The Consequences of Diversity in Multidisciplinary Work Teams

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Abstract

As organizations pursue new business strategies to compete in the global marketplace, they often conclude that multidisciplinary teams are needed to develop innovative products and services and respond to customers interested in a broad range of products and services. Multidisciplinary teams provide a structure for bringing together employees with the diverse technical backgrounds needed for these tasks. The increasing popularity of team-based organizational structures reflects the widely shared belief that teamwork offers the potential to achieve outcomes that could not be achieved by individuals working in isolation.

As they restructure around multidisciplinary teams, however, many organizations are discovering that teams do not always produce the desired results. Even when teams fulfill their potential, team members and their organizations may experience unanticipated negative side-effects, such as unproductive conflict and high turnover. This chapter explores the interpersonal dynamics that arise within multidisciplinary teams, and the longer-term consequences of such dynamics. A description of the types of diversity likely to be present in multidisciplinary teams is presented first. This is followed by an overview of research that has investigated how diversity affects the way team members feel about each other and the ways they behave toward each other. The research reveals that members of multidisciplinary teams are likely to experience a variety of challenges. Communicating effectively with team-mates who do not share a common technical lan-

guage or perspective is one such challenge, but it is perhaps not the most difficult one. Also on the team's agenda are issues of power and status, the struggle to develop a feeling of cohesiveness, and managing relationships beyond the team's boundary. How these challenges are addressed has implications for how individuals on the team feel about themselves and others, as well as for the performance and long-term survival of the team.

To succeed in increasingly competitive domestic and global markets, many organizations are pursuing new business strategies that emphasize the development of innovative products and services and responsiveness to customers who may be interested in a broad range of products and services offered by a firm. Achieving these new objectives requires coordination among employees who have dissimilar technical backgrounds and perspectives, so many organizations now are incorporating multidisciplinary teams as a basic form of organizing. For example, in the telecommunications and electronics industries, multidisciplinary R&D teams bring together experts with a variety of knowledge backgrounds, with the expectation that such teams will be more likely to generate innovative ideas for new products and services. In order to ensure that the new products or services appeal to customers, the teams may include representatives from marketing or even the eventual end-users. When manufactured products are to be produced, multidisciplinary design teams may also include suppliers, whose presence can ensure that materials and components needed for production meet quality standards and are available when needed. For service delivery, multidisciplinary teams often are designed to ensure that all of a customer's potential needs can be met by a single team. Regardless of whether the customer is a medical patient being served by a multidisciplinary medical team, or an insurance policy holder who holds many different types of insurance policies, multidisciplinary service teams simplify the customer-organization interface and may improve the service received.

The increasing popularity of team-based organizational structures reflects the widely shared belief that teamwork offers the potential to achieve outcomes that could not be achieved by individuals working in isolation. As many organizations are discovering, however, the pay-off from teamwork is not automatic. Although teams offer great potential for increased innovation, quality and speed, the potential is not always realized. Even when teams fulfill their potential, team members and their organizations may experience unanticipated negative side-effects, such as unproductive conflict and high turnover.

To be maximally effective, multidisciplinary teams must successfully manage the assets and liabilities associated with their diversity. To manage diversity, in turn, presumes an understanding of the types of diversity likely to be present in multidimensional teams and the consequences of various types of diversity for the behavior of team members. After describing in some detail the types of diversity likely to be present in multidisciplinary teams, this chapter provides an overview of research that shows how diversity affects the way team members feel about each other and the ways they behave toward each other. The composition

of multidisciplinary teams is shown to have implications for problem-solving and decision-making processes, the development of status hierarchies, patterns of participation and communication, the development of cohesiveness, team performance, and, in the longer term, both the stability of the team and its ability to learn and develop over time. Because of the complexity of team composition and the important influences of organizational and societal context, the precise ways in which these dynamics will unfold in a specific team are impossible to fully control, or even accurately predict. Consequently, this chapter concludes by suggesting that, when relying on multidisciplinary teams to carry out significant tasks, an organization should be prepared to experiment and learn along the way. To be effective, experimentation and learning should be based upon an understanding of what is known to date, as reflected in the literature reviewed here and in the experiential knowledge of an organization's most skilled team leaders.

THE NATURE OF DIVERSITY IN MULTIDISCIPLINARY TEAMS

In this chapter, the term "diversity" is used to refer to the social *composition* of teams; "diversity" does not refer to the characteristic of an individual person. In order to fully describe the diversity of a team, both the content and structure of the team's composition must be considered.

The Content of Diversity

As we have seen, multidisciplinary teams are designed to be diverse in terms of the occupational backgrounds and functional areas of expertise of the team members. These teams are likely to be diverse in other ways as well. For example, in the everyday language of the popular press, the term diversity is widely used within the USA, and increasingly within Europe, to refer to the demographic (e.g. gender, ethnicity, age) composition of an organization's workforce. Throughout much of the world, organizations that previously employed a workforce that was mostly male and mostly from a single cultural or ethnic group now employ increasing numbers of women and people from many different ethnic and cultural backgrounds. Assuming these employment patterns continue, demographically diverse organizations will soon replace the relatively homogeneous organizations of the past.

