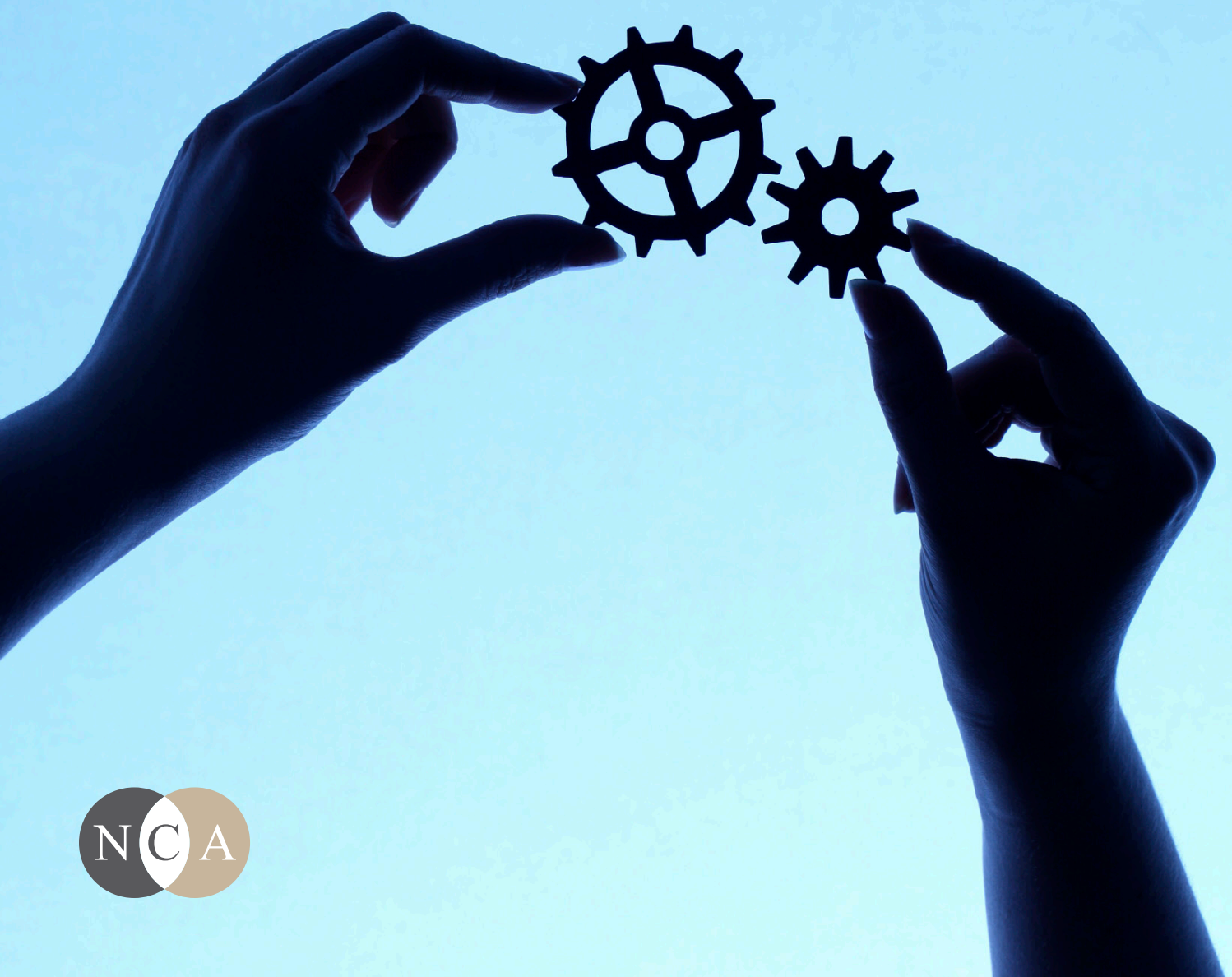


Carroll C. Arnold

Distinguished Lecture 2013

Paradoxes of Collaboration

Marshall Scott Poole, Ph.D.



The Carroll C. Arnold Distinguished Lecture

On October 8, 1994, the Administrative Committee of the National Communication Association established the Carroll C. Arnold Distinguished Lecture. The Arnold Lecture is given in plenary session each year at the annual convention of the Association and features the most accomplished researchers in the field. The topic of the lecture changes annually so as to capture the wide range of research being conducted in the field and to demonstrate the relevance of that work to society at large.

The purpose of the Arnold Lecture is to inspire not by words but by intellectual deeds. Its goal is to make the members of the Association better informed by having one of its best professionals think aloud in their presence. Over the years, the Arnold Lecture will serve as a scholarly stimulus for new ideas and new ways of approaching those ideas. The inaugural Lecture was given on November 17, 1995.

The Arnold Lecturer is chosen each year by the First Vice President. When choosing the Arnold Lecturer, the First Vice President is charged to select a long-standing member of NCA, a scholar of undisputed merit who has already been recognized as such, a person whose recent research is as vital and suggestive as his or her earlier work, and a researcher whose work meets or exceeds the scholarly standards of the academy generally.

The Lecture has been named for Carroll C. Arnold, Professor Emeritus of Pennsylvania State University. Trained under Professor A. Craig Baird at the University of Iowa, Arnold was the coauthor (with John Wilson) of *Public Speaking as a Liberal Art*, author of *Criticism of Oral Rhetoric* (among other works), and co-editor of *The Handbook of Rhetorical and Communication Theory*. Although primarily trained as a humanist, Arnold was nonetheless one of the most active participants in the New Orleans Conference of 1968 which helped put social scientific research in communication on solid footing. Thereafter, Arnold edited *Communication Monographs* because he was fascinated by empirical questions. As one of the three founders of the journal *Philosophy and Rhetoric*, Arnold also helped move the field toward increased dialogue with the humanities in general. For these reasons and more, Arnold was dubbed “The Teacher of the Field” when he retired from Penn State in 1977. Dr. Arnold died in January of 1997.

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The Carroll C. Arnold Distinguished Lecture
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Paradoxes of Collaboration

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It is an honor to deliver the 2012 Carroll C. Arnold Distinguished Lecture. Professor Arnold retired before I finished my degree, but I was fortunate to have as one of my teachers a student of his, Stephen Lucas, and I have had the good fortune to work with others whom he taught and influenced. I know from them that Professor Arnold truly was “a teacher to the field.”

I would also like to thank NCA Vice President Steven Beebe for giving me the opportunity to deliver this lecture. Steve is an exemplar of collaboration in word and deed. He has influenced several generations of scholars and practitioners through his writing and teaching on group communication.

This lecture itself, like all scholarship, is a collaboration that draws on the path-breaking work of many of my fellow communication scholars as well as upon my own.

The story it tells intertwines several streams of research conducted over the past two decades and foreshadowed by early research on group discussion as a tool of democracy that enabled people to work collegially toward wise policies and decisions. William Keith (2007) makes a convincing case that this emphasis on cooperative discussion shaped the birth of the modern communication discipline and is a key background assumption in communication research.

This lecture will explore four questions about collaboration. I first address the question “What is collaboration?”, adopting a broad view of the subject. Then we will consider “What makes collaboration so challenging?” Among these challenges are dealing with and capitalizing on the paradoxes of collaboration featured in the title of this lecture. The next logical question is “How can communication scholarship help us to understand and improve collaboration?” As we will see, scholarship in our discipline has contributed truly unique intellectual and pragmatic resources for promoting collaboration and for escaping the traps we inevitably fall into when we attempt to collaborate. Once we have considered the contributions of our discipline it is fitting to ask “What additional questions and directions should be undertaken?”



