discursive analyses that have not led to testable theories (Hechter 1987 and Coleman 1990 are exceptions). The cohesion literature consists of a set of disparate empirical findings guided by a loose conceptualization of the phenomenon and ad hoc hypotheses. The fundamental need of both literatures is a theory or set of theories that foster cumulative theoretical and empirical work.

Without claiming to solve all the problems of these literatures, we first present an abstract and general definition for the concept of group solidarity, exploring some of its properties and

implications. We then provide a theory of group solidarity that explicates the role of emotions in the formation, maintenance, and dissolution of solidary groups. Rather than casting a loose, broad net designed to capture all previous work on solidarity and cohesion, our purpose is to devise the smallest possible set of concepts and propositions that will enable the most general possible explanation of solidarity. The definition of solidarity is designed to be useful for a variety of theoretical bases, for example, emotional, rational, structural, and so forth. Our theory will look in but one of these possible directions.

THE CONCEPTS OF COHESION AND SOLIDARITY

One of our major points of contention regarding previous work on solidarity and cohesion is the lack of a clear definition for these concepts. In our own struggle with this problem, we have discovered what we believe to be a reason for this: both concepts carry with them numerous intuitively appealing connotations, most of which we readily associate with cohesion, solidarity, or both. This is probably because these connotations are factors that we readily conceive of as causes or consequences. This is the same trap that most of the cited research and theories fell into. Thus, we began by working on definitions that would sidestep the distracting connotations of previous conceptions and theories, highlighting not what leads to or follows from solidarity, but rather the distinctive properties by which it can be identified.

In his contribution to Kellerman's (1981) volume on group cohesion, Sudarshan wrote that:

> ... cohesion is the causal framework for structure and form. Structure implies parts which go together to make a whole and a search for the bonding agency leads us to study cohesion. By its very nature, then, cohesion implies constraint to freedom, but rather than

destroy freedom altogether it tames the tendency to chaos and channels it into harmony (1981, p. 124).

Although its bearing on our interests is direct and obvious, it so happens that Sudarshan is a physicist and he was writing about the cohesiveness of physical matter. Also writing in Kellerman's collection, another physicist suggested that the cohesion of a set of objects is increased by factors that reduce the chaos of relations among members (Silber 1981). He noted that the states of matter (liquid, solid, gas) are properties of groups of atoms that are predictable from the properties of the individual atoms and their relations, but not exhibited by the individual atoms. The emergent properties of a substance in a particular state are determined by the relative degree of order (or absence of chaos) in interatomic and/or intermolecular relations. That is to say, macro properties are determined by the organization or structuring of components.

"Structure" implies a degree of stability in the spatial relationships of components. As noted in any basic physics text (e.g., Feynman, Leighton, and Sands 1963), the state of matter occupied by a substance depends in part on the balance of attractive and repulsive forces between particles. At very small distances a strong repulsive force prevents atoms and molecules from collapsing in on themselves. At relatively larger distances, particles attract one another. The actual distances involved depend on the nature of the substance, the degree to which its atoms or molecules are "excited" (i.e., its temperature), and other factors.

It is the relative stability of the inter-particle distances that determine the state of matter—the degree of structure—exhibited by the set of particles. Gases, characterized by extreme chaos, possess a near total lack of structure. Liquids are more structured in that temporary bonds among subsets of particles form and, as a consequence, the collection of particles coheres to some degree. Solids are even more structured in that atoms or molecules

remain in fixed relationships to one another, their motions restricted to "vibrating" in place. All of a substance's characteristic emergent properties—the temperature at which it changes states, its density, its brittleness if a solid, its viscosity if a liquid, its conductivity, and so on—depend on properties of the constituent particles and their relations to one another.

These physical insights regarding the relation of parts to the cohesive whole \ suggest a general theoretical strategy: to understand solidarity and cohesion, we should consider (1) a small set of relevant properties of individuals comprising the \J group, (2) the nature of the relations between group members, and (3) properties | of the structure of relations characterizing the group. Within these guidelines, we " propose abstract structural definitions for sets of human actors that are analogous to the states of matter. As a scope condition, we will initially consider sets of uniform and simple actors, each of whom may engage in relations with one or more other actors in the set.[2]

We begin with a definition of cohesion. Our definition relies on the concept of "reachability" from social network analysis. Reachability refers to the strength and directness of relations among members of a set of actors. It is maximized when every actor has a strong, direct relation with every other actor in the set. Reachability is reduced when some actors are only indirectly related (e.g., A and C in the A—B—C network), and/or when some relations are weaker. We may thus define cohesion as follows:

Definition 1. *A set of actors is cohesive to the degree that it has high reachability*.

