speech communications, political science, organizational behavior, group psychotherapy, social work, and educational psychology. Accounts of this history can be found in numerous publications (e.g., Cartwright & Zander, 1953, 1960, 1968; McGrath, 1997; McGrath & Altman, 1966; Moreland, Hogg, & Hains, 1994; Sanna & Parks, 1997). In our condensed summary, we note some of the strengths of group theory and research up to the present time and some of its weaknesses. We cite representative work within each tradition discussed, but the reader should note that we do not intend this as an exhaustive review.

Some Main Themes From Past Research

Small group research has always incorporated a diffuse array of research and theory. Much of the earliest research was generated by several relatively distinct "schools" of small group research, each with its own perspective about what groups are, what they do, and how to study them. McGrath (1997) summarized early work in terms of three schools and identified three additional defining metaphors for group research in more recent work. We flesh out that account by adding several additional bodies of research, many of which have a more applied focus than the six reviewed by McGrath.

The first three schools of early research identified by McGrath focused on studying groups as (a) systems for influencing members, (b) systems for patterning interaction, and (c) systems for performing tasks. To these we add (d) the classic work of the National Training Laboratory (NTL) and others on groups as a setting in which individuals grow in self-understanding; (e) the Tavistock Institute's groundbreaking research in work organizations, in which groups were viewed as intact sociotechnical systems with multiple outcomes (e.g., task performance and member satisfaction); (f) the Hawthorne studies plus the work of Katz, French, and others on how informal groups develop within work settings and affect both work effectiveness and member satisfaction; and (g) work by Sherif and others on the dynamic interplay of intergroup and intragroup processes.

Three more recent bodies of research identified by McGrath (1997) explore groups as (h) information-processing systems; (i) systems for managing conflict and attaining consensus; and (j) systems for motivating, regulating, and coordinating the activities of members. We add to that list recent work reflecting some of the earlier applied themes: (k) research on work teams in organizational settings and (l) research in education, clinical psychology, and social work on using groups in classroom, clinical, and community settings to enhance the learning and psychosocial adjustment of members. We also add another stream of basic research: (m) research on cognition and behavior in the minimal group and social categorization tradition. Several of the more recent research traditions integrate or reinterpret themes within one or more of the earlier bodies of work.

Theoretical insights and empirical findings gleaned from these 13 research streams form the substantive underpinnings of our approach to small groups. At the same time, each of those bodies of work contains some serious constraints and limitations—some common to all of them, some shared by most. Many of those constraints arise from inherent features of the conceptual and methodological paradigms that allowed that work to generate so much useful knowledge. These limitations suggest to us that the field of small group research needs to transcend some established assumptions and practices if it is to continue to gain new insights and understandings about groups and how they operate.

The next section covers each of the 13 bodies of past and current research briefly. We then discuss some limitations of the existing knowledge base and identify some conceptual tools we think are needed if the next century of research on small groups is to make the dramatic progress that we feel is possible.

Early Group Research

Groups as Vehicles for Influencing Members

A large body of small group research in its early years viewed groups as *vehicles for influencing members* (e.g., changing their attitudes). That school was built on the work and inspiration of Kurt Lewin (e.g., Lewin, 1948, 1953; Lewin, Lippett, & White, 1939), with many now-famous contributions, such as Festinger's (1954, 1957) social comparison theory and dissonance theory, Thibaut and Kelley's (1959) exchange theory,

Newcomb's (1953, 1961) theory of communication acts and work on the acquaintance process, French and Raven's analysis of power (French, 1956; French & Raven, 1959), and Cartwright and Zander's (1953, 1960, 1968) conceptual framework, which shaped the early organization of the field.

Although this body of work began with the study of natural groups (e.g., Festinger, Schachter, & Back, 1950), it quickly migrated into the laboratory. In fact, researchers in this school played a major role in creating a powerful *experimental technology* for studying groups in laboratory experimental settings. In large part because this technology became the dominant paradigm for studying groups, small group research was a central topic within a developing experimental social psychology in the 1950s and 1960s. The very success of this experimental technology, however, helped separate many researchers from the study of natural groups with which they had begun.

