CHAPTER **2**

Teamwork

Everyone has to work together; if we can't get everybody working toward common goals, nothing is going to happen.

HAROLD K. SPERLICH
Former President, Chrysler Corporation

Coming together is a beginning;
Keeping together is progress;
Working together is success.

HENRY FORD

REFLECTION Think about a really effective team you've been a member of, a team that accomplished extraordinary things and perhaps was even a great place to be. Start by thinking about teams in an academic, professional, or work setting. If no examples come to mind, then think about social or community-based teams. If again you don't conjure up an example, then think about sports teams. Finally, if you don't come up with a scenario from any of these contexts, then simply imagine yourself as a member of a really effective team. OK, do you have a picture of the team in mind? As you recall (or imagine) this highly effective team experience, try to identify the specific characteristics of the team that made it so effective. Please list these characteristics. Now that you have made a list of characteracteristics for a highly effective team, what attributes do you think describe a really ineffective team? As you did above, recall (or imagine) a team you were on that you considered to be highly ineffective. What characteristics do you believe made the team ineffective? Again, please make a list.

Look over the lists you made for the Reflection. What were the key characteristics that defined an effective and ineffective team? Sometimes it is as important for you to simply think about attributes of an ineffective team so that as you begin to learn about characteristics of effective teams, you will understand their importance. Did you preface either of your lists with "It depends"? The characteristics of an effective team depend, of course, on the purpose of the team. In large measure they depend on goals related to the team's task (what the team is to do) and maintenance (how the team functions). Michael Schrage (1991) states emphatically:

> [P]eople must understand that real value in the sciences, the arts, commerce, and, indeed one's personal and professional lives, come[s] largely from the process of collaboration. What's more, the quality and quantity of meaningful collaboration often depend upon the tools used to create it. . . . Collaboration is a purposive relationship. At the heart of collaboration is a desire or need to: solve a problem, create, or discover something. (pp. 27, 34)

Let's assume that an effective team has both task goals and maintenance goals, because most effective teams not only have a job to do (a report to write, a project to complete, a presentation to give, etc.) but also a goal of getting better at working with one another.

I've used the Reflection on the preceding page with hundreds of faculty and students in workshop and classroom settings. Here is a typical list of the characteristics of effective teams:

Good participation	Common goal
Respect	Sense of purpose
Careful listening	Good meeting facilitation
Leadership	Empowered members
Constructively managed conflict	Members take responsibility
Fun, liked to be there	Effective decision making

My goal for this chapter is to help you get a sense of the essential characteristics of teams that perform at a high level by drawing on your experience (as I have tried to do above) and introduce you to some of the rapidly expanding literature in this area. I will remind you of the importance of maintaining a team climate that embraces and celebrates diversity, then summarize some of the classic work on stages of team development. Finally, I aim to acquaint you with emerging notions, such as "communities of practice," "network quotient," and "emotional intelligence."

Definition of a Team

Katzenbach and Smith (1993) studied teams that performed at a variety of levels and came up with four categories:

Pseudo teams perform below the level of the average member.
Potential teams don't quite get going but struggle along at or slightly above the level of the average member.
Real teams perform quite well.
High-performing teams perform at an extraordinary level.

Katzenbach and Smith then looked for common characteristics of real teams and high-performing teams. All real teams fit this description: a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable. High-performing teams met all the conditions of real teams and, in addition, had members who were deeply committed to one another's personal growth and success.

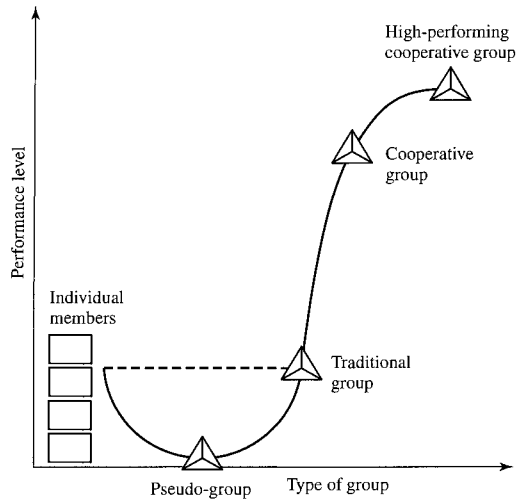
REFLECTION Now think about the teams in your engineering classes. Think about your most successful and effective team project experience. What were the characteristics of the team? What were the conditions? Are they similar to those of your most effective teams? Describe the team development process.

Types of Learning Teams

There is nothing magical about teamwork in engineering classes. Some types of learning teams increase the quality of classroom life and facilitate student learning. Other types of teams hinder student learning and create disharmony and dissatisfaction with classroom life. To use teamwork effectively, you must know what is and what is not an effective team.

There are many types of teams that can be used in classrooms. Formal cooperative learning groups are just one of them, although they are becoming quite common (Johnson, Johnson, and Smith, 1998b). When you choose to use (or are required to use) groups as part of a course, you must ask yourself, What type of group or team am I involved in? Figure 2.1 and the following descriptions of groups may help you answer that question.

Figure 2.1 Group Performance



Pseudo Learning Group

Students in a pseudo learning group are assigned to work together but they have no interest in doing so. They believe they will be evaluated by being ranked in terms of highest performer to lowest performer. On the surface these students talk to each other, but under the surface they are competing. They see each other as rivals who must be defeated, and they block or interfere with each other's learning, hide information from each other, attempt to mislead and confuse each other, and distrust each other. These students would achieve more if they were working alone.

Traditional Classroom Learning Group

Students in a traditional classroom learning group are assigned to work together and accept that they must do so. But because assignments are structured, very little joint work is required. These students believe that they will be evaluated and rewarded as individuals, not as members of the group, so they interact primarily to clarify how assignments are to be done. They seek each other's information, but have no motivation to teach what they know to their groupmates. Helping and sharing are minimized. Some students loaf, seeking a free ride on the efforts of their more conscientious groupmates. The conscientious members feel exploited and do less. The result is that the sum of the whole is more than the potential of some of the members, but the harder working, more conscientious students would perform better if they worked alone.

Cooperative Learning Groups

Students in cooperative learning groups are assigned to work together and, given the complexity of the task and the necessity for diverse perspectives, they are relieved to do so. They know that their success depends on the efforts of all group members. The group format is clearly defined: (1) The group goal of maximizing all members' learning provides a compelling common purpose that motivates members to roll up their sleeves and accomplish something beyond their individual achievements. (2) Group members hold themselves and each other accountable for doing high-quality work to achieve their mutual goals. (3) Group members work face-to-face to produce joint work-products. They do real work together. Students promote each other's success through helping, sharing, assisting, explaining, and encouraging. They provide both academic and personal support based on a commitment to and caring about each other. (4) Group members are taught teamwork skills and are expected to use them to coordinate their efforts and achieve their goals. Both task and team-building skills are emphasized. All members share responsibility for providing leadership. (5) Groups analyze how effectively they are achieving their goals and how well members are working together. There is an emphasis on continual improvement of the quality of learning and teamwork processes. For a recent guide to success in active learning, see *Striving for Excellence in College* (Browne and Keeley, 1997).

High-Performance Cooperative Learning Group

A high-performance cooperative learning group meets all the criteria for being a cooperative learning group and outperforms all reasonable expectations, given its membership. What differentiates the high-performance group from the cooperative learning group is the level of commitment members have to each other and the group's success. Jennifer Futernick, who is part of a high-performing, rapid-response team at McKinsey & Company, calls the emotional binding together of her teammates a form of love (Katzenbach and Smith, 1993). Ken Hoepner of the Burlington Northern Intermodal Transport Team stated: "Not only did we trust each other, not only did we respect each other, but we gave a damn about the rest of the people on this team. If we saw somebody vulnerable, we were there to help" (Katzenbach and Smith, 1993). Members' mutual concern for each other's personal growth enables high-performance cooperative groups to perform far above expectations, and also to have lots of fun. The bad news about extraordinarily high-performance cooperative learning groups is that they are rare. Most groups never achieve this level of development.

Groups and Teams

I've been using the term *team* in reference to projects and *group* in reference to learning, but I will use these two terms interchangeably throughout this book. Though the traditional literature focuses on groups, recently some writers have been making distinctions between groups and teams. For example, Table 2.1 presents Katzenbach and Smith's (1993) summary of the major differences between working groups and teams.