Note that this definition does not specify any particular type of relation. Simply, a relation is any sort of attractive bond between actors, and thus a relation from x to y ("$x \rightarrow y$")

indicates only and precisely that *something* attracts *x* to *y*. For instance, *x* may be attracted to *y* because *y* is physically appealing, *y* is attracted to *x*, *y* is a friend of a friend, or because *x* sees a mutual relationship with *y* as potentially remunerative, fulfilling, comforting, useful, and so forth. The specific factors that make relations operate as "bonding agents" are probably countless. One may choose to pursue whatever line of theorizing one chooses, and we would expect that different relational bases will require different theoretical tacks. These may relate cohesion to cognitive, behavioral or other properties of individual actors, to properties of certain combinations of different types of actors, to certain structural configurations, external forces, and so on. Our emotion-based theory, presented here, explores one such theoretical direction.

We next define three distinct pure types of "actor sets," analogous to the three states of matter. We call these aggregates, assemblages, and solidary groups. As with physical matter, natural sets of actors that constitute pure instances of any given type will be exceedingly rare, perhaps even nonexistent. However, the pure forms serve as excellent points of reference, and are thus worth defining explicitly.

Aggregates, in the first definition, are analogous to gases. Relations in a pure aggregate are weak and chaotic if they exist at all, and exhibit no discernable structure. In short:

Definition 2. *An aggregate is a set of actors with low cohesion.*

The concept of aggregate serves as a baseline to which more organized sets of actors may be compared. The paradigm case is a set of strangers waiting at a bus stop. They are contained by the vessel of a common purpose—to board the same bus at the same time—but lack any further social structuring with respect to one another.

Let us next make explicit the intuition that the durability of a relationship is given by its strength. A set of actors whose members have generally weak relations may then form substructures whose shapes change over time, or which stand in relatively "fluid" relations to one another. A pure assemblage is thus a perfectly "liquid" group whose integrity is maintained not via a fixed structure, but by the "stickiness" that results from properties of the distribution of relatively *temporary* relations among its members. Thus, relative to the low cohesion of an aggregate:

> **Definition 3**. *An assemblage is a set of actors with moderate cohesion*.

Given that cohesion is defined in terms of reachability, we may then say that every pair of actors in an assemblage is directly or indirectly related, but not necessarily at all times. The spectators at a football team's home games is such a grouping. Across a season, "membership" in the assemblage is fluid. At gatherings, relationships among members are often locally strong (people come with friends) but always globally weak. Despite the low average strength of relationships, however, it is sufficient for various forms of collective action, for example, making a "wave." In fact, the wave illustrates very well the low but non-zero reachability among actors in the assemblage: spectators in *Section A* can "reach" those in *Section M* via a chain of influence stretching from *A* to *B* to *C* and so on.

Moderate cohesion at the level of the assemblage can also result from fluctuations in the strengths of a fixed set of relations. Thus, at a given time, flows of influence, resources, communication, sentiment, and so forth, may be relatively concentrated in some relations, then in other relations at other times. An example may be found in shifting patterns of coalition

building and busting among members of a political body, responding to series of issues to be decided collectively.

It is pleasantly fortuitous that the word "solid" denotes not only the third state of matter, but also appears in the label for the third type of set, the solidary group:

Definition 4. *A solidary group is a set of actors with high cohesion and unity of structure*.

High cohesion again implies that members are in relatively strong, enduring and direct relations with one another. "Unity of structure" is the absence of substructures, that is, subsets of actors with higher reachability among one another than with those in other subsets. It may be that the paradigm case of a cohesive group is one having all actors strongly related to all others, thus producing a structure that also has perfect unity. In general, however, two groups may be similar in terms of reachability, but one configuration may be more unitary than the other. For example, both sets of actors in Figure 1 have six members, six strong relations, and two weak relations. The configuration of relations in la, however, clearly shows two strong substructures linked only by weaker relations. In contrast, the location of the weak relations in 1b does not result in the formation of distinct substructures. Therefore, 1b is a more solidary group. Another way of viewing the distinction between solidarity and cohesion is that the former imposes certain higher-level structural conditions, such as structural homogeneity.

The question now is not whether we have captured some "essential" property of solidarity, some essential distinction between it and cohesion, or what some particular set of theorists think of when they think about solidary groups. Rather, we are interested in whether the

definitions and distinctions that we have drawn will aid in the development of a parsimonious and fruitful theory. Toward this consideration, we next examine some of the implications and properties associated with our definitions.