Marshall Scott Poole delivers the Carroll C. Arnold Distinguished Lecture at the NCA 98th Annual Convention in Orlando, FL.

What Is Collaboration?

Collaboration is a multifaceted concept that has gained great purchase in both scholarly and lay circles in the past decade. It stands at the center of a constellation of terms, many of which have been the subject of research and teaching long before collaboration gained wide currency. Terms associated with collaboration include coordination, cooperation, teamwork, dialogue, and integrative problem solving at the interpersonal and group levels and partnership, alliance, cooperative, learning community, and community of practice at the organizational and community levels. Though its current usage has generally positive implications, collaboration also has its dark side as reflected in terms like collusion and “quisling.”

A cursory search on the internet turns up thousands of references to collaboration, and the ones that appear at the top of the list evidence what we might call “the corporate colonization of collaboration,” following Deetz (1989). There are literally hundreds of corporations, consulting firms, software applications, and books promoting collaboration and advancing programs and formulas that guarantee effective collaboration. That collaboration has become a “buzzword” among professionals and the public is a positive development in that it focuses attention on this important concept. Buzzwords, however, are used in so many ways and so loosely that they blur the meaning of a term, necessitating clarification.

The communication discipline is in a unique position to contribute to this clarification. From Aristotle’s analysis of rhetoric in the polis to Kenneth Burke’s concern with identification to contemporary research, collaboration in the broad sense has been a fundamental concern of Communication scholars. Communication takes a process and practice orientation, both of which are essential to understanding collaboration. And, as previously noted, the ethic of democracy and collaboration are deeply rooted in our discipline.

At the outset, I will offer a provisional definition of collaboration as *the joint activity of two or more people which: (1) is directed by a shared purpose, or regard for all parties’ individual goals, or both; (2) honors the perspectives and contributions of all parties involved; and (3) strives for a high quality experience and outcomes for all parties.* This broad definition is meant to encompass a wide variety of phenomena that might be labeled collaborative, and we will leave until later the task of sorting out levels or types of collaboration.

One notable feature of this definition, which draws on thinking of Laurie Lewis (2006) and Michael Shrage (1990), is that a shared goal or purpose is *not* a prerequisite for collaboration, as is often assumed. As Lewis (2006) argues, many collaborations are entered into for the purpose of advancing individual agendas through interaction with others who can help the individual achieve his or her purpose through stimulation, challenge, competition, or other promotive activities. What separates this type of collaboration from domination or exploitation is that all parties in the collaboration are able to advance their individual agendas without some gaining at the expense of others.

Taking a broad view of collaboration, we will now turn to some exemplars that illustrate various forms collaborations can take. These will highlight key characteristics of collaboration and also some of the challenges faced in creating and maintaining collaborations.

T.S. Eliot and Ezra Pound

Consider, first, T.S. Eliot and Ezra Pound. It is well-documented that they collaborated closely on one of Eliot's masterworks, *The Waste Land*. Pound took Eliot's lengthy original and reduced it from over 1000 lines to 434 lines, and edited the manuscript extensively. Stillinger (1991) comments,

"The majority view is that the 434 lines of *The Waste Land* were lying hidden from the beginning in the 1000 lines of the draft, rather in the manner of one of Michelangelo's slumbering figures were waiting to be rescued from the block of marble...[I]t took one poetic genius to create those lines in the first place, and another to get rid of the several hundred inferior lines surrounding and obscuring them (pp. 127-128; cited in Miller, Wald, Harris, Bollier & Mako Hill, 2012).

This raises the question: Is *The Waste Land* Eliot's poem or Pound's? Without the contributions of both, we would not have this masterwork. It is difficult to tell where one's contribution leaves off and the other begins. This is a central characteristic of a good collaboration: At the end of the day, authorship and responsibility are blurred and the product is greater than any of the contributors could have achieved on his or her own.

That *The Waste Land* is attributed solely to Eliot highlights another characteristic of collaboration to which we will return: the tendency to try to identify one individual responsible for things. It threatens to undercut collaboration and dealing with this tendency is one of the challenges we must overcome to promote effective collaboration.

Surgical Teams

Now let's turn to a different type of collaboration, illustrated in Figure 1, the surgical team. A high-functioning surgical team coordinates a number of specialized roles—surgeons, anesthesiologist, nurses, technicians—to perform exquisitely delicate operations. As Robert N. Wilson (1954) recounts in his classic study "Teamwork in the Operating Room" and John Lammers and Dean Krikorian (1997) reinforce, collaboration melds members of the team together, setting a boundary around the performance situation and enabling them to adapt to the unexpected and expedite efficient task accomplishment.



Figure 1. Surgical Team

As the different uniforms in Figure 1 indicate, there are clear role divisions in surgical teams, and along with role divisions comes a status hierarchy. The M.D.s—most often the chief surgeon but at certain junctures the anesthesiologist—orchestrate the team and shape how the skills and programs brought to the team by the other members are applied to the task. This commonly-employed team structure both enables and poses challenges for collaboration. It serves

to unify a diverse set of talents and functions into a coherent whole during the time of the performance. It may also lead to breakdowns in collaboration if the high status members overcontrol or make inappropriate choices, prompting resistance and rebellion from lower status members.

Matisse and Picasso

One would not ordinarily think of our third example—the painters Matisse and Picasso—as a collaboration. They represent, after all, different schools of work and are widely regarded as competitors. Their collaboration was implicit: each indirectly pushed the other’s art forward. In a wonderful review of the Matisse-Picasso joint exhibition at the New York Museum of Modern Art, John Richardson (2003) summarizes the parallel development of both artists’ paintings, showing similarities in composition and style in works rendered in each artist’s incomparable manner.

Matisse and Picasso waged an artistic “war” of sorts in the early twentieth century, with the up and coming Picasso challenging Matisse’s position. It is said that some of Picasso’s group bought a Matisse and used it for a target. Yet, Matisse influenced Picasso and Picasso influenced Matisse. Matisse’s early masterpiece *La Bonheur de Vivre* (shown below) influenced Picasso’s later series *Women of Algiers, After Delacroix*, painted after Matisse was dead (see below). Picasso commented on this series, which was based on a painting by Delacroix which Matisse and Picasso both greatly admired, “Yes, [Matisse] is dead. And I, I am continuing his paintings” (Richardson, 2003, p. 152). Each was aware of the other’s influence while they lived contemporaneously. Matisse commented to Picasso’s partner Françoise Gilot, “We must talk to each other as much as we can. When one of us dies, there will be some things that the other will never be able to talk of with anyone else” (p. 181). Picasso: “You have got to be able to picture side by side everything Matisse and I were doing at the time. No one has ever looked at Matisse’s painting more carefully than I, and no one has looked at mine more carefully than he” (p. 147).



Figure 2. *La Bonheur de Vivre* by Henri Matisse



Figure 3. *Women of Algiers* by Pablo Picasso

This example highlights the fact that collaborations are not always “nice.” Picasso and Matisse, however high their regard for one another’s art, were competitors. They illustrate an intriguing mode of collaboration—collaboration through competition. Their example also shows that collaborators do not necessarily have to work closely together, but can stimulate one another at a distance.