Small group researchers continue to be interested in influence processes in groups, although the emphasis on majority influence in this early work has broadened to include minority influence processes (e.g., Moscovici, Mugny, & Van Avermaet, 1985; Nemeth, 1986; for a recent review, see Wood, Lundgren, Ouellette, Buscerne, & Blackstone, 1994). The theory of social impact (Latané, 1981) and its successor, dynamic social impact theory (Latané & L'Herrou, 1996; Nowak, Szamrej, & Latané, 1990), integrate majority and minority influence into a single framework and also take dynamics seriously.

The features of this work that have informed our approach to groups are its substantive emphasis on how groups fulfill member needs, its conceptual emphasis on the importance of member-member and member-group relations, and of course the methodological approach of studying groups experimentally.

Groups as Vehicles for Patterning Interaction

Another large portion of early research on groups regarded groups as *vehicles for patterning human interaction* (e.g., patterned sequences of problem-solving phases). Bales's (1950a, 1950b) interaction process analysis (IPA) theory and coding system and its applications to analysis of group processes (Bales, 1953, 1955; Borgatta, 1962), leadership and

group structure (Bales & Slater, 1955; Borgatta, Couch, & Bales, 1954; Talland, 1955), and problem-solving phase analysis (Bales & Strodtbeck, 1951; Psathas, 1960), as well as his later SYMLOG theory (Bales & Cohen, 1979), provided the benchmark work on group interaction process for decades.

In the same era, Bion, Thelen, and colleagues (Bion, 1961; Stock & Thelen, 1958; Thelen, 1956; Thelen, Stock, & Associates, 1954) developed an alternative theory of work and emotionality in groups and an alternative system for coding interaction. That work had and continues to have an enormous influence on research and theory in group psychotherapy (e.g., Ettin, Fidler, & Cohen, 1995; Verdi & Wheelan, 1992; Wheelan & McKeage, 1993). Both the Bales IPA system and the Bion system for observing interaction (a) are highly labor intensive and demanding, (b) focus on interaction process but not on its content, and (c) are tightly tied to particular theories and hence less useful for researchers working out of other theoretical frameworks.

This work is important to our theory because of its emphasis on the key role of group process and because of its early concern with the patterning of interaction process over time. The focus on dynamic processes continues in recent work based in this school, such as Polley's (1988, 1989) development of group field dynamics. See Bales (1999) for a recent summary and integration of this body of work.

Groups as Vehicles for Performing Tasks

Another large body of early research on groups viewed groups as *vehicles for task performance.* That work, much more diffuse, dates back to the 19th-century work of Triplett (1898), to Allport's (1920) early research on social facilitation, and to the work of other scholars in the early 20th century (e.g., Dashiell, 1930). Much of this work studied military units and sports teams (e.g., Altman & Haythorn, 1967; Carter, Haythorn, & Howell, 1950; Goodacre, 1953; Havron, Fay, & Goodacre, 1951; Havron & McGrath, 1961; Roby & Lanzetta, 1956; for reviews, see Dyer, 1985; McGrath & Altman, 1966). The majority of work, however, used ad hoc laboratory groups to study topics such as leadership styles (e.g., Fiedler, 1964; Glanzer & Glaser, 1959, 1961), communication patterns (e.g., Guetzkow & Simon, 1955; Shaw, 1954, 1958), and various

aspects of group problem solving, decision making, and task performance (e.g., Davis & Restle, 1963; Hackman & Morris, 1975, 1978; Laughlin & Ellis, 1986; Lorge & Solomon, 1955; Shaw, 1932; Steiner, 1972; Taylor & Faust, 1952; for reviews, see Davis, Laughlin, & Komorita, 1976; Levine & Moreland, 1990; McGrath & Kravitz, 1982).

Because task performance was central to this school, a portion of the work from this perspective dealt with the effects of different types of tasks (e.g., Carter, 1950; Kent & McGrath, 1969; Laughlin & Shippy, 1983; Laughlin, VanderStoep, & Hollingshead, 1991; McGrath, 1984; Roby & Lanzetta, 1957, 1958; Steiner, 1972). This school's emphasis on task performance as an outcome and its concern with differential effects of different tasks have both been important to our own thinking.

