

PRACTICING COLLABORATION IN DESIGN

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ABSTRACT:

Occurring more frequently and with greater diversity among participants, collaboration is an activity without substantial theory or process development in design; it happens in an ad hoc manner. Collaboration may involve inter-disciplinary, multi-disciplinary, inter-institutional or international participation, each of which adds complexity to the process. This essay, based on conversations with designers engaged in collaborative activity and complemented by reflective writings, briefly examines collaborative history in design, explores definitions of the term, reflects on theoretical limitations to mapping collaboration, reveals qualities of collaborative individuals, describes problems in process and explores an inter-disciplinary discourse. The essay concludes with identification of variables that characterize collaborative projects.

Individuals are increasingly aware of the limitations to their knowledge and skill in a complex technological and increasingly interactive world.

Disciplines that structure knowledge and maintain boundaries are seeking inter-disciplinary perspectives in the search for new knowledge and solutions to persistent problems. While inter-disciplinary and multi-disciplinary are often used interchangeably, the difference is worth noting. Inter-disciplinary refers to activities that fall between two disciplines. Multi-disciplinary refers to activities in which several disciplines share perspective (Rogers, 1994, 404). To this is added inter-institutional work that joins strengths not found in a single entity and inter-national work with its border crossing cultural complexity. These are some of the factors that stimulate interest in collaboration in contemporary society; they range from inter-personal through inter-disciplinary to multi-disciplinary to inter-institutional to inter-national. The benefits of collaboration accrue only if its possibilities are understood and managed. To this end, some perspectives on collaboration are developed from selected readings and from the interplay and conversation of individuals who engage in the practice of collaboration. The perspectives are reflective and theoretical, but also practical. They include a look at design collaboration historically, an examination of words relating to collaboration that need careful use, a look at the problem of formalizing or theorizing about the practice of collaboration, a discussion of practical issues regarding collaboration from experiential perspectives and finally a tentative identification of variables that identify collaborative work.

Collaborative design — its early years

Collaboration has an interesting, if largely unwritten, history in design. It is not a new idea at all. Even in design sources discussing the history of large design offices (the Henry Dreyfuss office, for example) conscious collaborative association of various kinds date to the 1930's. Some of these associations are discussed in *Group Practice in Design*, a mid-twentieth-century book that explores collaborative variations in design practice in the United States and Britain (Middleton, 1967). This is a simpler approach to collaboration than the complexities just mentioned at the beginning of this essay. The book focuses on people under one professional umbrella — doctors, lawyers or designers working together for efficiency and scale to achieve an increase in service to the client and to enhance creativity and quality. Case studies of architecture, interior design, product design, communication design and entertainment (broadcasting) complement the general discussion. Well known architecture firms, Skidmore Owings and Merrill in Chicago and The Architects Collaborative in Boston, for example, as well as the Industrial Design partnership, later called the Design Research Unit in Britain, ground the discussion in a practical way.

Group practice was an ideal some aimed toward as expressed in the following statement (Middleton, 1967, 91):

...the idea [is] of [a] group team, composed of talents that are inevitably various and unequal, but which are given the fullest opportunity at every stage to make to the project as a whole such contribution as they may be capable of. In the fullest sense — not easily achieved — the essential purpose of group practice is to link and focus the creative and critical faculties of every member of the team, not just upon one or two facets of the problem but upon every aspect at every stage.

This is directly counter to the romantic notion of the secluded genius whose suffering, determination and superior creativity brings excellence into existence. Given the complexity of contemporary life, one can be a romantic genius in only a small way, i.e., time is too short to process and master all the knowledge and skill one might want to bring to bear on a project. Consequently, if one aspires to do large or complex work, collaboration provides the only reasonable context for development.

Exploring what is design and what design can contribute resonates even more today than it did then [emphasis added]:

It is the perpetual frustration of the designer, be he landscape architect or typographer or product designer, that he is called in too late, when all major decisions have been taken and the project has already assumed such a form that little can be done to it save clean up some of its superficial ugliness. *This is not design.* The elegant design solution is that which meets maximum requirements with the minimum means. This postulates that all relevant factors must be embraced by the creative act of synthesis which we call design (Middleton, 1967, 93).