That Matisse's early painting influenced Picasso's later work also points to the possibility that distant collaborations can extend across time as well as across space. This suggests an important boundary we should place on our definition of collaboration today: collaborations must involve at least one period of interaction among *living* collaborators. Picasso continued to be influenced by his collaboration with Matisse after Matisse passed on, keeping Matisse alive in his continued references in what was now a one-sided collaboration. Collaboration must involve at least some actual give-and-take among collaborators. Absent this, the relationship is better considered influence. While our entire discipline has been influenced by Plato and Aristotle, I would submit that none of us who developed ideas while reading their works were collaborating with them.

A logical extension of this line of thought is to ask whether collaborators must interact with one another through direct face-to-face interaction. Many scholars seem to place a premium on direct unmediated interchanges among collaborators through conversations and meetings, both large and small (e.g., Chrislip & Larson, 1994; Straus, 2002). The next example confronts this assumption.

Foldit

Foldit, an online community of professional and amateur scientists dedicated to discovering how proteins are folded, is described in some detail by Nielsen (2012). Proteins, molecules essential to living things, are very long molecules that are folded like extremely complex pretzels, with many twists and turns, doubling backs and contortions of their molecular backbones. The ability of proteins to catalyze and to participate otherwise in biological reactions depends on their folding, and many diseases and other biological malfunctions can be traced to misfolded proteins. Hence, solving the folding problem is essential to understanding the function of proteins.



Figure 4. Foldit

Determining how proteins are folded depends on the flexible application of a set of rules governing protein configuration. Early researchers took years to arrive at a proper

structure for a single protein, but advances in knowledge and technology have reduced this to the order of weeks or even days for relatively simple proteins. The challenges facing the protein research community are daunting, however, for three reasons. First, there are thousands and perhaps even hundreds of thousands of proteins to study. And while knowing how a single protein is folded is useful, proteins typically act through interacting with other proteins—often *many* other proteins—so determining folding for groups of proteins is necessary. Finally, the particular rules that must be applied to determine folding differ across categories of proteins. Determining the shape of the first protein in a given category is particularly challenging and there are many different categories, most of which are *terra incognita*.

These challenges pose a mountainous problem for the relatively small community of scientists studying protein folding. One solution was to develop computerized methods for determining folding, and these have had limited success. But something more was needed. Two scholars from the University of Washington, biochemist David Baker and computer scientist Zoran Popovic, designed a game called “Foldit” that shows proteins to players, gives them controls for moving the protein and its components around to change its configuration, and scores them on the level of energy required to maintain the shape they come up with (lower energy levels are better). Many of the tools incorporated into Foldit are similar to or based on tools used by scientists, so in effect the players take the role of amateur scientists tackling the giant corpus of proteins whose shape needs decoding.

Foldit incorporates features characteristic of effective online games. Players compete to see who can come up with the lowest energy configurations and the game keeps score; they can see how well they are doing and gain status in the game community through their performance. They can also cooperate by working in teams and coaching each other. The Foldit site provides training and education on fundamentals of protein folding.

As of late 2011 more than 75,000 had signed up for Foldit and a portion are regular players. Nielsen (2012) quotes one of the top Foldit players, who describes the game as “the most challenging, exciting, stimulating, intense, addictive game I have ever played” that provides a way for people to “offer something proactive to solving some of worlds/societies most complicated puzzles” (p. 147). Foldit players have fared well in competitions including both professional biochemists and computers and have uncovered some novel structures. Nielsen sums up, stating that Foldit is “a symbiosis: the professionals develop the systematic understanding that underlies the mechanics of the game, and the amateurs then supply the dedicated artistry required to take best advantage of that systematic understanding” (p. 148).

Foldit is a prime example of a *massive online collaboration community (MOCC)*, which also includes undertakings such as Wikipedia and Galaxy Zoo. Collaborators work on their own or in small groups on individual tasks that together serve a greater common goal. In terms of our definition of collaboration, they are pursuing individual goals that are honored by the collaboration, but also serve a larger overall goal.

Communication and information technology is essential to MOCCs. The portal and game tools are what make Foldit possible. Built into the Foldit game’s structure and rules is implicit knowledge of the biochemical processes that influence folding; players are allowed to make some moves, but other folds are disallowed because they are

not consistent with scientific knowledge about folding. In this sense, Foldit augments the typical player's abilities. Foldit also provides features that support teamwork and interaction among members. There is an online forum and a wiki where players can discuss strategy and insights and also build community. The game score allows participants to identify who is best at the game and when high scoring members share tips, others attend to them.

While relatively stable teams may form in Foldit, as in all online games players may also play alone or switch partners often. Like the surgical teams, Foldit players develop specific skills that are transferable across different situations. Hence the particular "cast of characters" in a given collaboration within the larger enterprise may vary greatly across proteins and over time.

Foldit and other new online environments stretch our conception of collaboration, which has often emphasized relatively bounded interchanges among a relatively small cast of characters. MOCCs exhibit a rich variety and range of collaborations among changing sets of collaborators. Foldit as a whole is a collaborative enterprise in which local players contribute to a common project through a mix of competitive and cooperative interactions with the game and with one another.

In closing our consideration of Foldit, it is worth considering one other issue: As computer agents become more and more sophisticated it is even possible that people will work on projects like Foldit with nonhuman agents. There is already a degree of "intelligence" built into the rules of the game, which constrain what players can do. A more active agent might make substantive contributions or suggestions, similar to those of human collaborators, that would inspire or inform humans playing the game. Could we classify this as a case of human-machine collaboration? We will pursue this point no further, but it is worth considering.

Qualities of a Good Collaboration

Drawing on these examples and the work of communication scholars Laurie Lewis (2006), Renee Heath and Lawrence Frey (2004), and David D. Chrislip and Carl E. Larson (1994), we can advance a set of properties that effective collaborations share. To the extent that a collaboration achieves these for a significant portion of the time it exists, I judge it to be a *good* collaboration.

A good collaboration is, first of all, *active*. Collaborators focus on action, on solving a problem, creating a work of art, discovering something, completing a task. It is in activity that collaborations are realized. Collaboration is a process, not a state; a practice, not an institution. As activities, collaborations are focused on the doing, not on the being of the individual collaborators.

While egos, status, and personal achievement, are both motivators and products of collaboration, someone standing outside the collaboration will appreciate it as an accomplishment in its own right that leads to something true, good, or beautiful (or perhaps the obverse in the case of nefarious collaborations), not as something any of the individuals is in control of. Akhavan, Amarral, Murphy, and Uehlinger (1999) captured this aptly in their statement that collaboration was "working in a system while giving of

oneself, but not giving up oneself...a balance between autonomy and togetherness' (p.4, cited in Lewis, 2006, p. 219). So while we might worship at the feet of geniuses such as Pound, Eliot, Picasso, and Matisse, their collaborations occurred through acting together or in response to one another, through each giving up control to some extent and losing themselves in the action. Even though our surgeon may get the credit for a successful operation, it is the teamwork in which she is but one participant that carries out the operation. In a real sense collaborations go on *between and among* the collaborators, not within the control of any of them.

A good collaboration, second, is founded on *social interaction and relationships*. Collaboration requires engagement and interchange. While direct face-to-face conversation has often been taken as the archetype for collaboration, in fact collaborative interaction can take many forms. Pound and Eliot certainly talked with one another, but the collaboration that produced *The Waste Land* was sequential, with Eliot writing, Pound editing/rewriting, Eliot rewriting some more and so on. Much of the interaction in surgical teams is programmed, as each specialty enacts its own part of the work. Surgical team members are trained to play their parts and their experience gives them skills, attitudes, and knowledge in their specialties. In such cases, training is a substitute for communication—prior communicative episodes build the skills necessary for teamwork in the present. Communication during an operation that is going well is often perfunctory, brief, and coded so that as little as possible is required; paradoxically, when action teams engage in a great deal of communication, it is a sign that things are not going well, that unanticipated problems have arisen that require improvisation. For many teams, past communications—during training and related to previous problematic situations—are more important than communication as they actually collaborate.

