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**COLLABORATION IN THE VIRTUAL
ORGANIZATION**

**CEO PUBLICATION
G 98-28 (356)**

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November, 1998

To be published in (Eds.) Cary L. Cooper and Denise Rousseau, *Trends in Organizational Behavior*. New York: John Wiley and Sons

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Collaboration in the Virtual Organization

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Collaboration is the key to effectiveness in the virtual organization. Faced with the growing challenges of global competition, rapid change, and increasing complexity, organizational structures are becoming more flexible and fluid (Mohrman, Galbraith, Lawler, & Associates, 1998). Advances in information technology have enabled people to work across organizational boundaries (Cohen & Mankin, 1998) and provided the infrastructure for independent firms across the globe to function together as if they were a single company. The virtual corporate model depends upon people who can quickly come together and collaborate to exploit a specific opportunity or solve a specific problem. Virtual teams, composed of geographically dispersed organizational members who communicate and carry out their activities using technologies such as e-mail and videoconferencing depend upon effective collaborations for their success. Effective collaborations -- among individuals, teams, and organizations—are the wellsprings of knowledge and creativity, key strategic resources for performance success in all modern organizations, but particularly in the virtual organization. Therefore, how to facilitate and support these collaborations should be the starting point for modern organizational and technological design. The purpose of this chapter is to take this initial step and explore how organizations and technologies can be designed to create more effective collaborations.

Specifically, in this chapter we examine four research traditions that provide some insight into the nature of the collaborative process and the factors that bear upon it. These

areas are 1) conflict-resolution, 2) process facilitation and team design, 3) the psychology of flow and optimal experience, and 4) computer-supported cooperative work (CSCW).

Three questions guide our exploration:

- What is the nature of collaboration?
- What processes, policies and structures enable collaboration?
- How can organizations create these enabling conditions that enable successful collaborations?

From this we construct a generic framework that integrates the understandings that emerge from this exploration concerning: 1) the nature of the collaborative process, 2) the conditions and processes that can facilitate successful collaborations, and 3) the potential outcomes of this process. Then we briefly speculate on the implications of this framework for virtual teams and the virtual corporation.

Conflict Resolution

The conflict resolution research views collaboration as a potential strategic intention or orientation of a person in a conflict situation. Thomas (1979, 1992) provides a two dimensional taxonomic scheme of the “strategic intentions” of the different parties involved in a conflict. Conflicting parties differ in their assertiveness, the degree to which each party attempts to satisfy his or her own concerns, and cooperativeness, the degree to which each party attempts to satisfy the other's concerns.

Five strategic intentions are classified in terms of these two orthogonal dimensions: competing, accommodating, compromising, avoiding, and collaborating. A competing intention represents an attempt to win one's position -- to satisfy one's concern

at the other's expense. This is a "win-lose" approach. An accommodating intention is an attempt to satisfy the other's concerns at the neglect of one's own. This is a "yielding-losing" approach where one helps the other achieve their goals at the expense of one's own goals or supports another opinion despite one's own reservations. A compromising intention is understood as halfway between competing and accommodating. Compromising is an attempt to attain moderate but incomplete satisfaction of both parties' interests. Neither party is fully satisfied or fully dissatisfied. This approach can be viewed as "splitting the difference." An avoiding intention reflects a desire to ignore the concerns of both the self and the other. It involves withdrawing or exiting from the situation, not trying to shape it in any way.

Finally, a collaborating intention represents an attempt to fully satisfy the concerns of the two parties to achieve an integrated resolution. Collaboration is a "win-win" approach where both parties' goals can be completely achieved. In judgmental conflicts, collaboration enables the parties to reach a synthesis – i.e., a new conclusion or idea that incorporates the insights of each party but goes beyond each. This taxonomy of five intentions is supported by relatively strong empirical evidence (Ruble & Thomas, 1976; Van de Vliert & Hordijk, 1989).