Groups as Vehicles for Improving Member Self-Understanding

Simultaneous with these three schools of basic research on groups, work at the National Training Laboratory at Bethel, Maine, was exploring small groups from a more applied standpoint, investigating how groups could be used to help individuals learn, grow, and gain greater understanding of themselves. This work, which also originated with the insights and teachings of Kurt Lewin (see Moreland, 1996, for an account of how this tradition got started), led to a host of alternative approaches by many research and practice groups, all of them exploring how groups can contribute in a quasi-therapeutic way to individual growth and development. Each research or practice team tended to develop its own protocol for establishing and directing groups and established its own criteria for assessing the progress of members on their self-insight and self-development tasks.

One long-standing contribution of this body of work was the insights it contributed to how small groups developed over time (see, e.g., Bennis & Shepard, 1956; Hill & Gruner, 1973; LaCoursiere, 1980; and integrative reviews by McGrath, 1984; Tuckman, 1965; Tuckman & Jensen, 1977). For examples of more recent work on group development that draws on this tradition, see McCollom (1995b) and Worchel (1994). This work is important for our thinking because of its focus on developmental issues and also because of the importance it placed on the personal and interpersonal consequences of group activities.

Groups as Intact, Holistic, Sociotechnical Systems

The work of researchers at the Tavistock Institute in London, using what came to be known as the "sociotechnical" approach, related both to the basic issues of the first three schools and to the applied focus of the fourth. That work viewed groups as intact systems, consisting not only of a collection of members but also of the tools, resources, and technology available to (or imposed on) them. It studied groups in the field (see, e.g., Trist & Bamforth, 1951) and revealed how changes in technology could not be viewed separately from the group structure that had grown up around a particular technology and set of tasks. The sociotechnical tradition of studying naturally occurring work groups in context has been continued by contemporary researchers inspired by this tradition (e.g., Goodman, 1986; Kolodny & Kiggundu, 1980).

This work has been important to our thinking because of its focus on technology and the interconnection between members, tasks, and tools. More fundamentally, this body of work was one of the earliest to study groups as intact, complex systems, embedded within larger contexts that set constraints on these systems.

Informal Groups in Work Settings

Much early applied research on groups was conducted in work organizations. Unlike the sociotechnical school (and a later tradition to be discussed below), most of this research was not concerned with analyzing how formally organized work groups did their tasks; indeed, this work stumbled on the importance of groups in the workplace serendipitously. Perhaps the most notable part of this body of work were the well-known "Hawthorne studies" (Homans, 1950; Roethlisberger & Dickson, 1939), conducted at the Western Electric Company's plant in Hawthorne, Illinois. The researchers conducting these studies were not, initially, studying groups. Instead, they were interested in the impact of workplace conditions and incentives on individual productivity. To facilitate their studies, however, they separated out small groups of workers and placed them in separate rooms for easier observation. They found—to their surprise—that these informal groups of workers developed and enforced strongly entrenched "group norms," which

sometimes worked against the higher productivity goals of management, counteracting the expected impact of production incentives, and sometimes promoted enhanced production.

Other group researchers (e.g., Coch & French, 1948; Kahn & Katz, 1953) began investigating informal groups in work settings more deliberately. They were interested in how emergent informal groups—the unplanned patterns of interpersonal relations that developed among coworkers—affected task performance and worker satisfaction in those settings. They found that informal groups had a strong impact on what formal work groups could accomplish and on how they carried out their work. This body of work is important to our thinking because of its emphasis on the importance of emergent groups and because of its early investigation of how the group as a distinct entity mediates the impact of a larger embedding context (typically work organizations) on individuals.

The Interplay of Intergroup Relations and Within-Group Processes

Some early group research also tackled the question of intergroup relations and how those intergroup processes are intertwined with intragroup activities. A classic early study that epitomizes work on this topic was the Robbers Cave study by Sherif, Harvey, White, Hood, and Sherif (1961), which showed that rivalry between groups typically worsened under close contact but could be transformed into cooperation through the manipulation of a common fate affecting both groups.

