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Focus of Academic Research, Writing and Leadership:

“How diverse people can work together creatively to discover solutions to complex problems”

Most managers, engineers, and scientists realize that the complex issues of many real world problems are more effectively handled by the collaboration of people who bring different expertise, perspectives, values, and knowledge.

Unfortunately, how to do these complex collaborations well is neither easy nor obvious. Some approaches are extremely productive, others are extremely painful.

Few people realize that there is a field of study which researches methods which enable diverse people to effectively do complex work together. As a result, many people have painful and ineffective team experiences, never realizing that it is the natural result of doing something difficult that they are not trained for. Others have success from their efforts, but have no idea of the higher levels of accomplishment they missed because of their collaboration approach.

Increasing the effectiveness of complex teams addressing complex problems is the ultimate goal of my research, writing, and teaching.

Improving the research done on these methods is the strategy driving my academic efforts. I do not limit this to the hands-on research I can accomplish, but am attempting to move the entire field forward to greater research effectiveness by addressing critical issues of problem complexity and cultural differences which tend to be difficult to research.

Personal History as Perspective

The unique mix of practical experience and academic preparation provided by my personal history in this area is very relevant to the content and the methods of my efforts in the area of research and writing.

I was exposed to the area of cross functional team collaboration in the early 1950's, had my first formal training in 1962, and began reading and analyzing the research literature about 1966. I taught my first formal university course in deliberate creativity in 1969.

These dates may need a bit of explaining. My father was part of the Value Engineering program at General Electric and some of my earliest reading was of creativity and teamwork handouts, such as the old woman/young woman, brainstorming, and even materials on introvert/extrovert styles and Roethlisberger's work on the impact of motivation on work. In the early sixties, as he prepared to run his own Value Engineering program, he practiced the formal training course over and over on the family, so that I had down cold all the fundamentals of function/cost analysis, brainstorming, and teamwork

before I entered high school. At this time I began attending the professional society meetings of the Society of American Value Engineers at the local and international level.

When I began college and wrote home asking for money, my father paid me by the hour to go into the university library, find articles on teamwork, creativity, and management, and report their conclusions to him in writing. My enjoyment of these materials and their fit to the professional techniques I had already learned caused me to change my major from mathematics to psychology.

In 1969 I attended the annual Creative Problem Solving Institute in Buffalo New York (founded by Alex Osborn, the inventor of brainstorming) and was invited back the following year as an intern instructor. In 1970 I taught a semester long course in creativity as part of Notre Dame's "free university" program, with very positive feedback.

I stayed active in the professional society and assisted my parents in their consulting business in this area while I was employed as a high school mathematics teacher, then software developer, then manager of my own very successful department leading cross functional Value Engineering team projects at Johnson Controls in Milwaukee, Wisconsin, reporting to the Corporate Vice President of Research and Development. During this time I began publishing articles in conference proceedings, not only within Value Engineering, but also presenting to academic conferences in the area of systems thinking as well as engineering conferences such as the Society of Automotive Engineers.

Since 1976 I have been a very active member of the faculty of the annual Creative Problem Solving Institute in Buffalo, New York. In this role, I offered courses on many different aspects of deliberate team creativity to academics and practitioners from all over the world. I led longer term interactions on systems thinking, researching creativity, and relating the multiple creative processes. This activity provides me a network of colleagues, academic and practitioner, in a variety of countries, institutions, and industries. Many of these colleagues contribute annually to "Creativity's Global Correspondents", whose editorial board I serve on.

While I studied to earn my Masters and Doctorate, I was constantly learning from leading cross functional teams in new industries, technologies, and cultures, continuing to author papers attempting to improve theory and make people aware of the relevant knowledge available in other fields.

I earned my Masters of Science in Creative Studies from the program at State University of New York College at Buffalo established by Alex Osborn's Creative Education Foundation and staffed by the most respected researchers in creative problem solving, such as Sidney Parnes. Here I explored all the classic literature of creativity and problem solving, acquiring useful new concepts and perspectives, but was still dissatisfied with the literature's overall lack of fit to the complex problems handled by teams in organizations.