Roger Fisher and William Ury (1981) of the Harvard Negotiation Project in their book, *Getting to Yes*, describe an approach of principled negotiation based on collaboration. Their approach uses the following four-step process for coming to mutually acceptable agreements in every sort of conflict situation:

1. Separate the people from the problem.
2. Focus on interests, not positions.

3. Invent options for mutual gain.
4. Insist on using objective criteria.

The end result of principled negotiation is a "win-win" solution that satisfies both people's interests and provides the opportunity for mutual gain. The solution is new and often reflects a creative synthesis of ideas from both parties.

This research tradition helps us to understand collaboration. It reveals that collaboration can occur in conflictual and difficult situations. It is not necessary to begin with the same viewpoints to have a successful collaboration. In fact, a creative synthesis may occur precisely because the parties to the conflict begin with opposing viewpoints that are creatively integrated in the solution. Collaboration requires considerable communication skills -- each party has to listen to the other's interest and voice their own -- and be able to explore options that might meet both their interests. Resolving conflicts through principled negotiation creates shared understandings and new discoveries.

Process Facilitation and Team Design

Implicit in the definition of teams is a notion of collaboration. A team is a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and are seen by others as an intact social entity, embedded in one or more larger social systems (for example, business unit or the corporation), and who manage their relationships across organizational boundaries (Cohen & Bailey, 1997; Hackman, 1987; and Alderfer, 1977). If tasks are interdependent and outcome responsibilities shared, then team members need to work with one another and relevant stakeholders to accomplish their goals. Working jointly with others is a

necessary condition for collaboration, but as we will see shortly, not sufficient. Early and more recent work on team effectiveness from both a group process and a group design perspective addresses how members should work with one another.

For example, Benne and Sheats (1948) described the task functions and maintenance functions that should take place in groups in order for them to function effectively. Task functions include behaviors such as initiating, opinion seeking and giving, information seeking and giving, and summarizing. Maintenance functions included behaviors such as harmonizing and compromising, encouraging, diagnosing, and standard setting. According to Benne and Sheats (1948), these behaviors enable people to work together effectively in groups.

Edgar Schein's (1969) book, *Process Consultation*, extends Benne and Sheat's (1948) work and describes the characteristics of effective teams as shared goals, member participation and listening, free expression of ideas, mutual trust, effective problem-solving, consensus-seeking and testing, and flexibility and innovativeness. Many of these characteristics can be viewed as enablers of effective collaboration. If people who work with one another share goals, listen to one another, encourage participation, freely exchange ideas, trust one another, and so on, they are likely to work well together.

A more recent work from the same tradition is Roger Schwartz's (1994) book on facilitating effective groups. He lists 16 specific ground rules for effective groups such as: test assumptions and inferences, share relevant information, agree on what important words mean, disagree openly with any member of the group, discuss undiscussable issues, and do not take cheap shots or otherwise distract the group. Again, these ground

rules can be viewed as the ingredients for a recipe on how to effectively collaborate with others.

The work on team design and effectiveness describes how to create the conditions for effective groups. The precursor of work in this tradition is the job characteristics model developed by Hackman and Oldham (1980). The primary focus of this model was on the design of individual jobs, but they extended the model to address the design of group tasks. Specifically, they argue that group members will experience high motivation in their work (and therefore, exert greater effort) when the following conditions are met:

1. The group task requires the use of many different skills for successful completion (skill variety).
2. The group task is a whole and meaningful piece of work (task identity).
3. The outcomes of the group's work on the task "make a difference" to other people either inside or outside the organization (task significance).
4. The group task provides substantial latitude for members to decide together how they will carry out the work, including the methods to be used, the assignment of priorities to various subtasks, the pace of the work, and so on (autonomy).
5. The group as a whole receives trustworthy information, preferably from doing the work itself, about the adequacy of group performance (feedback). (pp. 171-172)