This study and other early work exploring intergroup relations (e.g., Blake & Mouton, 1961; Rabbie & Horwitz, 1969) continue to inform studies of conflict between groups ranging in size from a few people to whole nations or societies. A primary emphasis has been understanding the roots of intergroup hostility and violence, demonstrating the ineffectiveness of mere contact between members of different groups in counteracting hostility, and searching for more effective ways to prevent or defuse intergroup conflict in schools (e.g., Johnson, Johnson, & Maruyama, 1984; Schofield, 1978), in the workplace (e.g., Brown, Condor, Matthews, Wade, & Williams, 1986), and between large racial and ethnic groups (e.g., Staub, 1989; White, 1969). This body of work has been important to our thinking because of its focus on the dynamic tension between cooperation and competition, on the importance of contextual factors in understanding intragroup relations, and on the two-way interchange between a group and its embedding contexts, which also contain other groups.

More Recent Bodies of Group Research

As noted above, work on the core topics of many of the "early" schools has continued to the present. Small group researchers have not lost interest in influence processes, the patterning of interaction, group performance, and so on, and contemporary work on these themes can be viewed as contributing to a continuous line of research established by this early work. So the work of many of these schools is ongoing.

In this section, we identify recent bodies of work that are less easily identified as continuations of one of these prior streams. Others surveying the field might come to different conclusions about which bodies of work constitute "continuations" or "new themes," and we have no doubt left out some bodies of work that others would include. The bodies of work that we have decided to call new "schools" or "streams" of research strike us as different from continuations of the early schools for one or more reasons. Some are pursued primarily by researchers in disciplines other than experimental social psychology. Some integrate multiple themes from different early schools; others coalesce around new metaphors for thinking about groups. The first one we describe exemplifies the emergence of a new metaphor.

Groups as Information-Processing Systems

The metaphor of the computer, which inspired the development of modern cognitive psychology and contributed to a new interest in cognition by social psychologists, has also been applied in the past few decades to small groups. This growing body of research treats groups as systems for *organizing and processing information*—that is, acquiring, encoding, processing, storing, exchanging, and using "information," broadly construed. It is exemplified by the theory and research of Wegner and colleagues, and others, on transactive memory in groups

(Hollingshead, 1998; Wegner, 1986; Wegner, Erber, & Raymond, 1991); the work of Davis and colleagues, and others, on group decision-making processes, information exchange, and group memory (Clark & Stephenson, 1989; Davis, Kameda, Parks, Stasson, & Zimmerman, 1989; Hartwick, Sheppard, & Davis, 1982; Hinsz, 1990; Hinsz, Tindale, & Vollrath, 1997; Laughlin & Adamopoulos, 1982; Stasser, Taylor, & Hanna, 1989; Stasser & Titus, 1985, 1987; Tindale, 1989); and the work of Levine, Moreland, and others on sociocognition (Gruenfeld & Hollingshead, 1993; Levine & Moreland, 1985, 1991). This work emphasizes what we see as one of the crucial "instrumental functions" of a wide variety of kinds of groups: the acquisition, storage, processing, generation, and use of information.

Groups as Conflict-Managing and Consensus-Seeking Systems

Another body of more recent work treats groups as systems for *managing conflict and generating consensus.* Scholars who take this perspective focus on the political work that groups do. It contrasts with the earlier stream of research on conflict because it emphasizes what happens when group members work together to try to resolve conflict and thus tends to focus on intragroup, rather than intergroup, conflict. It is exemplified by theory and research on negotiations and mediation and on the experience and effects of intragroup conflict (e.g., Bazerman, Mannix, & Thompson, 1988; Deutsch, 1949a, 1949b; Deutsch & Krauss, 1962; Jehn, 1995, 1997; Komorita, 1973, 1974, 1979; Pruitt & Kimmel, 1977; Vidmar & McGrath, 1970).