Are there any surprises in this list, from your perspective? Many students emphasize the importance of a strong leader, but Katzenbach and Smith indicate that real teams, as opposed to working groups, have shared leadership roles. Also, the literature on high-performance teams indicates that they are composed of members with complementary skills; that is, they're diverse.

Regardless of whether you call them groups or teams, as we move from the information age (where knowledge workers ruled) to the conceptual age (where creators and empathizers will rule), the horizontal element of the T-shaped person will become more and more important. Expertise involving analysis is still important of course, but provides only one pillar (or column in engineering teams) of the T-shaped person.

Importance of Diversity

Often we must work with people who are different from us or difficult to work with but whose skills, talents, expertise, and experience are essential to the project. Working with a diverse group may seem impossible at times, but look at the example of Phil Jackson, former head coach of the Chicago Bulls basketball team. Can you imagine a more diverse group than one made up of Dennis Rodman, Michael Jordan, and Scottie Pippen? Phil Jackson is an expert at managing diversity.

Table 2.1 Not All Groups Are Teams: How to Tell the Difference

Working Group	Team
Strong, clearly focused leader	Shared leadership roles
Individual accountability	Individual and mutual accountability
The group's purpose is the same as the broader organizational mission	Specific team purpose that the team itself delivers
Individual work-products	Collective work-products
Runs efficient meetings	Encourages open-ended discussion and active problem-solving meetings
Measures its effectiveness indirectly by its influence on others	Measures performance directly by assessing collective work-products
Discusses, decides, and delegates	Discusses, decides, and does real work together

Source: Katzenbach and Smith, 1993.

Diversity has many faces, including preferred learning style (visual, auditory, kinesthetic); social background and experience; ethnic and cultural heritage; gender; and sexual orientation. The evidence from effective groups is that diversity is important—that is, the better the group represents the broader community, the more likely it is to make significant, creative, and desired contributions. Participating in and managing diverse groups is not always easy, because diverse groups usually bring a diversity of ideas and priorities. Here are some considerations that may help you learn to manage diverse groups more effectively (Cabanis, 1997; Cherbeneau, 1997):

1. Learn skills for working with all kinds of people.
2. Stress that effective teams are diverse.
3. Stress the importance of requirements.
4. Emphasize performance.
5. Develop perspective-taking skills (i.e., put yourself in others' shoes).
6. Respect and appreciate alternative perspectives.

The Chicago Bulls' former head coach Phil Jackson argued that "Good teams become great ones when the members trust each other enough to surrender the 'me' for the 'we.' " In his 1995 book (coauthored by Hugh Delehanty) *Sacred Hoops: Spiritual Lessons of a Hardwood Warrior,* Jackson offers terrific advice on organizing and managing extraordinarily high-performing teams.

Reflection: On Diversity

One of the greatest challenges I faced as co-coordinator of the Bush Faculty Development Program for Excellence and Diversity in Teaching at the University of Minnesota was helping colleagues in science, mathematics, and engineering recognize the importance of the discrepancy between the rapidly growing diversity of the population and the lack of diversity among the student body. My most memorable exposure to these issues was at a September 1997 conference held at Penn State: "Best Practices in Diversity: Exploring Practical Applications for the 21st Century." It was a real eye-opener for me to see and hear so many people deeply engaged in "making the great diversity of our nation work for the future" (in the words of Graham Spanier's welcoming remarks). The conference was particularly memorable for me because it came at the beginning of my sabbatical leave at Michigan State University, and because so many students, faculty, staff, and administrators participated in the conference that we chartered a bus and went to the conference together.

Let's start our discussion of diversity by exploring the question "Why bother?" Why should we be concerned about the diversity of student team members' experiences?

First, little attention is paid to the fact that not all students are the same. University of Minnesota astronomy professor Larry Rudnick once said, "I used to think all students learn exactly the same way I do; perhaps a little slower." It seems that many faculty assume that students are basically like themselves, not only in learning styles but in many other characteristics as well—outlook, cultural or ethnic background, experience, motivation, expectations, sexual orientation. This "sameness" approach is simpler, easier, and safer for faculty. If faculty need to design only a single, one-size-fits-all instructional system (probably the one they experienced as a student), they'll have a system that they find familiar and manageable. Faculty who acknowledge that learners are different must face lots of unknowns, and more work. But when faculty don't provide students with opportunities for diverse experiences in the classroom, students are less likely to learn the skills and knowledge they will need to work in teams with diverse membership.

The consequences of ignoring differences can be enormous. For example, they affect simple testing situations. Students from some cultures (some Native Americans and Asians, for example) are reluctant to correct others or to make them look bad in front of their peers. When there is an individual test followed by a group test format, such students might get a higher individual score but won't contradict the group during the group exam portion. Typically such a student will explain such behavior by saying that in their culture it's unacceptable to correct another person. One group dealt with this difference by always having the Asian-American students go first during the group exam portion.

Second, U.S. demographics are changing very rapidly, and undergraduate engineering enrollments don't reflect the broader diversity. Many students will choose to avoid fields of study where they don't see students like themselves enrolled, partly because they feel unwelcome.

William. A. Wulf (1998), president of the National Academy of Engineering, stressed this point in his article "Diversity in Engineering":

> Every time an engineering problem is approached with a pale, male design team, it may be difficult to find the best solution, understand the design options, or know how to evaluate the constraints. (p. 8)

Wulf also made a case for the connection between diversity and creativity:

> Collective diversity, or diversity of the group—the kind of diversity that people usually talk about—is just as essential to good engineering as individual diversity. At a fundamental level, men, women, ethnic minorities, racial minorities,

> and people with handicaps, experience the world differently. Those differences in experience are the "gene pool" from which creativity springs. (p. 11)

People who don't see themselves represented can find it hard to be interested in the designs, products, and services created by engineers, and engineering in turn is deprived of their marvelous talents.

Fourth, the trend toward globalization as described in the Preface and Chapter 1 means that engineering graduates will likely be working for international companies and on globally distributed teams. The more extensive and deeper the understanding of people from other countries and especially other languages, the easier it will be to work in the global workplace.

Finally, diversity is the law of the land. At least three times (in *Brown v. Board of Education*, Title IX, and PL 94-142), the United States Supreme Court and Congress have reemphasized that all citizens have equal rights and opportunities—in particular, that all individuals, regardless of differences, have a right to access to the broader peer group.

Characteristics of Effective Teams

The research on highly effective teams—both in the classroom (Johnson, Johnson, and Smith, 1991, 1998a, 1998b) and in the workplace (Bennis and Biederman, 1997; Hargrove, 1998; Katzenbach and Smith, 1993; Schrage, 1991, 1995)—reveals a short list of characteristics:

1. *Positive interdependence.* The team focuses on a common goal or single product.
2. *Individual and group accountability.* Each person takes responsibility for both her or his own work and the overall work of the team.
3. *Promotive interaction.* The members do real work, usually face to face.
4. *Teamwork skills.* Each member has the skills for and practices effective communication (especially careful listening), decision making, problem solving, conflict management, and leadership.
5. *Group processing.* The team periodically reflects on how well the team is working, celebrates the things that are going well, and corrects the things that aren't.

Teams have become commonplace in engineering practice and are making inroads in engineering education. The immense literature on teams and teamwork ranges from very practical guides (e.g., Scholtes, Joiner, and Streibel, 1996; Brassand, 1995) to conceptual and theoretical treatises (e.g., Johnson and Johnson, 1991; Hackman, 1990). Check out one of these to broaden and deepen your understanding of teamwork. Four books were highlighted in this chapter—*Shared Minds: The New Technologies of Collaboration* (Shrage, 1991); *The Wisdom of Teams: Creating the High-Performance Organization* (Katzenbach and Smith, 1993); *Organizing Genius: The Secrets of Creative Collaboration* (Bennis and Biederman, 1997); and *Mastering the Art of Creative Collaboration* (Hargrove, 1998). These four books focus on extraordinary teams, teams that perform at unusually high levels and whose members experience accomplishments through synergistic interaction that they rarely experience in other settings. They provide lots of examples and insights into high-performance teams.

- Establish urgency and direction
- Select members based on skill and potential, not personalities
- Pay attention to first meeting and actions
- Set clear rules of behavior
- Set some immediate performance-oriented tasks and goals
- Challenge the group regularly with fresh information
- Spend lots of time together
- Exploit the power of positive feedback, recognition, and reward

Source: Katzenbach and Smith, 1994.