In the case of Foldit interaction is mediated by the game environment. Players interact around models on their screens and can communicate through online forums and a wiki. These communication tools are much more indirect and slower than face-to-face communication, but the slower rhythm and indirectness of communication within Foldit seems to me appropriate for a game which requires a good deal of concentration and deliberate thought. Since receivers control communication via forums and wikis, they avoid interruptions and distractions and seek input or give advice when they are ready. Perhaps more important in Foldit are signals such as scores and player rankings, which give players immediate feedback as to how they are doing and enable comparison of their own achievements and proficiencies with others'. These set up a gigantic feedback system among members that motivates players and encourages them to excel through competition.

This emphasis on interaction around competition links to a third characteristic of a good collaboration: it is *confrontational*. Collaborations are not always as cooperative and supportive as today's interpretations of the term may suggest. The nature of confrontation differs. In some cases, collaborators actively confront their differences and work them through, as with Pound and Eliot. In others, collaborators goad one another forward, as Picasso and Matisse did, without ever coming to a resolution. Handled properly, differences inject new ideas and possibilities into the collaboration that promote creativity. Confrontation also challenges collaborators to evaluate and sometimes to question their activities, enhancing the quality of collaborative outcomes.

For collaborators to rise to this challenge, a good collaboration must be *empowering*. Participants must have space to exercise their talents and to contribute freely and spontaneously. A major impediment to this is power and status differentials among collaborators. To the extent that one or a few members can potentially control the others, free and creative interchanges are less likely. Often collaborators are free agents, like Picasso and Matisse, Pound and Eliot, and the players of Foldit. But even in situations where there is a clear leader and authority, like the surgical team, collaboration is most effective when fostered by willing performance of roles by team members. To the extent that they fear the surgeon or feel her “looking over their shoulders,” their performance is likely to degrade. Lewis (2006) states well the benefits of equalization and empowerment in collaboration in health care settings: “In these situations, collaborative processes may level the field so that lower-status participants’ wisdom, knowledge, concerns, and ideas can become a part of the decision-making process” (p. 219).

A final quality of a good collaboration is *emergence*. Good collaborations are surprising, generating interactions and outcomes that none of the collaborators could have foreseen. The well-worn term “synergy” is apt here: good collaboration is more than the sum of its parts and interactions among collaborators produce emergents that none of them alone could have brought about. Emergence occurs both in the process and the outcomes of collaborations. The paintings of Matisse and Picasso were superior due to their collaboration, but each also advanced in his artistic techniques due to the other. An excellent surgical team is able to detect and to adapt to problems during an operation that a more fragmented group of specialists would either not notice or handle in an inferior way. Participants in Foldit contribute to a scientific edifice that none of them could imagine constructing on their own. Their contributions are at least additive, and they are more complex in the case of those participants who learn from one another and spark each other to more intensive analysis through competition.

Weaving Collaborations

These five qualities define an ideal type that collaborators can aspire to. It is important to acknowledge that only “peak” collaborations exhibit all five characteristics. Many other worthwhile collaborations partially achieve them, and even peak collaborations may only realize them fully for limited periods of time. Collaborations unfold over time and space, as depicted in Figure 5 through a process I term “weaving collaborations.” As the

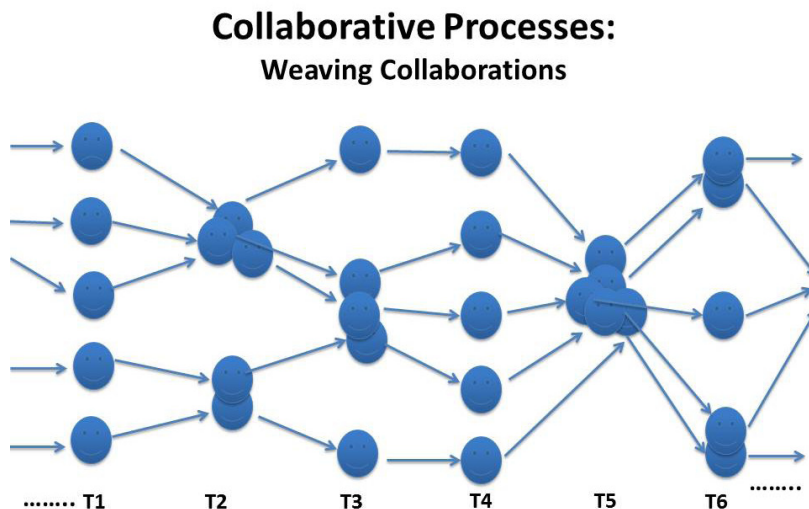


Figure 5. Weaving Collaborations

figure shows, participants sometimes work alone, sometimes are fully engaged with one another, and sometimes are engaged with only a subset of other collaborators. Taken as a whole, the temporal progression of collaboration exhibits periods in which collaborators are woven together, then “unravel”, then reweave, and so on as long as the collaboration lasts. Periods T2, T3, T6, and especially T5 are those when we are most inclined to declare that collaboration is taking place. I believe, however, that periods like T1 and T4, when participants work alone, are also important. These are periods for private contemplation and many of the ideas that will spark collaboration occur during these seemingly fallow periods.

Collaborations, then, are made up of series of collaborative episodes broken by periods of solitary work. The length and intensity of collaborative and solitary episodes varies. For Eliot and Pound the solitary episodes were quite long and the collaborations short. For surgical teams collaboration and solitary work are much more equal in length and intensity, with solitary work at the beginning, collaboration starting relatively early in the operation and peaking near its mid-point, with solitary work on individualized tasks dominating as the operation winds down. Foldit has hundreds and sometimes thousands of lines of work occurring simultaneously, many solitary but some collaborative. A diagram of Foldit like that in Figure 5 would be incredibly large and complex if tracked over any length of time, comprising an “ecosystem” of collaborations (Poole & Contractor, 2012).

Collaborations also obviously vary in the length of time they exist. Picasso and Matisse’s extended over two decades, while MABAS and Foldit are ongoing enterprises whose participants may be engaged for years and even decades as well. Surgeries, on the other hand, are limited in duration. While many surgical teams are fairly stable over time, many others are composed of rotations of participants filling various roles, with different scrub nurses, anesthesiologists, and surgeons coming and going for different operations. After and during collaborations, members engage in post hoc processes to understand, make sense of, and explain the collaboration. This often involves a story that narrates the collaborative process and its major events and influences (Browning, 1992; Poole, 2012). A significant part of this narrative deals with allocation of credit for the successes and failures of the collaboration. As noted before, the public gives most of the credit for *The Waste Land* to Eliot, regardless of Pound’s contributions. As we will see, this post hoc sense-making with respect to credit poses a key challenge for collaboration.

Two Types of Collaboration

The ideal type model of collaboration advanced in the preceding sections enables us to distinguish between two forms collaboration may take. Both are valuable constituents of human activity, but only one realizes all five qualities of a good collaboration. Each is, however, productive in its own way and so, like Sears, we can consider them to be “better” and “best.”

*Collaboration*¹ is constructive coordination of activities to achieve a goal or solve a problem. This is the type of collaboration touted in the corporate and government sectors. It is more than sufficient for effective joint activity. It is best accomplished through practice and through development of plans and programs that choreograph the collaboration. Practice, plans, and programs involve not only the most effective

and efficient ways and means for action, but also working out responses to exceptions and problems. Collaboration ¹ is problem solving through application of programs and routines, supplemented by improvisation when necessary. Teamwork, joint ventures, and interorganizational collaborations are all examples of Collaboration ¹.