In his later chapter in the *Handbook of Organizations* (1987), Hackman develops this work further by presenting a model for team design and work group effectiveness. In this chapter he asserts that group effectiveness is a function of the members' efforts, their

knowledge and skills, and the appropriateness of their task performance strategies. The structure of the group and its task, the supportiveness of its organizational context, and the processes that the group uses create the conditions for effectiveness. The processes addressed by Hackman are coordination and commitment, sharing and weighing of expertise, and implementation of strategies. Similar to the work cited earlier, these process dimensions are likely to be enablers of collaboration. For example, how group members coordinate their efforts and their willingness to listen to one another and evaluate each others' contributions based on expertise (not on status or other task irrelevant characteristics) seem important for how well they collaborate together. Less obvious, but perhaps more critical, is the logic implied by this model for creating the conditions for effective collaboration. What can the organization do --in the way it structures groups and tasks, and in its systems, policies, and practices -- to create the conditions for people to work together effectively. The focus on creating conditions for working together effectively enables us to look more comprehensively at the antecedents of collaboration.

In their recent review of the team effectiveness literature, Cohen and Bailey (1997) present a heuristic model that suggests that group effectiveness is a function of environmental factors, design factors, group processes, and group psychosocial traits. Environmental factors are characteristics of the external environment in which the organization is embedded, such as degree of turbulence. Design factors refer to those features of the group, task, and organization that can be directly manipulated to create the conditions for effective performance. Processes are interactions such as communication, decision-making and conflict resolution that take place within teams and with external

others. Group psychosocial traits are shared understandings, beliefs, or emotional tone. This model extends the team design framework by drawing attention to the group as a social entity that has shared psychosocial traits that influence its behaviors. Group processes can become embedded in these traits, and these traits help to shape internal and external processes. The development of certain shared psychosocial traits may help to support collaboration. This framework helps us to look more comprehensively at the antecedents of and the conditions for effective collaboration.

The Psychology of Flow and Optimal Experience

The research tradition that offers great insight on the collaborative process does not even explicitly address this issue. Despite this limitation, the theories of “flow” and “optimal experience,” as presented by the renowned cognitive psychologist, Mihaly Csikszentmihaly, provide a potentially rich phenomenological perspective from which to explore the process and experience of collaboration. He describes “optimal experience” as those “rare occasions” when “we feel a sense of exhilaration, a deep sense of enjoyment that is long cherished” (p 3). In his theory, this experience is the result of “flow” – “the state in which people are so involved in an activity that nothing else seems to matter: the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it” (p 4).

According to Csikszentmihaly there are eight major components to the flow experience. At least some have to exist for an activity to flow, to result in an optimal experience, and to be intensely enjoyed. Ultimately, it is these experiences that will

produce the most effective, productive and, of special importance to him, creative results.

These elements are:

- A challenging activity that requires skill. The activity is goal-directed and bounded by rules. The activity should be challenging but with a reasonable possibility of successful completion.
- The merging of action and awareness. The person's attention is completely absorbed by the activity and there is "no psychic energy left over to process any information but what the activity offers. All the attention is concentrated on the relevant stimuli.... People become so involved in what they are doing that the activity becomes spontaneous, almost automatic; they stop being aware of themselves as separate from the actions they are performing" (p 53).
- Clear goals and feedback. Clear goals and immediate feedback are an important factor in achieving the level of involvement and focus described above.
- Concentration on the task at hand. When one is totally involved and focused on the task at hand... "one is able to forget all of the unpleasant aspects of life" (p 58).
- A sense of control. What people enjoy, Csikszentmihaly argues, "is not the sense of being in control, but the sense of exercising control in difficult situations. It is not possible to experience a feeling of control unless one is willing to give up the safety of protective routines. Only when a doubtful outcome is at stake, and a person is able to influence that outcome, can a person really know whether she is in control" (p 61).