In organizations that rely on work teams, other dimensions of diversity that are likely to become salient include status diversity, age diversity and educational diversity. Status diversity is introduced whenever teams are formed to include members from different levels of the organizational hierarchy. For example, in the USA, it is common to staff a task force by taking people from a "diagonal

slice." which goes across functional groups and includes people from the top to the bottom of the organization. Because status in organizations tends to co-vary with age and education, teams created using this approach typically have high levels of age and educational diversity as well.

Another type of diversity present in many organizations reflects the restructuring that took place during the past decade of corporate mergers and acquisitions. These have created organizations populated by the combined workforces of previously distinct companies. Whereas the unmerged firms may each have had a monolithic corporate culture, embodied within the new firm are multiple corporate cultures; after a merger, diversity replaces homogeneity. Like national cultures, corporate cultures shape expectations for behavior and guide interactions among interdependent employees. Until corporate cultures began colliding, they often went unnoticed, but now the difficulties that arise in merging dissimilar corporate cultures are widely recognized by top level executives (Kanter, 1989).

Finally, rapid advances in electronic communications make it possible for organizations to create "virtual" teams, with members dispersed across neighboring cities, states or countries. In addition to the many other types of diversity that may be present in such teams, the geographic diversity of these teams creates some unique challenges, which must be carefully managed in order for the team to function effectively (e.g. see Armstrong and Cole, 1996).

As should now be apparent, the composition of any particular team is complex; the people who make up a team can differ from each other in many different ways. Diversity may be low for one content dimension (e.g. when everyone shares the same national culture) and high for another content dimension (e.g. when the team has three men and four women). Thus, it is not sufficient to say that a team is diverse or homogeneous; the content of diversity must be specified, also.

Because the term diversity can refer to so many different aspects of team composition, it is useful to organize the types of diversity found in multidisciplinary teams into the simple two-dimensional taxonomy shown in Figure 3.1. In this taxonomy, the individual attributes that create diversity within a team are categorized as either *readily detected or underlying*, and as either *task-related or relations-oriented*. Together, readily detected and underlying attributes contribute to the *total* diversity present in a team. To fully understand how diversity affects the functioning of multidisciplinary teams, team dynamics associated with task-related diversity *and* relations-oriented diversity must be considered.

Readily detected attributes can be determined quickly and consensually with only brief exposure to a target person. Generally, they are immutable. Readily detected task-related attributes include organizational and team tenure, department or unit membership, formal credentials and education level. Readily detected relations-oriented attributes include gender, race, ethnicity, national origin and age.

In comparison to readily-detected attributes, underlying attributes are less

	Task related attributes	Relations-oriented attributes	
Readily detected attributes	Department/unit membership Organizational tenure Formal credential and titles Education level Memberships in professional association	Sex Age Nationality Ethnicity Religion Political memberships Physical appearance	
	Knowledge and expertise Skills Physical abilities Task experience	Socio-economic status Attitudes Values Personality	

Figure 3.1 A taxonomy for describing the content of team diversity. The examples shown in each cell of the taxonomy are intended to be illustrative, not exhaustive. Adapted from Jackson, May & Whitney (1995), with permission

obvious, more difficult to verify, and subject to more interpretation and construal. Task-related underlying attributes include physical skills and abilities as well as cognitive knowledge, skills, abilities and job experience; relations-oriented underlying attributes include social status, attitudes, values and personality.

Managers and researchers alike often assume that readily detected attributes are associated with task-related underlying attributes (Hambrick & Mason, 1984; Lawrence, 1991). For example, an automotive design team that is occupationally diverse (e.g. a purchasing manager, a market researcher, an R&D engineer and a foreman from the manufacturing plant) would be expected to make better design decisions than a more homogeneous team *because* of the diversity of task-relevant knowledge, skills, and abilities they presumably would bring to the task.

What managers (and some researchers) often ignore are the possible effects of the relations-oriented diversity that might be present in such a team. Relations-oriented diversity can shape behavior even when there is no association between it and the team's task-related attributes, because it triggers stereotypes that influence the way team members think and feel-about themselves as well as others on the team. For example, data from several million US students indicates that cognitive ability differences between males and females are negligible (Hyde, Fennema & Lamon, 1990; Hyde & Linn, 1988), yet males are generally perceived as more intelligent than females (Wallston & O'Leary, 1981). Similarly, the evidence indicates that the deteriorating effects of age have little impact on intellectual capacity until the seventh decade of one's life (Labouvie-Vief,

1989), yet managers appear to denigrate employees who are older than the norm for a particular job or position (Lawrence, 1988; see also Tsui, Xin & Egan, 1996). Interpersonal relations and interaction patterns follow from stereotype-based thoughts and feelings, and ultimately these determine what information is available to the team, what information is attended to by the team, and who has the most influence in decision-making processes (e.g. see Berger & Zelditch, 1985; Devine, 1989; Stephan, 1985; Turner, 1987).