Properties of Pure States

If the different states of cohesion—aggregate, assemblage, solidary group—are to be useful concepts in a theory, they should at the very least suggest a unique set of properties for each state. Table 1 illustrates such properties. We will examine each row of the table in sequence. Note that we consider these notions provisional and somewhat speculative, but interesting nonetheless.

Insert Figure 1 Here

Insert Table 1 Here

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1. *Strength*. All else being equal, a higher degree of cohesion implies greater structural strength. That is, to the extent that a given type of relation is strong enough to hold a pair of actors together within some larger context or environment, then a larger set of actors held together by the same type of bonds within the same type of environment will also resist cleavage. By extension, then, solidary groups are stronger (in this sense) than assemblages which, in turn, are stronger than aggregates.

2.   *Stability*. The increase in stability as we move from aggregate to assemblage to solidary group is entailed by the way we characterized reachability. Reachability implies strength, strength implies endurance, and the greater the endurance of pair-wise relations, the greater the endurance of the larger configurations they comprise.

3.   *Largest Discernable Unit*. If we take a "time-slice" of the structure of relations among a set of actors, we would find disjoint actors in the aggregate, disjoint clusters of actors in the assemblage, and no disjointedness in the solidary group.

4.   *Largest Enduring Unit*. If instead of a time-slice we examine persistence over time, only in the solidary group would any enduring non-actor unit be discernable: the group as a whole.

5.   *Locus of Chaotic Activity*. In aggregates, actors behave chaotically with respect to one another. In assemblages, actors may form temporary clusters, but the clusters behave chaotically with respect to one another. Theoretically, a solidary group is devoid of such chaotic activity at any level, although it may behave chaotically with respect to other groups, clusters, or actors.

6.   *Boundary Definition*. Any boundary describing an aggregate is arbitrary or artificial, that is, not inherent in the aggregate itself. In contrast, assemblages have sufficient cohesion that the boundary discriminating the assemblage from its environment should be discernable—analogous to the effects of surface tension of liquids. The changing relations in assemblages, however, result in different clusters and different actors forming the boundary at various times. The unitary structure of the pure solidary group, in contrast, produces a stable boundary.

7.   *Penetrability*. It is conceivable that under some conditions, the relative penetrability of a set of actors is related to its level of internal cohesion. The changeable relations in assemblages (or absence of relations in aggregates) could more readily permit the intrusion of new actors, in contrast to the case of the relatively strong and stable relations of the more solidary group. An

exception may occur in a solidary group with formal positions. If an actor leaves a position, such groups may have a structural imperative to fill their gaps. A nonmember actor with the appropriate characteristics should be attracted to the gap by the same forces that attracted the former occupant. Even still, the imposition of selection criteria in effect inhibits the flow of actors into such a group.

Degrees of Solidarity

To solve the problem of defining solidarity, we had to back-track and define a more fundamental property, cohesion, to which solidarity is related but not identical. If solidarity requires a strong, unitaiy relational structure, are there degrees of solidarity? Here again the physical analogy provides some insight. A 12-inch cube of iron is relatively solid with respect to most earthly environments. However, the identical material in many such environments will be much more brittle when its gross (as opposed to fine) structure is altered in certain ways, for example, when it is formed into a five-foot square sheet only one-half inch thick. In some respects, such a change can make the object even more solid, for example, with respect to a blow to its half-inch side. In most respects, however, the solidity is weakened and the object is much more vulnerable to breakage. The analogy to social structural change would be a shift from a situation in which most people have strong ties to most others, to one in which strong ties are arranged relatively linearly. The reduction in solidarity is then attributable to the decreased average reachability between members.

Another way that the solidity of physical objects can be altered is through the introduction of "impurities." This is not always the case, as iron is strengthened into steel by

"doping" it with carbon. Often, however, impurities alter gross properties of the substance into which they are introduced. In its pure form, for example, water does not gradually harden as it solidifies, nor gradually soften as it melts. It makes no sense to talk of water ice that is less than solid. In many impure substances and more complex compounds, however, state changes are not so discrete. Butter softens before it melts. Glass has certain liquid properties even in its "solid" form. Changes in temperature can transform rubber compounds through liquid, semi-solid, and solid states with no definite points of transition.

