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What is This?
Emerging Theories of Communication in Organizations

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This article reviews recent theoretical developments in four areas of organizational communication that have a common concern with information processing: communication media choice, computer-supported group decision making, communication technology and organizational design, and communication networks. For each topic the article includes a review of current theory, an assessment of the empirical evidence to date, and proposals for further theoretical and empirical development. The wealth of scholarship in these areas in the last 5 years testifies well to the substantial contribution of information processing-related theories to a new core of organizational communication theory.

Reviews and critiques on the subject of organizational communication invariably have assailed the lack of theoretical infrastructure behind the myriad research reports. No single criticism has been echoed with such vigor as the fragmentation of the field, and no prescription for a cure has been forwarded so frequently as the advice to elaborate coherent theory (e.g., Euske & Roberts, 1987; Krone, Jablin, & Putnam, 1987; Porter & Roberts, 1976; Putnam & Cheney, 1983; Redding, 1979; Richetto, 1977; Rogers & Agarwala-Rogers, 1976). And, no injunction has broached so little remedy.

In the face of this purported theoretical wasteland, review essays have helped make sense of the burgeoning field by revealing a variety of integrative themes that unite diverse studies. For example, Krone et al. (1987) drew on Fisher’s (1978) classic view of the study of human communication to argue that the philosophical foundations of organizational communication research rest on four perspectives: mechanistic, psychological, interpretive-symbolic, and systems-interaction. Major research streams were categorized into one or more perspectives on

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the basis of their underlying assumptions and key communication concepts. Tompkins and Redding (1987) employed a two dimensional characterization of the field. Research since 1970 was described as composed of three “phases” labeled formulary-prescriptive, empirical-prescriptive, and applied-scientific, and three “orientations” classified as modernist, naturalistic, and critical. A related conceptualization is Hawes, Pacanowsky, and Faules (1987)”s description of three major schools of thought in the study of organizational communication: interpretivist, pluralist, and critic. Paradigmatic concerns are also echoed in the notion of research “traditions” elaborated by Putnam and Cheney (1983). The framework for their critical review of organizational communication research draws heavily on philosophical distinctions enunciated by Habermas (1971).

The issue of theory deficiency is confronted pointedly and rather pessimistically by Euske and Roberts (1987), who forego any attempt to focus on elusive organizational communication theory. Instead, their approach starts from the premise that communication underlies most organizational processes; therefore, the most relevant theory is organization theory itself. They review major traditions in organization theory and draw out their implications for organizational communication research. Their trek explores four familiar categories of traditional organization theory (classical, human relations, behavioral decision, systems), and three recent theoretical frameworks that treat organizations as dynamic processes that interface with their environments (resource dependency, population ecology, institutional). Tompkins (1987) similarly argues that organizational communication scholarship is derivative of organization theory. He further asserts, however, that when viewed diachronically, organizational theory itself can be shown to be derivative in its fundamentals from classical rhetorical theory.

Weick (1987:99) also asserts that communication is the essence of organization and that scholars of organizational communication should “sort through organizational theories and choose which ideas to pursue.” However, his contribution to improving the quality of organizational communication theory takes a different form. His treatise focuses on the theorizing process. He discusses in some detail the activity of theorizing and encourages scholars to engage this process. The essay concludes with prescriptions to “beef up” by increasing methodological rigor, “grow up” by taking scholarship seriously, or “give up” by seeking context-specific ideas rather than theory.

All of these approaches have merit as perspectives on the field. However, they have not as yet propelled us toward that decades-old but still elusive goal: the promulgation of new theory. The field of organizational communication is unlikely to benefit dramatically from development of another conceptual road map to compensate for the lack of theoretical infrastructure. The theory deficit must ultimately be addressed in the most direct way: theory development.

Thus, this article does not try to create yet another integrative framework for imposing some form of order on a diffuse field. Nor does this article provide a redundant review of the areas of inquiry in organizational communication. The field is extensively and capably reviewed in two recently published handbooks (i.e., Jablin, Putnam, Porter, & Roberts, 1987; and Goldhaber & Barnett, 1987). Instead, we focus our lens on those rudimentary elements of theoretical progress
that hold significant potential for further elaboration. What promising new models are emerging? How are derivative theories being beneficially employed? We concentrate our review on what can be done to advance these beginnings. Ultimately, we ask: “What can be done to generate theory rather than lament its absence?”

There are budding areas of potential throughout the study of organizational communication. Any review must be selective of topics in a field that has generated 38 chapters of review materials in two recent handbooks. We choose to focus on several areas that have in common a concern with an age-old issue in the study of both organization and communication: information processing—by individuals, groups, and organizations.

No concern with information processing can ignore the monumental changes that have taken place in information creation, compilation, transmission, and storage. The technological marriage of communications and computing has spawned new challenges for the management of organizational communication and new agendas for research. This subfield is a particularly rich one to mine. For years it was accurately characterized as data-rich but theory-poor. Recently, there has been a concerted effort to develop the theoretical infrastructure. This effort has led to very promising pre-theoretical models and theory development efforts.

The presentation is organized as follows. We begin with a look at how communication media are used for organizational information processing at the individual level. Our primary focus is a growing body of literature on individual media choice. This thrust is grounded in organizational information processing theory, structural symbolic interaction theory, social information processing theory, and social learning theory. We then turn to computer-supported information processing within groups. We particularly highlight an emerging model of computer-supported group processes that has roots in structuration theory. Our lens then shifts to two recently published models of organizational design and decision-making via new communication technologies. The final section focuses on communication networks. Our interest in this section is to illustrate how a communication-specific method can be used to investigate theory across a wide range of topics in organization and management.

**Individual Information-Processing and Communication Media**

**Media Richness Model**

The Media Richness Model of media choice in organizations has achieved considerable prominence in organizational communication. Daft and Lengel’s (1984, 1986) initial formulation of this model was based on organizational information processing theory (Galbraith, 1977; Tushman & Nadler, 1978). This approach focuses on ambiguity as a pivotal attribute in understanding communication activity and identifies uncertainty reduction mechanisms employed by organizations to cope with ambiguity. Daft and Lengel proposed that communication media can be arrayed along a continuum of media “richness” based on differing capacities to resolve ambiguity. Four criteria define relative media richness: speed of feedback, variety of communication channels employed, personalness of source, and richness of language used. Face-to-face is the richest communication medium, fol-
lowed by telephone, and written documents. The model proposed that individuals choose communication media whose richness matches the ambiguity level of the task. Task ambiguity was defined according to criteria articulated by Perrow (1970).

Trevino, Daft and Lengel (1987) modified the original information-processing based model of media richness to conform more closely to the theory of Structural Symbolic Interactionism (Stryker & Statham, 1985). This theory asserts that interpersonal interactions are symbolic because individuals use interactions as the basis for constructing meaning. The revised media richness model proposed that certain media carry symbolic meaning that transcends the explicit message (e.g., written media symbolize formality). In McLuhan's (1964) terms, the medium is the message. The effect of symbolic meanings is to deflect media choice behavior away from the rational matching of task ambiguity and media richness in some situations. For example, a need to convey formality may occasionally override the need to use a richer medium to deal with an ambiguous communication situation.

The revised model also added electronic mail to the richness continuum above written documents and proposed three situational constraints to rational matching: geographical separation of communication partners, time pressures emanating from the task, and the unavailability of a critical mass of communication partners in computer-based networks.

A second key change was the level of analysis for task ambiguity. The initial formulation of the model centered on an individual's job as a whole and was measured at that level. The later model focused on the individual communication interchange as the unit of matching rather than the whole task. This change achieved a conceptual consonance with early communication research that argued that people match media choices to communication requirements for a specific interchange based on "social presence" of the medium and the complexity of the communication task (Short, Williams, & Christie, 1976). Social presence was defined as the sense of psychological closeness achievable between partners using the medium. As such, it bears some resemblance to the concept of media richness.

A third change that has implications for the model is the finding that high performing managers were more media sensitive than low performing managers (Daft, Lengel, & Trevino, 1987). That is, high performing managers were more likely to match media richness to communication task ambiguity. This finding has led more recently to a more prescriptive orientation to the approach (Lengel & Daft, 1988).

The media richness model has generated considerable research over the years. Three studies directly tested the media richness ranking, and all found support for the ranking of traditional media. Trevino, Lengel, Bodensteiner, Gerloff, and Muir (1990) also found support for the ranking of electronic mail, but in the two other studies (Schmitz & Fulk, 1991; Fulk & Ryu, 1990) electronic mail was ranked lower than predicted. Both studies also reported that the standard deviations for the mid-range media were very large relative to very small differences across means and that considerable variation in richness ratings was unaccounted for by the richness continuum.

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The matching hypothesis has also been tested repeatedly with conflicting findings. Five direct field tests of the initial formulation were non-supportive (Markus, 1988; Rice, Grant, Schmitz, & Torobin, 1990; Rice, Hart, Torobin, Shook, & Tyler, 1989; Rice & Shook, 1990; Jones, Saunders, & McLeod, 1988-1989). A sixth study employed the original formulation of task ambiguity, but tested the moderated matching hypothesis by measuring the three identified situational contingencies. The results supported only the situational effects model, but not the core task ambiguity portion (Steinfeld & Fulk, 1989). Nevertheless, Rice and Shook’s (1989) meta-analysis of 40 early media studies (conducted prior to the development of the media richness model) lends some credence to the matching notion. Their analysis showed that higher level managers, who presumably have more ambiguous tasks (Daft & Lengel, 1984), more frequently used face-to-face communication, while lower level managers more frequently used the telephone and written media. Jones et al. (1988-89) also reported heavy use of rich media by upper versus middle managers. However, they also noted that information rich sources (observational hours, social meetings) were used extensively by lower level managers.