And today, we understand that it is unlikely that such a synthesis can be handed off through isolated sequential operations until completion.

In a section titled, Patterns of Collaboration, two primary patterns are identified by their preposition: working *for* and working *with*. In the former, a director tightly controls and designs a project, drawing in others as consultants and workers as needed. In the latter, a group of people share knowledge, work together responsibly and make critical decisions together facilitated by a leader. These remain the most common generic patterns. Walter Gropius, (1953) reflecting on The Architecture Collaborative, wrote that its

organization is based: "...on individual freedom of initiative instead of authoritarian direction by a 'boss'; a belief that by 'synchronizing all individual effort by a continuous give and take of its members, a team can raise its integrated work to higher potentials than the sum of the work of just so many individuals.'" Transforming this idealistic vision of the possibilities of collaboration into reality is not easy to achieve.

Active collaborators
define collaboration

In a symposium addressing the issue of collaboration, participants offered their definition of the term. Fourteen people offered definitions, two of them working 'collaboratively.' Table 1 shows the thirteen definitions. An analysis of these definitions reveals the following characteristics. 'Who' or participants in collaborative work includes both design professionals and individuals with different capabilities. 'What' they are doing is quite diverse – negotiating the scope and constraints of their work, sharing knowledge and expertise, combining and negotiating disjoint knowledge, performing productive activities, working together, developing their own knowledge and working in their own best interests as well as allowing actionable entry to others. 'Why' they are doing this is also diverse – maximizing positive results of their activity, achieving common aesthetic, business and social goals, solving problems, achieving success, producing something not otherwise possible and making a better world. "How" they are doing this is also diverse – they mediate, argue, participate, act, react and value in ways that are supportive, selfless, different but complementary, respectful, cooperative, self-satisfied, symbiotic and in a spirit of trust.

What is most interesting in these definitions is the contrast between self-direction and other-direction coexisting in some kind of dynamic balance. The variety of purposes and actions reveal a fluid situation in which improvisation and critical reframing are welcome.

TABLE 1:

Collaboration Definitions

These are the definitions contributed by seminar participants.

DIETMAR WINKLER:

A supportive, to an extent selfless process, sharing one's expertise and conceptual, interpersonal planning or implementation skills for maximizing the positive result of an activity.

ARLENE GOULD:

The coming together of designers from various disciplines along with other professionals to share knowledge and achieve common aesthetic, business and social goals.

CHRIS BARLOW:

Adjustment and combination of disjoint knowledge by diverse individuals.

ALAIN ROCHON:

To put in common, actors whose expertise, knowledge, way of working, personality, etc. are different, but complementary. This action is meant to: solve a particular problem or task, build or disseminate knowledge, etc. within a specific time frame.

DIRK KNEMEYER:

Multiple systems with complementary skills and interests engaged in active, respectful, productive activities to achieve more success.

KEITH RUSSELL:

*Collaborate = work together
Elaborate = work it out
Cooperate = do the work together
Collaboration is that form of working together where the working together (is the work) produces an understanding of an outcome (and the outcome) that could not otherwise be produced.*

GØSTA KNUDSON:

Develop your own knowledge by solving a problem together with other professions in a way that makes the world a better place in which to live.

JILL DACEY:

Two or more people working together on a project or problem. Best case scenario: when each individual is working in his/her own best interests, that interest contributes to the greater good (solution) to the project or problem. Each participant is self-satisfied.

REGINA DE OLIVERIA HEIDRICH:

Collaboration is a help for different problems concerning education and design study and research.

RUTH LOZNER:

An interactive, cooperative conversation among members who can both contribute and benefit by the outcome and final action.

SHARON POGGENPOHL:

Collaboration is based on a recognition of limitation and the ability to trust others and allow them actionable entry into a situation.

JAY RUTHERFORD:

A group of people with different capabilities that perceive a task or problem to be solved and use their expertise in a symbiotic way to solve it. At the end — ideally — everyone has learned something new — either directly practical or social that they can use in future problem-solving situations.