This led me to my Ph. D. in Organizational Behavior from Weatherhead School of Business at Case Western Reserve University, the first and largest doctoral program in organizational behavior. Here I explored group dynamics, organizational theory, and management in great depth. I found many concepts which had great relevance to effective team collaboration and did research which reshaped my understanding of the field. While my effectiveness as a practitioner was greatly increased by

integrating ideas and concepts from my study and my research, I still was dissatisfied with the fit of the literature to my experience with real world complex design and problem solving.

This life experience has given me a unique background and perspective on the phenomena and the literature of collaborative efforts, resulting in my commitment to make the research in this area more relevant and effective.

Deliberate Team Creativity: A diverse field

This field of study is a collaboration of people in a variety of knowledge domains, such as psychology, technology management, engineering management, design, architecture, computer science, management, social psychology, etc. In each of these domains there are people looking at issues related to team collaboration and structuring the processes of design and problem solving, although each group tends to use different language for similar elements.

One key source of knowledge and hypotheses is interaction with experienced practitioners who use their own assemblages of techniques under names such as: cross functional teams, ad hoc teams. collaboration, value engineering, team problem solving, knowledge creating teams, etc. IIT seems to be the only place using the term interprofessional for these approaches.

In many ways it is like the old story of the Blind Men and the Elephant, in which each thinks that the small part of the problem they perceive is the whole problem. Fortunately, while many researchers focus on developing knowledge within and applicable to that specific domain, others investigate the lessons learned in other domains, collaborating to discover more generally applicable principals and insights, trying to see more of the elephant.

Each of these researchers tailors their writing to the language of their own field, so no common name for this emerging field has been agreed upon. The phrase that I coined, “deliberate team creativity”, is growing in usage among practitioners, academics, and organizations. The term is designed to distinguish research into methods which can be taught and used deliberately to improve effectiveness, from research into “natural” processes of creativity and teams. It is not that we ignore natural processes, but that we focus on what works when it is done deliberately.

One general principle that has been emerging is that the available research does not fit well with the realities of real world complexity. While this has long been obvious to experienced practitioners, academic researchers are finally recognizing that the dynamics measured by looking at simple teams doing simple problems are unpredictably different from the dynamics of complex teams doing complex problems.

Researchers concerned with this issue propose that this dysfunctional focus on simplicity results from the tough choices needed to accomplish publishable research in a reasonable period of time. While this is certainly true, I am also convinced that better theories and models can reduce the difficulty of doing useful research into complex team collaboration.

The major part of my ongoing academic work has been exploring the usefulness of new conceptual models by interaction with experienced researchers and practitioners in various domains. As are discussed in detail in my various publications, key themes I have been exploring are:

- seeing creativity as insight (changes in the persons thinking), not ideas
- seeing design and problem solving as learning processes, not production processes. Design and problem solving teams keep getting smarter about a problem or design objective until the solution is obvious.
- separating the complicatedness of single domain problems from the complexity of multiple domain problems with their conflicting values and perspectives. The tools of dealing with complicated interactions are quite different from tools for conflicting values and strategies.
- deliberate creativity involves leadership, which is not a personal attribute, but a process of invoking the specific followership of the individuals you are attempting to influence, followership which varies by culture, style, discipline, organization, etc.
- seeing the impact of culture not only on the very definition of what is creative, but also on the kinds of techniques needed for deliberate improvement in effectiveness. Getting a Chinese team or a Polish team to work together creatively is quite a different process than a team of Americans

The issue of effectively handling problem complexity has also led me to apply these perspectives to issues of ethics (decisions made in complexly conflicting situations) and entrepreneurship (especially team-based enterprises in other cultures).

I have had strong positive feedback to the usefulness of these conceptualizations not only from researchers in different fields but from working professional managers and engineers, struggling to improve their effectiveness and impact.

Outreach to Colleagues in the Field of Deliberate Team Creativity

The lack of a strong trans-disciplinary journal in this field has made it necessary to conduct outreach efforts at conferences not only through papers but also with tutorials and other activities designed to give more researchers an experience-based understanding of the issues of complexity which should be addressed in their research, as well as tools which could be usefully researched in their focal domains.