Tests of the revised model, which focuses on communication incidents rather than overall tasks, offer more hope. Three studies using hypothetical communication incidents found support for the revised model (Trevino et al., 1987; Trevino et al., 1990; Daft et al., 1987—also reported in Russ, Daft, & Lengel, 1990). One field study of actual use was supportive (although the sample size was only 13 managers; Nosek, 1989), but one other field test was not (Reinsch & Beswick, 1990). Nevertheless, a number of studies of electronic mail per se, a relatively low richness medium, have shown that it is frequently used for tasks that are high in socio-emotional content (Hiltz & Turoff, 1978; Kiesler, 1986; Kiesler, Siegel, & McGuire, 1984; Phillips, 1983; Rice & Love, 1987; Steinfeld, 1986).

To summarize, the results are more supportive for (a) the media richness continuum as applied to traditional rather than newer media, and (b) the revised model that targets only communication activities rather than whole tasks. Even within these categories, however, the theory has predicted in some situations but not others. There are contrary findings that cannot be explained within the premises of media richness theory.

Social Influence Model of Technology Use

One attempt to cope with the accumulating body of anomalous findings has been the development of a contrasting model for newer communication media. The Social Influence Model of Technology Use (Schmitz, 1987; Fulk, Steinfeld, Schmitz, & Power, 1987; Fulk, Schmitz, & Steinfeld, 1990) begins with the alternative assumptions that perceptions of electronic media vary across individuals in systematic ways and that this variance is as important for media selection as is any constant component identified in the media richness model. Drawing on premises from Social Information Processing Theory (Salancik & Pfeffer, 1978), Social Learning Theory (Bandura, 1986), and Symbolic Interactionism (Mead, 1934), the model proposes that media perceptions (such as richness) are, in part socially constructed. The processes involve at least four forms of social influ-
ences on both media perceptions and media use: (a) direct statements by coworkers in the workplace, (b) vicarious learning, (c) norms for how media should be evaluated and used, and (d) social definitions of rationality.

The theory predicts that there will be considerable variation in the perceptions and use of communication technologies and that this variation will be linked to the social processes in play within the organization. In addition, because work groups are important sources of social support and regular interaction, there will be similar patterns of media use within groups (regardless of task ambiguity) and different patterns of media use across groups. Finally, media choices may not be objectively rational: that is, mismatching will occur where social forces come into play to influence media selection.

There is some evidence to support this model. First, five studies of closely connected co-workers (including supervisors) have found convergence in media perceptions (Svenning, 1982) or media use (Nosek, 1989; Rice, Grant, Schmitz & Torobin, 1990; Rice & Shook, 1989; Shook, 1988) that cannot be explained by task demands. Second, four studies have predicted individuals’ media attitudes and/or use with measures of social influence. Individuals’ perceptions of electronic mail richness were predicted by their communication network partners’ perceptions of electronic mail usefulness (Fulk & Ryu, 1990; Schmitz & Fulk, 1991) and by network partners’ actual use (Schmitz & Fulk, 1991). Individuals’ electronic mail use was predicted by communication network members’ actual use (Schmitz, 1987; Schmitz & Fulk, 1991), and by the proportion of coworkers who used electronic mail (Fulk & Steinfield, 1989). Third, in an interesting field test of the social influence model’s proposal that variation in richness perceptions is linked to the social context, Ryu and Fulk (1991) found that perceptions of electronic mail richness were more similar in cohesive work groups than in noncohesive groups.

Overall, the direction of findings is supportive of the model. However, the largest explained variances were reported in studies that correlated measures obtained from the same information source. It is difficult to determine the extent to which correlations were upward-biased by common method variance. Nevertheless, the theory was also supported by some studies not subject to this possible bias (Schmitz & Fulk, 1991; Schmitz, 1987; Rice et al., 1990). In fact, these studies may have understated relationships because measurement error from the different data sources may have attenuated correlations. These most conservative tests of the model showed only moderate amounts of explained variance.

Directions for Future Development

The mixed findings for media choice models have two key implications. First, the supportive findings suggest a degree of empirical validity sufficient to warrant investing additional thought and research toward developing these models into theoretical statements on organizational communication. Second, the number of anomalous and non-supportive findings as well as the only moderate levels of explained variance indicate that there is room for continuing improvement to the models posited to date. This section suggests constructive directions for concep-
tual development toward the goal of ultimately constructing one or more testable theories.

The predictive validity of these models can be enhanced quite readily by a more robust conceptualization of the influences on choice making. Beyond rational and social influence factors, other important forces operate at both the individual and organizational level. For example, Rice and Case (1983) have noted that individuals have “media styles,” such that some media are favored regardless of circumstances. Other communication style factors hold potential importance as well, such as telephone apprehension (Reinsch, Steele, Lewis, Stano, & Beswick, 1990), communication competence (Monge, Bachman, Dillard, & Eisenberg, 1982), or general communication apprehension (McCrosky, 1982). A model of individual choice must ultimately reckon with individual difference factors as key contributors to behavior.

Media choice theories must also come to grips with powerful forces exerted at the organizational level—including culture, organizational policies, and resource constraints (Fulk & Schmitz, 1988). For example, one consideration that presents itself is how costs are allocated across the different media. If, as is often the case, the amount users are charged varies dramatically by medium (e.g., the telephone is a free good but electronic mail is not), usage by individuals should vary in ways more predictable by budgets than richness considerations. Organizational policies may explicitly define and constrain appropriate use (e.g., written correspondence requires supervisor approval but electronic notes do not). Organizations also tend to develop cultures about media use. Some firms have strong verbal cultures, for example, whereas others focus on documentation and written memos.

The need to construct more robust conceptualizations is not simply a question of adding an infinite number of predictors. Rather, the need is to develop multi-level theory that encompasses a variety of interdependent processes. The challenge is to refine our models of the core processes involved. One starting point is the concept of media richness. In our search for scientific parsimony, we may have missed opportunities to capture the multiple faces of richness. A key question remains unanswered: How do individuals weigh media ratings on the four proposed dimensions of media richness? Current formulations are silent on the mechanisms by which the dimensions are combined to produce a medium’s position on the richness continuum. And, no provision is made for situational influences on cognitive processing of richness stimuli. It is easy to imagine situations when speed would be paramount and others where personalness was the prime criterion. Or choice may depend on multiplicative interactions among the subdimensions. The dimensional character of richness deserves theoretical and empirical attention. Oversimplification to a global concept belies the rich panorama of complex cognitions that are implicated in media behavior.

An additional direction for development rests on the concept of task ambiguity. The revised media richness model targets individual communication activities for examination. There are several compelling reasons to expand the model to consider the level at which the theory was originally formulated: global tasks. First, one issue facing many organizations that implement new media is not which communication activity the new medium is used for, but whether the new medium is...
used at all. The literature is replete with examples of new media systems that have been adopted and implemented by organizations but which are not used by the intended users (Panko, 1984). Second, global task attributes such as analyzability are core variables in organization theories. A global task model of media use permits integration of media use models more directly into existing organizational theory and research. Third, research on media style suggests that such style may transcend the imperatives of communication activities and create overall patterns of use that are not predicted at the level of the communication activity. Fourth, a global task perspective would fill the gap in the organizational literature between the media richness model and issues of how information processing in organizations is linked to information richness requirements at the broader organizational level (e.g., Huber & Daft, 1987).

A more robust conceptualization would also embed media choice in a more complex net of causal relationships. What are the effects of media choice? In current formulations, the process stops when media choices are made. How does media choice influence other important organizational communication processes? How does media choice in one situation impact media choice in other situations? The independent and intervening effects of media choice on organizational information processing are important areas of future inquiry. And, such consideration should go beyond concern with whether the choices were correct. If media choice models are to hold an important place in the new theory-driven field of organizational communication, they must reflect the complex, dynamic, and sometimes nonrecursive processes of communication in organizations (Monge, 1990). Study of the consequences of media choice would also have an additional benefit of helping to answer questions that plague this line of research overall: Why study media choice? Does it really make an important difference in organizational or individual functioning? Only carefully constructed theory and research can provide the data needed to provide honest answers to such questions.

A final concern is that media choice theories have largely developed in a vacuum relative to the field of communication. Communication media use in its most essential form is communication behavior. It involves initiation, regulation of interaction, relational communication, message exchange, persuasion, and a host of other communicative processes. Media choice occurs within well-defined communication contexts, such as superior-subordinate interaction, communication network linkages, communication cultures, and communication structures. Media choice cannot escape the influence of communication processes, structures and contexts. Media choice models must take another important step forward. Theory development must occur under the guidance of a wealth of findings from existing communication research. Only then can these models vie for the claim of being real theories of organizational communication.

Implications for Managers

Lengel and Daft (1988) provide six prescriptions for practicing managers based on the Media Richness Model: (a) send non-routine and difficult communications through a rich medium, such as face-to-face; (b) send routine, simple communications through a lean medium such as a memo; (c) use rich media such
as discussions and meetings to make your presence felt throughout the organization; (d) use rich media for implementing company strategy; (e) use multiple media on critical issues to make sure your message is heard correctly; (f) evaluate new technologies critically instead of assuming that they are appropriate for the entire range of managerial tasks.

The Social Influence Model of Technology Use suggests some other considerations. First, consider the receiver of your message. Some individuals are most attentive to ideas put in writing, while others work primarily face-to-face. Second, think carefully about organizational norms regarding what things should be formalized and written down and what tasks can be accomplished verbally. Third, when introducing new communication systems into the firm, recognize that how individuals perceive and use them will not simply be a function of the technology itself, but also how it is evaluated in the social system. Encourage informal help sessions and peer training; use opinion leaders to support the system in the social network. Fourth, remember that organizational policies (e.g., budget) and managerial pressures (e.g., working styles) have important influences on media use. Careful attention to the premises of the two theories can improve communication effectiveness in the managerial role.