In this body of work, groups are viewed not so much as problem-solving systems but, rather, as interest- or perspective-blending systems. They are looking not for a correct answer but for consensus. This work is important to our thinking because it makes clear that rational information processing and problem solving is not the only thing groups do, because it recognizes the importance of dynamic political tensions in groups, and because it focuses on consensus as an emergent group-level product of interactions among members. It complements the cognitive focus of the information-processing school with an emphasis on affective processes.

Groups as Systems for Motivating, Regulating, and Coordinating Member Activities

A third body of recent work treats groups as systems for *motivating, regulating, and coordinating member behavior.* Work along these lines includes research and theory on socialization of members by Moreland, Levine, and others (e.g., Goodman & Leyden, 1991; Goodman, Devadas, & Hughson, 1988; Moreland & Levine, 1982, 1984; Salas, Blaiwes, Reynolds, Glickman, & Morgan, 1985); work on habitual routines by Gersick and Hackman (1990) and others (e.g., Weiss & Ilgen, 1985); and the work of Poole and colleagues on adaptive structuration (e.g., Poole, 1981, 1983; Poole & DeSanctis, 1989, 1990; Poole & Roth, 1989a, 1989b; Watson, DeSanctis, & Poole, 1988). Much work in sports psychology (e.g., Ball & Carron, 1976; Carron, 1988) also takes this perspective.

This body of work views groups as the medium within which much human development and activity takes place and in which interaction and resulting interpersonal relations are motivating forces, normative-regulatory forces, and behavior-coordinating forces. This body of work has been important to our thinking because of its emphasis on ongoing group processes and because more than any of the other current "schools" it stresses the dynamics of group operation.

The Development and Use of Teams in Work Organizations

In the last decade or so, there has been a resurgence of interest in groups in the workplace, coincident with the growing use of "teams" as a basic unit of organizations (e.g., Beyerlein, Johnson, & Beyerlein, 1997; Guzzo & Salas, 1995; Hackman, 1990; Salas, Dickinson, Converse, & Tannenbaum, 1992; Sundstrom, De Meuse, & Futrell, 1990; see Guzzo & Dickson, 1996, for a recent review). This body of work shows both that teams can be very effective units of the work organization and that teams can fail to provide high performance effectiveness, depending on the features that they incorporate and the contextual conditions under which they operate. That work also shows that organizations often create units they call teams and expect the benefits that are purported to flow from them but create those teams in a way that undercuts

their effectiveness as autonomous performing units—by failing to provide needed resources, including training; by placing responsibility on the team but rewarding individuals; and by failing to provide an appropriately supportive embedding context for the team to do its work. We draw on this body of research not only because it emphasizes teams or groups as intact systems but also because it stresses the importance of both initial conditions and interrelations with embedding contexts.

Groups as Vehicles for Improving the Learning and Adjustment of Members

The early work on "t-groups" and other forms of groups designed to benefit members' psychosocial adjustment has its parallel in current bodies of work within group psychotherapy, social work, and educational and clinical psychology (e.g., Corey & Corey, 1992; Kaplan & Sadock, 1993; Yalom, 1995). Some of that work, done in classroom settings, explores the benefits of group activities both for individual learning and for the development of positive patterns of interpersonal relations (e.g., Christensen, 1983; Michaelsen, Watson, & Schrader, 1985; Watson, Kumar, & Michaelsen, 1993). Application of these ideas, within a wide range of types of groups, explores how group settings can be beneficial to individual psychosocial adjustment, whether those individuals are children and adolescents (e.g., Duncan & Gumaer, 1980; Scheidlinger, 1984), adults suffering from the after-effects of childhood trauma such as incest (e.g., Herman & Schatzow, 1984), people with behavioral problems such as eating disorders (e.g., Brisman, & Siegal, 1985; Hendren, Atkins, Sumner, & Barber, 1987), battered women (e.g., Sadock, 1983), or the men who batter them (e.g., Grusznski & Bankovics, 1990). This work emphasizes the two-way interchanges between the group and its members and highlights a wide range of group types and a wide range of group-related phenomena.