We may conceive of group structures in an analogous way. For example, a group could have an open, lattice-like structure making it "solid" but "brittle," or members may possess a capacity to form new relations when old ones are broken due to external pressures, imparting a degree of "resilience" to the structure. In groups with different types of relational ties—"impure" groups, so to speak—we would expect that factors that serve to weaken ties of a certain type do not necessarily weaken ties of other types. Such selective tie-weakening may shift a set of actors from a state of solidarity to something stronger than an assemblage—from solid to "slushy" rather than liquid. In general, it makes sense to presume that in natural groups with complex, nonuniform actors, solidarity is usefully conceptualized as a continuum. The problem now is to demonstrate the theoretical utility of such a conceptualization.

EMOTIONS AND SOLIDARITY

For purposes of sociological analysis, emotions are individual phenomena with the potential for affecting group-level social change. One of the ways this can happen is through the weakening or strengthening of bonds between group members in response to changes in the emotional states of those members. Emotions may then be construed as one type of "glue" that can bind people to one another and to their groups, thereby maintaining the coherence and integrity of supra-individual social units. Emotions are not the only basis for such bonds, but they clearly are a significant one. If we can show how the emotions of individuals can create, modify, and destroy social structures, or how the response of individuals to group processes are conditioned or mediated by emotional processes, we will have made a significant advance toward understanding how emotions and emotional processes relate to group solidarity. The specific purpose of this section is to theoretically examine the role of emotion in the creation and maintenance of group solidarity. We assert that under certain conditions emotions delimit, if not determine, emergent group structures.

Working now at the higher end of the cohesion spectrum, we will consider the role of emotions in the production of group solidarity. Our definition for solidary groups requires unity of structure and high reachability. Reachability, in turn, is based upon the strength and directness of relations. Thus, anything that can be assumed to act on assemblages so as to increase the strength of relations, or the directness of relations, and/or the unity of the structure, without reducing one of the other factors, is therefore sufficient to increase group solidarity.

Our approach to solidarity thus directs us toward, among other things, relational bases that bond the members of sets of actors. Although numerous "bonding agents" may be identified

for complex human actors, here we limit our attention to emotions. Thus we now expand the

scope of our theory to include sets of actors, the members of which are capable of anticipating

and experiencing a desirable positive emotion such as excitement, joy, wonder, love, or

contentment, or an undesirable negative emotion such as fear, anger, despair, hatred, or

frustration. The actual emotional experience of an actor x stems from one or more behavioral

encounters with another actor, y.

Emotion/Solidarity Propositions

Our theory picks up from the point at which an actor, x, anticipates experiencing a

positive emotion through an encounter with a chosen member, s_i, of a set of actors, S. The theory

makes no assumptions about the source of x's expectation, nor the reasons that encounters may

engender a particular emotional response. In addition to these scope conditions we reiterate that

(for now) the hypothetical actors to which this theory refers are essentially uniform and very

simple.[3]

Our first proposition links x's expectations with subsequent action:

Proposition 1. If x expects to experience positive emotions in an encounter with s_i, then

   x will encounter s_i.

Note also that for this and the other propositions, negative emotions entail opposite

consequences, for example, in this case if x anticipates negative emotions, then x will not

encounter s_i.

The second proposition establishes the connection between emotions and the formation of relations:

Proposition 2. If x encounters s_i and x experiences positive emotions, then $x \rightarrow$ s_i strengthens.

With reference to the physical metaphor, positive emotions enhance the attractive forces between members, negative emotions diminish them. In combination, Propositions 1 and 2 suggest that groups that induce expectations of positive emotional encounters will produce high rates of interaction if those expectations are generally confirmed.

The third proposition posits a tendency for reciprocation to occur in pair-wise relations:

Proposition 3. If $x \rightarrow s_i$ strengthens, then $s_i \rightarrow x$ strengthens.

In natural groups, it has been found that reciprocity of attractive relations is commonplace (Berscheid 1985) although the actual strengths of the mutual relations are generally not perfectly matched (Wellman 1988). Our theory would predict such differentials in strengths, given the next proposition.

The fourth proposition captures the idea that all else being equal, if an actor has positive experiences with one member of a set of actors, then he or she will anticipate similar experiences with other members. This provides the mechanism for a process of emotional generalization:

Proposition 4. If $x \rightarrow s_i$ strengthens, then x anticipates experiencing positive emotions in an encounter with an s_j.

When "fed back" into the other propositions, it becomes clear that if x's expectation is verified, the $x \leftrightarrow s_i$, relation will form and strengthen with further positive encounters. Thus, assuming positive encounters, the strengthening of relations I among some members will strengthen relations among others.