Information Processing in Technology-Supported Decision Making Groups

The proliferation of tools for technology-assisted collaborative work has sparked an active and vital area of research on how groups use communication technology for information processing and decision making. Johansen (1988) identified 17 types of technologies that could support group work, ranging from coordinated writing software to sophisticated group decision support system technologies. Research can be found under a variety of labels, including group decision support systems (GDSS), groupwork, computer-supported cooperative work (CSCW), collaborative work, electronic networks, group support systems, collaboration support systems, and electronic meeting systems. In the midst of this empirical energy, one theoretical model has emerged recently, the Theory of Adaptive Structuration in the use of GDSSs (Poole & DeSanctis, 1990). This model is grounded in structuration theory (Bordieu, 1978; Garfinkel, 1978; Giddens, 1979) and its recent application to group decision making (Poole, Siebold, & McPhee, 1985). The new theory focuses specifically on the use of GDSS.

The promulgation of this theory is particularly timely. The research literature linking GDSSs and group processes can be characterized as a potpourri of diverse and conflicting findings. In the absence of strong theoretical guidance, the findings have not accumulated in conceptually sensible ways. Reviewers are forced to seek regularities in research results based on such technical factors as setting (lab versus field), and type of GDSS technology employed (e.g., local area networks versus decision rooms; Dennis, George, Jessup, Nunamaker, & Vogel, 1988).

The Theory of Adaptive Structuration can serve several valuable functions. First, it can help make sense of the jumble of research findings to date on a conceptual level. It can direct researchers toward patterns to seek in the data and provide a rationale for these patterns. It can also potentially resolve inconsistencies in results across studies and help to account for anomalous findings. Second, the the-
ory can provide the basis for a priori hypothesis development leading to generalizable conclusions. Third, the theory makes an important link to the broader field of organizational communication by its roots in both communicative theories of group decision-making and existing social theory on structuration. Study of GDSSs then becomes study of organizational communication processes in their most fundamental sense.

Our review begins with an overview of recent research on the effects of GDSSs on groups structure and process. The diversity of findings is evident. We then turn to the Theory of Adaptive Structuration, including its rationale and basic premises. This section is followed by directions for future development. We conclude with suggestions for practicing managers.

Before a detailed discussion of this theory and research, a brief description of the nature of GDSS systems is in order. GDSSs vary tremendously in their capabilities and in the communication patterns they can support. Thus GDSS uses and effects are dependent on the particular combination of GDSS features that are available to groups. More detailed discussions of GDSS features are available in Dennis et al. (1988), DeSanctis and Galuppe (1987), and Huseman and Miles (1988).

**Group Decision Support Systems Concepts**

A GDSS provides communication, computing, and decision aids to support decision making in groups. DeSanctis and Galuppe (1987) identified three levels of GDSS, based on the sophistication of decision support. Level 1 systems provide electronic mail capabilities within the group, facilities for displaying ideas, and mechanisms for compiling votes and tabulations under conditions of anonymity. They are primarily communication systems designed to improve the rate of information flows in the decision process. Level 2 GDSSs supplement the basic technology with a variety of decision support tools: PERT charts, decision trees, budget allocation models, probability assessment models, social judgment models, or Delphi, for example. Level 3 GDSSs impose structure on communication patterns; they control the timing, pattern, and even the content of information exchange. They can restrict the group to certain linkages among members, and can alter the centrality of each node (person). They also offer a range of rule-related functions, including a rule-writing facility, maintenance of a rule base, and automated parliamentary procedure or Robert’s rules of order. They can even include expert advice on what rules should be applied to structure interaction. A Level 4 GDSS has been proposed by Huseman and Miles (1988), which would apply artificial intelligence or expert systems to the decision process.

A recent survey (Straub & Beaucclair, 1988) revealed that 10% of firms sampled had implemented decision rooms, 19% were using computer conferencing for decision making, and 4% reported using teleconferencing with video and audio links. As these figures indicate, GDSS is predominantly used for level 1 and level 2 systems. Similarly, most academic research has been concentrated on these two lower levels of system support.
Recent Research on Group Decision Support Systems

Research reported through 1988 is capably reviewed by Dennis et al. (1988). And, studies published since that time are based on dissertations included in that review. Thus, the Dennis et al. article provides a virtually up-to-date review. Dennis et al. (1988) note that few empirical studies have been conducted and that the results from these studies are inconsistent. The numbered points below summarize Dennis et al.’s (1988) review. These are organized here for conceptual purposes into sections of technology and group process, technology and group outcomes, and context and group process. Additional considerations uncovered in our review are also appended at the end of each section.

Technology and Group Process

1. Equality of participation. Three studies demonstrated more equal participation across group members in GDSS supported groups, but four studies reported no differences in patterns of participation between GDSS and non-supported groups.

2. Decision consensus. Three studies found that GDSS groups were less likely to achieve consensus, and one study found no differences between the types of groups.

These findings are supplemented by several other concerns regarding group process. First, reliance on this technology limits the use of social cues in meetings (Kull, 1982; Watson et al., 1988). Nevertheless, other forms of computer mediated communication have reported a modicum of socio-emotional content (Rice & Love, 1987; Steinfeld, 1986). The limitation on social cues poses a lesser problem for established groups than for those forging new relationships. Second, higher degrees of conflict have been reported in GDSS groups (Gallup, DeSanctis, & Dickson, 1988). Third, Jarvenpaa, Rao, and Huber (1988) found no differences between GDSS and non-supported groups on perceived equity of participation. Perceived equity was defined as “the degree of correspondence between (a) the time each spent talking and (b) each person’s contribution to the task at hand” (653).

Technology and Group Outcomes

3. Decision quality. Six studies reported higher decision quality in GDSS supported group, but four studies showed no differences in decision quality between GDSS and non-supported groups.

4. Decision speed. Five studies found that GDSS groups were slower than non-supported groups, and two found no differences in decision speed between the two types of group.

5. Decision satisfaction. Two studies reported increased satisfaction with GDSS, one reported decreased satisfaction, and one reported no differences in satisfaction between GDSS and non-supported groups.

6. Satisfaction and effectiveness in field settings. In five case studies respondents reported high satisfaction and effectiveness with GDSS.

Additionally, GDSS users have indicated that the decision-making process is less understandable and project issues are perceived as more trivial (Watson, De-
Sanctis, & Poole, 1988). Turoff and Hiltz (1982) reported a negative relationship between two outcome variables: consensus and quality of solutions. Consequently, they recommended that these goals not be pursued concurrently or with equal emphasis. Jarvenpaa et al. (1988) found that non-supported groups exhibited more “communication thoroughness,” defined operationally as the number of thoughts recorded, number of verbal remarks and electronic messages exchanged, and the proportion of task (as opposed to socio-emotional) remarks exchanged.

**Context and Group Process**

The relationship between contextual variables and group processes has drawn less empirical attention. Gallupe et al. (1988) examined group processes in a Level 1 GDSS under high and low task difficulty. They found the GDSS to improve decision quality under both conditions, but reported a stronger effect at higher levels of difficulty. Easton, George, Nunamaker, and Pendergast (1990) used a different approach by comparing the effects of two GDSS systems on the same task. They concluded that GDSS systems are highly task sensitive—specific features of a GDSS technology must be appropriately matched to task characteristics to ensure group performance.

To summarize, a common set of factors have been investigated in GDSS research. More consistency in findings exists for consensus and decision speed: the majority of studies found that GDSS groups were slower and less likely to achieve consensus. The total number of studies is still so small, however, that no definitive conclusions can be drawn. The mixed findings for equality of participation are less conclusive than equalization effects already reported for teleconferencing (Short, Williams, & Christie, 1976) and computer conferencing groups (Rice, 1984). Regarding decision quality, the one conclusion that can be drawn is that GDSS groups produce decisions of no less quality than non-supported groups. In the light of the espoused goals for improved decision-making via GDSS, this claim is rather disappointing.

**Theory of Adaptive Structuration**

Poole and DeSanctis (1990) argue that the inconsistency across findings derives from the search for technology effects in the absence of understanding how groups appropriate and use GDSS. Technological effects arise not from the technology itself but from the choices that group members make about what features of the technology to use and in what fashion. These choices are intimately linked to ongoing group dynamics. Poole and DeSanctis claim that the complex interaction of technology and group processes is not captured adequately in effects-oriented GDSS research. This research tends to objectify technology by treating it as independent of the user. Research also has decontextualized technology by ignoring the situations in which it is used.

Objectification and decontextualization conceal the social nature of technologies. Continually bombarded by such discourse, we forget that users constitute and give meaning to technologies. Until applied by a

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user in a specific context, a GDSS or any other technology is simply
dead matter. (Poole & DeSanctis, 1990: 178)

Their theory presents an alternative conceptualization of information and deci-
sion processes using GDSS as emergent, dynamic, self-reflective, and socially
structured. Fundamentally, they argue, technology use is a social process invol-
vying the construction and recreation of context and social world. Their theory is
designed to eloquently capture interactions among technology, context, group pro-
cesses, and social structure.

The Theory of Adaptive Structuration was developed from three foundations.
The first is a series of studies of information exchange processes in GDSS (Poole
& DeSanctis, 1987; Poole & DeSanctis, 1989; Gallupe, DeSanctis, & Dickson,
1988; Watson, DeSanctis, & Poole, 1988; Poole, Holmes, & DeSanctis, 1991).
The second contributor is a coordinated trail of conceptualization and research on
decision development in small groups (Poole, 1981, 1983a, 1983b, 1985; Poole &
Roth, 1989a, 1989b). The third prong is broader social theory on structuration
processes (Bordieu, 1978; Garfinkel, 1978; Giddens, 1979; Poole, Siebold &
McPhee, 1985). The net result is a theory of structuration in GDSS supported
decision-making groups.