ROGER REMINGTON & JUDITH GREGORY

Collaboration involves negotiating scope, mediating, arguing, participating, interacting, acting, reacting and valuing within various constraints.

Collaboration and Contribution

Further, the distinction between contribution and collaboration is worth noting. One can contribute to a project without collaborating. In a contribution, one's role is narrowly defined – it may happen in a specific sequence and in a special way. It may be a particular skill one brings to a project. A contributor may also be part of a marginal group who offers aid or support but does no direct work on and is not essential to the project. In contrast, collaborative work cannot be accomplished by a single person; but all so-called team work is not collaborative. Collaborative work is marked by shared decision making, the give and take of ideas exchanged and explored, the integration of multiple perspectives and a synthesis that integrates hitherto isolated ideas. Another way to discriminate between contribution and collaboration is to consider the difference between a hand-off, an overlap and collaboration. The hand-off implies specialized, sequential work with little interaction between phases. An overlap implies some degree of information exchange and adjustment on a short-term basis. The collaboration is a continuous working together and working out performed interactively.

Increasingly we recognize that knowledge is created socially. For example, reading a book consists in knowledge transfer that occurs through the social organization of authors, publishers, libraries, literacy programs, the Library of Congress, schools, etc. It is more than the connection between author and reader, it is shared language, concepts, resources, institutions and other texts. Forming the social and intellectual network for collaboration is similar to this, even if the scale is much reduced.

Given the increasing interest in **collaborative** work, the question of whether a pattern or theory of collaborative practice can be identified is an interesting one.

Collaborative patterns and theoretical limitations

Information work, taken in the broadest sense – whether design research or design practice – often crosses boundaries; such boundaries can be inter-departmental, inter-disciplinary, multi-disciplinary, inter-institutional or international. Each requires particular sensitivity and offers particular collaborative opportunity. Given the increasing interest in collaborative work, the question of whether a pattern or theory of collaborative practice can be identified is an interesting one. Without such a theory or pattern, what remains are case-by-case exemplars.

Collaboration is a social practice without substantial theory. The difficulties of establishing theory are explored by the sociologist, Pierre Bourdieu, whose presentation of a deeper, more philosophical discussion of social space (networks, associations, reputations) and symbolic space (educational perspectives on form and content of knowledge) and its meaning puts a frame to this problem. Practice does not yield to scientific explanation or modeling for two primary reasons: the difference in time and logic. Bourdieu notes (1998, 81) that the time dimension of science and that of practice are alien.

The shift from the practical scheme to the theoretical scheme, constructed after the event, from practical sense to the theoretical model, which can be read either as a project, plan or method, or as a mechanical program, a mysterious ordering mysteriously reconstructed by the analyst, lets slip everything that makes the temporal reality of practice in process...Its temporal structure, that is, its rhythm, its tempo, and above all its directionality, is constitutive of its meaning.

This phenomenon is seen in many abstract diagrams that purport to show design process. What appears to be simple and logical on paper is often a messy practice in reality, full of recursions, feedback loops and unforeseen difficulties. The formal logic of a diagram can be only a primitive guide. Donald Schön (1983) likens design to a process full of uncertainty, ambiguity and value conflict to which we can add emergent purposes in the case of collaboration. These are certainly not characteristics that make for a predictable process; thus we find a situation that is dynamic, causing participants to think and work fluidly and to encounter conflicting ideas, process concepts, criteria and sometimes even difficult personalities.

The logic of practice and theory is also incompatible according to Bourdieu. He states (1998, 81): "A player who is involved and caught up in the game adjusts not to what he sees but to what he fore-sees, sees in advance in the directly perceived present ...anticipating the anticipations of others..." Bourdieu concludes that there is no possibility of giving a scientific explanation of practice (1998, 92):

This paradoxical logic is that of all practice, or rather of all practical sense. Caught up in the 'matter in hand,' totally present in the present and in the practical functions that it finds there in the form of objective potentialities, practice excludes attention to itself (that is, to the past). It is unaware of the principles that govern it and the possibilities they contain; it can only discover them by enacting them, unfolding them in time.