The Structure of Diversity

To this point, our discussion has treated diversity as a construct that varies from high to low. Much of the theoretical and empirical literature adopts this vocabulary also. But this is an oversimplification. Many different configurations of attributes can be present in a team. A few configurations of diversity have drawn special attention, however, because of their powerful consequences. One such configuration is the nearly homogeneous team that includes a "token" or "solo" member, such as a lone female in a team of males (see Kanter, 1977). Two other psychologically distinct configurations are (a) a homogeneous team that includes a small minority faction (i.e. two members who are similar to each other but distinctly different from the other members of a team), and (b) a bipolar team composition, which is characterized by the presence of two equal-size coalitions (e.g. a team composed of 50% employees from headquarters and 50% employees from a subsidiary). Such configurations can be particularly powerful determinants of how team members perceive themselves, their feelings toward each other as well as communication and influence processes within teams-processes which are central to team decision making.

THE CONSEQUENCES OF DIVERSITY

Diversity is of interest because it has important consequences, including how individuals feel about themselves and other members of the team, communication patterns within the team, communications across team boundaries, the distribution of resources among team members, team performance, and so on. Figure 3.2 lists the many types of outcomes that can be affected by diversity. The columns in Figure 3.2 distinguish between consequences that reflect effects observed as a team is performing its tasks (labeled short-term effects) and consequences that become apparent over longer periods of time or may even persist after the team has disbanded (labeled long-term outcomes).* The distinction between short-term and long-term is not as sharp as it appears in the Figure, however, for the time dimension that is used to separate these categories

^{*}The consequences labelled "short-term" here are similar to what McGrath, Berdahl &Arrow (1996) refer to as "modes of activity", with the exception that McGrath et al. treat goal attainment as an activity mode, whereas here performance outcomes are treated as "longer-term outcomes".

	Short-term effects	Long-term outcomes	
c E	Seeking, offering and receiving task information Initiating/responding to influence attempts Seeking, offering and receiving social support and information Seeking, offering, receiving tangible resources and aid	Performance (speed, creativity) Satisfaction with performance of self and team Acquisition of knowledge and skills (learning) Establishment of position in communication networks	
Ē	Task- related communication networks Resource distributions Influence networks Status hierarchy Friendship communications Cohesiveness	Establishment of external relations Balance of interpersonal accounts (political debts and credits) Friendship coalitions Performance (speed, solidity, creativity) Membership stability	

Figure 3.2 The possible consequences of team diversity. The examples shown in each cell of the taxonomy are intended to be illustrative, not exhaustive. Adapted from Jackson, May & Whitney (1995), with permission

of outcomes is continuous. The rows in Figure 3.2 distinguish between consequences for individual team members and consequences for the team as a whole. Again, the distinctions among these types of outcomes are not as sharp as they appear in Figure 3.2. Many consequences experienced by individuals have implications for the team as a whole, and almost all consequences experienced by the team as a whole have implications for individuals in the team.

As the reader will soon discover, the implications of diversity are far-reaching. No single theory explains the full set of established empirical relationships between aspects of diversity and its consequences. Instead, a variety of theoretical interests and perspectives have guided the studies described, including expectation states theory (Berger & Zelditch, 1985), the "upper echelons" perspective and research on top management team composition (Hambrick & Mason, 1984; Hambrick, 1994), organizational demography (Pfeffer, 1983), relational demography (Tsui & O'Reilly, 1989), and social identity theory (Turner et al., 1987). These literatures reflect the varied interests of psychologists, sociologists and management scholars; each is limited, but together they offer many insights about how diversity affects multidisciplinary teams.

A full discussion of all research relevant to understanding how different types

of diversity are related to these many consequences is more than can be accomplished in this chapter, so this review is necessarily selective. The focus is on well-established findings and draws most heavily on research that appears to have clear applicability in field settings. Short-term team effects are described first, including diversity's effects on internal team dynamics and diversity's effects on the team's external relationships. Then longer-term outcomes are considered, including longer-term consequences for individuals and the team as a whole.

Diversity Shapes Internal Dynamics within the Team

In the short term, diversity has many consequences for the way members of a team process information, make decisions and carry them out. Diversity also shapes the social dynamics within the team. This section describes some of these consequences in detail.

Decision-making and Problem-solving

Decision-making processes are central to the functioning of multidisciplinary teams. Indeed, it is often because diverse perspectives are presumed to improve decision processes that organizations employ multidisciplinary team structures.