- The loss of self-consciousness. “the loss of the sense of self separate from the world around it is sometimes accompanied by a feeling of union with the environment” (p63). The apparent paradox is that the loss of self during the flow experience is often followed by the emergence of a stronger sense of self after the experience ends. Csikszentmihaly describes it as follows:

In flow a person is challenged to do her best, and must constantly improve her skills. At the time, she doesn't have the opportunity to reflect on what this means in terms of the self -- if she did allow herself to become self-conscious, the experience could not have been very deep. But afterward when the activity is over and self-consciousness has a chance to resume, the self that the person reflects upon is not the same self that existed before the flow experience: it is now enriched by new skills and fresh achievements. (pp. 65-66)

Csikszentmihaly does not specifically address the collaborative process but he does apply his theory to work tasks and to interpersonal relationships within families and among friends. In any case it is not difficult to see how his theory and the elements described above could be used to help us understand the collaborative process. Following his principles we can see that successful collaborative experiences are very enjoyable and productive. They work best when the activities are directed toward clear goals, the collaborators possess the skills required by the task, and the goals are challenging but reasonably attainable. Anybody who has been part of a successful collaboration also knows the importance of immediate feedback from teammates and co-workers in sustaining the collaborative relationship and progress toward their mutual goals. They

also will recognize the focus, the total absorption and timelessness, the sense of control and the immersion of the self in the totality of the collaborative moment that Csikszentmihaly describes. Most important, anybody who has ever been in an effective collaborative relationship has experienced the sheer pleasure Csikszentmihaly talks about in other contexts when collaborations work well, or to use his expression, when they “flow.”

Computer-Supported Cooperative Work (CSCW)

The research tradition on computer-supported cooperative work explicitly focuses on collaborative intellectual work. As defined by Galegher and Kraut (1990) the aims of researchers in this field are:

To describe both the general features of collaborative intellectual work and the specific details of particular kinds of collaboration, to create technological systems that will improve the quality and efficiency of collaborative work and foster kinds of collaboration that would be impossible without advanced communication and computer support, and to assess the impact of these technologies on individuals, groups, and organizations. (p4)

Not surprisingly, the focus of most of the work in this area is on the technology for facilitating collaboration, commonly known as groupware, not on the nature of the collaborative process itself.

Nonetheless, some interesting ideas can be found in the literature, especially in the book by Michael Schrage, appropriately titled, *Shared Minds: The New Technologies of Collaboration* (1990). In contrast with many writers in this area, Schrage spends a

considerable amount of time discussing the nature of collaboration before moving on to the primary topic of his book, the technology of collaboration. He begins by differentiating between “communication,” which by inference is the primary focus of much of the CSCW literature, and “collaboration.” Communication, he notes, is merely the exchange or transmission of information, collaboration is the act of constructing relevant meanings that can be shared by all parties to the collaboration. “The act of collaboration is an act of shared creation and/or shared discovery” (p 6) in which “two or more individuals with complementary skills [interact] to create a shared understanding that none had previously possessed or could have come to on their own” (p 40).

Organizations that attempt to substitute increased communication for increased collaboration will learn the hard way that there is a tremendous difference.

Flooding someone with more information doesn't necessarily make him a better thinker. Creating a shared understanding is simply a different task than exchanging information. It's the difference between being deeply involved in a conversation and lecturing to a group. The words are different, the tone is different, the attitude is different, and the tools are different. (p 7)

Effective communication is only a precursor, a necessary but not a sufficient condition for collaboration.

According to Schrage, shared “space” is essential for effective collaboration so that individual collaborators can “play collectively with ideas and information” and “generate shared understandings that they couldn't possibly have achieved on their own” (pp. 31-32). He describes other characteristics associated with successful collaboration. It is “purposive” (i.e., the purpose is to solve a problem or create or discover something)

and occurs within constraints, including limits of expertise, time, money, the competition, and the “prejudices of the day.”