The logic of practice is "things to be done" while the objectified logic of science is representation in a homogeneous (abstract) space.

Turning away from theory, we look to what can be drawn from experience in the practice of collaboration; what follows examines issues related to people, and cultural difference in inter-disciplinary, inter-institutional and international work.

Qualities of collaborative people

Beginning with the essentials, individuals engaging in collaborative activity need to be risk-takers with their ego on 'hold' as they explore beyond disciplinary limits and known boundaries. They experience a de-centering of where they are. Flexibility and a shared vision or at least a common ground ease the exploration among diverse individuals, however, the paramount characteristic is trust. Participants have different knowledge and cannot validate each other's work; furthermore they have different perspectives and use different processes. In order to engage in the situation's ambiguity and work within cognitive complexity, trust is essential. At a less obvious level, collaborators need to respect each other's personal preferences – where someone thinks, for example, through abstractions and formal logic, or through more concrete and detailed speculation. Such differences need to be appreciated and supported. Attention to stakeholders in all their variety and need is a prerequisite, as is attention to the collaborative process itself. It is a mistake to focus solely on the problem, project or task at hand. Team maintenance as well as personal growth and satisfaction are essential if the collaboration is to succeed. Collaborative work requires attention shifts – between project and team, between personal and group goals and between one's own disciplinary perspective and that of another.

People however have limits to their ability to be process connected: in a physical and mental way; with regard to time constraints and its management involving access and priorities; in their ability to coordinate with others; and in their basic limited consciousness. Technology has promised increased connectivity, however this too must be managed to be an asset rather than a tool that fragments time and distracts concentration. While the promise of transparency is largely unfulfilled, an intranet on which progress can be posted and issues raised as they are encountered, allows participants to update their understanding of the enterprise when they have time. Not all information can be transferred through technical mediation; sensitivity to the need for face-to-face interaction is required. Meetings maintain engagement, keep context and goal in focus and provide

for cohesion among the collaborators, but even meetings need efficient management so they avoid becoming time sinks.

Leading a collaborative process is demanding. Besides the obvious accountability for budget, time and expectations, the leader is responsible for and owns the process and the transfer of knowledge – she/he takes responsibility for making things happen. The scope of the task is large, from managing and delegating tasks, to monitoring progress, quality and end result, to team dynamics, to setting expectations and attending to all stakeholders. The leader needs to provide guidelines for development and provide both social glue and oversight of the process. In relation to the participants, there is a need to define common goals, facilitate exchange of values and contributions, define roles and responsibilities, provide constructive criticism, build positive reinforcement and help all to stay connected to the process. Use of communication tools and progress reports need to be efficient and in tune with participants' information needs and time frame. Building a shared language and process is essential for inter-disciplinary teams and this in itself is no easy task. Again use of an intranet can provide a ready reference for terms, a means to follow progress and a strategy for tapping multiple ideas when problems occur.

Process coordination requires an overview of structure and flexibility of thinking about the structure so that when contingencies arise, they can be worked around or overcome. Not only adaptability in process, but adaptability with regard to teamwork is needed. Facilitating decision is not always obvious – knowledge of individual styles of thinking, careful listening to reluctance or counter argument is often needed. Interpersonal conflict will occur, requiring the leader to have good interpersonal skill, the ability to be ecumenical and empathic and to know what is negotiable. Survival of groups and teams often depends on 'controlled friction' (Middleton, 1967, 287). Even working through difference may yield surprising and valuable results. Individual levels of ownership, influence and participation

color these conflicts. And how value conflicts are dealt with need attention. Face-to-face discussion is nearly always essential; in contrast to complexity that can be monitored more technically. Compromise, consensus or executive decision may all have a role in moving a collaborative project forward; yet which approach is appropriate when remains an open question.

Collaborative process brings many people into association, beyond mission and goal. All need to understand the metrics for success and be able to assess progress holistically. Not everything is done collaboratively; individual participants need to be aware of their intersection points with others – the points of collaboration – so these moments are met and maximized. These are often focused on synthesis in which artifacts represent current progress and illustrate ongoing problems or opportunities. Feedback and clear understanding of next steps result from these collaborative points. Many projects go through cycles of contribution and collaboration. Orchestrating work to be done independently increases efficiency and supports collaboration effectively – intellectually, creatively and socially. (Figure 1 presents an abstract schema illustrating over time a few elements of the collaborative process.)