The Theory of Adaptive Structuration views the group decision-making pro-
cess as one of information exchange that occurs over several stages. During these
stages groups go through predictable phases in patterns of interaction as they con-
duct their ordinary and essential social practices. The social practices include
such familiar behaviors as decision making, socializing, establishing power rela-
tions, and the like. Group structure is a dynamic entity that varies as a group en-
gages in social interaction. The key to this dynamism can be found in the concept
of structuration, which refers to “the process by which systems are produced and
reproduced by members’ use of rules and resources” (Poole & DeSanctis, 1990:
179). For example, the rule that more senior persons are deferred to leads to pro-
duction of a social system with a specific pecking order. Rules and resources are
the essence of structure. Thus, structure is both a medium and an outcome of ac-
tion. In sum, a system is the group itself, structure is the rules and resources that
sustain the system, and structuration is the process of applying structure to create
and recreate systems.

A GDSS is designed to assist groups in converging on a choice as they progress
through their decision phases. As such, the goal of a GDSS is essentially that of
altering the communication structures that develop over time. The degree and
type of such structural alteration will depend not only on what technical features
are available (e.g., Level 1 versus Level 3) but also whether these features are em-
ployed, how they are modified in their employment, and the degree of control
users are able to exert over use of the GDSS. Poole and DeSanctis (1990:179)
ote:

The possible impact of GDSSs and other social technologies can be un-
derstood in these terms: they provide rules, such as voting routines, and
resources, such as databases, which can be used by groups in the struc-
turing process. What is important in determining GDSS effects is not
the hardware or software per se, but the structures this technology promotes in the group.

The theory highlights four key relationships. These are portrayed in Figure 1. The first is how dimensions of GDSS technology (e.g., GDSS level, asynchronous vs. synchronous meeting support, degree of member control of the system, degree of structure imposed on the group by the GDSS, and face-to-face versus dispersed meeting support) affect how groups use the GDSS. The second is how dimensions of context (e.g., nature of the group's task, group size, degree of agreement on values) affect how group structures (rule and resources) are used. Third, use of technologies and group structures themselves produce what Poole and DeSanctis call "appropriation processes," defined as the particular combination of structural features used by groups in their practices (e.g., faithful or ironic use, attitudes toward GDSS, level of consensus). Appropriations in turn affect group outcomes. The key distinguishing feature of this model is that in order to understand technology effects, one must first understand how the technology is used by groups in the pursuit of their own social practices.

A number of specific predictions can be derived from this theoretical infrastructure. To illustrate, Poole and DeSanctis propose: "Appropriation of the GDSS depends on the behavior of the group leader, particularly his or her willingness to act in a manner consistent with the spirit of technology" (187). This prediction relies on an understanding of how leadership is reciprocally linked to both group processes and technology use. Compare this prediction to the usual hypotheses about GDSS and appropriations such as level of consensus. The typical study tests whether GDSS-supported groups are more or less likely to reach consensus, without consideration of leadership, group processes, or how the group chooses to use the particular configuration of technological features available.

One article has attempted a direct test of portions of the adaptive structuration model. Poole, Holmes and DeSanctis (1991) compared baseline, structured manual, and GDSS groups. They found that the structured protocol affected group process, but that GDSS technology had an effect beyond structure on both conflict level and conflict management behavior. However, GDSS use did not affect change in consensus. Poole et al. also found that groups used GDSS differently. About half of the groups adapted the GDSS to produce positive impacts on conflict management, and the other half adapted the technology in ways that would not promote productive conflict management. Overall, the results supported the proposition that group use of technology mediates the impact of technology dimensions on conflict interaction and outcomes.

Directions for Future Development

A major requirement for research is to conduct studies in field settings to increase the generalizability of GDSS studies from the laboratory to management. Most studies report that GDSS groups take more time to reach a decision than a conventional group. This finding is particularly disturbing in light of Huber's (1984) conclusion that groups will need to reach decisions more quickly. An alternate explanation, however, is that GDSS groups require more decision making time due to unfamiliarity with the technology, or a lack of sophistication of the
GDSS itself (DeSanctis & Gallupe, 1987; Hiltz & Turoff, 1981). Most GDSS studies have been conducted in the laboratory setting using student subjects. The studies are further limited in that the groups are temporary and the tasks are unfamiliar. It is essential to determine how managers respond to this technology, particularly at policy levels of the corporation.

A second line of research concerns the effects of GDSS on leadership. Equalization of participation may be welcomed by low status members, but challenged by those of higher status. The very process of GDSS shifts emphasis away from individuals and towards ideas (DeSanctis & Gallupe, 1987). Although decision support tools may actually undermine human leadership (Turoff & Hiltz, 1982), this problem may be neutralized by supplementing a GDSS with face-to-face interaction (Poole, Holmes, & DeSanctis, in press).

A third suggestion is to identify group structures that emerge over time in GDSS-supported groups during the process of structuration. Previous GDSS research has largely focused on context, technology, process, and outcomes. Expectations of structural alteration have roots in research on other forms of support for group interaction. Eveland and Bikson (1989) studied the emergence of group structures in large, electronically supported versus nonsupported task groups in a field setting. They found that the electronically supported group developed an overlapping coordinative committee structure not found in the non-supported group. The coordinating committees had fluid structures, and there was less continuity of leadership compared to the nonsupported groups. Level 1 GDSS systems are only somewhat more sophisticated than the system described by Eveland and Bikson. Level 1 systems offer electronic and decision support with minimal constraints to communication patterns. Thus, these systems may also facilitate the development of new structural mechanisms by providing communication channels sufficient to permit such overarching matrix-like communication patterns.

Eveland and Bikson’s (1989) research also calls attention to group size as an important contextual variable. Their groups contained 40 persons. Much GDSS research is conducted using very small decision-making groups (3 to 7 persons). The literature on group interaction shows important effects of group size on such factors as participation rates, development of coalitions, and ability to achieve consensus—many of the same variables of interest to GDSS researchers. What
happens to technology supported groups when the decision-making unit is large versus small? Poole et al. (1991) compared 3- and 4-person groups, but no systematic study has been made comparing these small teams to much larger groups. There are many types of task forces and teams in organizations whose membership exceeds the group sizes studied to date in GDSS research. And, GDSS is able to support larger groups by minimizing coordination and communication logistics (Dennis et al., 1988). Given the known effect of group size on group processes, GDSS research cannot be effectively generalized to larger groupings. At the same time, however, Huber (1988) has argued that GDSS meetings will require fewer participants. Clearly, the complex interaction of GDSS support, group structuration, and group size is worthy of future investigation.

Other contextual factors also should be investigated as contributors to use of group structures. For example, the introduction of anonymity to brainstorming and polling may well be implicated in group dynamics. Studies of computer conferences have found considerable differences in interaction patterns in pen-name or anonymous forms of electronic interaction (e.g., Hiltz, Johnson, & Turoff, 1986). Choice shifts may be a particular concern when polling is done under conditions of anonymity.

Finally, use of structuration premises in GDSS research requires careful attention to design and conduct of research. Designs intended to uncover straightforward technology effects may prove to be of little benefit in tracking the processes involved in production and reproduction to the social system. Structuration is an on-going communication process that can be assessed most faithfully by processual methods. Research must capture and analyze patterns of interaction across time.

**Implications for Managers**

Group decision support systems will become more prevalent in American business in coming years. These tools offer substantial promise in managing the information needs of a complex, rapidly changing environment. Firms considering an investment in this technology, however, should be reminded that GDSS is no panacea. These systems are still relatively unsophisticated, and require extensive employee training to access their full potential. Additionally, existing systems offer very different combinations of features; although this helps explain the difficulty in replicating GDSS study results (Poole, et al., 1991), it can vastly complicate the MIS manager’s job at time of implementation.

Different decision support tools can contribute to different aspects of the decision-making process: some features may be more useful for brainstorming, for example, whereas other features facilitate quality of decision processes. Thus, an ideal system will include a variety of software tools, capable of addressing numerous types of tasks and groups sizes (Easton, et al., 1990). Conversely, an inappropriate matching of software to specific tasks can substantially inhibit a group’s effectiveness.

A successful implementation will devote equal attention to non-task related issues in using GDSS. Existing features of social systems, such as status hierarchies, leadership, communication patterns, and norms for conflict management
may be incompatible with certain GDSS structures. If so, these systems may be rejected before they have had a chance to produce positive results. Conversely, to the extent that GDSS features support existing social patterns, they may thrive.

**Information Processing and Organization Design**

Alterations in information-processing capabilities arising from innovations in communication technologies pose important challenges for organization design theory. The rather diffuse, conflicting, and generally “messy” set of empirical findings on technology impacts stands in sharp contrast to the order and coherent logic of information-processing theory. Yet, this theory and research ultimately must be integrated. And, as Huber (1990) notes, the pressure for such integration is growing at an exponential rate as new technologies proliferate widely and embed themselves more deeply into core organizational processes. A number of scholars have identified organization design issues surrounding new information technology (e.g. Keen, 1990; Malone & Smith, 1987-88). Two of the more developed models are described below.

**Design of Research & Development Organizations**

Allen and Hauptman (1987; 1990) draw on information-processing premises to create a model of organizational structure space. The model portrays three parameters that determine the relative appropriateness of two alternative organization forms (functional versus project) for R&D organizations. The first parameter is the rate of change of technological knowledge in R&D. A dynamic knowledge base exerts pressures toward the specialty-oriented functional structure in order to facilitate communication and up-to-date knowledge transfer among specialists. The second parameter is task duration. For a short project, project teams may be appropriate even if knowledge is changing rapidly, because the period of isolation from the functional cohort will be brief. The third dimension is task interdependence. The coordination needs arising from interdependence across specialties demand a project structure.