To a casual observer *Collaboration* ² bears a resemblance to Collaboration ¹, but it has an entirely different quality. In Collaboration ² there is a greater play of ideas and possibilities and collaboration is less subject to planning and control than in Collaboration ¹. In Collaboration ² it is much more difficult to determine where one person's contribution ends and another's begins: authorship, responsibility, or control over the emerging product is difficult to establish with any degree of certainty. In Collaboration ² participants question basic assumptions, problematize plans and programs, and learning to learn, much as Argyris and Schon (1978) described in their discussion of second-order learning.

Collaboration ² does not work only according to the scripts and programs that enable Collaboration ¹. It also rests on chance events and contacts. Collaboration ² is more fluid and less choreographed than Collaboration ¹ and therefore leaves more room for chance to impact the collaboration. Whereas chance events are often viewed by those engaged in Collaboration ¹ as "shocks" to a well-oiled system, in Collaboration ² they are viewed as opportunities or as problems that simply must be surmounted. Hence, they stimulate further ideation and experimentation. The freer mindset of participants in Collaboration ² situates them to take advantage of chance events and contacts. As Pasteur commented, "Chance favors the prepared mind." Participants in Collaboration ² are prepared in the sense that they are open to novelty and possibilities. Eric Eisenberg's (1990) concept of "jamming" aptly describes some types of Collaboration ², as does Sawyer's (2007) notion of collaborative creativity.

While Collaboration ¹ is grounded, Collaboration ² is "airy." Collaboration ¹ is systematic and structured, while Collaboration ² is looser and more inventive. Collaboration ¹ gives participants more certainty, and is less equivocal (and may therefore be boring for some); Collaboration ² is less certain and more equivocal (and therefore may be more uncomfortable for others).

The outcomes of Collaboration ² are much less predictable and certain than those of Collaboration ¹. There are well-documented theories of teamwork (LaFasto & Larson, 2001; Salas, Sims, & Burke, 2005) but the sources and explanation for creativity and play have thus far eluded scholars. Participants in Collaboration ², however, take their chances willingly and accept that with risk comes both the possibility of great accomplishments and the possibility of failure. We know that Collaboration ¹ is going well when there is a general feeling of smooth operation, routine problem solving, and capable handling of exceptional issues. We know that Collaboration ² is going well when there is a feeling of surprise and gratification from what is developing.

Collaboration ¹ is the foundation of most cases of Collaboration ². Without a degree of coordination and teamwork, Collaboration ² cannot "take off." Indeed, most episodes of Collaboration ² emerge from Collaboration ¹ and are relatively short, moving back into Collaboration ¹ after a period of creativity and play. So Figure 5 can be re-imagined in terms of periods of Collaboration ¹ interspersed with episodes of Collaboration ². This may need to be the case, as Collaboration ² is often quite taxing, as well as exhilarating.

This description of collaboration suggests that it is both wonderful and relatively rare, especially Collaboration ². As we attempt to collaborate we must surmount several challenges, which I will characterize in terms of paradoxes inherent in collaboration.

Paradox has long been of interest to communication scholars. A lengthy and distinguished lineage of rhetorical communication scholars have written about collaboration from the Sophists, Cicero, Kenneth Burke (1969), Barnett Pearce and Vernon Cronen (1980) Leslie Baxter and Barbara Montgomery (1996), Linda Putnam (1986), and Cynthia Stohl and George Cheney (2001).

In common parlance, paradox is a thought-provoking contrast or contradiction or some problematic situation. A rhetorical paradox is a trope that represents an opposition between two terms. “That’s the youngest old man I never met!” uses the paradox trope. A logical paradox is the case in which we confront two contrary or even contradictory propositions to which we are led by an apparently sound argument. “I always lie” is a logical paradox.

In the case of collaboration, the nature of the paradoxes in question differs somewhat from these language-based paradoxes. In this case we confront *social paradoxes* which play out in the world as we attempt to act and interact (Poole & Van de Ven, 1989). Social paradoxes are looser from a logical point of view than the paradoxes of language. They include tensions and oppositions between incompatible or conflicting positions as well as paradoxes similar to rhetorical or logical paradoxes like those in the double bind (Bateson, 1972). These play out in the world, not just in language, and so we have the resources of the social world to deal with them. Social paradoxes play out in time and space.

Social construction processes also play a part in social paradoxes. How we frame them determines in part how tightly we are caught in the “cage” the paradox traps us in. Paradoxes framed as inescapable dilemmas elicit one type of reaction, while those viewed as opportunities for growth elicit another. Certain ways of thinking about and reacting to social paradoxes can set up a reflexive circulation between the poles of the paradox that intensifies their impact and ability to catch us.

Baxter and Montgomery (1996) adapt an insightful analysis of tensions and paradoxes developed by Bakhtin for communication research. They note that tensions, contradictions, and paradoxes can be viewed as bipolar entities, such as openness-closedness and integration-differentiation. Communicators in relationships and organizations must deal with the pull of these poles, and there are a variety of means for doing so, as we will develop subsequently. If a means of coping with the paradox draws the person, relationship, or organization toward one pole, the other pole exerts a pull that increases the more the first pole is emphasized. Rather like a spring, pulling to one side of a paradox results in social forces that pull back strongly from the other side.

Weaving an effective collaboration involves handling paradoxes that collaboration entails. In my view there are three major paradoxes facing collaborators, the paradoxes of control↔indeterminacy, immediate focus↔distal concerns, and individualism↔collectivity. How collaborators respond to these paradoxes shapes their experience. Collaboration ² is particularly sensitive to these paradoxes and whether it emerges at all depends on how they are handled.

The first paradox arises from a tension between *control and indeterminacy*. Collaborators must exert control in order to act effectively, control over the emerging product, and over the process by which it is created. At the same time, a degree of indeterminacy and loss of control is essential to the creativity that springs from effective collaborations, as we have seen. There must be a vision and expectations about the outcome of the collaboration, but these dampen emergence and surprise. However, emergence can render the situation so equivocal that participants are like rudderless ships. Control and indeterminacy mutually implicate one another. Indeterminacy breeds attempts at control to keep it from “running amuck,” whereas attempts at control are doomed to fail to at least some extent, introducing indeterminacy into the situation.

Picasso, for example, continuously innovated in style and technique in a pursuit of control over his expression, but his exposure to Matisse enlivened him with new ideas beyond any mastery he had achieved, introducing indeterminacy into his artistic trajectory, which he addressed through further attempts at control, each ultimately falling short, prompting further efforts and comparisons and so on. The roles of Foldit guide participants, providing them some degree of control, but tradeoffs in the rules and a multiplicity of possible low energy solutions also engender uncertainty as to what the best solution is. And while the surgeon often seeks to control and direct the operation, unexpected complications—sometimes introduced by her very efforts to control the situation—emerge and must be dealt with.

A focus on the immediate situation versus a long-range perspective is the second paradox facing collaborators. Creativity and responsiveness to shifting situations requires intense focus on the present, on the action at hand. An orientation to the future and to the past are, however, also essential materials for collaboration: collaborators must have a sense of where they are going and of precedents and history as guideposts and as standards for judging the merit of their activities. The mutual implication of present, past, and future foci are strong. Agency, as George Herbert Mead (1932) argued, depends on a self in the present that is continuously orienting to the past and to the future (cf Emirbayer & Mische, 1998, for a more recent argument). Too great a focus on the here-and-now, however, may render collaborative efforts ineffective or trivial, because collaborators act without reference points. The past and future, however, can also exert a tyranny that stifles creativity.