Stages of Team Development

Teams often progress through a series of stages. One of the most common "sequential-stage theories" was formulated by Bruce W. Tuckman (Tuckman, 1965; Tuckman and Jensen, 1977). According to Tuckman, teams develop through five sequential stages: forming, storming, norming, performing, and adjourning. Members get to know one another and start to learn to work together in the forming stage. Differences and conflicts appear during the storming stage, and much of the team's focus in the norming stage is on managing conflict. The team works together to accomplish the goals during the performing stage. The group dissolves during the adjourning stage.

An alternative to stage theory was developed by Robert Bales (1965), who argued that there must be an equilibrium between the team's focus on its task and its focus on its working relationships; that is, there must be a team maintenance orientation. Teams oscillate between focusing on achieving their goals and focusing on maintaining good working relationships (the more emotional dimension).

Both these perspectives are valuable for understanding team development. Teams move through stages while dealing with issues that emerge. Further information on team development is available in *The Team Developer* (McGourty and DeMeuse, 2001), *Joining Together* (Johnson and Johnson, 1991), and *The Team Handbook* (Scholtes, Joiner, and Streibel, 1996).

Emerging Ideas

Other exciting developments in the area of teamwork include the emerging ideas of communities of practice, emotional intelligence, and network quotient. Communities of practice are essential in many companies (e.g., Boeing, Daimler Chrysler) for managing and developing knowledge. Here's a definition of such communities:

> Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. (Wenger, McDermott, and Snyder, 2002, p. 4)

The concept of emotional intelligence is also being heralded as important for team and project success. Daniel Goleman (1998) defines emotional intelligence

as "the capacity for recognizing our own feelings and those of others, for motivating ourselves, and for managing emotions well in ourselves and in our relationships" (p. 24).

A related idea is that of NQ, or network quotient. Tom Boyle of British Telecom, who calls this the age of interdependence, says that people's NQ—their capacity to form connections with one another—is now more important than IQ, the measure of individual intelligence (Cohen and Prusak, 2001).

These emerging ideas indicate that teamwork, project management, and knowledge management are dynamic areas where there is a lot of innovation. So, stay posted and stay alert.

Effective teamwork is not easy to accomplish. Engineering professor Douglas J. Wilde said, "It's the soft stuff that's hard, the hard stuff is easy" (Leifer, 1997). Larry Leifer (1997), director of the Stanford Center for Design Research, reports, "Design team failure is usually due to failed team dynamics." However, if you work at it, continue to study and learn about effective teamwork, and attend to the skills and strategies needed for effective teamwork described in Chapter 3, you will very likely have many positive team experiences.

REFLECTION How are you documenting the skills and knowledge you're acquiring? How about the products, documents, and artifacts you're creating? Are you keeping a portfolio? Tom Peters (whose ideas occur frequently in this book) argues that "Your projects are *you*!" A portfolio is a good way to collect evidence of your development as a T-shaped person. Consider saving your problem-based and project-based learning projects, peer mentoring and teaching experiences, co-op and internship experiences, as well as your written work, observations, designs, and especially your reflections on your learning and experiences.

Reflection: Interdependence and Teamwork

I've been a student of interdependence and teamwork ever since I took a course on the social psychology of education in about 1974. Prior to that I had predominantly thought of learning (and work, for that matter) as an individual endeavor. The instructor of that course, Dennis Falk, one of David Johnson's graduate students, had us working together, cooperatively; and he emphasized positive interdependence. I had an epiphany! I thought, This is the way I worked as an engineer—why isn't the classroom organized in this way? Numerous resources are available to help faculty organize and manage learning teams. Especially see those developed by the Foundation Coalition Active/Cooperative Learning Project (www.foundationcoalition.org), which are intended to help students learn how to work together.

I've often wondered why there was such an emphasis on interdependence in Minnesota. I haven't discovered the answer yet, but it might be due to the Lakota presence in Minnesota. One of the cornerstones of Lakota culture is the phrase used in all their ceremonies—*mitakuye oyasin* ("We are all related") (Marshall, 2001). According to Medearis and White Hat (1995), the connection between *mitakuye oyasin* and education is this: "Education is an art of process, participation, and making connection. Learning is a growth and life process; and life and Nature are always relationships in process" (p. 1).

Questions

1. What are the characteristics of effective teams? How do you help promote them?
2. Where and how have teamwork skills been taught or emphasized to you? in school? in social groups? in professional groups? in your family? Describe two or three instances where teamwork skills were emphasized.
3. How is increasing ethnic diversity affecting project teams? What are some strategies for effectively participating on and managing diverse teams?
4. Students often say that groups in school are different from groups in the workplace, giving this as a reason for not using groups in school. Is it a valid excuse? Summarize the major differences between groups in school and groups in the workplace. How are these differences beneficial or harmful to the work of the group? What are some things you can do to improve the school groups?

Exercises

1. Check out a study of teams that have performed at extraordinary levels. Some of the books listed in the references for this chapter have terrific stories of stellar teams (see, e.g., Hargrove, 1998; Bennis and Biederman, 1997; Schrage, 1991, 1995). You may want to check the library or do an electronic search of the literature. Summarize the features of these extraordinary teams. How does your summary compare with the list provided in this chapter? Remember, this is a dynamic area of research with lots of new books and articles appearing each year.
2. Look for opportunities to participate on a superb team. Make a plan for participating on a high-performance team.
3. Study the diversity of teams in your school or workplace and note strategies for recognizing, valuing, and celebrating diversity.

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CHAPTER **3**

Teamwork Skills and Problem Solving

I will pay more for the ability to deal with people than any other ability under the sun.

JOHN D. ROCKEFELLER

If you can't operate as a team player, no matter how valuable you've been, you really don't belong at GE. (1993)

JOHN F. WELCH
CEO, General Electric

REFLECTION Have you been a member of a team that got the job done (wrote the report, finished the project, completed the laboratory assignment) but that ended up with the members hating one another so intensely they never wanted to see each other again? Most students have, and they have found it very frustrating. Similarly, have you been a member of a team whose members really enjoyed one another's company and had a great time socially, but in the end hadn't finished the project? Again, most students have, and they also have found this frustrating. Take a moment to recall your experiences with these two extremes of teamwork.

Importance of Task and Relationship

As noted in Chapter 2, to be most effective, teams need to do two things very well: accomplish the task and get better at working with one another. Both of these require leadership—not just from a single person acting as the leader but from every member contributing to the leadership of the team. This chapter focuses on teamwork skills using a "distributed actions approach" to leadership. *Distributed actions* are specific behaviors that team members engage in to help the team accomplish its task or to improve working relationships. Napier and Gershenfeld (1973) summarize many of these behaviors (see Table 3.1). Note the date—1973—which indicates that effective teamwork is not a new concept.

Table 3.1 Team Task and Maintenance Roles

Team Task Roles	Team Maintenance Roles
Initiating	Encouraging
Seeking information	Expressing feelings
Giving information	Harmonizing
Seeking opinions	Compromising
Giving opinions	Facilitating communications
Clarifying	Setting standards or goals
Elaborating	Testing agreement
Summarizing	Following

Table 3.2 Management Behavior Change Needed for Team Culture

From	To
Directing	Guiding
Competing	Collaborating
Relying on rules	Focusing on the process
Using organizational hierarchy	Using a network
Consistency/sameness	Diversity/flexibility
Secrecy	Openness/sharing
Passivity	Risk taking
Isolated decisions	Involvement of others
People as costs	People as assets
Results thinking	Process thinking

Source: McNeill, Bellamy, and Foster, 1995.

To achieve the benefits of a team culture, some changes in management behavior are needed, as shown in Table 3.2. To learn more about the behaviors listed on the right-hand side of Table 3.2, read on.

Organization—Team Norms

A common way to promote more constructive and productive teamwork is to have the team create a set of guidelines for the team, sometimes called team norms. Take a minute and list some things (attitudes, behaviors, and so on) that you have found (or believe) can help a team be more effective. Then compare your list with the following two lists, both of which are from McNeill, Bellamy, and Foster (1995). The first was adapted from the Boeing Airplane Group's training manual for team members and the second is from the Ford Motor Company.