How will information technologies affect the model? Allen and Hauptman (1990) hypothesize that communication and information technologies will facilitate knowledge transfer among technical specialists. Scientific communication can be facilitated by document search and retrieval systems, expert systems, and electronic forums. These systems also support links between individual contributors and technical gatekeepers, who are key intermediaries in the knowledge transfer process. The net effect is that communication systems can substitute for some features of the functional organizational structure.

A second hypothesis is that communication and information technologies support coordination across interdependent specialties. For example, project status and control can be facilitated through the use of hierarchically organized bulletin boards and project coordination software. These systems permit specialists to remain in their functional divisions and achieve coordination on project activities.

The impact of information technologies is to modify the organizational structure space. Functional structures can be effective in more situations if the organization supplements the structure with project coordination systems; project teams
can be used more frequently if team members have access to communication channels to their individual specialties. The net effect is to create a larger area of the space in which organizations can avoid the vexing trade-offs between functional and project goals in R&D.

This new model has not as yet been empirically evaluated. However, a variety of studies bear upon portions of the model. For example, use of computer-mediated communication has been shown to lead to sharing of technical expertise among scientists in such diverse fields as oceanography (Hesse, Sproull, & Kiesler, 1990, cited in Finholt, 1991), geophysics and geology (Fulk, Schmitz, Ryu, & Steinfeld, 1989), computer science (Finholt, 1991), and social science (Bikson, Eveland, & Gutek, 1989).

Studies of technology-assisted scientific collaboration also have implications for the model. Bikson et al. (1989) investigated the role of electronic mail in collaborative work among scientists at the RAND corporation. They found that the technology helped facilitate communication across dispersed groups and encouraged multiple group memberships. The effect did not arise without costs, however. Bikson et al. noted that use of the new communication channel across groups also increased both the complexity of the work and pace of group interaction. These consequences created other pressures for the collaborators, particularly on the social dimension. Bikson et al. remark that technology-supported collaborators need to devote “creative attention to the social variables that affect multi-person tasks” (11).

Kraut, Galegher, and Egido (1987-1988; 1990) developed a stage model of scientific collaboration. The initiation stage is characterized by getting connected with collaborators. The execution stage includes planning and executing tasks and involves processes of information-sharing, coordination, and establishment of interpersonal trust. The public presentation stage focuses on relative ownership of task outcomes and the development of an understanding of what to present. Kraut et al. then argue that the diversity of goals across the different stages of the process calls for multiple and varied collaborative tools, including at the minimum: (a) support for individually performed activities, (b) protocols that facilitate integration of individually accomplished products, and (c) technologies that permit collaborators to work jointly “as easily as if their offices were next door to each other” (55). Kraut et al.’s model highlights that “the establishment and maintenance of a personal relationship is the glue that holds together the piece of a collaborative research effort” (53). They argue pessimistically that current technologies have been largely unsuccessful because they focus primarily on task completion without supporting personal relationships.

Fulk, Schmitz, Ryu, and Steinfeld (1989) investigated the use of electronic mail for scientific communication in two dispersed R&D centers. The centers employed functional structures with no project teams. Electronic mail was used heavily by research managers to coordinate and manage multifaceted research efforts. The main effect was on speed and frequency of communication with other departments, rather than on the creative dimension of the research projects. Company records indicated a shortened project completion cycle due primarily to removal of barriers to communication. These results seem consonant with Allen &
Hauptman’s (1990) hypothesis that communication technologies can serve coordination purposes and support a viable functional structure under conditions of task interdependence.

This study also found that those scientists identified as technical gatekeepers were heavier users of the technology and reported stronger effects of the technology on all aspects of their work. Even non-gatekeepers, however, reported positive effects on their ability to communicate with key research partners and gatekeepers both on-site and in other corporate locations.

In short, though no direct tests of the model exist, research has demonstrated some benefits to coordination and knowledge transfer posited by the model. The substitutability of technology for functional or project structure has yet to be assessed comprehensively. One key concern identified in collaborative work studies is the inability of the technologies to support the relational dimensions of interaction—a key underlying dimension for effective project completion.

**Organizational Design, Intelligence, and Decision-Making**

Huber (1990) took a more inductive approach. He organized the empirical findings on organizational effects of communication technologies to create a Theory of the Effects of Advanced Information Technologies on Organization Design, Intelligence, and Decision Making. Huber notes that his propositions were “pieced together from organizational communication and information systems research,” plus a minimum of extrapolation as necessary. His 14 propositions describe four categories of effects: (a) at the subunit level, (b) at the organizational level, (c) on organizational memory, and (d) on organizational intelligence and decision making.

The broad logic integrating the propositions is that use of advanced information technology leads to increased information accessibility, which in turn leads to changes in organization design. Both accessibility and design changes lead to improvements in the effectiveness of intelligence development and decision making. In combination, the propositions state that use of computer-assisted communication technologies will lead to:

1. more individuals participating as information sources in decision making, but fewer persons composing the formal decision unit;
2. fewer organizational levels involved in processing messages and authorizing action, and “a more uniform distribution, across organizational levels, of the probability that a particular organizational level will make a particular decision (252)”;
3. greater variation across organizations in the level at which a particular decision is made;
4. less time devoted to decision-making meetings, and more rapid identification of problems and opportunities, action authorization, and decision making;
5. higher quality decisions; and
6. fewer human links in information-processing networks.

The evidence that underlies these propositions is based on diverse studies that
produced mixed findings. Thus, Huber also provides suggestions for research designed to investigate the validity of the propositions.

Directions for Future Development

Both of these approaches make a substantial contribution to both organizational communication theory and organization theory. They demonstrate vividly the nature and scope of theoretical issues attendant upon the use of new communication technologies in organizations. As Huber notes, this foundation offers a wealth of opportunities for elaboration and expansion. Seven new directions seem most promising.

One direction is to expand the core premises of Huber's effects-oriented theory to consider how organization design features might function in a reciprocal fashion to influence communication system design. The issue of whether communication technologies will decentralize, centralize, or reinforce existing structure is not simply a question of assessing effects. Organizations make decisions about the features and capabilities of the communication systems they implement. For example, centralized firms may select technologies that reinforce centralization, such as mainframe-based rather than distributed processing. Also, organizational policies as to how communication systems are used shape communication behavior toward more or less centralization. Conversely, organizations can select technologies and policies that promote an alternative to existing organizational forms. Technology implementation reflects choices by organizational decision makers about what type of effects should be found. There is tremendous opportunity for research to assess the degree to which such policy choices actually influence the types of effects produced.

A related area of future potential is the study of the dynamic interplay of technology and organization. The study of communication technology implementation has progressed through several phases over the last few decades. Early research was technological determinist in orientation (see Noble, 1977). The 1980's pressed the contrary theme of social determinism of technological systems (e.g. Bijker, Hughes, & Pinch, 1987). An emerging trend is toward more contingent models, which consider the degree of social or technological determinism to vary depending on circumstances. Little of this broader technology literature has penetrated the literature on management and organization design. The view of organizations and technology as dynamic systems in complex interaction merits further investigation by organizational researchers.

Considerable discussion has occurred in popular and academic circles about the role of new information and communication technologies as substitutes for mid-level managerial coordination functions (e.g., Crowston, Malone, & Lin, 1987-88; Keen, 1990; Zuboff, 1988). Such substitution has the potential to reduce or even eliminate whole levels of management. Revisions to current models of organization design may fruitfully consider whether and when such effects exist, whether they are inevitable, and how the theoretical base should be modified to incorporate them.

Allen and Haupts's (1990) model must confront a number of key issues about how R&D scientists communicate. As Allen's (1984) previous research has
shown, knowledge is transferred among scientists through personal contact, which is promoted primarily through spatial proximity. Kraut et al. (1990) note that the informal, almost serendipitous nature of contact poses a challenge for communication technologies. Can technological systems be designed to accomplish this spontaneity of interaction? Existing technologies have been largely unsuccessful on this dimension. Key features of knowledge transfer and coordination may be affected in the transition to technology-based interaction.

The findings of Bikson et al. (1987) and Kraut et al. (1990) also highlight the role of social relations in research collaboration, and the failure of existing systems to support adequately this dimension of scientific interaction. Future research and model-building must consider the type and character of scientific effort that can be facilitated by communication technologies. One possibility is that such systems may effectively supplement structure rather than substitute for it. Longitudinal studies that track the use of communication systems for coordination and knowledge transfer are a necessary prerequisite for drawing sound conclusions about the effects of technologies on the viability of alternative organizational forms.

The development of Allen and Hauptman’s model into an articulate theory requires elaboration of a set of interrelated propositions (Blalock, 1969). One starting point is to concentrate on the micro-processes by which scientific work is performed, with attention to communication system features that benefit this process. The work of Kraut et al. (1987-88) provides important insights to this task. The formulations of both Huber and Allen and Hauptman can benefit from consideration not simply of individual technologies, however, but also their functions. As Nass and Mason (1990) note, in order to understand technological effects, we should focus not on specific packages of hardware and software (e.g., electronic mail or computer conferencing), but the specific task and social variables that are inherent in a particular configuration of features (e.g., interactivity, synchronous versus asynchronous nature, complexity). Even technologies under the same generic label serve vastly different functions depending on (a) features available, (b) organization implementation specifics, and (c) utilization patterns. For example, Kerr and Hiltz (1982), demonstrate that vastly different technological configurations can be created under the generic label of “computer conferencing.”

A valuable new direction for theories of organization design is to incorporate interorganizational influences. The availability of inter-organizational computer networks has at least two important consequences. First, environmental linkages have the potential to alter organization design by virtue of the new types of information-processing channels that are created. Second, such networks represent important forms of organization per se. What types of organizational forms are spawned by such networks? Are such forms qualitatively different in predictable ways from forms described in existing literature on inter-organizational linkages?