Pound and Eliot likely struggled with the tension between immediacy and distal focus as they crafted *The Waste Land*. A poem drawing on classic themes, yet breaking with contemporary models while projecting a sere future necessitates struggle with both sides of the paradox among readers and certainly did for its creators. The immediacy of language of the poem melds with concern for classic references and projections of an uncertain future.

The third paradox of collaboration is *individualism versus collectivity*. Collaborators must bring something uniquely individual to an effective collaboration, be it superb skills to fulfill a role in a surgical team, or artistic or scientific genius. An effective collaboration, as we have noted, cannot simply be the sum of individual contributions. The collaboration must be collective. Each collaborator must recognize the contributions of others, as Picasso and Matisse did. In addition to the agency of individual egos there must be a collective agency in collaboration.

These paradoxes encapsulate the challenge of collaboration: Collaborators must attempt to satisfy two competing and conflicting demands that interact in a complex system. This can be a maddening, self-defeating task or it can lead to exhilarating opportunities. As we know from Baxter and Montgomery, it is our response to tensions and paradoxes that determines their impact, positive or negative. Addressing these paradoxes effectively is critical for Collaboration ¹. It is absolutely essential for Collaboration ², which is much rarer and more sensitive, always dependent on a delicate balance between paradoxical poles.

Failure to recognize and to address the paradoxes effectively leads to pathologies of collaboration:

- Manipulative domination of naïve participants by others who use their fellow participants' efforts for their own ends in the name of collaboration, a syndrome eloquently described by Stohl and Cheney (2001)
- Expropriation of the products of a true collaboration by one or two participants, who take the credit for something only the collective could have produced, all too common in a day when we lionize the individual and media seek a face to simplify representation of something too complex to convey in "sound bites" or short reports
- Uninspired pseudo-collaboration in which participants go through the motions of what they think should be a collaboration but in reality is nothing more than coordinated work, at the root of much "teamwork" in all walks of life
- Loss of faith in collaboration due to the preceding pathologies, resulting in a reluctance to try collaboration, instead falling back on adherence to a leader or, perhaps worse, to desultory efforts at working together.

These pathologies stem either from ignorance of the paradoxes or from inappropriate responses to them.

Poole and Van de Ven (1989) and Baxter and Montgomery (1996) catalog several options for responding to paradoxes and tensions, including:

- *Denial*, when participants ignore or refuse to recognize the paradox: In a surgical team with an overly dominant primary surgeon, the team may simply ignore the problems this causes in terms of the team's adaptability and in terms of errors the surgeon may lead the team into by overcontrolling the situation.
- *Cosmetic Response*, when participants take actions that appear to address the problems raised by the paradox, but are not actually responsive. For example, in our surgical team, the overly dominant physician may overtly praise the team for its collaboration, but really change nothing about her behavior and continue to dominate and browbeat members.
- *Selection*, when participants respond to or embrace one pole of the paradox and ignore the other: Members of the surgical team may agree that the surgeon has every right to control all members and activities and attempt to serve the surgeon in the best manner possible.

- *Alternation*, when participants switch from one pole to the next over time: The surgical team may willingly accept the surgeon's dominance during delicate and risky operations, but shift to a more egalitarian and autonomous mode of operation during routine surgeries.
- *Segmentation*, when some of the participants deal with one pole of the paradox, while others deal with the other pole: The surgeon and anesthesiologists might exert their individualism during the operation, while the nurses and technicians might work as a supportive collective. Segmentation is a common response to paradox in organizations, since different departments or units can be assigned to deal with different aspects of a paradox.
- *Transcendence*, when participants openly acknowledge the paradox confronting them, accept it, and attempt to work out creative responses to it: The surgical team might, for example, openly discuss problems of balancing control and indeterminacy and come to a recognition that just when they feel most in control, something unexpected may happen. They might realize that control can emerge from using their skills to "go with the flow" of the unexpected incident, while maintaining a vigilant attitude, and in so doing avoid panic when an apparently controlled situation suddenly goes awry.

Denial and cosmetic response are both "do nothing" responses to paradox. Selection represents an attempt to address the paradox by sticking to one side, while alternation and segmentation consign attention to the two poles of the paradox to different sectors of time and space, respectively. Transcendence is the response which tries to fully realize the paradox and, in a sense, revel in it.

Transcendence is the response that most of us academics find most attractive, since it requires creativity. However, it is an expensive response, since it requires continuous balancing and improvisation and without vigilant maintenance is in danger of "degenerating" into one of the "lower order" responses. Each of the responses can be appropriate, under the proper circumstances.

This is because all paradoxes are not the same in the social world. Across different situations and over time, paradoxes differ in the strength of the pull their poles exert and in the urgency of the response they require. Some paradoxes may be relatively weak, with one pole exerting a stronger pull than the other, while others may have strong pulls in both directions. Some paradoxes may require immediate response, while others give participants more time. A response such as selection may work well with a paradox in which one pole is particularly strong relative to the other, while that same response may not be effective when both poles exert a strong pull and two demands must be met.

With this in mind, we turn now to how to deal with the paradoxes of collaboration. We will first consider some generalizations based on communication research. Then we will consider how collaborations can be built through interactions among participants, through communication technology, and through institutional infrastructures that promote communication.

How can Communication Scholarship Help Us to Understand and to Improve Collaboration?

The work of Baxter and Montgomery (1996), Seo, Putnam and Bartunek (2000), and a research project currently being conducted by myself, John Lammers, and a group at the University of Illinois suggest some general hypotheses regarding how the management of paradox relates to collaboration.

A *non-collaborative process* is most likely when participants choose to ignore the paradoxes of collaboration, when they put up a cosmetic response, or when they select one pole of the paradox and rigidly adhere to it. None of these responses confronts the three paradoxes in any meaningful way.

When participants ignore the paradoxes, they let them operate unchecked, and their interactions will be governed by swings between poles. They may work collaboratively if the pull of poles is neither too strong nor too urgent. However, when there is a turn of events so that one or more of the paradoxes come more strongly into play—for example, when one member tries to direct the others, triggering the control-uncertainty and individualism-collectivism paradoxes—then the paradoxes exert themselves and inject turbulence into their interaction. Rather like passengers on a rudderless ship, participants who ignore paradox are subject to its effects without being aware of it. They are likely to blame the impact of the paradox on other participants rather than considering the whole system of interaction, undermining their ability to deal with it.

A cosmetic response involves acknowledging a tension but doing nothing substantive about it. Participants who engage in cosmetic responses are ultimately subject to the same helplessness that possesses those who ignore paradox.

Responding to a paradox through rigid attention to one pole and neglect of the other creates a sort of tyranny. Rigid selection creates a relationship, group, or organization “stuck” in one mode of operation. It might be dominance of the “team” by a single member, or it could be excessive collectivism in which no consistent course of action is chosen and therefore no focus to the effort. If the rigidity corresponds to the pole with the strongest pull, then this response will work, at least until the situation changes and the other pole exerts its own attraction. Ultimately, as Baxter and Montgomery argue, rigid selection is most likely to stultify the relationship and the associated collaboration.