Code of Cooperation

1. *Every* member is responsible for the team's progress and success.
2. Attend all team meetings and be on time.
3. Come prepared.
4. Carry out assignments on schedule.
5. Listen to and show respect for the contributions of other members; be an active listener.
6. *Constructively* criticize ideas, not persons.
7. Resolve conflicts constructively.
8. Pay attention; avoid disruptive behavior.
9. Avoid disruptive side conversations.
10. Only one person speaks at a time.
11. Everyone participates; no one dominates.
12. Be succinct; avoid long anecdotes and examples.
13. No rank in the room.
14. Respect those not present.
15. Ask questions when you do not understand.
16. Attend to your personal comfort needs at any time, but minimize team disruption.
17. Have fun.
18. ?

Ten Commandments: An Effective Code of Cooperation

- Help each other be right, not wrong.
- Look for ways to make new ideas work, not for reasons they won't.
- If in doubt, check it out. Don't make negative assumptions about each other.
- Help each other win, and take pride in each other's victories.
- Speak positively about each other and about your organization at every opportunity.
- Maintain a positive mental attitude no matter what the circumstances.
- Act with initiative and courage, as if it all depends on you.
- Do everything with enthusiasm; it's contagious.
- Whatever you want, give it away.
- Don't lose faith.
- Have fun!

Team norms are common today not only in business and industry, but also in academic and research settings. The box "Tips for Working Successfully in a Team" presents a list developed by Randy Pausch for use in a course he taught at Carnegie Mellon University (Pausch, 2002). (Pausch's website also contains a set of slides that summarize his terrific, and radical, ideas on time and project management—see http://www.alice.org/Randy/teams.htm.) Having an agreed-upon, abided-by code of cooperation such as Pausch's will help teams get started toward working effectively. However, if team members haven't developed the requisite communication, trust, loyalty, organization, leadership, decision-making procedures, and conflict management skills, then the team will very likely struggle or at least not perform up to its potential. One way a team can develop such a code is to create a *team charter*—a sample format for a team charter is given below. Also see Exercise 3 at the end of this chapter.

Team Charter Guidelines

- Team name, membership, and roles
- Team mission statement
- Anticipated results (goals)
- Specific tactical objectives
- Ground rules/guiding principles for team participation
- Shared expectations/aspirations

Team charters typically are created during a team meeting early in the project life cycle. Involvement of all team members in creating the charter helps build commitment of each to the project and to other members. A set of guidelines such as the Team Charter Guidelines often helps the team through this process.

Let's start to look more deeply into the mystery of teamwork skills, starting with a summary of our work on teamwork skills in learning groups.

Tips for Working Successfully in a Team

Meet people properly. It all starts with the introduction. Then exchange contact information and make sure you know how to pronounce everyone's names. Exchange phone numbers, and find out when it is acceptable to call.

Find things you have in common. You can almost always find something in common with another person, and starting from that baseline, it's much easier to then address issues where you have differences. This is why cities benefit from professional sports teams, which are socially galvanizing forces that cut across boundaries of race and wealth. If nothing else, you probably have in common things like the weather.

Make meeting conditions good. Have a large surface to write on, make sure the room is quiet and warm enough, and that there aren't lots of distractions. Make sure no one is hungry, cold, or tired. Meet over a meal if you can; food *softens* a meeting. That's why they "do lunch" in Hollywood.

Let everyone talk. Even if you think what's being said is stupid, don't interrupt. Cutting someone off is rude and is not worth whatever small time gain you might make. Don't finish people's sentences for them; they can do it themselves. And remember: talking louder or faster doesn't make your idea any better.

Check your egos at the door. When you discuss ideas, immediately label them and write them down. The labels should be descriptive of the idea, not the originator, e.g., "the troll bridge story," not "Jane's story."

Praise each other. Find something nice to say, even if it's a stretch. Even the worst of ideas has a silver lining inside it, if you just look hard enough. Focus on the good, praise it, and then raise any objections or concerns you have about the rest of it.

Put it in writing. Always write down who is responsible for what, by when. Be *concrete.* accountability. Never assume that someone's roommate will deliver a phone message. Also, remember that "politics is when you have more than two people"—with that in mind, always copy any piece of e-mail within the team, or to me, to *all members* of the team. This rule should *never* be violated; don't try to guess what your teammates might or might not want to hear about.

Be open and honest. Talk with your team members if there's a problem, and talk with me if you think you need help. The whole point of this course is that it's tough to work across cultures. If we all go into it knowing that's an issue, we should be comfortable discussing problems when they arise—after all, that's what this course is really about. Be forgiving when people make mistakes, but don't be afraid to raise the issues when they come up.

Avoid conflict at all costs. When stress occurs and tempers flare, take a short break. Clear your heads, apologize, and take another stab at it. Apologize for upsetting your peers, even if you think someone else was primarily at fault; the goal is to work together, not start a legal battle over whose transgressions were worse. It takes two to have an argument, so be the peacemaker.

Phrase alternatives as questions. Instead of "I think we should do A, not B," try "What if we did A, instead of B?" That allows people to offer comments, rather than defend one choice.

Source: Randy Pausch, for the Building Virtual Worlds course at Carnegie Mellon, Spring 1998.

Teamwork Skills

What are teamwork skills, and how does one learn them? This is an area we've researched in our study of active and cooperative learning (Johnson, Johnson, and Smith, 1998). We identified the following categories of skills—forming, functioning, formulating, and fermenting—and have suggestions for mastering them.

Cooperative Teamwork Skills

Forming skills—*Initial management skills*

- Move into teams quietly.
- Stay with the team.
- Use quiet voices.
- Take turns.
- Use names, look at the speaker.
- No "put-downs."

Functioning skills—*Team management skills*

- Share ideas and opinions.
- Ask for facts and reasoning.
- Give direction to the team's work (state assignment purpose, provide time limits, offer procedures).
- Encourage everyone to participate.
- Ask for help or clarification.
- Express support and acceptance.
- Offer to explain or clarify.
- Paraphrase others' contributions.
- Energize the team.
- Describe feelings when appropriate.

Formulating skills—*Formal methods for processing materials*

- Summarize out loud completely.
- Seek accuracy by correcting/adding to summaries.
- Help the team find clever ways to remember.
- Check understanding by demanding vocalization.
- Ask others to plan for telling/teaching out loud.

Fermenting skills—*Stimulating cognitive conflict and reasoning*

- Criticize ideas without criticizing people.
- Differentiate the ideas and the reasoning of members.
- Integrate ideas into single positions.
- Ask for justification of conclusions.
- Extend answers.
- Probe by asking in-depth questions.
- Generate further answers.
- Test reality by checking the team's work.

Learning Cooperative Teamwork Skills

1. Observe and reflect to see the *need* to learn the skill.
2. *Learn how* to do it (T-chart—what does it look like?, what does it sound like?).
3. *Practice* the skill daily.
4. *Reflect* on, process, and refine use.
5. *Persevere* until skill is automatic.

These cooperative teamwork skills are essential for productive and successful teamwork, and they must be learned and practiced with the same seriousness with which other engineering skills are learned.

Communication

Effective communication—listening, presenting, persuading—is at the heart of effective teamwork. The task and maintenance roles we have listed all involve oral communication. Here are the listening skills emphasized in an Arizona State University course called Introduction to Engineering Design (McNeill, Bellamy, and Foster, 1995):

Stop talking.
Engage in one conversation at a time.
Empathize with the person speaking.
Ask questions.
Don't interrupt.
Show interest.
Concentrate on what is being said.
Don't jump to conclusions.
Control your anger.
React to ideas, not to the speaker.
Listen for what is not said; ask questions.
Share the responsibility for communication.

Three listening techniques they recommend are these:

Critical listening
- Separate fact from opinion.

Sympathetic listening
- Don't talk—listen.
- Don't give advice—listen.
- Don't judge—listen.

Creative listening
- Exercise an open mind.
- Supplement your ideas with another person's ideas and vice versa.

You may be wondering why so much emphasis is placed on listening. The typical professional spends about half of his or her business hours listening, and project managers may spend an even higher proportion of their time listening. Most people, however, are not 100 percent efficient in their listening. Typical listening efficiencies are only 25 percent (Taylor, 1998). The first list provides suggestions to help the listener truly hear what is being said, and the second highlights the fact that different situations call for different types of listening.

REFLECTION Take a moment to think about the listening skills and techniques. Do you listen in all three ways listed above? Which are you best at? Which do you need to work on?