Identity in Groups

One body of work currently receiving considerable emphasis is the study of social identity, group identity, in-group/out-group perceptions, members' attributions about self and others, and other concepts

involving groups and identity. Unlike the earlier work of Sherif and others on intergroup relations, current work is much more focused on basic research issues, and rather than studying more natural groups longitudinally, it primarily studies either short-lived, ad hoc laboratory groups or "minimal groups" whose members are informed of their membership but do not interact.

This body of work, which draws on social identity theory (Tajfel, 1974, 1978; Tajfel & Turner, 1979) and social categorization theory (Turner, 1985; Turner, Hogg, Oakes, Reicher, & Wetherall, 1987), focuses on the cognitive process of perceiving groups and group boundaries and identifying oneself as a member and on the consequences of this process, such as in-group favoritism and discrimination against out-group members. The emphasis has been largely on intergroup relations (e.g., Brown, 1978; Tajfel, Billig, Bundy, & Flament, 1971; Taylor & McKirnan, 1984; van Knippenberg & Ellemers, 1993) rather than on intragroup process (for some exceptions, see Brewer & Gardner, 1996, Hogg, 1987, 1996; Hogg & Hardie, 1991; Rabbie & Lodewijkx, 1996). This work is important to our thinking because of its emphasis on individual cognition and perception about groups, on the group boundary, and on the ways in which the context of intergroup relations may affect group members' cognition, emotion, and behavior.

SOME STRENGTHS AND LIMITATIONS OF PAST THEORY AND RESEARCH

The research from these 13 streams of work on small groups, plus other work that does not fit neatly within any of these categories, encompasses an enormous number of published studies (see McGrath & Altman, 1966; Moreland et al., 1994; and Sanna & Parks, 1997, for overviews). Research in all of these approaches has been done well for the most part—as well as can be done by working with the methodological tools that have dominated our field during this era. These multiple research streams have provided key ideas for our theory of groups. The ideas that we will draw from these bodies of work, and some crucial

sentful, or indifferent, and they make preliminary inquiries to see which candidates express strong interest. They consider the leadership styles of different potential members and the possible pitfalls of assigning different members as task force leader. Barbara, who is familiar with research on creativity in groups, wants the group to be demographically diverse, with a mix of men and women and representation from some different ethnic groups. After weighing these various requisites and constraints, Ali and Barbara assemble the group, designate a leader, and arrange an initial group meeting at which they clarify the objectives of the group, the resources available, the deadline for completion, and the frequency with which they would like to hear progress reports from Richard, the group leader. Then they hope for the best.

Contrast this with the formation of a three-person flight crew, such as the one described by Ginnett (1990). Tom, Bill, and Greg were assigned by the airline to be the captain, first officer, and flight engineer in this group on the basis of their availability in time and space and their certification to perform one of these three roles. Tom and Greg had flown together before, as it happened, but past experience with the other crew members was, according to Ginnett, the exception rather than the norm for such crews (p. 428). This crew was expected to fulfill its mission of flying planeloads of people back and forth along the Eastern seaboard, in challenging weather conditions, with many lives and staggeringly expensive organizational resources at stake. Airline managers presumably had high confidence that any given crew assembled in this fashion would complete group formation and be ready to perform this challenging task successfully within minutes of meeting for the first time. In stark contrast to the lengthy decision process that Ali and Barbara went through to assemble their task force, the airline might well have used an automated scheduling program to assign pilots and flight engineers to crews.

Finally, consider a group of nine students who form a new a capella singing group. No one assigns these students to the group; instead, one or more of them come up with the idea of creating a group, and somehow they find one another. No one assembles this group by assigning members to it. Instead, people transform themselves into members as the group assembles itself. The group includes men and women; sopranos, altos, tenors, and basses; and members with a range of singing backgrounds and skills. No one has a predetermined conception of how many people will be in the group or what attributes they will have,

apart from a shared interest in membership. A leader emerges. A group identity and boundaries develop. The group invents projects, figures out what tasks the projects entail, and acquires or develops tools and resources for completing the tasks. In contrast to the planning task force and the flight crew, the singers are a completely self-organized group.