If one adopts a rational view of the decision-making process, diverse perspectives seem to be beneficial on several counts. For example, during the environmental scanning that occurs in the earliest phase of decision-making, members with diverse perspectives should provide a more comprehensive view of the possible issues that might be placed on the team's agenda, including both threats and opportunities. Once potential threats and opportunities have been identified, discussion among members with diverse perspectives should improve the team's ability to consider a variety of alternative interpretations of the information gathered by the team and to generate creative solutions that integrate the diverse perspectives. As the team discusses alternative courses of action and solutions, diverse perspectives presumably will increase the team's ability to foresee all possible costs, benefits and side-effects (e.g. see Cowan, 1986; Haythorn, 1968; Hoffman, 1959; Hoffman & Maier, 1961; Pearce & Ravlin, 1987; Porac & Howard, 1990; Simon, 1987; Triandis, Hall & Ewen, 1965).

This view of the benefits of diversity during decision-making accurately reflects some of the potential benefits to be gained by creating diverse decision-making teams, but it is not the whole picture. Decision-making is not simply rational information processing. In particular, the availability of expertise does not guarantee the use of that expertise because information held by only one member of a team is often ignored.

Research on conformity and social influence indicates the value of having on a team at least two people who agree on a correct answer. The most well-known social influence studies are the classic experiments of Solomon Asch, who asked subjects to judge line lengths after hearing the erroneous judgments of several other people. This research revealed that when a person's private judgment was unlike the judgments expressed by others, the person soon abandoned his or her own judgment, even when their answer was verifiably correct. However, in the presence of just one other person who agreed, subjects persevered in the face of opposition (Asch, 1951, 1956; see also Allen, 1965; Sherif, 1935).

Just as a lone individual is likely to lack confidence, the team may lack confidence that a deviant opinion is correct. For typical problems, characterized by ambiguity, a team is much more likely to endorse the correct solution to a problem when at least two members of the team have the information or ability needed to determine the correct answer. This pattern of findings can be summarized as "truth *supported* wins" (Laughlin, 1980; Hill, 1982). This conclusion warns that if the correct answer is discovered by a sole person who has no ally in the team, the team is unlikely to adopt the correct answer as their solution to the problem. This is especially true if the person with the correct answer is of relatively low status (Torrance, 1959). Such evidence suggests that better decision-making and problem-solving should occur when team members have overlapping domains of expertise, instead of a sole expert for each relevant knowledge domain.

Status and Power

The texture of interactions observed within decision-making teams is not a function of task-based information alone. Observed behaviors also reflect status and power differentials. Surprisingly, there is little psychological or organizational research that empirically examines the consequences for decision-making teams of differences in *expertise-based* status or power, although every-day experiences indicate that these are relevant to communications, influence attempts, negotiations and resource allocation. The lack of empirical research may indicate that most scholars assume that the consequences of expertise-based status and power over resources are straightforward and obvious (i.e. rational).

In contrast, numerous studies have investigated the effects of socially defined status (e.g. status based on age and gender). Much of this research has been conducted to test hypotheses from expectation states theory, which emphasizes the formation and consequences of status hierarchies (Berger, Cohen & Zelditch, 1966, 1972). Although there is debate within this literature regarding the processes that lead to status hierarchies, there is agreement about the fact that status is usually correlated with demographic characteristics that are not relevant to performance (Ridgeway, 1987).

In the USA, decades of national opinion polls and psychological research on prejudice and discrimination show that the status attributed to individuals corresponds to their sex, age and ethnicity (Jaffe, 1987; Johnston & Packer, 1987; Katz & Taylor, 1988; Kraly & Hirschman, 1990; Chronicle of Higher Education, 1992). Unfortunately, the workplace is not immune from these status attributions. For

example, in a study of 224 R&D <u>teams</u> in 29 large organizations, Cohen & Zhou (1991), found that even after controlling for performance, higher status was attributed to males than females. Demographic cues such as age, sex and ethnicity trigger status assignments quickly, andunfairly *low* (non-task) status assignments prove difficult to undo (Ridgeway, 1982).

The behavioral effects of initial status attributions are pervasive. Compared to those with lower status, higher status persons display more assertive non-verbal behaviors during communication; speak more often, criticize more, state more commands, and interrupt others more often; have more opportunity *to* exert influence, attempt to exert influence more, and actually are more influential (Levine & Moreland, 1990). Consequently,- participation in task-related decision-making is likely to be unequal among members of teams characterized by demographic diversity, with lower status members participating less. At the team level, the presence of status differences *among* members (statusdiversity) is detrimental. Status differentiation inhibits creativity and appears to contribute to process losses (Steiner, 1972) because the expertise of lower-status members is not fully used (Silver, Cohen & Crutchfield, 1994).