David Perkins (2002) writes, "How smart an organization or community is reflects the kinds of conversations that people have with one another, taking conversations in a broad sense to include all sorts of interactions" (p. 14). Perkins writes that for systems to be habitually smart, they have to dramatically increase the number of "progressive interactions" and minimize the amount of "regressive interactions." Progressive interactions maximize quality knowledge and social cohesion. He calls these two aspects "process smart" (good exchange of ideas, good decisions and solutions, farseeing plans) and "people smart" (interactions that foster cohesiveness and energize people to work together). Regressive interactions don't get at ideas, or do so poorly; plans don't get made, or followed if they do; people are dissatisfied, at loggerheads, or opt out because it is easier to do so.

System or organizational intelligence is very hard to come by, says Perkins (2002), for at least six big reasons:

1. *The five-brain backlash*—too many voices making things unproductively complicated;
2. *Cognitive oversimplification*—the human tendency to oversimplify cognitive processing;
3. *Emotional oversimplification*—the equally human tendency to oversimplify emotions;
4. *Regression in the face of stress;*
5. *The domino effect* in which one person's regressive behavior tips others in the same direction; and
6. *Power advantage*—the fact that power figures sometimes take advantage of regressive interactions.

Regressive interactions are more likely to happen and persist because they are easier to do. Progressive interactions are more sophisticated and complex and therefore are less likely to catch on. The bad news is, *under stressful conditions, individuals and teams are more likely to revert to regressive behaviors.*

I encourage all of us to read David Perkins's *King Arthur's Round Table: How Collaborative Conversations Create Smart Organizations.* More importantly, I encourage all of us to practice **progressive interactions.**

Perkins suggests regularly asking the question, "How round is your table?" The cooperative learning table I set in my classes is round but some people don't seem to perceive it as round, in part, I think, because they lack skills for working cooperatively. I regularly grapple with how to make the learning and design table round and how to give everyone a seat at it.

Leadership

A common notion is that leadership is a trait that some are born with. Another common notion is that a person's leadership ability depends on the situation. There is an enormous body of literature on leadership, so I'll provide only insights that I've found useful. I'll also try to guide you to more reading and resources on the topic.

INDIVIDUAL AND TEAM REFLECTION What does it mean to lead a team? What does it take? Take a moment to reflect on the characteristics you admire most in a leader. Jot down eight to ten of them. Compare your list with your teammates' lists.

Leadership authors Kouzes and Posner (1987, 1993) have asked thousands of people to list the characteristics of leaders they admire. Table 3.3 lists the most common responses from their 1987 and 1993 studies. Many students and workshop participants express surprise that honesty is listed as number one. They say it's a given. Apparently honesty is not a given for many leaders in business and industry. In 1993, Kouzes and Posner also asked the respondents to list the most desirable characteristics of colleagues. Honest was number one again, with 82 percent selecting it. Cooperative, dependable, and competent were second, third, and fourth, with slightly more than 70 percent of respondents selecting each.

Kouzes and Posner found that when leaders do their best, they challenge, inspire, enable, model, and encourage. They suggest five practices and ten behavioral commitments of leadership:

Challenging the Process

1. Search for opportunities.
2. Experiment and take risks.

Inspiring a Shared Vision

3. Envision the future.
4. Enlist others.

Table 3.3 Characteristics of Admired Leaders

Characteristic	1987 U.S. Percentage of People Selecting	1993 U.S. Percentage of People Selecting
Honest	83	87
Forward-looking	62	71
Inspiring	58	68
Competent	67	58
Fair-minded	40	49
Supportive	32	46
Broad-minded	37	41
Intelligent	43	38
Straightforward	34	34
Courageous	27	33
Dependable	32	32
Cooperative	25	30
Imaginative	34	28
Caring	26	27
Mature	23	14
Determined	20	13
Ambitious	21	10
Loyal	21	10
Self-controlled	13	5
Independent	13	5

Source: Kouzes and Posner, 1987, 1993.

Enabling Others to Act

5. Foster collaboration.
6. Strengthen others.

Modeling the Way

7. Set the example.
8. Plan small wins.

Encouraging the Heart

9. Recognize individual contributions.
10. Celebrate accomplishments.

Peter Scholtes, author of the best-selling book *The Team Handbook,* recently published *The Leader's Handbook* (Scholtes, 1998). He offers the following six "New Competencies" for leaders:

1. The ability to think in terms of systems and knowing how to lead systems.
2. The ability to understand the variability of work in planning and problem solving.
3. Understanding how we learn, develop, and improve; leading true learning and improvement.
4. Understanding people and why they behave as they do.
5. Understanding the interaction and interdependence between systems, variability, learning, and human behavior; knowing how each affects the others.
6. Giving vision, meaning, direction, and focus to the organization.

REFLECTION Take a moment to reflect on what you've learned thus far about the competencies Scholtes emphasizes—systems, thinking, variability, learning and improvement, understanding people, interdependence, and giving vision—and list connections both with your personal experiences and with earlier sections of this book.

The latest breakthrough work on leadership is Jim Collins's concept of Level 5 leadership (Collins, 2001a, 2001b). Collins and his research team studied companies who moved from being good to being great. Their central finding was that the leaders of these companies "build enduring greatness through a paradoxical combination of personal humility plus professional will." Collins's revelation reminds me of a virtue that philosopher Walter Kaufmann said is a cardinal virtue—the fusion of humility and ambition (Kaufmann, 1973). I've tried to live by Kaufmann's cardinal virtue of fusing humility and ambition for the past 25 years. I find it interesting that Collins's work has focused on a similar fusion. There is something significant here, and I suggest that you reflect on it.

In addition to team norms, communication, and leadership, teamwork depends on effective decision making and constructive conflict management, described in the next two sections.

Reflection: That Reminds Me of a Story

The title of this reflection comes from a story told by Gregory Bateson—"A man wanted to know about mind, not in nature but in his personal, large computer. So he asked it, 'Do you compute you'll ever think like a human being?' The computer set about to analyze its computational habits. Some time later it printed out its results. The man ran to read the results and found the words neatly typed, THAT REMINDS ME OF A STORY."

In 1998 I wrote a *Journal of Engineering Education* Academic Bookshelf column on the Role of Narrative (Story). I was reluctant since I thought the engineering community would think it too far out; too soft. The column, in which I summarized books such as *The Call of Stories* by Robert Coles and *Hamlet on the Holodeck: The Future of Narrative in Cyberspace* by Janet H. Murray, received more e-mail and personal responses that any of the other 12 or so columns that I wrote. You can find summaries of several of the books on my website, www.ce.umn.edu/~smith. Follow the Teamwork and Project Management link.

Stories and storytelling are gaining a prominent place in the current leadership and workplace literature. Several prominent business leaders and scholars are making a case for stories. One interesting short book is *Storytelling in Organizations: Why Storytelling Is Transforming 21st Century Organizations and Management* by John Seely Brown, Stephen Denning, Katalina Groh, and Laurence Prusak. In response to the question "Why does narrative pervade organizations?" they offer twenty-three reasons. Here's a sampling:

- Stories have salience to the lives of people in organizations.
- Stories help us make sense of organizations.
- Storytelling communicates collaboratively.
- Storytelling communicates context.
- Storytelling flies under the corporate radar.
- Storytelling is memorable.
- Storytelling spurs double-loop learning.
- Storytelling is key to leadership.

Norman R. Augustine, former CEO of Lockheed-Martin, highlights the role of story in his 1997 book *Augustine's Travels: A World-Class Leader Looks at Life, Business, and What It Takes to Succeed at Both. Augustine's Travels* documents an around-the-world-in-eight-days, five-country whirlwind trip taken in 1995 by a team of leaders. It is packed with insight, advice, and wisdom, and infused with humor. Augustine seems particularly partial to Yogi Berra and Winnie the Pooh. He writes in the preface, "I want this book to help readers deal with issues, make decisions, and solve problems. As in *Augustine's Laws*, I've used lots of stories to illustrate my points."

Don't get me wrong here. To be successful as an engineer you must have done your homework, that is, developed a sufficient level of analysis skill and technical rigor (the vertical dimension of the T-shaped person). But it's not enough today, because if you're going to persuade others to support your ideas and fund your projects, you need to provide a compelling story.

REFLECTION Take a moment to recall stories from your family, friends, teachers, etc. that have stayed with you. Think about how you can convey your ideas in a storylike format. One common metaphor for thinking about this is the "elevator speech," sometimes called "the pitch." The essential idea of the elevator speech is to get your main point across is a minute or less, and of course, in a memorable way. Yes, this is hard work, but you'll surely benefit from the preparation and practice when you have an opportunity to pitch your ideas.