The Rings of Collaboration: A Framework of Outcomes, Enablers and the Process Itself

Figure 1 summarizes much of the proceeding discussion by integrating many of the elements, definitions, and conditions that emerge from the four research traditions. Each concentric ring represents the factors and processes that directly impact the factors and processes in the next inner concentric ring, and the outcomes represented by the innermost ring. The factors and processes in the outer rings directly impact those in the inner rings by creating conditions and by setting constraints. This framework intentionally does not show specific causal relationships. We believe that causality can be multiply determined, reciprocal, and dynamic. For example, the competitive environment in which a firm is embedded influences the organizing policies and culture, and may also have direct influences on task design. In addition, the structures that are close antecedents may shape collaborative processes, but the use of collaborative processes may shape the structures that develop. If people have succeeded in producing creative outcomes through past collaborations, then they may be more likely to engage in new endeavors and use the processes that led to their past success.

The innermost ring presents the ultimate focus of the inquiry, the reason why we are even interested in the collaborative process – i.e., successful, productive and value-added outcomes. These outcomes are creative -- new understandings and insights, new products and services, improved processes, solutions to problems, etc. – not just producing the same goods over and over, or providing routine, ongoing services. The

discussion in the last several pages suggests that creativity is the direct result of the collaborative process itself. An associated outcome is the feeling of satisfaction, the exhilaration and enjoyment that accompanies the successful achievement of a challenging goal.

We use Schrage's definition as the starting point for understanding the fundamental nature of the collaborative process, the next innermost ring. The act of collaboration involves "two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own" (p 40). When it works well, collaborators build upon each others ideas, going back and forth, constructing an upward spiral of new, shared ideas until the process concludes with the creative outcomes in the innermost ring. New ideas arise from the synthesis of individual ideas, a creative synergy emerging from the building blocks of the collaborative process.

This process is not always as smooth as this description might imply. The *sine qua non* of effective collaboration is the tension and conflict between different ideas, viewpoints, and objectives. As we have seen from the conflict-resolution literature, conflict when managed well can spark creativity; on the other hand, it can destroy the collaboration when it is suppressed, mishandled, or allowed to escalate unchecked. This may seem to contradict our earlier point that participants will experience exhilaration and enjoyment as the outcome of a successful collaboration. But that is the case only if we "take the temperature" of the process at various points as it unfolds rather than look at the entire process from the perspective of its ultimate outcome. Most people who have been parties to successful collaborations would probably describe them as often difficult,

sometimes painful, but ultimately profoundly satisfying in a way that only the successful conclusion of a difficult journey can be.

They might also describe the process as thoroughly involving, transcendent, and timeless, especially when the collaborators have managed to resolve critical conflicts and are well on their way to constructing the upward spiral of creative synthesis, brick by brick, idea by idea. The focus, concentration, loss of self consciousness, and merging of action and awareness described by Csikszentmihaly is also part of the collaborative experience.

The next ring of the framework describes what we refer to as the “close antecedents” of the process. That is, they are the immediate enablers of collaboration, the conditions that most directly impact the collaborative process. We partition these conditions into two categories: structures and behaviors. In the first category we include characteristics of the tasks and the conditions that make up the immediate environment within which the tasks are performed. The job design and group design literature suggests that the most important may be task interdependence – i.e., the degree to which the successful completion of tasks by one individual is dependent upon the successful completion of other tasks by other individuals. If tasks are not interdependent there is no need or reason to collaborate. Individuals working alone can do the work. Attempts to create collaboration and teamwork in this case will be forced, artificial, and ultimately, ineffective.

Another important set of close antecedents are the group task characteristics described earlier on the section on team design, especially the five characteristics associated with highly motivating group tasks identified by Hackman and Oldham – skill

variety, task identity, task significance, autonomy, and feedback (see p 6). Other structural characteristics that emerge from the review earlier in this chapter include clear and challenging goals, as well as constraints and rules that place some limits on the collaborative process. It may seem illogical to classify rules and constraints as enablers, but without boundaries and structure placed on the process, collaborators can easily lose focus and be overwhelmed by the choices offered by limitless options. Another characteristic is the task-related skills and expertise of the participants. They are obviously critical factors in successful collaborations.

The last structural characteristic is shared space. This notion is central to Schrage's perspective on collaboration. He argues that the primary obstacle to effective collaboration is the "ephemeral" nature of conversation.