The foregoing propositions provide an elementary emotion-based explanation for the emergence of a structurally defined group solidarity. If all of the interpersonal encounters in S result in positive emotional responses, perfect solidarity will emerge in S *whether or not each member interacts with every other member*. If some encounters produce mixed emotions and weaker relations, considerable solidarity may still emerge, depending on the structural location of those weaker relations. In fact, all three structural requisites for solidarity—strength, directness, and unity—are achievable via the processes described by the propositions. Propositions 2 and 3 involve strength-enhancement, and Propositions 3 and 4 together establish processes that increase the directness of relations and unity of structures.

These are basic ideas indicating how a unitary structure with high reachability might develop among a set of actors. The potential utility of our framework is revealed by extending these propositions to other phenomena associated with solidarity. For example, both solidarity and cohesion literatures suggest in a loose way that the group or collectivity somehow becomes an object in itself for members (Parsons 1951; Hagstrom and Selvin 1965; Piper et al. 1983), and an extension of these propositions offers a specification of this process. In addition, we can indicate how something like a "resistance to identity loss" might create repulsive forces that

prevent groups from reaching extreme levels of solidarity, and also how vicarious experiences in groups strengthen solidarity further. The following pages briefly analyze these three processes in order to illustrate the potential value of the elementary propositions above.

<p style="text-align: center">Emotional Bonding to Groups</p>

Let us define a concept gx representing total strength of all $x \leftrightarrow s_i$, that is, of x's direct, mutual relations. Consider what can happen if x is allowed to develop a somewhat different kind of emotional relation.

Proposition 5. The greater g_x, the stronger the positive emotions x associates with S.

The greater the frequency and intensity of relations between jc and members of the group, the stronger the positive emotional bonds to the group as an object. This specifies a process by which interpersonal relations generate emotional bonds that connect members to the group.

Interestingly, emotional bonding to the group can vary independently from group solidarity since it is based only on direct ties among actors. It then becomes possible to conceive of groups whose members all feel strong emotional ties to the group, while the group has relatively low solidarity; all actors are overgeneralizing their emotional responses and actually reside in disparate emotional subgroups. There is research that shows that people do tend to make inferences about groups on the basis of insufficient samples (e.g., Quattrone and Jones

1982; Tversky and Kahne- man 1971). In such cases, these structures should be far more vulnerable to disintegrative forces than those having higher structural unity and reachability.

On the other hand, it may be reasonable to propose that emotional attachment to the group may facilitate structural solidarity by fostering positive encounters with previously unrelated others. Perhaps once a threshold of g_x is exceeded, x develops such a strong bond with the group that he or she becomes unconditionally attracted to other members whom he or she encounters.

Resistance to Identity Loss

Thus far we have focused on attractive forces that maintain relationships. Earlier, however, it was stated that particles comprising physical matter are also governed by a repulsive force at short distances that prevents matter from collapsing in upon itself. An analog for our set of emotion-experiencing actors could be a negative emotional reaction to the loss of individual identity. That is, as an actor becomes increasingly enmeshed in a network via strong attractive relations, he or she may suffer a loss of individuality. The actor becomes more a structural element than an actor, losing individual integrity and certain freedoms (Zimbardo 1969). Resistance to such losses may be conceptualized as an increase in x's repulsive force toward others, limiting the strength and/or number of relations in which x may engage. Let t_x represent x's threshold in S, above which relationships become identity-robbing. The effect of resistance to identity loss is given as:

Proposition 6. The greater $g_x - t_x$, the greater the degree to which x experiences

negative emotions in one or more $x \rightarrow s_i$.

Using earlier propositions we can derive that:

Derivation 1. The greater $g_x - t_x$, the greater the degree to which one or more $x \rightarrow s_i$

weakens.

When t_x is exceeded in S but x still wishes to establish new relations, he or she may seek them with members of other sets of actors. In this manner multiple group memberships may be established. Regardless of x's relations with other sets of actors, however, coupling Proposition 6 with those given previously creates a countervailing force against solidarity. The result may be shifting clusters of related actors in S—the analog to a "liquid group." Whether S is an aggregate, assembly or solidary group will depend on the actual levels of t_x for members of S. In general, then, resistance to identity loss is one process that can limit potentially deleterious consequences of extreme solidarity such as deindividuation and groupthink.

Vicarious Responses

What would happen if actors' emotional responses were affected not only by their direct encounters, but also by the encounters of those to whom they are related? One simple and well-grounded way to introduce this possibility is to allow our actors to (1) make inferences about other relations, (2) observe whether those inferences are confirmed or disconfirmed, and (3) respond emotionally to this observation.