Decision Making

There are several approaches to making decisions in teams. Before exploring them, however, I suggest that you try a team decision-making exercise. Common exercises to assist in the development of teamwork skills—especially communication (sharing knowledge and expertise), leadership, and decision making—are ranking tasks, such as survival tasks, in which a team must decide which items are most important for survival in the desert, on the moon, or in some other difficult place. Ranking tasks are common in organizations that must select among alternative designs, hire personnel, or choose projects or proposals for funding.

My favorite ranking task for helping teams focus on communication, leadership, decision making, and conflict resolution is "They'll Never Take Us Alive." This exercise, which includes both individual and team decision making, is Exercise 1 at the end of this chapter (see page 53). Do that exercise now.

TEAM REFLECTION 1: How did your team make the decision? Did you average your individual rankings? Did you vote? Did you discuss your individual high and low rankings and then work from both ends toward the middle? Did you try to reach consensus? Were you convinced by team members who seem to have "expert" knowledge? Did you start with the number of fatalities for one of the activities and work from there?

TEAM REFLECTION 2: How well did your team work? What went well? What things could you do even better next time?

The method a team uses to make a decision depends on many factors, including how important the decision is and how much time there is to decide. Teams should have a good repertoire of decision-making strategies and a means of choosing the one that is most appropriate for the situation.

Several methods have been described in the literature for making decisions. One of my favorites is from David Johnson and Frank Johnson (1991). The authors list seven methods for making decisions:

1. *Decision by authority without discussion.* The leader makes all the decisions without consulting the team. This method is efficient but does not build team member commitment to the decision.
2. *Expert member.* The most expert member is allowed to decide for the team. The difficulty with this method often lies in deciding who has the most expertise, especially when those with power or status in the team overestimate their expertise.
3. *Average of members' opinions.* The team decision is based on the average of individual team members' opinions.
4. *Decision by authority after discussion.* The designated leader makes the decision after discussion with the team. The effectiveness of this method often depends on the listening skills of the leader.
5. *Minority control.* Two or more members who constitute less than 50 percent of the team often make decisions by acting as (a) an executive committee or (b) a special problem-solving subteam.
6. *Majority control.* Decision by a majority vote is the method used by the U.S. Congress. Discussion occurs only until at least 51 percent of the members agree on a course of action.
7. *Consensus.* Consensus is probably the most effective method of team decision making in terms of decision quality and gaining members' commitment to the decision, but it also may take the most time. Perfect consensus is achieved when everyone agrees. A lesser degree of consensus is often accepted where everyone has had their say and will commit to the decision, even though not everyone completely agrees with the decision.

David and Frank Johnson (1991) note that the quality of the decision and the time needed vary as a function of the level of involvement of the people involved in the decision-making method, as shown in Figure 3.1.

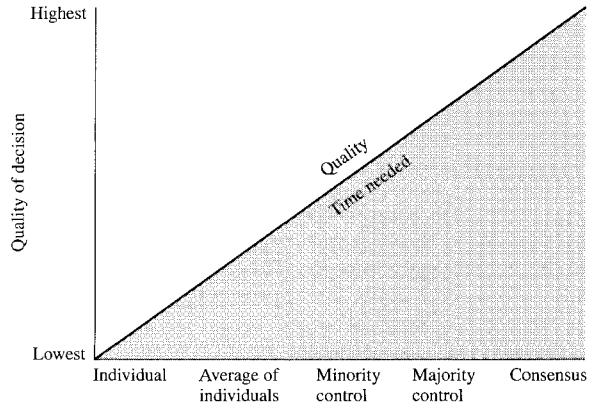
They also list the following characteristics of effective decisions:

1. The resources of the team members are well used.
2. Time is well used.
3. The decision is correct, or of high quality.
4. The decision is put into effect fully by all the necessary members' commitments.
5. The problem-solving ability of the team is enhanced.

TEAM REFLECTION How well did your team do on each of these five characteristics of effective decisions?

Typically, novice decision-making teams don't take full advantage of the skills and talents of their members, and they often struggle to get started. Some researchers report a series of stages in team development (e.g., forming, storming, norming, performing) and offer suggestions for working through each stage (Scholtes, Joiner, and Streibel, 1996). Also, if you ask a team to

Figure 3.1 Decision Type and Quality



invest time and effort in making a decision, it is very important that the decision or recommendation of the team be implemented (or that very good rationale be provided for why it wasn't implemented). Few things are more frustrating than to be asked to spend a lot of time and effort on work that goes nowhere.

Some of the latest and most interesting work on decision making comes from David Garvin and Michael Roberto (2001). They propose that we view decision making as an inquiry process rather than as an advocacy process, so that decision making is seen as collaborative problem solving rather than as a contest. Key differences between an advocacy approach and an inquiry approach are shown in Table 3.4. Their inquiry approach to decision making is consistent with a constructive academic controversy approach my colleagues and I devised to help students learn about reaching decisions in controversial situations (Johnson, Johnson, and Smith, 2000). Approaching, framing, and working through decisions in this manner can result in far more enlightened and constructive decisions.

Table 3.4 Two Approaches to Decision Making

	Advocacy	**Inquiry**
Concept of decision making	A contest	Collaborative problem solving
Purpose of discussion	Persuasion and lobbying	Testing and evaluation
Participants' role	Spokespeople	Critical thinkers
Pattern of behavior	Strive to persuade others	Present balanced arguments
	Defend your position	Remain open to alternatives
	Downplay weaknesses	Accept constructive criticism
Minority views	Discouraged or dismissed	Cultivated and valued
Outcome	Winners and losers	Collective ownership

Source: Garvin and Roberto, 2001.

Russo and Shoemaker (2002) describe an interesting and straightforward four-step decision-making process:

1. *Frame.* Decide what you are going to decide and what you are not going to decide.
2. *Gather intelligence.* Gather real intelligence, not just information that will support your biases.
3. *Come to conclusions.* Determine how your team will act on the intelligence it gathers.
4. *Learn from experience.*

Russo and Shoemaker's approach helps demystify the process of decision making. Their guidance through each of the steps provides insight into the process and highlights key concepts. They also provide case studies and worksheets to help readers apply the approach to their own decision-making situations.

Making decisions and providing information so that others can make decisions are two of the most important and common activities of practicing engineers.

Conflict Management

Conflict is a routine aspect of every project manager's job. *Conflict* is a situation in which an action of one person prevents, obstructs, or interferes with the actions of another person. On complex projects and tasks, highly talented and motivated people routinely disagree about the best ways to accomplish tasks and especially about how to deal with trade-offs among priorities. A conflict often is a moment of truth, because its resolution can follow either a constructive or a destructive path.

> *The work life of a project manager is a life of conflict. Although conflict is not necessarily bad, it is an issue that has to be resolved by the project manager. Without excellent negotiation skills, the project manager has little chance for success.*
>
> JAMES TAYLOR
> A Survival Guide for Project Managers

INDIVIDUAL REFLECTION Write the word *conflict* in the center of a blank piece of paper and draw a circle around it. Quickly jot down all the words and phrases you associate with the word *conflict* by arranging them around your circle.

Review your list of associations and categorize them as positive, negative, or neutral. Count the total number of positive, negative, and neutral associations, and calculate the percentage that are positive. Did you have more than 90 percent positive?

Fewer than 5 percent of the people I've worked with in classes and workshops have had higher than 90 percent positive associations with the word *conflict*. Most, in fact, have had lower than 50 percent positive associations. Many have lower than 10 percent positive.

The predominance of negative associations with conflict is one of the reasons conflict management is so difficult for project managers. Many people prefer to avoid conflict or suppress it when it does arise. They become fearful, anxious, angry, or frustrated; consequently, the conflict takes a destructive path.

The goal of this section is to help you develop a set of skills and procedures for guiding conflict along a more constructive path. I'd like to begin by asking you to complete a questionnaire to assess how you typically act in conflict situations. The "How I Act in Conflict" questionnaire is included as Exercise 2 at the end of this chapter (page 54). Take a few minutes to complete and score the questionnaire. Try to use professional conflicts and not personal conflicts as your point of reference.

Set the questionnaire aside for a few minutes and read Exercise 3, the Ralph Springer case study (page 55). Work through the exercise, completing the ranking form at the end.