Even under the best of circumstances, its difficult to keep track of what's been said in conversation...the words vanish the instant they've been uttered. Even when taking notes, one can rarely, if ever, get a perfect transcript because of the inevitable discrepancies between what's been said and what's heard

Conversations don't have memories, only their participants do. The serial and ephemeral nature of conversation, then subtly works against collaboration. (p 97-98)

Therefore, collaboration requires a means for capturing the ideas discussed by participants and displaying them so that all can see, examine, analyze, manipulate, synthesize and build upon them to create shared understandings and new ideas. Whether it be a sodden bar napkin covered with notes and equations, a blackboard, or a computer-driven projection screen, there needs to be a "space" -- physical or electronic -- where the

ideas and symbols are displayed and “shared” so that everyone can participate on an equal footing.

The second category of close antecedents is the cognitive and interpersonal behaviors, skills and processes that ultimately make collaborations possible. The behaviors described earlier in the section on process consultation can all be direct enablers of the collaborative process. It is easy to see how behaviors and norms concerning participation, listening, free expression of ideas, and trust can contribute to effective collaborations. In addition, the sixteen “ground rules” for effective groups offered by Roger Schwartz provide very specific recommendations that can help create successful collaborations.

Other writers have also talked about the importance of “lateral skills” in cross-functional collaborations. Mankin, Cohen and Bikson (1996) define lateral skills, as the ability to work with and learn from other individuals with different functional backgrounds, perspectives, and agendas. People with lateral skills can:

- act as a bridge and interpreter between collaborators from different functional areas,
- can recognize the relevance of others’ expertise and rapidly learn their professional language and concepts, and
- can acknowledge the validity of others’ points of view even when they differ from their own.

It is easy to see how lateral skills can facilitate collaboration, especially among participants with diverse backgrounds, perspectives, and agendas.

The outermost ring contains the more distant antecedents of collaboration, the organizational policies, programs, structures, systems and culture that support collaboration. Included here are compensation systems that reward collaboration and teamwork, and training and education to help individuals learn the interpersonal process skills described above. Also important are professional development programs that encourage lateral career moves and networking. In fact, anything that helps lower boundaries and generally makes it easier for people to work together is necessary for organizations committed to innovation and knowledge-based change. New technologies, policies or cultures will play critical roles in reducing barriers to collaboration, whether they be organizational, functional, hierarchical, temporal, geographical or attitudinal in nature (see Mankin, Cohen, and Bikson, 1996).

And to complete our framework, all of these rings, all of these conditions, processes and outcomes are imbedded within an environment that is increasingly competitive, dynamic, unpredictable and global in scope. Changes in societies, economies, technologies, ideas, values and knowledge are the context for collaboration, as well as the drivers that will make it so critical for success in the 21st century.

Implications for Virtual Organizations and Teams

We began this chapter by asserting that collaboration is the key to effectiveness in the virtual organization. We then presented a framework that integrated the understandings about collaboration that emerge from four research traditions – conflict resolution, process facilitation and team design, the psychology of flow and optimal experience, and computer supported cooperative work. This framework describes the collaborative process itself, the factors that create the conditions for collaboration to

occur, and finally, the outcomes that are expected to emerge. In this final section, we look more closely at the virtual organization and virtual teams, and discuss the implications of “virtuality” for collaboration.

Virtual organizations are more complex than traditional organizations, in that they connect multiple organizations in a dynamic network. Each organization has its own policies, systems, and structures that may not easily mesh with its partners. The dynamic nature of the network as well as the number of boundaries that are crossed increase uncertainty and complexity. Similarly, virtual teams connect people across disciplines, functions, geographies, and organizations to temporarily work together on particular opportunities. In contrast to a traditional work team, whose members report to the same supervisor in the same unit of the same organization, virtual team members report to different supervisors from different functions, disciplines, and potentially different organizations, and do not share common methods of working together. Virtual team members need to develop their own methods of working together. In order to deal with the uncertainty and complexity, and to successfully develop effective ways of working together, collaboration is essential.