Implications for Practicing Managers

Perhaps the most obvious implication of this tradition of model building and research is that technological choices are far from neutral in their effects on organization design and functioning. Choices about implementation of information
technologies are not simply questions of technical features to be left in the hands of information systems staff. Rather, such choices are important managerial and strategic decisions that demand the attention of top executives. Delegation of technological choices by top management in the absence of technology policy guidance poses important risks of unforeseen organization design effects. Few organizations today formally include technology policy as a key element in strategic planning (Porter, 1986). Yet, there can be little doubt that such decisions are indeed critical policy concerns.

Network Analysis and Information Processing

Blalock (1969) highlights two forms of theory: verbal and mathematical. The models reviewed previously fall within the former category, as does much of organization theory. We now turn to an approach whose theoretical formulation is primarily mathematical. Communication network analysis has been central to communication studies for decades, beginning with five-person simple structures studied in the 1950s and 1960s (Guetzkow, 1965). The development of the first computer program to facilitate analysis of complex communication structures (Richards, 1976) propelled communication networks to a place of prominence in the emerging field of organizational communication. Most recently, Burt’s (1982) Structural Theory of Action has cemented the claim of communication network research to have articulated a coherent theoretical framework. Burt’s mathematical theory, which is based in sociological theories of differentiation, is quite complex. As a result, its impact has primarily been within the small cadre of scholars specializing in network analysis. The richness of its theoretical detail has not been fully realized outside the network school.

Network analysis methods have been incorporated within organizational studies, however, and have contributed important insights across a wide spectrum of organizational phenomena. Network concepts enjoy a special advantage in their ability to tap processes and structures across multiple levels of analysis, including inter-organizational exchanges (e.g., Aldrich & Whetten, 1981; Eisenberg, Farace, Monge, Bettinhaus, Kurchn-Hawkins, Miller, & Rothman, 1985), organizational structure (e.g., Tichy, 1981; Barley, 1990), intergroup structure (e.g., Nelson, 1989), group structure (e.g., Lincoln & Miller, 1979) and the individual in relation to structure (e.g., Brass, 1984; Krackhardt & Porter, 1985). Wellman (1983) has described network analysis as a “turbocharger”—a set of variables that can be added to boost the explanatory power of a given model.

The divorce of network methods from network theory has created a body of literature described by some critics as relatively ungrounded theoretically. As Nelson (1989: 38) notes, “to realize its full potential, network analysis must move beyond mere description to make normative statements about what kinds of networks support organizational effectiveness and how such networks are formed and managed.” To date, a primary contribution of network analysis to organization theory has been its ability to help conceptualize the nature and functioning of key organizational variables, such as interpersonal influence (Brass, 1984, 1985), resource exchanges (Roy, 1983), power (Markovsky, Willer, & Patton, 1988), inter-organizational relations (Burt, 1983), and interlocking directorates.
Network analysis is a conceptually sophisticated tool for studying patterns of information exchange and communication and has tremendous potential for further advancing our theoretical understanding of organizations.

As background, we begin with a brief description of elementary network methods. We then describe four examples of network research published since Monge and Eisenberg's 1987 review. The final section focuses on the potential of network analysis to enhance theory development, both in the three areas described in the previous sections and in other facets of organization theory.

**Overview of Network Methods**

Network analysis focuses on the relationships or linkages among two or more persons, objects, or other entities. Relationships among other entities that also may be analyzed using network analysis include groups, organizations, nations, and roles, for example. For purposes of clarity, the following section will describe networks among individuals. At the broadest level, two perspectives exist to conceptualize networks: relational (Rice & Richards, 1985) and structural (Burt, 1980). Relational approaches focus on links or pathways among members of a network, based on frequency and/or intensity of communication. The results of a relational analysis yield information about cliques—groups of individuals identified by their patterns of communication with each other (Rogers & Kincaid, 1981).

Structural analysis is founded on the observation that network members may occupy extremely similar positions in a social structure, yet have no direct relational connection (White, Boorman, & Breiger, 1976). A structural analysis yields "blocks," or collections of individuals with similar communication patterns. This approach considers individuals to be less important than the roles or positions they occupy.

Figure 2 shows a simplified network for a matrix organization. Members E, F, G, and H form a tightly interconnected project team, with frequent communica-

![Figure 2: Simplified matrix structure communication network.](image-url)
tion and strong ties among the members. Functional area managers (A-D) communicate on a weekly basis with their project team counterparts, but not with each other.

Relational analysis would classify E-F-G-H as a clique, based on the frequency and strength of their communication linkages. Functional area managers would be excluded from that clique because their communication is less frequent and perhaps of less intensity. Structural analysis would identify A-B-C-D as a block. Although these managers are distant from each other relationally, they occupy very similar structural positions within their corporate network.

Based on these elementary distinctions, network analysis can identify a variety of important network features. Five types of properties are studied most frequently. (See Monge & Contractor, 1988, or Farace, Monge & Russell, 1977, for more detailed descriptions.) Properties of links include such concerns as strength of the link, symmetry (whether persons communicate on an equal basis such as coworkers, or unequal basis such as boss and subordinate), multiplexity (e.g., both business and social relations within a group) and reciprocality (the degree of agreement between persons as to what their communication tie is), as well as whether the link is direct or indirect (communication through an intermediary). For example, the extensiveness of indirect links is a critical concern in studies of the role of interlocking directorates as mechanisms of social and economic control (e.g., Mizruchi & Stearns, 1988; Lang & Lockhart, 1990).

Network analysis also identifies the roles individuals play in the network. Three major role categories are group member, group linker (liaison, gatekeeper or bridge to another group), or isolate (few ties to the rest of the group). Of these roles, the liaison and gatekeeper have perhaps received the most attention in the organizational literature. For example, gatekeepers consistently have been found to facilitate transfer of knowledge across groups and thus to facilitate innovation (e.g., Allen & Cohen, 1969).

A third set of factors describes the individual’s position in the network. These descriptors include such factors as centrality of a person in the communication pattern and range of an individual’s ties throughout the network. For example, centrality is considered to be a key factor in studies of power (e.g., Burkhardt & Brass, 1990).

Networks can also be identified by their content. For example, networks to exchange task-based information in an organization may be quite different from those that are primarily social. Networks also may differ by medium, such that, for example, the face-to-face network will have very different properties from a network based solely on electronic mail.

Finally, properties of the network itself are available. A sampling of factors includes connectedness (the extent to which individual members are interlinked), density (the degree to which sets of members are interlinked), reachability (the degree to which people can be reached with a minimum of intermediaries), and openness (the extent of linkage outside the group). For example, radial networks that are not densely connected have been shown to have better exposure to new ideas, because members talk more with a variety of outsiders (Granovetter, 1973).

These concepts can be applied at several levels of analysis. Table 1 provides a
Table 1
Representative Network Studies by Level and Conceptual Approach

<table>
<thead>
<tr>
<th>Relational</th>
<th>Structural</th>
<th>Network Concepts Only</th>
</tr>
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<tbody>
<tr>
<td><strong>Intra-Organizational</strong></td>
<td><strong>Structural</strong></td>
<td><strong>Network Concepts Only</strong></td>
</tr>
<tr>
<td>Individual influence</td>
<td>Intergroup conflict</td>
<td>Gender and informal ties</td>
</tr>
<tr>
<td>Commitment</td>
<td>Technology and structure</td>
<td>Organizational crisis</td>
</tr>
<tr>
<td>(Eisenberg, Monge &amp; Miller, 1983)</td>
<td>(Barley, 1990; Burkhardt &amp; Brass, 1990)</td>
<td>(Krackhardt &amp; Stern, 1988)</td>
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<tr>
<td>Power and exchange networks</td>
<td>Employee turnover</td>
<td>Electronic mail linkages</td>
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<tr>
<td>Adoption of electronic messaging</td>
<td>Cognition &amp; goal achievement</td>
<td></td>
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<tr>
<td>(Rice, Grant, Schmitz, &amp; Torobin, 1990)</td>
<td>(Walker, 1985)</td>
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<tr>
<td>Work and friendship networks</td>
<td>(Lincoln &amp; Miller, 1979)</td>
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<td>Responses to new technologies</td>
<td>(Burkhardt &amp; Brass, 1990; Papa &amp; Tracy, 1988;</td>
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<tr>
<td>(Burkhardt &amp; Brass, 1990; Papa &amp; Tracy, 1988; Papa, 1990)</td>
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<tr>
<td>Securities exchange social structure</td>
<td>(Baker, 1984)</td>
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<tr>
<td>Job characteristics</td>
<td>(Moch, 1980)</td>
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<tr>
<td><strong>Inter-Organizational</strong></td>
<td><strong>Foreign economic investment</strong></td>
<td><strong>Corporate boards and interlocks</strong></td>
</tr>
<tr>
<td>Ownership and control</td>
<td>(Auster, 1990)</td>
<td>(Mizruchi &amp; Stearns, 1988; Galaskiewicz &amp;</td>
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<tr>
<td>(Roy &amp; Bonacich, 1988)</td>
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<td>Wasserman, 1981; Palmer, 1983; Ornstein,</td>
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<tr>
<td>Diversification</td>
<td>Market cooption and board selection</td>
<td>1984; Richardson, 1987; Stearns &amp; Mizruchi,</td>
</tr>
<tr>
<td>(Danowski, Barnett, &amp; Friedland, 1986)</td>
<td>(Galaskiewicz et al., 1985)</td>
<td>1986; Lang &amp; Lockhart, 1990; Gogel &amp;</td>
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<tr>
<td>Evolution of resource exchange ties</td>
<td>Inter-industry transactions</td>
<td>Koenig, 1981)</td>
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<tr>
<td>(Roy, 1983)</td>
<td>(Burt &amp; Carlton, 1985)</td>
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<td></td>
<td>Interlocks and market structures</td>
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<td>Adoption of labor initiatives</td>
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sampling of recent studies on a broad array of topics. Several factors may govern the choice of a conceptual approach. Level of analysis, for example, may indicate that one method is preferable. Studies of organizational behavior and interpersonal communication frequently apply relational perspectives (e.g., Brass, 1984; Moch, 1980), whereas structural approaches are often applied to inter-organizational studies (e.g., Auster, 1990; Burt, 1979; Burt, Christman, & Kilburn, 1980). Characteristics of the linkages being studied are also important. Both unreciprocated and multiplex ties are more readily handled by structural than relational approaches (Alba, 1982). Alternately, both methods may be equally suitable and
provide complementary insights. Burkhardt and Brass (1990), for example, studied the relationship between technological change and organizational structure using both relational and structural methods. A structural equivalence model was used to predict diffusion of the new technology throughout the organization, and relational measures of centrality were used to assess longitudinal changes in power.