As these examples illustrate, group formation is not a single process with minor variations. Instead, distinctly different sequences of events can result in the formation of new groups. In this chapter, we view group formation as resulting from the planned assembly of elements plus emergent dynamics. These processes are driven both by the individuals who become group members and by external forces that either initiate or facilitate group formation. On the basis of the relative importance of internal and external forces, and of planning and emergence, we define four categories of groups. A section on the "prehistory" of groups covers the context in which groups form, social integration, and planning that occurs in advance of group formation. We then discuss the impact of initial conditions and initial events that set the group on a path of development, and we define six prototypical project-focused and member-focused groups.

FOUR FORCES OF FORMATION

The creation of a new interacting group requires the assembly of components into a new whole; the transformation of people, resources, and intentions in the context of the whole; and the emergence of group-level features as the members of the new group come together. The formation of new groups is driven in part by the motivated action of their members. The structure of new groups is also determined in part by constraints, opportunities, and demands in the group's embedding contexts. People who are not group members are often instrumental in forming new groups. In the early history of the group, potential group members interact both with one another and with aspects of the embedding context to create a new collective entity. The new group then mediates and moderates the interaction between members and environment and creates a new boundary that defines what is internal and what is external for the group. External and internal forces contribute to both assembly and emergence.

Assembly is the deliberate combination of parts to form an envisioned whole, according to an implicit or explicit plan or plans. The primary challenge of assembly, as illustrated by Ali and Barbara's experience in putting together the notepad task force, is to select and combine people and resources in a group that is likely to complete its projects successfully, keeping in mind how different combinations of elements with different arrays of attributes are likely to fit together. The task force and the flight crew examples illustrate very different solutions to this assembly problem.

Structure and order can also emerge from initially uncoordinated local interaction among individuals who transform themselves into members of a group without any overall orchestrated plan. The formation of the singing group illustrates this process. In this case, the logic of the structure is determined not by a blueprint and careful engineering but by characteristic dynamics that entrain and order interacting parts, replacing independence with complex patterns of interdependence. Even the most carefully assembled groups have features—such as group boundaries, group identity, norms, and collective memory systems—that emerge as the group begins to operate.

The most important "elements" in a group are people, whose identity and behavior will change to some degree in the process of psychological group formation. Ali and Barbara "hope for the best" because they realize that the success of the group will depend very much on emergent processes. Some aspects of group structure, such as leadership, may be either predetermined or emergent. When elements of the group are transformed in the context of the whole, generating new dynamic patterns, we view this as a process of emergence.

THE GROUP FORMATION SPACE

External and internal forces, planned assembly, and emergent processes play a part in the formation of all groups. However, the balance of forces that shape their formation differs markedly across groups. Together, the four forces define a group formation "space" in which new groups can be arrayed. By dividing this space into quadrants we identify four categories of groups (see Figure 4.1):

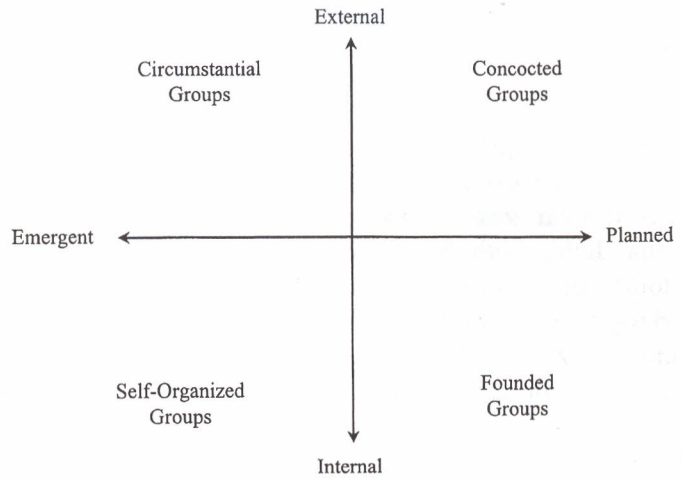

Figure 4.1. Forces in the Group Formation Space

1. *Concocted* groups (external, planned forces predominate)
2. *Founded* groups (internal, planned forces predominate)
3. *Self-organized* groups (internal, emergent forces predominate)
4. *Circumstantial* groups (external, emergent forces predominate)

When external agents deliberately form new groups according to some plan, we call these *concocted groups.* Many work groups in organizations, for example, are established by a manager who "creates" them by fiat, assigning members, tasks, and/or tools to them. These correspond to what Walton and Hackman (1986) called work teams. The notepad task force and the flight crew are both concocted groups.