We first propose that actors will tend to infer consistency among relations. In particular:

Proposition 7. If $x \leftrightarrow s_i$ and $x \leftrightarrow s_j$ are strong, then x infers that s, $s_i \leftrightarrow s_j$ is strong.

Then,

Proposition 8. If x infers that $s_i \leftrightarrow s_j$ is strong and observes that s_i experiences positive emotions in an encounter with s_j then x experiences positive emotions.

In short, x is assumed to be capable of vicarious emotional responses to social inconsistencies. Cooper and Fazio (1984), Croyle and Cooper (1983), Elkin and Leippe (1986), and Fazio and Cooper (1983) all provide evidence for "dissonance arousal," a physiological response to cognitive inconsistencies. Batson and Coke (1981), Berger (1962), Bandura and Rosenthal (1966), and Krebs (1975) provide evidence for empathetically induced physiological/emotional experiences. The propositions suggest that x takes an interest in the goings-on of those to whom he or she is strongly attached. If we allow that x's observing an $s_i -$

s_j encounter itself qualifies as an encounter for x, then x's emotional response is predicted by Proposition 2. Combined with subsequent propositions, this will lead x to anticipate positive encounters with other members of S and possibly establish new relations. Thus, a relation in which x is not a member may affect x's emotional state and, as a result, affect the number and strength of x's relations. In this manner, members may come to perceive a commonality and mutuality of experience in the group.

The true nature of the $s_i - s_j$ relation would only be a good predictor of x's vicarious response if x perceived the encounter accurately, or if s_i and s_j accurately project their emotional responses to the encounter. It is possible for x to misperceive the encounter as positive, to anticipate positive encounters with other members of S, to then engage in encounters with others, form new relations, and so forth. In this way a single misperceived relation can have an impact far beyond and opposite that warranted by its true nature.

IMPLICATIONS AND CONCLUSIONS

This chapter is part of a larger theoretical effort to develop a structural theory of group solidarity (see Markovsky and Chaffee 1995). It focuses on sets of actors whose members have the potential to form and maintain relations that may vary in their strength and directness. Cohesion is thereby conceptualized in structural terms and, in conjunction with structural considerations, viewed as a partial determinant of group solidarity.

The explanatory power of a theory depends as much on the comprehensibility of its terms as on the assertions it makes. With this in mind, one purpose of this chapter has been to develop clearer concepts of cohesion and solidarity, thereby laying the foundation for examining the

effects of emotional responses (and other factors) on group solidarity. The theory focuses on the

processes whereby positive or negative emotional responses in dyadic encounters affect the

strength of relationships, and how larger patterns of relationships determine the degree of group

cohesion or solidarity. We have made no formal claims about the causes of emotions nor the

consequences of the solidarity that may follow.

Given the conceptual problems and related issues in the cohesion and solidarity

literatures, it is important to understand how our approach bears on these literatures. The classic

definition of cohesion is open-ended, that is, a field of forces that motivate individuals to remain

in the group. The definition fails to distinguish the causes of cohesion (i.e., the forces) from

cohesion itself (i.e., remaining in the group), and this has generated substantial confusion and

debate over the years (Gross and Martin 1952; Piper et al. 1983). In these terms, our formulation

treats cohesion as an *effect* of the "field of forces" and defines the nature of that effect as the

development of relations among a set of actors. The dimensions that distinguish groups with

lower vs. higher levels of cohesion are the strength and endurance of the relations, and the degree

of reachability among actors. The key question, then, is how do strong, enduring, and reachable

relations develop among a set of actors?

We have shown that one pathway to strength and stability is through positive emotions

that develop from encounters between actors. Our theory indicates that such positive emotions

undergird attraction between parties to encounters, that under certain conditions such emotions

spread to other relationships, and that they may even create emotional bonds to the group as an

object unto itself. In this sense, our theory systematically disentangles and interrelates the

fundamental phenomena encompassed by Parsons' (1951) distinction between alter and the

group as an object, Hagstrom and Selvin's (1965) distinction between "social satisfaction" and

"sociometric cohesion," and Evans and Jarvis' (1980) distinction between "cohesion" and "attachment-to-group." Our approach would take issue with the need to develop an elaborate multidimensional conceptualization of cohesion or solidarity (see the recent effort of Drescher et al. 1985) but would certainly indicate a multidimensional conception of the causes of solidarity. Emotion is but one of many possible determinants.