Recent Network Research

Several recent papers are examples of the utility of network methods in studying organizational phenomena. This section provides illustrations for structural and relational approaches at both the intra- and inter-organizational levels.

Auster (1990) used a structural approach to identify patterns of Japanese investment in the U.S. The first stage of Auster’s analysis identified three categories of investments based on structural similarity: direct investment, high resource investment (joint ventures), and low resource investment (e.g., technology transfer and OEM supply). The second stage examined how these investment types were used across economic sectors. Joint ventures were most common in industries with high entry barriers, whereas low resource-investment linkages were associated with more turbulent, technology-based industries such as biotechnology. Direct investment was geographically focused in the western U.S. and was frequently directed at support businesses for other Japanese ventures in the U.S.

The application of network methods to this complex inter-organizational phenomena makes several contributions. First, the structural analysis synthesized data across economic sectors to yield an investment topology that is empirically validated and generalizable. Second, the network analysis permitted assessment of individual company strategies in the context of an identified overarching investment pattern rather than in isolation. Third, the network model offers a broader context for assessing the strategic implications of Japanese investment in the U.S.

Structural approaches also have proved useful in explaining intra-organizational phenomena. Nelson (1989) proposed that communication structures would play a critical role in explaining group conflict in organizations. He collected data from 20 organizations that ranged from low to high on conflict. He reported that low conflict organizations were characterized by “consistent, if not homogeneous, groups bound together in an orderly manner by strong ties (397).” Strong ties were pervasive both within and across groups in a firm. Additionally, low conflict organizations had inter-group ties mediated by a dominant group or linking hierarchy.

Nelson’s analysis contributes to organizational communication in at least two ways. First, it offers a wider context for viewing conflict than does research that focuses primarily on individual attributes. The interaction of network structure with attitudes and demographic variables offers substantial promise for future studies. Second, it highlights the systemic nature of conflict. Interventions must focus on how the system itself reinforces existing dysfunctional patterns. Third,
results of the network analysis can be applied to organization development initiatives (team building, for example) aimed at reducing the level of conflict.

The ability to map social structures makes network analysis particularly applicable to studies of power and control. Roy and Bonacich (1988) examined initial development of corporate control in their study of American railroads in the early 1900s. This was a period of transition, with formal interlocks now linking previously unconnected firms. Their results make several contributions to the literature on corporate control. First, Berle and Means (1932) are often cited regarding the transfer of control from owner to manager. However, Roy and Bonacich’s findings suggest that the managerial revolution did not dissolve the elite corporate class. Rather, they suggest this control was transferred to an inter-organizational level. They also reported no significant relationship between centrality and power. Although network scholars often consider these concepts inextricably intertwined, Roy and Bonacich suggest a contingency approach: some aspects of centrality may have different utility under different markets and exchanges.

Markovsky, Willer and Patton (1988) also used network methods to study power. Their focus, however was to develop a theory of power based on network position. They argued that contextual factors that shape resource exchange need to be incorporated into network-based power measures. They developed a graph-theoretic approach that evaluated each link in a network and its potential advantage or disadvantage in a resource exchange. Their model is particularly useful for assessing differences in power when we observe changes in the network itself (e.g., exclusion of one or more members) or the context of the transaction (e.g., time constraint that may limit the number of exchanges among members).

Current and Future Directions for Networks and Information Processing

This section turns to the use of network concepts and methods to advance our understanding of the three theoretical directions targeted for this review. The lens then shifts to other potential applications for network concepts.

Media choice. Network concepts have emerged recently in tests of the Social Influence Model of Technology Use. Fulk and Ryu (1990) asked individuals to identify their five most frequent communication partners and to report their estimate of partners’ attitudes toward electronic mail. The estimated partners’ attitudes predicted the focal individual’s attitudes and use of the medium. Rice et al. (1990) found that an individual’s adoption and expected outcomes of electronic mail were predicted by network members’ adoption of the medium. Schmitz and Fulk (1991) predicted individuals’ media attitudes and use from data on communication network partners’ actual media attitudes and use.

Four additional directions hold considerable potential. First, network analysis could be employed to test the situational moderating effect of geographic distance on media choice. Network methods would identify key communication partners. The physical distance of these partners from the focal individual would be assessed using criteria specified by Kraut et al. (1990) and Steinfield and Fulk (1989). Distance measures for key communication partners could then serve as predictor variables.

Second, another situational constraint to media choice is the availability of a
critical mass of communication partners. Network data for users of interactive
media could be used to assess if and when critical mass is reached. Valente (1991)
demonstrates that thresholds, the number of other adopters in an individual’s net-
work necessary for one to adopt, influence adoption behavior. The distribution of
thresholds determines when a critical mass is reached.

Third, network analysis could be employed to identify the communication
structure in an organization prior to introduction of a new communication system.
After the implementation, changes in communication networks could be as-
essed. For example, convergence of group members attitudes and use with those
of the opinion leaders would be consistent with social influence explanations.

Fourth, media use patterns within cliques could be compared to media use pat-
terns across cliques. Pattern similarity within but not across cliques also would
support a social influence rationale. Alternatively, positional network analysis
could be used to identify blocks. Similarity of use across blocks would indicate a
task-based explanation rather than social influences.

Group communication technologies. Poole and DeSanctis’ (1990) model
draws very heavily on structuration theory. This theory suggests that the effective-
ness of a new technology is governed by its ability to become embedded in an or-
ganization’s structure (Weick, 1990). Network-based studies could provide val-
uable information on changes in network structure attendant upon the use of
technology. For example, Barley (1990) studied changes in role relations and in
communication networks following introduction of a new medical technology
(CT scanners) in a hospital setting. He found that the introduction of the technol-
ogy led to changes in role relations among members of different occupational
groups (e.g., radiologists, CT technologists, nurses, administrators), and that role
relations produced different communication structures. These communication
structures also created different structures at the institutional level. Barley con-
cluded that

since the parameters of role relations are negotiated and renegotiated in
the course of ongoing interaction, it is plausible that the same material
conditions could give rise to different social systems. The ramifications
of any specific instance of technical change are, therefore, likely to be
the joint product of material and social forces whose interaction must
become an explicit focus of study. (99)

Haines (1988) argues that network theory and structuration theory share impor-
tant philosophical assumptions. Haines argues in favor of theoretical analysis and
integration of the two traditions:

Social network theories have ignored structuration theory and other
emerging methodological developments in social theory. They have at-
ttempted to generate an adequate theoretical account of the relationship
between human action and social structure by combining accounts
which Giddens has shown to be theoretically inadequate....Social net-
work analysis would be improved by the introduction of the action
component of structuration theory; structuration theory by the intro-
duction of the system component of social network analysis....Bringing
social network analysis and structuration theory together, then, would
facilitate their mutual development and, through this, the methodological restructuring of social theory. (178-179)

Haines’ work suggests that scholars focus not only on the potential of network methods for structuration theory, but that network theory itself (Burt, 1982) can enrich and be enriched by structuration theory.

Organization design. Allen and Hauptman (1990) have proposed what could be called a “shadow matrix” organizational structure for R&D units. Communication technologies provide the lateral communication infrastructure to supplement functional divisions, or alternatively, the functional information transfer to support project teams. Network methods could be used to assess lateral and vertical information flows in organizations where such supporting communication technologies are in place. An analysis of information flow patterns would evaluate the effectiveness of substituting technology for formal structure. Positional network methods would identify locations where similar substitution patterns are likely to occur and to have similar organizational effects.

A supplemental analysis might investigate the transfer of task versus interpersonal information over different communication media in collaborative networks. This analysis would test the claim of Kraut et al. (1990) and Bikson et al. (1990) that collaborative software cannot support critical social relationships involved in cooperative work. Comparison of networks for different media (e.g., electronic mail versus face-to-face) would also address questions of how communication technologies change organizational communication structures. Several studies have found that electronic mail, for example, supports new communication ties, more radial networks, and generally more lateral and vertical communication within the organization (Fulk, Power, & Schmitz, 1986; Bikson et al., 1989). One strength of structural network methods is the ability to assess multiple types of networks. This capability may prove particularly useful in clarifying the relationship between informal networks, new ties, and the success of a new technology implementation.

Relational network data about communication patterns concerning a specific decision could be collected and analyzed to investigate Huber’s (1990) proposition that a greater number of persons will be involved in information gathering regarding decisions but that formal decision-making bodies will be smaller. Prior to implementation of a new communication system, information networks would be identified for a series of decisions. After implementation, network data would again be collected and compared to the pre-implementation data. Alternatively, network data could be compared for decisions made with and without the assistance of advanced communication and information technologies for information input.