Alternatively, one or more persons who will be charter member(s) of a group may deliberately assemble a new group by linking up with other people. We call these *founded groups.* A small business start-up would fall into this quadrant. Both concocted and founded groups are formed because some person or persons—outsiders in one case, future members in the other—set out deliberately to connect people and resources into a coordinated whole that will complete collective projects.

Other groups, such as the singing group described at the beginning of the chapter, come into being without much planning. These groups

arise more or less spontaneously from self-organized activity that flows within existing patterns of relations among members, tasks, and tools. We call groups that emerge from local interactions among persons pursuing their individual agendas *self-organized groups.* Many friendship groups form this way. Walton and Hackman's (1986) category of self-enacted groups at work includes many groups of this type.

Groups thrown together by unexpected environmental circumstances that dictate both the project and the membership of the group fit the fourth quadrant of *circumstantial groups.* A group of people stranded together on a broken-down bus, for example, may form a circumstantial group. In self-organized groups, the primary impetus for group formation comes from group members; in circumstantial groups, the primary impetus emerges unexpectedly from the environment or embedding context. Neither is planned in advance.

Our designation of these four categories emphasizes the relative balance of forces in a group's formation, but all groups are formed by a combination of forces. The people in a stranded bus, for example, become aware of themselves as a bounded set of people who share a common predicament because of an unexpected external event, but no group will form if the people fail to make contact and simply continue reading or staring out the window. By the same token, dyadic contacts among people who are linked in a social network will not generate a bounded, functionally coordinated group if the context provides no opportunities or rewards for doing so. Instead, interpersonal contact will simply lead to more interpersonal contact.

WHAT THE CATEGORIES ILLUMINATE

The distinction between planned assembly and emergence is, in part, a distinction between groups that are to some degree "built" by designers (whether members of the group-to-be or not) who deliberately connect the elements and groups that "grow" out of an embedding context as ties among certain elements become denser and more closely coordinated with one another.

We believe that this typology is useful because the primary issues involved in group formation differ depending on where in this space a new group falls. When external forces predominate, a primary issue for

the new members of the group is how to conform to external demands. When internal forces predominate, a primary issue is how new members will coordinate and integrate their own goals, intentions, and expectations. The distinction between internal and external forces is, in part, a distinction between groups for which the member-group interchange develops first and plays a prominent role in a group's early development and groups for which the group-context interchange develops first and thus takes precedence over member-group relations in shaping a group's early development.

When a group is planned and deliberately created, the problems of assembly come to the fore—how to choose among, gain access to, recruit, and combine possible components. What to plan and what to leave to "chance" or emergent dynamics are also an issue. The external and internal creators of concocted and founded groups, respectively, are attempting to optimize (or possibly satisfice) the group composition, given their intentions for the group. The process of planning that precedes group formation determines some but not all aspects of the group composition. In groups that emerge more spontaneously, the composition is also emergent. Understanding the formation of such groups requires that we look at the forces that tend to bring people together into new collectives and consider the impact these forces have on the likely composition of emergent groups. In the next section, we discuss the "prehistory" relevant to groups in all quadrants of the group formation space.

THE PREHISTORY OF GROUPS

Although it is often not possible to identify the starting point of a new group with precision, we propose that a group "begins" when people who think of themselves as belonging to a new group interact withother new members and begin coordinating their actions for some collective purpose. Thus, group formation is both a cognitive and a behavioral process. All groups form in some context, in which people and resources are available, to serve one or more purposes via collective action. In the next section, we identify features of the embedding context that should affect the prevalence of forces during group formation.