It may prove instructive to consider how emotions could mediate some of the more commonly cited determinants of cohesion or solidarity such as the dependence of the actors on the group (e.g., Hechter 1987; Shaw 1981), intergroup conflict (Tajfel and Turner 1979), and sanctioning systems (Hechter 1987).

The dependence of members on the group motivates encounters and exchanges with other group members (Emerson 1972). If these encounters are rewarding, we would expect them to produce positive emotional responses. Thus, even groups appearing to rest on utilitarian foundations could generate emotional relations among members (Tallman, Gray, and Leik 1991). Utilitarian approaches to solidarity then may overlook the true causes of group solidarity, such as the bonds between group members. It is possible that the only condition under which dependence or other utilitarian factors could produce and maintain high solidarity without emotional relations is when actors have no alternative groups and no prospect of developing alternative sources of gratification, that is, when members' dependence on the group is absolute. Even then, however, there is no assurance of interpersonal bonding. The solidarity may be minimal.

The effect of intergroup conflict resembles that of dependence. The task of dealing with hostile others fosters intragroup encounters. The successful coordination of efforts, and especially the successful resolution of the conflict, would strengthen the positive emotions associated with intragroup relations and bridge subgroups that may previously have been only

loosely related. The initial level of cohesion or solidarity would then be enhanced by the intergroup hostility.

Another utilitarian tenet is that people remain in groups that provide rewards, and/or levy costs for leaving. Groups typically create sanctioning and selective incentive mechanisms to promote member compliance to formal and informal regulations and the accomplishment of group tasks. Here again, the emotional attachment of members should play a crucial mediating role. A social control agency may use either positive or negative sanctions (rewards or punishments) to obtain particular types of compliant behavior. The emotional implications of these two types of sanctions are obviously very different. Groups that attempt to control members through the administration of positive rather than negative sanctions are more likely to produce positive emotional responses and thereby foster attractive bonds among members, and between members and the group. Thus, positive sanctions promote cohesion and solidarity. Groups that punish members for non- compliance may succeed in controlling aspects of members' behaviors, but the negative emotional responses associated with punishment should weaken member- group relations and possibly even inter-member relations. Exceptions to the latter may occur if members are capable of providing one another with emotional support and/or rewards that countervail the punishments meted by social control agents.

Our theory helps to provide more rigorous derivations of some of the consequences of solidarity suggested in related literatures. For example, the close relations that are required for high reachability should facilitate communication and mutual influence among group members. Also, the heightened emotional attachment of members to the group should both increase voluntary compliance to group norms and decrease free-riding (see Lawler 1992). Examples of possible group level effects are the development of formal institutions that monitor the behavior

of individuals, that systematize the application of positive and negative sanctions, and that regulate access to and exit from the group. Thus, human groups can develop the capacity to purposefully manipulate and modify their own emergent properties, unlike the states of matter.

A social network imagery has informed our theorizing in many ways. Several concepts, such as relation, reachability, structural completion, boundary, and structural unity, reflect this imagery. In addition, a network metaphor has inspired us to think in multilevel terms, and informed our effort to connect individuals' emotions to the development of a set of stable relations (i.e., a social structure). Our passage from physical metaphors to an actual social theory was facilitated, if not explicitly guided, by general notions about social networks.

One of our next tasks is to formalize our theory using some of the network tools that have become available in recent years (e.g., Burt 1982, 1987; Burt and Minor 1983; Wellman and Berkowitz 1988). Its scope may then be broadened to include multiple types of relations among actors and multiple subgroups, permitting a broader range of derivations regarding macrolevel phenomena. Already our propositions hint of mathematical expressions that may be extrapolated, tested, and made even more precise. Additional structural concepts could also be incorporated and their implications drawn out. We have scarcely begun to consider, for example, how structural positions and variations in relational strength may interact to affect solidarity, the possible effect of simultaneous memberships in multiple networks, and the role of weak ties between subgroups within the group (Granovetter 1973, 1982). While there is much territory between emotions and group structure that remains to be explored, penetrating deeply into this territory is unlikely to lead anywhere without a conceptual and theoretical foundation such as that proposed in this paper.

Notes

1. By explicitly defining solidarity in the same terms that he asserts to be its determinants, Hechter presents an unusually bald tautology. The problem this creates is critical: solidarity cannot exist unless its "determinants" are present by *definition*. This makes the asserted causal relationships logically untestable. Obviously, Hechter did intend dependence and monitoring to be determinants and not defining properties. Failing to provide those defining properties, however, leaves those who may wish to test it with no guidelines for developing empirical indicators for "group solidarity." Hechter then loses any control over how other researchers operationalize solidarity for purposes of testing *his* theory.