Building a network of individuals who can work together is not a simple leadership task, but is one that requires constant attention to the process and the people. Charles Eames likened good collaboration to a circus; it can also be likened to jazz. The collaborative problem/process/project is evolutionary but not completely organic in form. In a surprising way the need is for focus on the group and its connectivity rather than on the problem. Protocols for working together are both established and evolve, while creativity relates to individual change and transformation.

FIGURE 1:

Collaboration Definitions

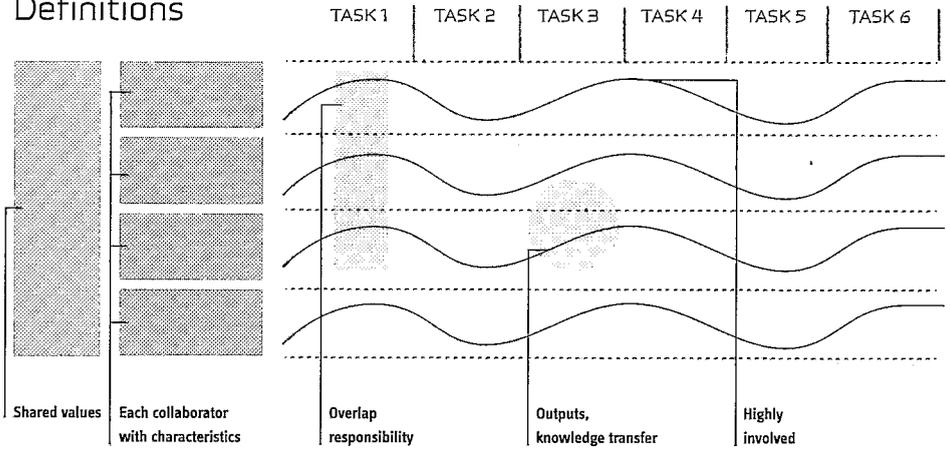


Figure 1: A conceptual collaborative schema that identifies shared responsibility, key collaborative moments relating to output critique and knowledge transfer and the fluxuating involvement of team members. (Contributed by Maria Giuduce.)

Interdisciplinarity and evolving a discourse

Design, a weak discipline, is at a disadvantage in inter-disciplinary work, if considered from a traditional academic perspective. Its body of knowledge is not well established in contrast to other disciplines. But considered from design's strength, its ability to absorb ideas into a working synthesis, it can play a significant role in collaborative activities. Again we run into Bourdieu's contrast between science and practice.

“...disciplines are prevalent organizational principles in universities, where the goal of knowledge production is to understand; they do not seem to command great respect where the goal is to generate practical knowledge in order to solve problems. In fact, there they are even frowned upon as obstacles to innovation or as providing a skewed perspective.” (Weingart, 2000, xii)

Designers have always worked collaboratively with service people (printers, for example) as well as other professionals in similar communication-oriented disciplines (writers, photographers, exhibit designers, etc.) However current collaborations are much more extensive and diverse, including those with computer scientists, psychologists, industrial designers, business people, sociologists...the list could go on. These more recent collaborations are often team based and find individuals bringing to the problem (situation, opportunity) diverse perspectives that forge a new vision of possibility. Current focus on interdisciplinarity (Weingart, 2000, 2) looks to the promise of "cognitive and organizational innovation through evolution by variation, diversity, and combination." This is substantially different than organizing many people with unique contributions, each of which is a component of the whole, moving toward a known result orchestrated by one individual. Important problems and opportunities today tend to call for multiple perspectives, with decision-making shared among several people. "Interdisciplinarity is a set of dynamic forces for rejuvenation and regeneration, pressures for change, and the capacity for responsiveness. It is the necessary 'churn' in the system. Interdisciplinarity entails knowledge negotiation and new meanings...." (Klein, 2000, 21). Such situations call for different skills in discourse and negotiation coupled with communication, prototyping and social skill that can anchor the work and bring out the best from all participants.