Note that this academic research strategy leads me to constantly enter new areas of publication, rather than entering and staying in one narrow sub-specialty which would allow me to gain acceptance by making a chain of small but effective contributions to a topic of current interest in that field. Rather, by networking, presenting and publishing I am attempting to influence several different academic domains. In each new field and organization, it takes a while to connect effectively with that subset of the literature and its researchers. Proposing that the field's assumptions about teams and creativity are blocking more effective research does not help in making that connection.

To clarify my work, let me relate my efforts to the different domains I am trying to influence:

- **Creativity and Creative Problem Solving**

This area focusing on the assessment, development, and stimulation of creativity grows to a large extent out of J.P. Guilford's work on intelligence and creativity and focuses largely on elements that stimulate the elucidation of ideas that diverge from established norms. The Journal of Creative Behavior (of which I am a consulting editor) has served as a center for this work since 1954, although extensive work on this idea generation concept is scattered across the fields of education,

psychology, and management. My attempted contribution in this area has four strands. First, creating a specific focus on deliberate creativity, the study of approaches to encourage greater creative output, informed by, but not centered on “natural” creativity. Second, proposing that there might be some research advantages to an alternate definition of creativity as a change in perspective or belief in the creator that makes ideas obvious, rather than the focus on ideas. Third, pushing exploration of creative effectiveness on problems of high complicatedness and multiple paradigm complexity, with all the attendant issues of team work. More recently, I have been quite interested in the effect of national culture not only on the methods but on the very definition of creativity.

Publications:

- "Deliberate insight in team creativity" *Journal of Creative Behavior* 2nd qtr 2000
- “An Alternate Perspective on Team Creativity”. Proceedings of 1994 International Creativity and Innovation Networking Conference, Quebec.

In Progress:

- After laying out the key arguments about culture and creativity in a book chapter: “National Culture and the Design of Complex Medical Systems” In Geisler, E. Et al *Technology, Healthcare, and Management in the Hospital of the Future*, Quorum Books; ISBN: 1567206239; (March 2003), I am revising this article to focus on creativity in general for submission to *Journal of Creative Behavior*, or an appropriate management journal.

• **Group Support Systems/Knowledge Management/Distance Learning**

These three areas, generally discussed separately, are various perspectives on the use of computers to improve knowledge creation and utilization. Each of these approaches has great potential to contribute to complex creativity, but tend to be designed in ways which interfere with creativity and complexity by storing and focusing on the smallest possible units of creativity. My goal in this area is to expose researchers and practitioners to proven approaches of deliberate complex team creativity and to theories of complex creativity which they might find useful in developing their work. This is accomplished with published articles, conference presentations, and special conference tutorials which provide an experience of the nature and effectiveness of techniques developed without computers. My writings seek to endorse and explain the results being discovered by various researchers who are beginning to share my dissatisfaction.

Publications:

- “Elements of a Human Centered Perspective on Collaboration Support Systems” *The International Journal of Healthcare Technology and Management*. Accepted, under revision.
- “Exploring a human centered perspective on collaboration and knowledge management systems”. SSGRR 2001 International Conference on Advances in Infrastructure for Electronic, Business, Science, and Education on the Internet. L’Aquila Italy. This invitation only conference with online and CD proceedings draws researchers from all over the world, and is carefully

structured to maximize interaction and stimulate joint projects. It is sponsored by Scuola Superiore Guglielmo Reiss Romoli, the education company of Telecom Italia Group.

- “Insight or Ideas: Escaping the Idea Centered "Box" Defining Creativity”, Hawaii International Conference on Systems Science (IEEE) 2001. This conference has been the meeting place of leading edge thinkers and researchers of computer systems for more than thirty years. It’s proceedings are a well respected publication within the IEEE.

Outreach:

- Organized and co-delivered conference tutorial on complex creativity at IEEE's Hawaii International Conference on Systems Sciences (HICSS) 2001

- **Creativity in Practitioner Fields: Health Care, Telecommunications**

As opportunities emerge, I develop and present papers which attempt to expose managers and practitioners to the resources available in complex creative collaboration.