TEAM ACTIVITY Share and discuss each member's results from Exercise 2. Discuss each of the possible ways to resolve the conflict.

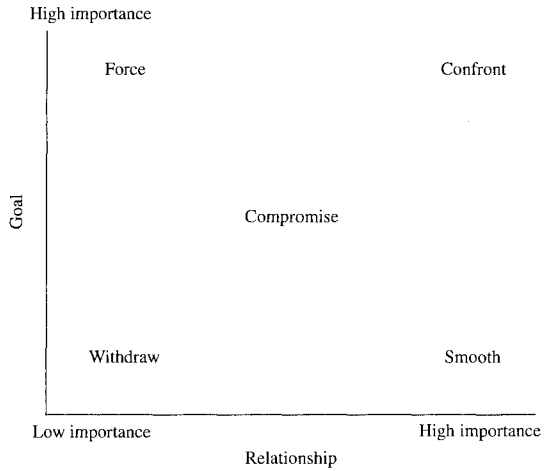
Then compare your individual responses from Exercise 2 to your rankings in Exercise 3. Note that each of the alternatives listed in Exercise 3 represents one of the strategies listed on the scoring form in Exercise 2. Match the alternatives to the strategies they represent. Discuss similarities and differences in the order in which each team member would have used the strategies and the relative effectiveness of each.

The five conflict strategies shown in Exercise 2—withdrawal, forcing, smoothing, compromise, and confrontation—were formulated into a model for analyzing approaches to conflict by Blake and Mouton (1964). The authors used two axes to represent the conflict strategies: (1) The importance of the goal, and (2) the importance of the relationship. The placement of each of the five strategies according to this framework is shown in Figure 3.2. The five conflict strategies are described as follows:

1. *Withdrawal.* Neither the goal nor the relationship is important—you withdraw from the interaction.
2. *Forcing.* The goal is important but not the relationship—use all your energy to get the task done.
3. *Smoothing.* The relationship is more important than the goal. You want to be liked and accepted.
4. *Compromise.* Both goal and relationship are important, but there is a lack of time—you *both* gain and lose something.
5. *Confrontation.* Goal and relationship are equally important. You define the conflict as a problem-solving situation and resolve through negotiation.

Each of these strategies is appropriate under certain conditions. For example, if neither the goal nor the relationship is important to you, then often the

Figure 3.2 Blake and Mouton Conflict Model



best thing to do is withdraw. If the relationship is extremely important and the goal is not so important (at the time), then smoothing is appropriate. In many conflict situations, both the goal and the relationship are important. In these situations, the strategy of confronting and negotiating often leads to the best outcomes.

A *confrontation* is the direct expression of one opponent's view of the conflict, and his or her feelings about it, and an invitation to the other opponent to express his or her views and feelings.

Guidelines for Confrontation

1. Do not "hit-and-run." Confront only when there is time to jointly define the conflict and schedule a negotiating session.
2. Openly communicate your feelings about and perceptions of the issues involved in the conflict, and try to do so in minimally threatening ways.
3. Accurately and fully comprehend the opponent's views and feelings about the conflict.

Negotiation is a conflict resolution process by which people who want to come to an agreement try to work out a settlement.

Steps in Negotiating a Conflict

1. Confront the opposition.
2. Define the conflict mutually.
3. Communicate feelings and positions.
4. Communicate cooperative intentions.
5. Take the other person's perspective.
6. Coordinate the motivation to negotiate.
7. Reach an agreement that is satisfactory to both sides.

Constructively resolving conflicts through a confrontation–negotiation process takes time and practice to perfect, but it's worth it. Conflicts that do not get resolved at a personal level must be resolved at more time-consuming and costly levels—third-party mediation, arbitration, and, if all else fails, litigation.

Finally, here are some heuristics for dealing with conflicts in long-term personal and professional relationships:

1. Do not withdraw from or ignore the conflict.
2. Do not engage in "win–lose" negotiations.
3. Assess for smoothing.
4. Compromise when time is short.
5. Confront to begin problem-solving negotiations.
6. Use your sense of humor.

Remember that heuristics are reasonable and plausible, but not guaranteed. I suggest that you develop your own set of heuristics for dealing with conflict as well as for the other skills needed for effective teamwork. Some of my former students who now work as project managers emphasize during classroom visits that they spend a lot of time resolving conflicts—over meeting specifications, schedules, delivery dates, interpersonal problems among team members—and that they deal with most conflicts informally.

Teamwork Challenges and Problems

REFLECTION What are some of the most common challenges and problems you've had working in teams? Please reflect for a moment. Make a list. Has a professor ever had you do this in your teams? If so, it's a clear indication that the professor understands the importance of team processing for identifying and solving problems.
What's on your list?

The challenges and problems you listed in the above Reflection may have included the following:

- Members who don't show up for meetings or who show up unprepared.
- Members who dominate the conversation.
- Members who don't participate in the conversation.
- Time wasted by off-task talk.
- Members who want to do the entire project themselves because they don't trust others.
- Team-meeting scheduling difficulties.
- No clear focus or goal.
- Lack of clear agenda, or hidden agendas.
- Subteams excluding or ganging up on one or more members.
- Ineffective or inappropriate decisions and decision-making processes.
- Suppression of conflict or unpleasant flareups among team members.

- Members not doing their fair share of the work.
- Lack of commitment to the team's work by some members.

These problems are commonly encountered by students (and professionals) working in teams and teams. If they are not addressed they can turn a cooperative team into a pseudo team (as described in Chapter 2), where the team performs worse than the individuals would have performed if working alone. If the challenges are addressed in a problem-solving manner, then the team is likely to perform at much higher levels (and the members will have a much more positive experience). The following process is widely used to address team problems.

Step 1: Identifying Challenges, Difficulties, and Barriers to Effective Teamwork: Develop a List of Them

- Reflect individually for a moment and start a list of challenges, difficulties, and barriers facing the team. Share the individual lists and create a joint list that includes at least one item from each team member.
- Do not solve (yet).
- Be realistic and specific.
- Work cooperatively.
- If more than one team is involved, list challenges, difficulties, and barriers for all teams on an overhead projector or flip chart.

Step 2: Addressing Challenges, Difficulties, and Barriers

1. Have each team (or if only one team is involved, each member) select one item from the joint list.
2. Clarify: Make sure you have a common understanding of what the item means or represents.
3. Identify three possible actions that will solve or eliminate the barrier.
4. Prioritize the possible solutions: Plan A, Plan B, Plan C.
5. Focus on what *will* work; be positive and constructive.
6. Implement the solutions; report back; celebrate and extend the ones that are effective.

Caveat: During implementation of teamwork, expect some problems. Doing so will help you recognize a roadblock when it appears. When it does appear, apply the appropriate parts of Step 2 above.

With one or more colleagues, develop three or more solutions. Implement one, evaluate, replan, and retry.

The problem identification/problem formulation/problem-solving format described above does not guarantee that your teamwork experiences will be free of troubles. But having a format for getting problems out on the table and then dealing with them in a problem-solving manner usually reduces the frustration and interference of team problems.

Reflection: Teamwork

I've tried to address many of the highlights of effective teamwork and team problem solving, but I've barely scratched the surface. Hundreds of books and articles have been written on effective teamwork, and I've listed a few of my favorites in the reference section (in particular, see Fisher, Rayner, and Belgard, 1995; Goldberg, 1995; Hackman, 1990; Katzenbach and Smith, 1993a, 1993b). As I mentioned earlier, the most widely used teamwork book is Scholtes, Joiner, and Streibel's *The Team Handbook* (1996).

Questions

1. What other skills do you feel are essential for successful teams? How about trust and loyalty, for example? I briefly dealt with trust and loyalty in the section "Organization," but you may want to emphasize them more. Check the references for more (e.g., see Johnson and F. Johnson, 1991). What other teamwork skills would you like to follow up on?
2. What are some of the strategies for developing a good set of working conditions in a team?
3. What are your reactions to the list of characteristics of effective leaders in Table 3.3? Were you surprised by the high ranking of honesty?
4. Why is conflict central to effective teamwork and project work? What are some strategies for effectively managing conflict?
5. Keep a log of problems you've faced in working on project teams. How do the problems change over the life of the team?
6. The next time a problem occurs in a team, try the problem-solving process outlined in this chapter. Then evaluate how well it worked.