Implementing Decisions

In the decision-making literature, a distinction often is drawn between *deciding* upon *a* course of action and *implementing* the decision. Whereas decision-making itself has been studied extensively, implementation has received less attention. Most of the evidence concerning the effects of diversity on decision processes comes from laboratory studies. In that setting, *teams* usually have responsibility *only* for generating new ideas *and* possible courses of action-they seldom actually implement their ideas. Work teams, on the other hand, usually take responsibility for both generating ideas and implementing them. Indeed, new management practices such as the use of multidisciplinary teams for concurrent engineering were specifically developed to ensure that idea generation, and implementation were integrated. Thus, in field settings, team performance often requires being effective in two types of activities: creative decision-making *and* task execution *or* implementation.

Psychological research on the execution of well structured tasks with clearly specified goals provides some basis for predicting the consequences of diversity during implementation. On the one hand, studies show that teams with diverse abilities outperform teams with homogeneous abilities, assuming members are free to take responsibility for the tasks that match their abilities. On, the other hand, teams composed of members who are homogeneous with respect to attributes that are not relevant to the task (e.g. demographic characteristics), perform better than diverse ones (Clement & Schiereck, 1973; Fenelon & Megaree, 1971). This effect has been found for tasks that require a-great deal of interdependence as well as for tasks requiring relatively little interdependence.

One reason why diversity that is not relevant to the task may interfere with

implementation is because all members of the team may he less strongly committed to whatever solution is eventually agreed upon. If diversity of perspectives makes reaching consensus difficult, teams may choose to resolve conflicts through compromise and majority rule instead of persisting to a creative resolution that is acceptable to everyone. Reliance on compromises or majority rule may decrease team members' acceptance of and enthusiasm for the team's resolution. Less acceptance of decisions is often assumed to be negative, but it is possible that an unexamined benefit of skepticism is the development and use of more elaborate mechanisms for obtaining feedback, greater attention paid to signals suggesting failure, and greater willingness to change the team's decision in the face of negative feedback.

Overall, then, diversity may slow down the processes of decision-making and ⁱmplementation while increasing the team's vigilance in attending to feedback about the quality of their decisions. The trade-off between speed and vigilance suggests that diversity may be a very positive feature for teams engaged in high-risk decisions, especially when actions have irreversible effects (e.g. in medical or military settings).

Cohesiveness

For complex decision-making problems, the expression and discussion of conflicting opinions and perspectives ensures thorough discussion of a wide range of interpretations, possible solutions and alternative consequences that might follow the acceptance of a solution (see Cosier, 1981; Janis, 1972; Schweiger, Sandberg & Rechner 1989; Schwenk, 1983). Exposure to alternative views may improve the quality of thinking about the issue at hand. It may also stimulate learning, which should benefit the team as it works on new tasks in the future (Nemeth, 1986). Unfortunately, however, dissent and disagreement often arouse negative emotional reactions (Nemeth & Staw, 1989; Schmidt, 1974), which may be directed toward other individuals in the team.

Cohesiveness refers to the degree of interpersonal attraction and liking among team members. To assess cohesiveness, researchers almost always ask team members to indicate their personal feelings about other members and/or their liking of the team as a whole. Under most circumstances, members of homogeneous teams experience more positive affect than members of diverse teams (Levine & Moreland, 1990; Lott & Lott, 1965; O'Reilly, Caldwell & Barnett, 1989; Zander, 1979), and similarity among friendship pairs has been found for a variety of readily detected and underlying attributes, including age, gender, race, education, prestige, social class, attitudes and beliefs (e.g. Berscheid, 1985; Brass, 1984; Byrne, 1971; Cohen, 1977; Ibarra, 1992; McPherson & Smith-Lovin, 1987; Verbrugge, 1977; Zander & Havelin, 1960).

The way team members feel about each other is important for many reasons. In the long term, for example, these feelings determine whether members retain their membership in the team. More immediately, positive affect promotes helping behavior and generosity, cooperation and a problem-solving orientation dur-

ing negotiations (for a review, see Isen & Baron, 1991). Helping is likely to be beneficial in many types of work situations, as when it takes the form of mentoring (Kram, 1985) or generally offering assistance to colleagues. When positive affect occurs in the form of attraction to team members, it may translate into greater motivation to contribute fully and perform well as a means of gaining approval and recognition (Festinger, Schachter & Back, 1950). Conversely, anxiety may inhibit a person's participation in team activities (Allen, 1965; Asch, 1956).

For decision-making teams, studies of how affect influences negotiations are of particular interest. In these problem-solving situations, where flexible and creative thinking can lead to more effective resolutions than compromise, positive affect is likely to be particularly beneficial for improving performance. For example, in a study of dispute resolution, negotiators induced to feel positive affect reached agreement more often, broke-off from discussions less often, cooperated more, obtained better outcomes, and evaluated the other negotiator more favorably, compared to negotiators in a control condition (Carnevale & Isen, 1986).