Collaboration enables people who cut across multiple boundaries to develop a common focus. Virtuality results in fragmentation without sustained effort to develop this common focus. Members of virtual teams cannot depend upon following the same policies and operating procedures, belonging to the same culture, using the same systems, and reporting to their boss in the same organizational structure in order to keep them focused in a common direction. Instead, a shared understanding emerges from the processes of collaboration. The rules for working together are not embedded in the

operating procedures or shared cultural norms of a given organization. Things that normally would be taken for granted are not in place.

Consequently, the difficulty of developing this shared understanding for those connected virtually should not be underestimated. Virtual teams need to create new structures that enable them to stay focused and create shared understandings about how they will work together and the results they are trying to achieve. This calls for putting in place many of the same conditions and processes that enable traditional teams to work effectively, but being more intentional and explicit about doing this. For example, having an interdependent task, and defining shared goals and making sure that all members have a common understanding of them are critical. Developing common working procedures and processes is essential. Ensuring that resources are allocated for the work at hand is a responsibility of virtual teams and members may need to negotiate for resources with their home organization. Creating “shared space” where the work of the team is represented so that all can see – becomes even more important when people are not co-located. The explicit use of systematic decision-making processes, a success factor for all teams (Mohrman, Cohen, & Mohrman, 1995), may be even more important for virtual teams. Explicitly deciding to use good group processes helps a virtual team develop common and productive ways of working together. The processes and behaviors that we describe as the close antecedents of collaboration are particularly important for virtual teams and people networked in virtual organizations.

Organizations that use virtual teams and the organizations that are linked together to form virtual organizations should examine their policies, systems, structures, and culture to see if they support collaboration. As discussed earlier, reward systems that

support teamwork and professional development systems that encourage lateral movement and networking help to reduce barriers to collaboration, both within and across organizations. The information technology systems that are used deserve special comment, because they enable people to communicate across geographic and organizational boundaries. The information technology designs that are used should enable users of one system to communicate and work with users of other systems – directly, seamlessly, and transparently. That means that systems need to be compatible with one another, preferably using open, nonproprietary standards (Mankin et al., 1996). Information technology also enables collaborative work to be archived, stored, reviewed and modified by all team members, irrespective of location. Information technology provides the platform for collaboration in the virtual organization – by linking people together and creating an electronic “shared space” where ideas can be synthesized and discoveries captured.

Information technology provides the platform, but ultimately it is the people that make collaboration work. The importance of the human element and human connections should not be taken for granted, particularly where people are connected virtually. At some fundamental level, it comes down to trust. Managers need to trust their people to give them the freedom to work virtually – where they cannot be seen and accounted for moment by moment. People need to trust others from different backgrounds, disciplines, organizations, and countries in order to effectively collaborate with them. Without trust, according to Charles Handy, the virtual organization cannot work at all:

If it is even true that a lack of trust makes employees untrustworthy, it does not bode well for the future of virtuality in organizations. If we are to enjoy the

efficiencies and other benefits of the virtual organization, we will have to rediscover how to run organizations based more on trust than on control.

Virtuality requires trust to make it work: Technology on its own is not enough (p.44).

In its essence, collaboration involves personal relationships between people.

People need to relate to one another in order to build upon each other's ideas and create something new. It involves the willingness to trust someone enough to work through a conflict with them and to transcend the difficulties that differences always pose. This is true for all organizations, but becomes a special challenge in the virtual organization that cannot rely on informal contact to build these relationships. By explicitly creating processes and systems that support collaboration, virtual teams and organizations create the conditions for these personal relationships to develop. For the organizations and people that are willing to invest in creating the conditions and relationships for collaboration – the new discoveries, creative insights, and the exhilaration and satisfaction that results from achieving challenging goals—are well worth the investment.

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Figure #1 Rings of Collaboration

Environment: Social, Technological, Economic, Etc.