Cultural aspects of collaboration

A way to examine discourse and the way process evolves, based on framing and ultimately on decisions regarding choice, is to look through a cultural filter. Disciplinary differences contain cultural presumptions with regard to epistemology for example. Through such presumptions or styles of examining the world, one discipline can feel superior to another; clearly this not a trivial matter in interdisciplinary work. Rainier Bromme (2000, 125) comments:

As a discipline's epistemic style contains a significance guiding both activity and cognition and thus also a normative component, it may well be expected that it contributes to stereotypes of this kind [disdain between various disciplines]. This again affects how open-minded a researcher will be about data, proofs, and refutations obtained on the basis of other epistemic styles.

This statement reveals what is perhaps the most stressful and disorienting aspect of inter- or multi-disciplinary activity.

Donald Schön (1994, 31) following Thomas Kuhn and Richard Rorty discriminates between normal and abnormal discourse in science as well as in other fields of inquiry. Normal discourse:

...proceeds under a shared set of rules, assumptions, conventions, criteria, and beliefs, all of which tell us how disagreements can be settled, in principle, over time....Abnormal discourse occurs, by contrast, when agreed-upon criteria for reaching agreement are not present as a basis for communication among the contending actors. Such situations are not defined by the participants in terms of an objective framework within which disagreements can be arbitrated or managed.

Comfort is attached to normal discourse. As mentioned previously, in inter- or multi-disciplinary work a hybrid discourse must be invented in which all participants can operate with respect and understanding, if they are to get on with an inquiry that is an interplay of thought and action. The extreme importance of communication is emphasized by one author (Maasen 2000, 177): "Interdisciplinarity, according to my thesis, is primarily a matter of preparing the grounds for communication among a variety of specialized discourses to occur."

Perhaps two of the largest issues are: 1) sorting out and agreeing on the meaning of terms which may have different reference in various disciplines and 2) negotiating process. Often process is a hybrid that unites or overlays particular actions and operations; this can result in a changed sequence or a later and more complicated synthesis.

While there are problems and fault-lines associated with inter- or multi-disciplinary work, Klein (2000, 6) identifies five patterns of disciplinary relations that also identify the benefits one might obtain as a result of engaging in such work. The patterns are:

- 1 developing conceptual links using a perspective in one discipline to modify a perspective in another discipline
- 2 recognizing a new level of organization with its own processes in order to solve unsolved problems in existing fields.
- 3 using research techniques developed in one discipline to elaborate a theoretical model in another
- 4 modifying and extending a theoretical framework from one domain to apply to another
- 5 developing a new theoretical framework that may reconceptualize research in separate domains as it attempts to integrate them

Beside inter-disciplinary cultural bias, there is institutional bias. When institutions collaborate, other kinds of process must be negotiated: the nature and extent of the collaboration, issues of fairness with regard to finances and work load, details with regard to control and responsibility. In the course of work, these are significant agreements.

"Institutional action frames are the beliefs, values and perspectives held by particular institutions and interest groups from which particular policy positions are derived..."

Metacultural frames are "...the broadly shared beliefs, values, and perspectives familiar to the members of a societal culture and likely to endure in that culture over long periods of time, on which individuals and institutions draw in order to give meaning, sense, and normative direction to their thinking and action..." (Schön, 1994, xiii).

Inter-national usually means inter-cultural collaboration as well. Basic issues to consider in these situations include differences in resources and infrastructure, not just technologically but in terms of access; economic framework; definition of context – what is included and what excluded. Attitudes toward time at both the micro and macro level – for example will meetings start on time? Or is sustainability measured in decades or centuries? Simple concepts such as what is a family or a leisure activity may have unfamiliar or subtle differences in meaning. Communication and collaborative character may also be different because of a particular social style related to work or the power distance between participant and leader. Language differences can confound translation requiring extra sensitivity and skill to come to an understanding. Criticism may take a very different form in delivery and response and decision-making may not be a clear or open process. These are only a few of the delicate issues that inter-national collaboration might spark.