Communication

In the broadest sense, communications are the means through which a team manages information. Communication involves producing, transmitting (sending) and interpreting (receiving) symbols (Roloff, 1987)-through verbal as well as non-verbal channels, directly and indirectly, passively and proactively (e.g. see Miller & Jablin, 1991). Work-related communications involve descriptive and evaluative task information, exchanged primarily for instrumental purposes. In contrast, friendship communications involve social information (i.e. support) and carry their own intrinsic value (Brass, 1984; Ibarra, 1992).

Studies of communication networks in work organizations reveal that team composition predicts who talks to whom about what, as well as how much people talk to each other overall. In general, communication networks are characterized by demographic homogeneity (Brass, 1984; Hoffman, 1985; Lincoln & Miller, 1979). For example, work-related communications between men and women are less frequent in units that are more diverse with respect to sex (South et al., 1982). Formal and informal meetings among peers and with immediate subordinates are lower in racially diverse groups (Hoffman, 1985). And age and tenure similarities between co-workers predict levels of communication among project teams of engineers (Zenger & Lawrence, 1989).

Diversity Shapes External Relationships

Psychologists have traditionally adopted an internal perspective for studying groups. Consequently, little is known about how diversity impacts performance on tasks that require teams to adopt an external perspective (Ancona, 1987). An

external perspective is adopted whenever a team interfaces with constituencies outside the team, including constituencies within the organization and those in the organization's external environment. Recent studies of new product teams indicate that these teams engage in several types of external contacts, including vertical communications aimed at managing the perceptions of higher level managers and obtaining feedback and horizontal communications aimed at obtaining information about markets and technologies (Ancona & Caldwell, 1992).

Consideration of the externally-oriented tasks of multidisciplinary teams suggests several avenues for future research. For example, it suggests the need to study how a team's composition influences its persuasive effectiveness in external negotiations. Externally oriented persuasion activities include winning the support and commitment of those inside the organization, image management and resource acquisition. These activities may be especially relevant to the successful implementation of decisions-a large, and largely ignored, aspect of team work in organizations.

Also, the external perspective shifts the focus of attention from intergroup analyses to intergroup analyses. This shift in focus raises the issue of how the composition of constituency groups shape the relationship between the team and their external constituencies. For example, teams may use different tactics when they interact with a constituency group that is homogeneous, compared to a diverse one. Or, composition effects may be more complex. For example, multidisciplinary teams may interact differently with constituencies whose compositions mirror their own team composition than they do with constituencies made up of people who are dissimilar to the team. Until additional research is conducted, such possibilities must remain within the realm of speculation.

Team Diversity and Longer-term Outcomes

For one team working on a specific task in a particular organizational setting, the short-term behavioral consequences of diversity are difficult to predict. Teams are dynamic and interaction patterns change during the course of task performance (McGrath, Berdahl & Arrow, 1996; Watson, Kumar & Michaelson, 1993). In the longer term, however, the eventual consequences of diversity are more predictable.

Individual Consequences

For individuals, the potential consequences of participating as a member of a diverse team are many. Here two are highlighted: team membership and performance enhancement or learning.

Ultimately, the probability of maintaining one's membership in the team may he partly determined by the team's diversity. This was illustrated in a study of 199 op management teams in US banks. Seven dimensions of team diversity were

investigated: age, tenure, education level, curriculum, the college one attended, military experience and job experience. These indicators of diversity predicted the probability of turnover among team members over a 4-year period of time. Managers who were members of more diverse teams were more likely to leave the team during the 4 years, compared to managers who were members of homogeneous teams. This was true regardless of the characteristics of the individual managers, and regardless of how similar a manager was to other members of the team. Simply being a members of a diverse team increased the likelihood that a manager would leave the team (Jackson et al., 1991). Presumably, this effect occurred because the more diverse teams experienced greater conflict and were less cohesive (cf., Wagner, Pfeffer & O'Reilly, 1984), creating feelings of dissatisfaction and perhaps increasing the perceived desirability of other job offers.

Although diversity appears to make some people feel uncomfortable, some people find diversity stimulating. One of the positive individual consequences of working amidst diversity may be individual growth and learning. For example, an interesting phenomenon observed within problem-solving groups composed of a mix of experts and relative novices is the "assembly bonus effect", which occurs when people perform better within the team context than they would alone. Such effects would be expected for low ability members, but it is notable that assembly bonus effects also have been observed for expert members interacting with others who are less knowledgeable (see Laughlin & Bitz, 1975; Shaw & Ashton, 1976).

One explanation for assembly bonus effects in that experts learn during their interactions with non-experts, perhaps because they take on the role of "teacher". Serving in the role of teacher may lead high ability members to sharpen their own thinking. Another possibility is that the questions and inputs of more naive members encourage the expert members to unbundle the assumptions and rules they automatically use when dealing with issues and problems in their areas of expertise (Simon, 1979). This unbundling may increase the probability of discovering assumptions that warrant scrutiny and decision rules for which exceptions may be needed. For multidisciplinary teams, findings such as these suggest the counter-intuitive idea that performance is enhanced more when both experts in the problem domain and novices are represented in the team, compared to teams composed of experts only.