Book Chapters

- “Following and Accelerating The Design Evolution Curve in Health Care” In Geisler, E. Et al *Technology, Healthcare, and Management in the Hospital of the Future*, Quorum Books; ISBN: 1567206239; (March 2003) Presented as a paper at Hospital of the Future Conference 2000, Enschede Netherlands
- “National Culture and the Design of Complex Medical Systems” In Geisler, E. Et al *Technology, Healthcare, and Management in the Hospital of the Future*, Quorum Books; ISBN: 1567206239; (March 2003)
- Following and Accelerating the Design Evolution Curve in Telecommunicated Multimedia, with Dr. George Kraft, in *Multimedia Information Systems in Practice* Wing S. Chow, Editor. Singapore, Springer-Verlag, 1999. pages 173-191.
- "Value Engineering" section in A. B. VanGundy *Techniques of Structured Problem Solving*, Revised Edition. New York: Van Nostrand Reinhold, 1988. pages 312-317.

Articles:

- “Deliberate Creativity for IT: Better Box Thinking”. *Information Technology Professional* (IEEE). In review.
- “Why They Don't Listen to Your Creative Ideas” *Innovative Leader*, Winston J Brill & Associates January 2002, #544.

Outreach:

- Organized and co-delivered conference tutorial on complex creativity at Hospital of the Future Conference 2001 at University of Twente Netherlands, and Conference 2002 IIT-Stuart Graduate School of Business.

- Delivered invited tutorial on Complex Team Creativity to senior Communist Party bureaucrats of Beijing Zhongxin Service Center at request of Deputy Director Wu Xiaoguang, Beijing, China December 1997

- **Entrepreneurship**

Although entrepreneurship is commonly seen as an individual endeavor, especially in American popular media, the ability of enterprises to grow beyond the expertise and vision of a single person requires creative solution of complex problems and often presents unique leadership challenges. I have been exploring the implications of the creativity and leadership models mentioned above for entrepreneurs, especially in countries whose culture does not naturally support individual initiative, such as China and South Africa.

- Visiting research fellow at The Centre for Entrepreneurship, University of Greenwich, London England, 2002-2003. Assisting in the development of the centre and its programs in London and in South Africa.
- “The Complexity of Creativity and Leadership in Entrepreneurship” Keynote paper for *International Conference on Creativity and Leadership in Entrepreneurship* July 2002 University of Greenwich Business School, London, England. July 2002.
- Delivered tutorial on Complex Team Creativity to International Conference on Creativity and Leadership in Entrepreneurship July 2002 University of Greenwich Business School, London, England. July 2002.
- Delivered two day course on Complex Team Creativity and Entrepreneurship to study tour from Young Entrepreneurs Association of China, Chicago 2001

- **Educational Uses of Collaborative Technologies**

Educational approaches which utilize teamwork, collaboration, or experiences with real life situations and problems can be greatly enhanced by using techniques and tools developed and proven in the realm. Some of my efforts to contribute in this area are summarized in:

Publications:

- “What would educationalists and students expect within an educational framework at master’s level?” Special academic conference of SAVE - The Value Society: Towards a Value Management and Value Engineering Educational Framework at Masters Level. May 2001. Fort Lauderdale, Florida

In Progress:

- Report in Development: Pilot Test of "Cyber Campus" Course
- Issues of InterProfessional Education: Collaborative Creativity

- **Connecting Disparate Fields**

In addition to constantly introducing people from different fields to each other's work, I organized a November 2000 NSF Sponsored Conference at Illinois Institute of Technology on "Collaboration across Professional Boundaries" to include a great many different fields.

Publications:

- "Creativity and Complexity in Cross Functional Teams" Collaborating Across Professional Boundaries: From Education to Practice, November 2000.

- **Developing effective researchers into deliberate team creativity**

Another strategy to improve the available research is to assist doctoral students and other researchers attempting to do useful work in this area. I have organized events at various conferences to enable dissertation researchers to interact with senior, more experienced researchers.

Outreach:

- Being part of a team of experienced researchers leading a Research "Homebase" within the annual Creative Problem Solving Institute for the last five or six years, assisting attendees with the development of their research and writing.
- Working with doctoral students in IIT's Institute of Design whose dissertations are related to deliberate creativity
- Leading online discussions about research with academics and practitioners on the list server for academics interested in Value Engineering (VEAMAC)

Summary

I am committed to a long term goal which is difficult and important. I feel that I am making progress on my agenda and that my efforts will grow in success, improving the quality and availability of this knowledge.