2. See Lawler, Ridgeway, and Markovsky (1993) for a related general strategy for building theories in "structural social psychology."

3. Some readers of earlier drafts of this chapter have noted a correspondence between the assumptions to follow and Homans' (1974) "basic propositions." They are worth paraphrasing here: (1) the frequency of an act is determined by the frequency of reward; (2) an act is more likely to the degree that an associated stimulus is similar to one associated with the act and a prior reward; (3) the likelihood of an act is determined by the value of its result; (4) each additional reward of a given type has diminishing value; and (5) approving or aggressive behavior follows from, respectively, receiving or not receiving an expected reward. These are fairly standard behavioristic assumptions and as such, capable of serving as interpretations of virtually *any* behavior. Some of the propositions that we assert could be interpretable through, or reducible to, Homans' basic

propositions. However, they are not logically derivable from Homans' propositions because they make assertions with respect to entities and phenomena that Homans' did not address, that is, expectations, relations, encounters, relational strength, bonding to groups, and so on.
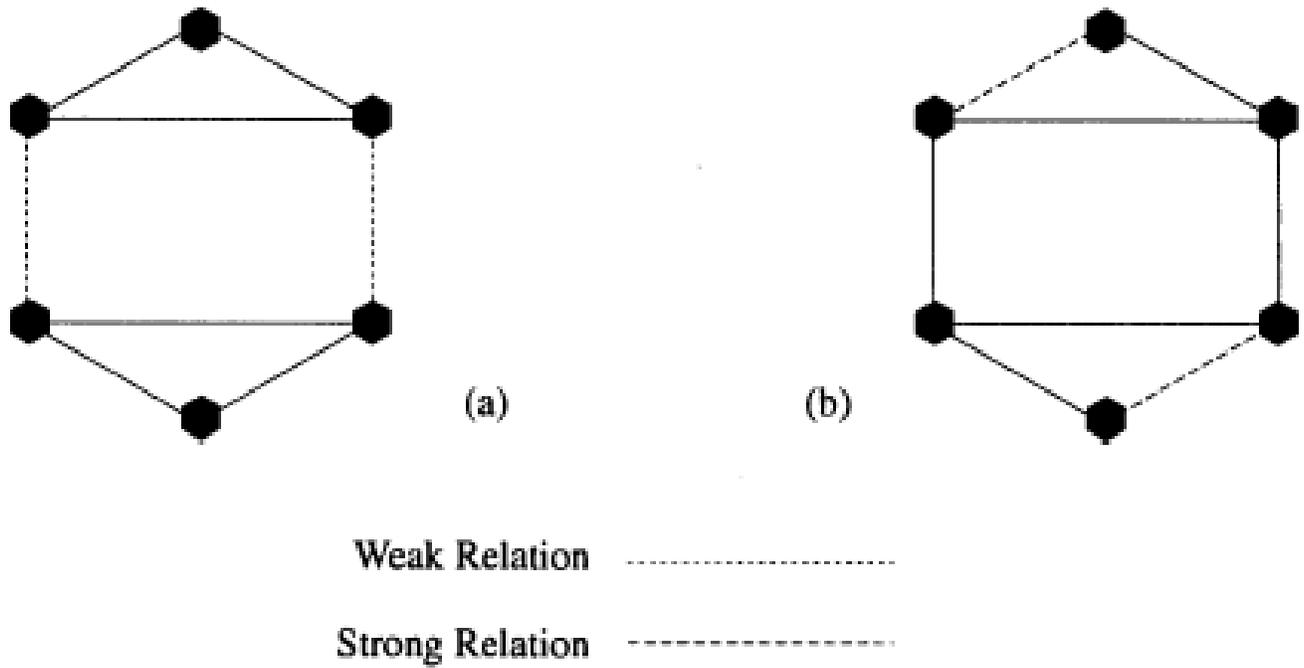
Figure 1

(a)   (b)

Weak Relation   ························

Strong Relation   ---------------

Figure 1. Equally cohesive groups that vary in solidarity

Table 1

Table 1. Properties of Aggregates, Assemblages and Solidary Groups

	Form		
Property	Aggregate	Assemblage	Solidary Group
Strength	low	moderate	high
Stability	low	moderate	high
Largest Discernable Unit	actor	cluster	group
Largest Enduring Unit	actor	actor	group
Locus of Chaotic Activity	inter-actor	inter-actor, inter-cluster	none
Boundary Definition	arbitrary	variable	fixed
Penetrability	high	moderate	low

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