Team Performance

It is interesting to consider how diversity shapes the internal dynamics of teams and the consequences of diversity for individual team members, but ultimately team performance probably is the long-term consequence of most concern to organizations. Presumably, team performance partially determines the performance of the organization as a whole. A team's performance may also have implications for how the organization responds to the team and its members. For

example, members of a high performance team may he individually rewarded through team incentive schemes. High performance teams may also accrue power in the organization, which they can then use in negotiations concerning the team's autonomy and to garner resources-including human resources, time, money and access to information. Clearly, the question of whether diversity relates to team performance is an important one.

Jackson (1992) provided a detailed review of research that examined the relationship between team diversity and performance outcomes. As that review makes clear, the effects of diversity on team performance are complex. Different effects are found depending on which attributes are studied (task-related or relations-oriented) and on the nature of the task being performed. For most types of tasks, there is simply too little evidence to draw any conclusions about the effects of diversity on team performance. Tasks involving creativity and judgmental decision-making are the exception, however.

Creative decision-making refers to the activities groups perform when they are faced with tasks that require formulating new solutions to a problem and/or resolving an issue for which there is no "correct" answer. Many tasks assigned to multidisciplinary teams can be characterized as creative decision-making tasks in that novel products, services or processes are being designed and there may be two, three, or many solutions that would be equally effective. For these types of tasks, the available evidence supports the conclusion that team diversity is associated with better quality team decision-making (Filley, House & Kerr, 1976; Hoffman, 1979; McGrath, 1984; Shaw, 1981). This effect has been found for diversity of many types, including personality (Hoffman & Maier, 1961), training background (Pelz, 1956), leadership abilities (Ghiselli & Lodahl, 1958), attitudes (Hoffman, Harburg & Maier, 1962; Triandis, Hall & Ewen, 1965; Willems & Clark, 1971) and gender (Wood, 1987), and for top management teams diversity with respect to occupational background (Bantel & Jackson, 1989) and education (Smith et al., 1994).

Membership Stability

As already described, members of diverse teams often express feelings of greater dissatisfaction and the team as a whole is often less cohesive. In the longer term, reactions such as these might be expected to result in members leaving the team, either voluntarily or because they feel pressured to leave by other team members.

During the past decade, several studies have examined the relationship between team diversity and team turnover rates. Many of these studies were stimulated by Pfeffer's (1983) discussion of organization demography. Most support the assertion that diversity is associated with higher turnover rates: In particular, several studies have shown that age and/or tenure diversity correlate with turnover rates (Jackson et al., 1991; McCain, O'Reilly & Pfeffer, 1983; O'Reilly, Caldwell & Barnett, 1989; Wagner, Pfeffer & O'Reilly, 1984). In addition, diver-

sity in terms of college attended, curriculum studied and industrial experiences has been shown to predict turnover rates for top management teams (Jackson et al., 1991).

The higher turnover rates associated with team diversity have often been treated as a negative consequence of diversity. Under many circumstances, turnover can be disruptive to team functioning. Nevertheless, turnover can be beneficial, also. This is because, over time, the repeated exposure of team members to each other gradually results in the homogenization of their attitudes, perspectives and cognitive schemas; in the process, the team's creative capacity diminishes also. Thus, the turnover experienced by diverse teams may be a cloud with a silver lining that offers an opportunity for the continual addition of fresh ideas.

CONCLUSION

Diversity is a fundamental fact in today's business organizations, and it is the heart- of multidisciplinary teams. Even in the most traditional company, employees differ from each other in terms of tenure, technical knowledge, educational background and organization status. Furthermore, throughout the world, many organizations are experiencing increasing workforce diversity along dimensions such as ethnicity, gender, and age. These and other aspects of diversity can have profound effects on the way one feels about oneself, as well as how one feels and behaves toward other members of the organization.

In organizations that rely on multidisciplinary teams, the effects of diversity extend beyond individuals to the team as a whole. As this chapter has described, the empirical evidence clearly indicates that in the longer term, diversity partly determines team performance and membership stability. Therefore, as companies restructure to take better advantage of multidisciplinary teams-whether at the level of top management or on the shop floor-understanding the dynamics of diversity becomes increasingly important.

The complexity of diversity and its myriad consequences means that a complete understanding of the phenomenon awaits many more years of research. This research must begin to consider how multiple attributes *in combination* create the texture of a team's life. Furthermore, we must consider more carefully the interplay between the specific nature of a team's diversity and the larger context that surrounds the team's activities. Context includes the nature of the tasks to be completed, the technologies used to complete the task, as well as the organizational and societal histories and cultures that serve as the backdrop for team activities. Although not discussed in detail in this chapter, all of these contextual factors can shape the unfolding dynamics of diversity for a specific work team (e.g. see McGrath, Berdahl & Arrow, 1996; Cox, 1996; Nkomo, 1996; Triandis, 1996).