Variables that
characterize
collaborative work

While the previous ideas range from fairly specific to broadly general, the people gathered to discuss collaboration – all designers – desired some synthesis; something beyond a summary – something more operational. Keeping in mind Bourdieu's cautionary statements about essential time and logic differences between what is science and what is practice, the expanding collaborative situation in which we work stimulates a need for order and understanding. This is not from a particular disciplinary perspective, but in a pattern-finding manner, close to practice. So in a tentative way, the exploratory conversation among experienced collaborators turned to a discussion of variables (see *table 2*). These are some of the distinguishing features of collaborative projects.

TABLE 2:

Collaboration Variables

Identification of collaboration variables (category and variable in left and middle) with a sample project played out against the variables (on right)

CATEGORY:	VARIABLES:	EXAMPLE USE:
CONTEXT	Project Research Teach	Research
GOAL	Apply knowledge Create knowledge Transfer knowledge	Apply knowledge Create knowledge Transfer knowledge
LOCATION	Regional National International	International
INSTITUTION	Industry University Foundation Government Competitor Non-competitor	Industry University Competitor
CULTURE	Single Double Multi	Single Double Multi-cultural
DISCIPLINE(S)	Same Dual Multi	Same
LEADERSHIP	Formal Informal Preset control Adaptable control	Preset control Adaptable control
PROCESS	Established To be negotiated Evolutionary	Evolutionary
SCALE	Small Medium Large	Large
SPEED	Fast Medium Slow	Slow
LONGEVITY	Defined end Sustained	Sustained
PROXIMITY	Face-to-face Distant	Distant
FUNDING	Funded Unfunded	Funded
ASSESSMENT	Internal External	Internal External
RISK	Low Medium High	Low
DOCUMENTATION	Detailed General Process Result Formal Informal Internal External Public Proprietary	Process Result

Against this outline characterizing collaboration, a project was drawn as an example, to see if the variables made sense. It was easy to pull from the single collaborative example project its position relative to the variables. It may be that these variables are too simplistic, but our sense was that the rich combinations, in which they practically occur might serve as an opening with which to gather patterns of collaboration and learn from individual and accumulated cases about their similarities and differences. Perhaps a database could be assembled using these variables as classificatory tags and over time patterns would emerge identifying a typology of collaboration. Destined never to be a science, collaborative performance nevertheless could be enhanced if we better understood its dimensions and variations.

Finally, what became abundantly apparent through our discussion was the essential need for good communication, social respect, shared values, clear administrative structure and responsibility in order to foster a harmony of minds.

Conversations are often the product of several people, but this essay is the product of thirty individuals over two days sharing experience and insight with a view to developing a better understanding of collaboration. I thank my co-conspirators and collaborators: Chris Barlow, Jill Dacey, John Demao, Maria Giudice, Arlene Gould, Judith Gregory, Regina de Oliveria Heidrich, Hsin-Chien Huang, Jo Hyunshin, Dirk Knemeyer, Gøsta Knudsen, Ruth Lozner, Simona Maschi, Don Newgren, Christena Nippert-Eng, Roger Remington, Alain Rochon, Keith Russell, Jay Rutherford, Marian Sauthoff, Napawan Sawasdichai, Peter Simlinger, Zoe Strickler, Patrick Whitney and Dietmar Winkler.

Beyond insightful conversation several individuals offered case studies or reflections from their experience. They are: Chris Barlow, Redefining creativity for intercultural/cross-functional success; Jill Dacey, Development of international core competencies and student/faculty exchange in information; John Demao, Cross-cultural multi-national collaboration; Maria Giudice, The collaborative challenges between information architects and visual designers; Regina de Oliveria Heidrich, International exchanges; Hsin-Chien Huang, Living in a mirage; Dirk M. Knemeyer, Global collaboration network; Simona Maschi and Christena Nippert-Eng, Privacy and services; Don Newgren, Design Research Institute; Roger R. Remington, National graphic design archive; Alain Rochon, Simplification of governmental public communication: a holistic approach; Jay Rutherford, Learning design online?: Medienquadrat; and Patrick Whitney, Collaborative research: Global companies – local markets.

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| REFERENCES |

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