Collaboration ¹ is most likely to result in cases when more flexible selection, segmentation, and alternation are the response to paradoxes of collaboration. Selection of one pole of a paradox without overly rigid adherence is a functional response, when that pole has a strong pull or requires urgent attention. A more flexible approach leaves the collaboration to adapt if the situation changes. The teamwork and coordination characteristic of Collaboration ¹ can be fostered by this weaker form of selection under the right conditions, for example when a leader takes control of a team, enabling members to smoothly deploy their specific skills. Holding to one pole is unlikely, however, to allow sufficient play to result in Collaboration ².

Segmenting the response to the paradox by delegating separate poles to separate collaborators or groups of collaborators fosters Collaboration ¹ It represents a division of labor appropriate to teamwork and coordinated, concerted effort. By

separating responsibility for responding to the poles, however, it prevents the type of engagement that is more likely to lead to Collaboration ². Alternation guided by one or more participants with others following also promotes coordination and teamwork characteristic of Collaboration ¹. However, this cants the collaboration toward control and individualism somewhat, impeding its ability to become Collaboration ². Collaboration ² is possible for each of these three responses, but Collaboration ¹ is more likely.

Though there are no guarantees, Collaboration ² is most likely to emerge when the response to the paradoxes of collaboration are either alternation driven by all participants or transcendence. When there is shared control of alternations among participants the play and indeterminacy necessary for Collaboration ² have room to exert themselves, but can be tempered through swings back toward control. Transcendence is, of course, a response that attempts to honor both sides of the paradoxes and so can sustain Collaboration ² as long as the participants can sustain transcendence. Collaboration ² is fragile, and these responses give us our best chance of igniting it, but they are by no means certain to do so and often end in Collaboration ¹, an accomplishment in its own right, but less than Collaboration ².

These hypotheses are, of course, oversimplifications. They assume that all participants respond to the paradoxes in the same way. They also do not allow for change over time in the underlying situation that may change the strength of the poles and their urgency. Nor do they take interactions among the three paradoxes into account. Having advanced these general hypotheses, however limited, we will now turn to communication scholarship that holds insight for promoting collaboration and for dealing with its paradoxes.

Dialogic Communication

Dialogue has a rich history in communication studies. Studies of rhetoric and public address, civic discourse, interpersonal communication, group communication, organizational communication, and political communication have yielded insights into dialogue in its various forms (e.g., Anderson, Cissna, & Arnett, 1994; Barge, 2002; Anderson, Baxter, & Cissna, 2004; Heath, 2007). In dialogue lies an important key to collaboration and to effective responses to its paradoxes.

Cissna and Anderson (1994) write:

Dialogue implies more than a simple back-and-forthness of messages in interaction; it points to particular process and quality of communication in which participants “meet,” which allows for changing and being changed. In dialogue, we do not know exactly what we are going to say, and we can surprise not only the other, but ourselves...” (p. 10).

Cissna and Anderson go on to outline a number of characteristics of dialogue, including: immediacy of presence in the situation and to fellow participants; emergent unanticipated outcomes and effects; “recognition of ‘strange otherness’” in fellow collaborators that appreciates their unique skills and creativity; vulnerability to the other; mutuality; immersion; genuineness; and authenticity. They also note that dialogue has much in common with integrative conflict management (Folger, Poole, & Stutman, 2012).

Dialogue enacts the transcendence strategy. Transcendence requires a sensitive awareness of other collaborators and of the unfolding situation that dialogue is ideally suited to sustain. Dialogue is responsive and improvisational, both key enablers of transcendence. With its emphasis on inclusiveness, dialogue empowers participants to focus their efforts on the collaboration. The main aspect of transcendence that is not emphasized by the dialogic tradition is heightened awareness of the situation, due to its focus on self and other in dialogue. Situational responsiveness is not, however, inconsistent with dialogue, and provided participants can sustain it, dialogue—or “multilogue”—is one of the best models of transcendence that we have (cf. Smith & Lewis, 2012). Dialogue is also a superb vehicle for participative alternation. Through dialogue participants can detect emerging pressures due to unaddressed issues in the collaboration and work out how to adjust to them.

Dialogic communication is a form of communication that is particularly likely to promote collaboration, particularly Collaboration². Dialogue is ideally-suited to address the paradoxes of control \leftrightarrow indeterminacy and individualism \leftrightarrow collectivity. Indeed, dialogue thrives “in the midst” of these two paradoxes and it is likely to break down when participants emphasize a single pole (particularly individualism or control).

Procedures and Communication Technology

Some of the earliest research in communication studies concerned the use of procedures to guide group discussions, and our discipline has long been concerned with communication procedures of all sorts, from inventional schemes to approaches for the resolution of intractable conflicts.

Group discussion procedures such as brainstorming, reflective thinking, and so on are resources for collaboration (Poole, 1991). Sunwolf and Seibold (1991) note that procedures serve four functions, all of which are related to one or both types of collaboration: to structure, to analyze, to create, and to agree. There is substantial evidence that procedures enhance group effectiveness *provided* they are properly adapted to the situation and *if* they are used in spirit and not too rigidly applied (Hirokawa, 1985; Poole, 1991; Sunwolf & Seibold, 1999).

Procedures help groups for several reasons (Poole, 1991):

- They provide objective ground rules that protect groups from arbitrary control by one or a few members and enable the group to structure, analyze, create, and agree based on proven formulas.
- They protect participants against their own bad habits. As the documentation of groupthink and other pathologies of groups indicates, participants often develop habits that lessen the group’s ability to structure, analyze, create, and agree effectively. For instance, participants may ridicule each others’ ideas or try to dominate the discussion because that is the way they’ve done things in the past. Procedures are often consciously designed to protect against such habits.
- They capitalize on strengths of collectives. Groups, and all collaborations, are valuable precisely because the knowledge, skills, and abilities of several people surpass those of individuals. Procedures are often designed to help groups work so as to maximize the benefits of their superior resources. For example,

brainstorming techniques are set up to help groups generate quantities of ideas as quickly and with as much scope for creativity as possible.

- They surface and help manage conflicts. As we have noted, it is important that groups and all collaborations confront differences of opinion and perspective, which means dealing with conflict. Groups often avoid this in order to avoid the unpleasantness of conflict. Some procedures offer structured ways of bringing conflicts out in the open and handling differences in a constructive manner (Folger, Poole, & Stutman, 2012).
- They give a sense of closure and accomplishment. Procedures often incorporate milestones and achieving these gives groups a sense of accomplishment, which encourages the group to try harder in the future and builds commitment.
- They encourage process orientation, making participants aware of the importance of careful attention to *how* they do things, as well as to the content of what is done. Attention to process often contributes to effective collaborations.
- They empower participants by giving everyone a “roadmap” of what is going to happen and how a collaboration should be handled. This prevents domination of the group by a few members and enables all to contribute, enhancing creativity and creating constructive interactions.

Procedures lay out how collaborations should occur in systematic steps and so they are best at promoting segmentation and alternation, the two responses which turn on structuring the collaboration by distributing responses to the poles temporally or spatially. Because of their systematic nature, procedures are also more likely to promote Collaboration ¹, which depends less on inspiration and more on perspiration, so to speak. Collaboration ² is more likely to emerge when structures are relaxed somewhat, as it requires more leeway for play and creativity. To allow for the possibility of Collaboration ² participants must avoid the major flaw in procedures, which is that they are apt to encourage rigidity and the inability to “go with the flow” of the interaction.