The complexity of diversity's effects surely means that organizations will never be able to manage multidisciplinary teams effectively simply by following a few

specified rules. For example, it is unlikely that researchers will ever produce meaningful answers to questions such as "What is the ideal composition for a seven-person team in country X working on task Y in an organization whose culture and climate can be describe as Z?" And even if researchers could provide answers to such questions (eventually), it would not he for a very long time. Given that diversity is already a fact of organizational life, and that teams are fast replacing individuals as the fundamental building blocks in organization structures, the practical task of effectively managing diverse teams will challenge many organizations. How should they proceed?

Faced with the complex and uncertain consequences of team diversity, the best advice for organizations may be to proceed in the mode of a learning, organization. A learning organization recognizes that current actions should he informed by all available information (e.g. the results of past research), but it also accepts responsibility for creating new knowledge through its own actions. In order to learn more about the special challenges and benefits of diverse teams, organizations that rely on diverse teams to carry out significant tasks should be prepared to monitor the internal dynamics and longer-term outcomes of its teams, and learn from their experiences. Furthermore, organizations should be prepared to experiment with alternative ways of structuring the task and with alternative team compositions, relying on the input of team members for feedback about successes and failures.

For example, Brewer and her associates (see Brewer, 1996) have investigated a technique called "cross-cutting" for structuring teams that requires the input of people with diverse areas of expertise. The objective of cross-cutting is to ensure that task-related attributes (such as expertise) are not correlated with relations-oriented attributes (such as gender) within the task force. Because this concept of cross-cutting is a relatively new one, however, precise recommendations for how to design cross-cutting teams cannot be made. Experimentation is needed. Suppose a task required the expertise of market researchers and product design engineers. In the organization as a whole, it may be that the market research unit is populated mostly by women, while the product design engineers are likely to be men. Brewer's research suggests that, in composing a task force, it would be helpful to avoid assigning two female market researchers and two male engineers to the task. A cross-cutting design would suggest having one male and one female for each area of expertise. This type of team design is predicted to result in low levels of intergroup differentiation and bias, and relatively high levels of cooperation.

Although it sounds promising, the effectiveness of cross-cutting team designs has not been demonstrated in the field. Therefore, if organizations choose to follow Brewer's recommendation, it would be prudent to monitor teams designed according to cross-cutting principles in anticipation of making design adjustments, as needed. For a specific organization operating in a specific cultural context, a learning-based approach to managing diversity within work teams is perhaps the only way to maximize the potential benefits of diversity while simultaneously minimizing the potential costs (see also Jackson, 1993).

Organizations that choose to adopt a learning approach may be most likely to succeed if they have in place managers with strong leadership skills. Team members often tailor their behavior based on cues from the leader in order to avoid jeopardizing their own personal status. Therefore, leaders have a disproportionate influence on team dynamics; through their own attitudes and behavior, leaders may amplify, nullify or moderate some of the natural consequences of diversity. They can shape informal norms and structure the processes used for decision-making.

Inept leaders may squander the potential benefits of diversity by not allowing adequate time for a full discussion to occur; they may support norms that stifle the expression of disagreement in general, or the expression of dissent by a minority faction in particular (e.g. see Bourgeois, 1980). If they do allow a team to engage in open disagreements, inept leaders may be insensitive to the importance of moving from disagreement to consensus through the construction of new and genuinely shared understandings (Ginsberg, 1990), and instead encourage compromises to which no one feels committed.

In contrast, skillful leaders know how to use conflict-inducing decisions aids, such as devil's advocates and dialectical inquiry, to temporarily diversify a homogeneous team (Cosier & Schwenk, 1990; Quinn, 1980). When necessary, they know how to reduce dysfunctional conflict through the exploration of unstated assumptions and values, and thereby speed up the learning process that is often needed before a team is able to craft satisfying resolutions (see Cook & Hammond, 1982). When conflict has been intense, regardless of whether it arose naturally or was induced, skillful leaders attend to the aftermath, ensuring that cohesiveness is restored.

In order to reap the benefits of multidisciplinary teams, managers will need to rely on all of the resources they have at hand, including: (a) the large body of social science research and theory, which can be used to develop a deeper understanding of the many possible functional and dysfunctional dynamics that can arise within diverse teams; (b) the methods used by learning organizations to generate new knowledge that has immediate local applicability, which include systematic experimentation and monitoring; and (c) the conflict management skills of their most effective leaders. Alone, each of these would be inadequate, but used in combination, they should provide adequate guidance to ensure the effective use of multidisciplinary teams. Taking a longer-term perspective, social scientists can draw upon these same resources to improve the base of knowledge that will be available in the future.

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