Emerging sources of network data. New technologies are making new types of network level data available, for both intra- and inter-organizational studies. Interactive communication systems offer the ability to collect highly detailed yet unobtrusive network data over time (Rogers, 1987). Data files may contain a wide variety of information regarding computer-mediated communication. Rice (1989) provides a detailed review of computer-captured data methods. Rice and
Borgman (1983) compare costs and benefits associated with this form of data collection.

Network analyses based on computer captured data have been used to evaluate communication processes during corporate crises (Danowski & Edison-Swift, 1985), communication flows across areas (Eveland & Bikson, 1987), and convergence of electronic mail use in a social network (Schmitz, 1988). Opportunities for network research will continue to improve as computer-based communication systems continue to diffuse widely throughout industry.

Network Contributions to Organization Theory

Employee transfers and organization design. The ability of network measures to quantify elements of organizational structure offers particular promise for organizational design research. Application of network tools may prove particularly useful in responding to a common criticism of organizational design—that of having “lavished too much effort on devising techniques for changing organizations and too little on examining the conditions under which interventions are successfully implemented” (Nelson, 1986: 65). One review proposed nearly 20 network-based hypotheses on the relationship between organizational design and effectiveness (Pearce & David, 1983). One example is the application of network analysis to employee transfers.

Studies of transnational employee transfers (Galbraith & Edstrom, 1976; Edstrom & Galbraith, 1977) have found that transferred executives have larger intra-organizational networks than similar personnel who had not been transferred. These larger networks tend to contain more weak ties, which have been shown to facilitate transfer of new and different information (Granovetter, 1973), and hence to facilitate innovation (Tichy, 1981). These studies concluded that employee transfer, used strategically, could be an invaluable design tool. One strategy would begin with a relational analysis. The candidate for transfer should be fairly central in the home network, based on analysis of closely knit cliques, in order to maximize his or her information value in the new locale. Also, structural analysis could be used to identify coordination nodes already in place. Spatially distributed managers will have weak ties across locations and thus cannot be identified by relational measures. A structural analysis, though, may be able to identify these coordination nodes based on similar communication structures.

Executive decision making. Top management team consensus on strategic goals and methods is positively associated with financial performance. Theory suggests that the pattern of information processing among senior managers may affect the ability to develop consensus (Bourgeois, 1980; Dess, 1987). This theory could be tested by linking communication network properties to the level of consensus achieved in top management teams. Networks characterized by cliques, factions, and isolates may find it more difficult to achieve consensus. Structural characteristics of the top management team, such as centrality, connectedness, and the presence of coalitions could be assessed for effects on the ability to build consensus.

Inter-organizational relations. Resource dependence theory (Pfeffer & Salancik, 1978) proposes that linkage to external resources is positively associated with
a firm’s performance. Boards of directors in high performing firms respond to resource scarcity and competitive uncertainty in two ways: The number of interlocks with other firms are greater, and the number of directors declines (Boyd, 1990). The net result is a more compact, flexible board with superior access to resources. These findings would suggest that boards of high performing firms are more densely connected to the environment than their low performing counterparts. Network analysis offers several avenues to better explain the behavior of high performing boards.

Relational tools could substantially improve our understanding of this process by examining different aspects of network centrality. Graph-theoretic procedures developed by Freeman (1978/79) could be applied to interlocks among Fortune 500 firms. Three specific measures could then be tested for a relationship with firm performance: (a) betweenness, a measure of control over the flow of network resources; (b) closeness, a measure of independence from other network members, and (c) degree, a measure of activity in the network. Finally, a structural analysis could be used to identify characteristics of high performing directors across organizations.

Implications for Practicing Managers

Although the mathematical foundations of network analysis are outside most managers’ domain of interest, the network concepts themselves are extremely valuable. This perspective allows firms to be visualized as information-processing structures. Work groups, for example, develop stronger cliques over time and gradually become insulated from other areas. Periodic transfers across groups may help reverse this inertia and simultaneously create new information ties across the organization. Similarly, firms in search of new executive staff or board members may find it useful to consider their existing network of information and resource ties. In an environment characterized by uncertainty, new staff should be considered who have structurally different ties, thus provide the firm with access to new and different resources. Firms considering an investment in new communication technologies could also benefit by evaluating the potential effects on both formal and informal communication systems.

Conclusion

This chapter evolved out of a growing sense of disquiet with the charge to assemble a puzzle from the jigsaw patterns of research in the field of organizational communication. Recent handbooks showed 38 chapters of capable reviews of research trails within the field. No single article could even begin to update competently the literature on this vast panorama of topics. And, within the last 4 years more than a half dozen “frameworks” have been proposed as conceptual glue for binding together a host of research traditions and disparate findings. Clearly, the discipline would not be advanced by postulating yet another new assembly of the various pieces into a unifying framework.

Yet, despite this high level of energy for creating a sense of coherence in the field, an essential element was absent. Indeed, the flurry of activity to make sense of the jumble of topics and findings brought into stark relief the relative vacuum
at the center—a problem well articulated in previous reviews of the field. The key task facing the field was quite clear: rather than struggle to organize from the periphery, focus on building the theoretical core.

Thus, this review began with a question: What promising new theoretical models are emerging in the study of organizational communication? One set of answers to this question were sought in a subset of topics with two unifying features. First, they engage a historically central issue in organizations, information processing. Second, they confront a common challenge to account for organizational communication and information processing in a rapidly changing technological landscape.

A second question was this: What can be done to advance these beginnings? We explored a variety of theoretical and empirical embellishments to the theories and models proposed to date. And, we considered how one communication-specific topic, analysis of communication networks, could make unique contributions beyond its own internal theoretical boundaries. We explored the potential contributions of communication network analysis to theory building and research across a wide variety of topics in organizational studies. Overall, the trek through all of these budding areas was encouraging. There is even the untapped potential for development at the meta-theoretical level through common themes such as information processing in communication structures. Although theoretical development continues, there is also an excellent core of initial formulations that rightfully can lay claim to a portion of the new theoretical core of organizational communication.

The methods for developing theory in any discipline are diverse. The models described in this chapter represent only a sampling of potentially fruitful approaches. The Media Richness Model was built by extrapolating existing organizational theory to a new communication context. The Social Influence Model was constructed by focusing on the anomalies, the places where extrapolated theory seemed a poor fit, and then seeking alternative theoretical rationales that fit both original premises and anomalies. The Theory of Adaptive Structuration applied general social theory to a specific social context of particular relevance to organizational communication researchers. Allen and Hauptman’s (1990) model of organization design in R&D units combined research findings specific to R&D settings, premises of organizational information processing theory, and analysis of communication technology functions to produce a situation-specific sub-theory of organizational information processing theory. Huber’s (1990) Theory of the Effects of Advanced Information Technologies on Organization Design, Intelligence and Decision Making was developed more inductively from cumulating a diverse set of empirical findings and then filling in the picture with deductions from organizational information-processing theory as necessary.

In combination, these theories illustrate theory building via a variety of methods: (a) induction from existing research findings, (b) deductions from broader social theory, (c) application of existing theory to a new context, (d) applying one set of existing theories to account for anomalies found in tests of other imported theories, and (e) building more comprehensive theories in part from analysis of existing capabilities of communication technologies. Two other approaches have
been suggested as holding potential for theory development in organizational communication. Euske and Roberts (1987) propose explicating the communication implications of organization theories that do not provide explicit propositions about communication. Weick (1987) adds that the first step is to make explicit the assumptions about communication that are embodied in organization theory. To do so, a scholar should

apply the property as originally stated to actual or imagined organizations and pay close attention to when it fits, where it fails to fit, and what adjustments, additions and specifications we must make to improve its fit. Those adjustments, additions and specifications are clues to conditions that must be met if the property is to have its predicted effects. (Greenwald, Tratkanis, Leippe, & Baumgardner, 1986: 109). What follows is a process of successive definition, as the application helps clarify both the original concept and the underlying ideas about communication. An additional approach is to reason by analogy from existing theory in very different disciplines. An example of this method is the application of cybernetics to communication in the classic work by Shannon and Weaver (1949). Each approach has its own strength and limitations (see Steinfield & Fulk, 1990, for a more detailed analysis), but each can contribute in important ways to the infrastructure of organizational communication theory.

A final concern takes a broader perspective on the field as a whole. The preparation of this article involved reviewing a vast array of books and papers on a host of topics in organizational communication that have appeared since the publication of the recent handbooks. Nowhere was promising theoretical development as evident as in the study of the interplay of information, organization, and communication technology. However, the trend is not limited to these areas alone. Consider, for example, conceptualization and research on organizational assimilation processes. Jablin (1987) has developed a stage model that focuses not simply on static conceptions of progression through phases, but proposes in detail the dynamics of interaction as individuals and organizations progress through the challenges and demands of mutual adjustment throughout the life cycle. This model has served as an important integrating force for research on a multitude of facets of organizational assimilation, from questioning patterns in employment interviews (Jablin & Miller, 1990) to organizational exit processes. Consider also the burgeoning area of inquiry into conflict and negotiation (Putnam & Poole, 1987). This area has its roots in long-standing theories of organizational behavior. These roots are extended by Putnam and colleagues to focus specifically on conflict as a communication behavior. Conflict models in their tradition take on new meaning as communicative phenomena. A related area of theorizing is Poole’s sequence of conceptual and empirical work to frame a model of decision development in small groups and a theory of coherence in group decision making (Poole, 1981, 1983a, 1983b, 1985; Poole & Roth, 1989a, 1989b). This work not only contributes to the theoretical structure of the field in its own right, but also lends important insights to the emerging Theory of Adaptive Structuration in GDSS use in small decision-making groups.

For years this new generation called organizational communication has suf...
ferred under the judgment that it is a field of inquiry in search of theory, an amalgam of findings that lack conceptual adhesive. The apparent inability of the new field to rise to the repeated challenge of grounding its scholarship in sets of interrelated axioms, premises, and propositions has been a vexing criticism. But no longer.

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