In recent years procedures embodied in communication technologies have received a good deal of attention, starting with online bulletin boards, email, and group decision support systems (Poole & DeSanctis, 2009; Scott, 1999). Typical technologies used for collaboration today include wikis, video services like Skype, and social media. One common characteristic of these technologies is that they facilitate communication. This is an invaluable aid to collaboration *so long as a problem or conflict does not emerge*. Research and experience show that unstructured technologies like email, wikis, or Skype are not well-suited to handle complex problems or conflict (Scott, 1999; DeSanctis, Poole, Zigurs, & Associates, 2008).

More effective in supporting collaborations involving complex problems or conflict are communication technologies that incorporate more structured procedures that “walk” participants through steps for structuring, analysis, creativity, and agreement. These include technologies like higher level group support systems and structured argumentation tools (DeSanctis et al., 2008). These have been shown to improve consensus and creativity in groups, but they are also much more difficult and time consuming to learn and to employ. Hence, they cannot be easily implemented in today’s “do it yourself” online applications and tend to be resisted by users. So again we confront

an irony: The most popular technologies for working together are not necessarily the best for collaboration, yet technologies that are better at promoting collaboration are either not available or too difficult to use.

The main exceptions to this ironic rule are massive online environments such as Foldit. Designers of these environments can build in stringent rules which do not seem stringent to users because they come with an environment that is both involving and gives participants room to act. That ventures like Foldit and Wikipedia can build in procedures to facilitate collaboration without seeming overly controlling is ironic, too. They can do this precisely because they are controlling and their users willingly submit to their control. Entering into these virtual communities, participants buy into strictures they would not accept in the “real world” or even in online interactions that they are used to conducting in the real world, such as meetings.

Nielsen (2012) discusses a number of characteristics of these large scale online collaborations. They provide rich, well-defined “information commons” that give participants the informational resources they need to engage in the collaboration. They divide their work into modules or pieces that permit participants to work on them for manageable chunks of time and that harness participants’ particular expertise. For example, collaborators with different skills might work on different tasks in Wikipedia. Efforts of participants are channeled by signaling mechanisms that direct their attention to areas or problems that need attention. For example, Foldit poses challenges for its players and Wikipedia has lists of articles that need attention.

These massive online collaborations are structured to allow open participation, enabling participants to play at the same time they give them some degree of structure and control. They also have what Nielsen calls “designed serendipity,” which enables chance contacts and experiences that surprise participants and may spark creative responses. Along with this they have facilities such as forums, messaging, and contests that allow participants to develop relationships. They also have educational tools and forums that help participants develop their abilities. Motivation to participate is heightened by features that enable participants to assess their progress and also give them recognition for contributions or for exceptional achievements.

Communication technologies, like the procedures they embody are more likely to promote Collaboration ¹ than Collaboration ². Orchestrating the activities of large numbers of participants through structure is more conducive to teamwork and coordination than to playful creativity and emergence. Still, bringing this many people together to work on a common endeavor leaves room for the occasional surprise, and that is what creativity is made of.

Building Collaborative Institutions

To this point most of our attention has been directed to the endeavor of collaboration itself. We have neglected the backdrop of collaboration, the culture and social structures that provide its foundation. The institutional move in communication studies, exemplified by Lammers and Barbour (2006), but also a deep concern of critical scholars (e.g., Deetz, 1989) explores this backdrop. Institutionalists in communication would argue that effective collaboration depends not only on immediate interactions and joint activities, but also on the building of social institutions that inculcate collaborative habits and skills,

Browning and Shetler (2000) have written a wonderful history of how collaboration developed over a long period of time in SEMATECH, a semi-conductor industry consortium in Austin, Texas. SEMATECH literally saved the U.S. semi-conductor industry and it did so in large part because several key participants worked long and hard to lay a solid institutional foundation for collaboration among participating companies.

Gastil and colleagues (Burkhalter, Gastil, & Kelshaw, 2002) developed a model of group deliberation in political discussions and juries that has important implications for collaboration more generally. They argue that participating in effective deliberations builds participants' knowledge and knowledgability about the deliberative process and reinforces their sense of community and common fate. They view deliberation as part of a continuous process that contributes to the structuring of political communities that value and are prepared for deliberation.

Their model posits four self-reinforcing cycles that occur through participation in effective deliberations: (1) cultivation of "deliberative habits", including values favoring deliberation over other approaches, through participation in deliberative discussions that develops norms that make deliberative discussions more effective, further reinforcing deliberative habits; (2) development of a sense of civic identity and commonality with others that increases perceived common ground which in turn reinforces the impact of deliberation on creating identity and commonality; (3) participants using and thus nourishing existing analytical skills and competence when they engage in deliberation, which increases their political knowledge and skills, which in turn builds further analytical competence to engage in deliberations; and (4) participants' motivations to participate being enhanced as they enjoy the feeling of political efficacy, which sets up a self-reinforcing cycle. These four cycles reinforce each other and the end result is the production and reproduction of meanings, norms, and power relations that are configured to optimize deliberative participation and in turn reinforce the structures-in-practice that enable participation.

The deliberative communities described by Gastil and colleagues are very much like collaborations. Collaborations are much more likely to be effective and Collaboration², in particular, is more likely when participants belong to communities with deep collaborative roots. Cultivation of collaborative habits, development of sense of community, fostering collaborative skills, and nurturing the motivation to collaborate greatly increase the likelihood of good collaborations. As Gastil and colleagues note, this is best done through participation in meaningful and rewarding collaborations, setting up a cycle of future collaborations. And as Browning and Shetler remind us, this takes time, patience, and a good deal of inspiration.

Questions for Communication Scholars

As this discussion shows, we already know a good deal about collaboration and communication scholarship has made great contributions to our understanding of collaboration, how to achieve it, and the grounds for collaboration. A number of additional questions remain to be addressed.

The central question of this address--How can we meet the paradoxes of collaboration?— is hardly settled at this point. As I hope I have shown, meeting these paradoxes requires cultivation of effective collaborative interaction as well as development of collaborative

cultures and institutions. It is also important to consider the relationships of collaboration between levels, from dyads to groups to organizations to communities and societies.

Improvisation, play, and creativity are important constituents of collaborations. However, these can also undermine collaboration if done in the spirit of individualism and control. What is the role of communication in these processes and how do we manage communication to turn them in collaborative directions?

If nothing else this lecture has highlighted the wide variety of collaborations. We lack theory regarding how differences and universals in collaborations. An emerging body of work on communication technologies can advise us regarding similarities and differences in face-to-face and technologically mediated collaborations, but there is such a dizzying array of new technologies (with more coming all the time), that the book is far from closed on this question. Another key question relates to similarities and differences among dyadic, small group, organizational and mass collaborations. Procedures play an important role in structuring collaborations in group, organizational, and mass contexts, yet they may also be in a controlling and manipulative fashion. The conditions under which procedures promote and undermine collaborations bears further investigation.

Building the conditions for collaboration is a final area in need of further investigation. How do we build collaborative contexts and institutions? What is the best way to teach collaboration? How do we build an appreciation for collaboration at a time when it seems that individualism trumps all else? How do we develop the capacity to build “islands of collaboration” in a savagely competitive world? And, how do we get these “islands” to spread? These are as much challenges to us as constructive scholars and citizens as they are questions for research and teaching.

These questions are certainly worth addressing. I concur with James Watson, co-discoverer of the structure of DNA that “*Nothing new that is really interesting comes without collaboration.*”

But as we answer each of these questions, still more will arise, because collaboration is an evanescent, elusive phenomenon. I also concur with Moïse the Beadle in Elie Weisel’s book *Night*: “*Every question possesses a power that is lost in the answer.*” I believe we will never fully be able to answer the questions surrounding collaboration, because there will always be a part of it that is a mystery.

Endnote

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