Exercises

1. They'll Never Take Us Alive!!

Below in alphabetical order are listed the top 15 causes of death in the United States in 2003. The data were taken from an annual review of death certificates reported in the National Vital Statistics Report, Vol. 53, No. 15, February 28, 2005. Your task is to rank them in order. Place the number 1 next to the item that causes the most deaths, the number 2 next to the item that causes the second most deaths, and so on. Then, in the last column, write in your estimate of the number of fatalities each product or activity causes annually in the United States.

Product or Activity	Ranking	Number of Fatalities
Accidents		
Alzheimer's disease		
Blood poisoning		
Cancer		
Diabetes		
Heart disease		
Hypertension		
Influenza and pneumonia		
Kidney disease		
Liver disease		
Lung disease		
Parkinson's disease		
Pneumonitis		
Stroke		
Suicide		

Team Tasks

1. After individuals have filled in their charts, determine one ranking for the team. (Don't worry yet about the estimates for the numbers of fatalities.)
2. Every team member must be able to explain the rationale for the team's ranking.
3. When your team finishes, and each member has signed the chart, (a) record your estimated annual number of fatalities in the United States for each, and then (b) compare your ranking and estimates with those of another team.

Note: A list of rankings and annual fatalities is available from the author at ksmith@umn.edu.

1a. Variation on annual fatalities ranking.

Motor vehicle accidents are a major cause of death in the United States; in fact, they are the leading cause of death for people age 4 to 34. In 2002, motor vehicle deaths were ranked eighth overall as a cause of death.

What are the most common types of motor vehicle accidents? What can be done from an engineering perspective to minimize the frequency and severity of motor vehicle accidents?

2. How I Act in Conflict

The proverbs listed below can be thought of as descriptions of some of the different strategies for resolving conflicts. Proverbs state conventional wisdom, and the ones listed here reflect traditional wisdom for resolving conflicts. Read each carefully. Using the scale provided, indicate how typically each proverb describes your actions in a conflict. Then score your responses on the chart at the end of the exercise. The higher the total score in each conflict strategy, the more frequently you tend to use that strategy. The lower the total score for each conflict strategy, the less frequently you tend to use that strategy.

5 = Very typical of the way I act in a conflict
4 = Frequently typical of the way I act in a conflict
3 = Sometimes typical of the way I act in a conflict
2 = Seldom typical of the way I act in a conflict
1 = Never typical of the way I act in a conflict

_____ **1.** It is easier to refrain from quarreling than to retreat from a quarrel.
_____ **2.** If you cannot make a person think as you do, make him or her do as you think.
_____ **3.** Soft words win hard hearts.
_____ **4.** You scratch my back, I'll scratch yours.
_____ **5.** Come now and let us reason together.
_____ **6.** When two quarrel, the person who keeps silent first is the most praiseworthy.
_____ **7.** Might overcomes right.
_____ **8.** Smooth words make smooth ways.
_____ **9.** Better half a loaf than no bread at all.
_____ **10.** Truth lies in knowledge, not in majority opinion.
_____ **11.** He who fights and runs away lives to fight another day.
_____ **12.** He hath conquered well that hath made his enemies flee.
_____ **13.** Kill your enemies with kindness.
_____ **14.** A fair exchange brings no quarrel.
_____ **15.** No person has the final answer but every person has a piece to contribute.
_____ **16.** Stay away from people who disagree with you.
_____ **17.** Fields are won by those who believe in winning.
_____ **18.** Kind words are worth much and cost little.
_____ **19.** Tit for tat is fair play.
_____ **20.** Only the person who is willing to give up his or her monopoly on truth can ever profit from the truths that others hold.
_____ **21.** Avoid quarrelsome people as they will only make your life miserable.
_____ **22.** A person who will not flee will make others flee.
_____ **23.** Soft words ensure harmony.
_____ **24.** One gift for another makes good friends.
_____ **25.** Bring your conflicts into the open and face them directly; only then will the best solution be discovered.
_____ **26.** The best way of handing conflicts is to avoid them.
_____ **27.** Put your foot down where you mean to stand.
_____ **28.** Gentleness will triumph over anger.
_____ **29.** Getting part of what you want is better than not getting anything at all.
_____ **30.** Frankness, honesty, and trust will move mountains.
_____ **31.** There is nothing so important that you have to fight for it.
_____ **32.** There are two kinds of people in the world, the winners and the losers.
_____ **33.** When someone hits you with a stone, hit back with a piece of cotton.
_____ **34.** When both people give in halfway, a fair settlement is achieved.
_____ **35.** By digging and digging, the truth is discovered.

Scoring

Withdrawal	Forcing	Smoothing	Compromise	Confrontation
1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
11.	12.	13.	14.	15.
16.	17.	18.	19.	20.
21.	22.	23.	24.	25.
26.	27.	28.	29.	30.
31.	32.	33.	34.	35.
Total	Total	Total	Total	Total

Source: David Johnson and Frank Johnson, 1991.

3. Case Study—Ralph Springer

The following case gives you a chance to apply the Blake and Mouton (1964) conflict model to a hypothetical situation. Read the case carefully and then label each of the possible actions from most to least effective and from most to least likely.

You have been working as a project manager in a large company for some time. You are friends with most of the other project managers and, you think, you are respected by all of them. A couple of months ago, Ralph Springer was hired as a supervisor. He is getting to know the other project managers and you. One of the project managers in the company, who is a friend of yours, confided in you that Ralph has been saying rather nasty things about your looks, the way you dress, and your personal character. For some reason you do not understand, Ralph has taken a dislike to you. He seems to be trying to get other project managers to dislike you also. From what you hear, there is nothing too nasty for him to say about you. You are worried that some people might be influenced by him and that some of your co–project managers are also beginning to talk about you behind your back. You are terribly upset and angry at Ralph. You have a good job record and are quite skilled in project management, so it would be rather easy for you to get another job.

Rank each of the following five courses of action from 1 (most effective, most likely) to 5 (least effective, least likely). Use each number only once. Be realistic.

Effective	Likely	
_____	_____	I lay it on the line. I tell Ralph I am fed up with the gossip. I tell him that he'd better stop talking about me behind my back, because I won't stand for it. Whether he likes it or not, he is going to keep his mouth shut about me or else he'll regret it.
_____	_____	I try to bargain with him. I tell him that if he will stop gossiping about me I will help him get started and include him in the things other project managers and I do together. I tell him that others are angry about the gossiping and that it is in his best interest to stop. I try to persuade him to stop gossiping in return for something I can do.
_____	_____	I try to avoid Ralph. I am silent whenever we are together. Whenever we speak, I show a lack of interest, look over his shoulder, and get away as soon as possible. I want nothing to do with him for now. I try to cool down and ignore the whole thing. I intend to avoid him completely if possible.
_____	_____	I call attention to the conflict between us. I describe how I see his actions and how it makes me feel. I try to begin a discussion in which we can look for a way for him to stop making me the target of his conversation and a way to deal with my anger. I try to see things from his viewpoint and seek a solution that will suit us both. I ask him how he feels about my giving him this feedback and what his point of view is.
_____	_____	I bite my tongue and keep my feelings to myself. I hope he will find out that the behavior is wrong without my saying anything. I try to be extra nice and show him that he's off base. I hide my anger. If I tried to tell him how I feel, it would only make things worse.

4. Team Ground Rules Contract Form

Project teams are an effective aid to learning, but to work best they require that all team members clearly understand their responsibilities to one another. These project team ground rules describe the general responsibilities of every member to the team. You can adopt additional ground rules if your team believes they are needed. Your signature on this contract form signifies your commitment to adhere to these rules and expectations.

All team members agree to:

1. Come to class and team meetings on time.
2. Come to class and team meetings with assignments and other necessary preparations done.

Additional ground rules:

1.

2.

If a member of the project team repeatedly fails to meet these ground rules, other members of the team are expected to take the following actions:

Step 1: (fill in this step with your team)
If not resolved:
Step 2: Bring the issue to the attention of the teaching team.
If not resolved:
Step 3: Meet as a team with the teaching team.

The teaching team reserves the right to make the final decisions to resolve difficulties that arise within the teams. Before this becomes necessary, the team should try to find a fair and equitable solution to the problem.

Members' Signatures: Team Number:_____

1. _____ 2. _____

3. _____ 4. _____

Source: Adapted from a form developed by Dr. Deborah Allen, University of Delaware.

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