Interdisciplinary Practice and the Slippery Problem of Creative Authorship:
And Now Service Delivery Mania

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Learning situations are conditioned by the state of practice in our marketplace. With unprecedented growth in service industries and interdisciplinary practices the traditional "genius" understanding of the creative process is inconsistent. This paper explores the myths created by stories of solitary "genius" and encourages, instead, the inclusion of *antecedents*. By including the work of others in creative development stories we encourage a cooperative, and more realistic, approach to learning. Central to this exploration is a concern for the reconciliation of the slippery problem of creative authorship with the concurrent development of skills surrounding cooperative practice responding to service delivery mania.

> I might have painted if I had lived in an atmosphere of art, but in America everything resolves itself into the getting of money and selling a poor article instead of a good one.
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> *- William Morris Hunt, painter.*

1 THE SAN DIEGO EXPERIENCE

The AIA/AAH (American Institute of Architects Academy of Architecture for Health) annually conducts a charrette associated with the fall conference of the AAH. Faculty from teaching institutions in a different region each year are asked to submit proposals for a six person team to attend this charrette. The University of Utah Graduate School of Architecture was one of four schools invited to participate and funding was provided to attend. The design problem would be a Post Surgical Recovery Care Center (PSRCC) on the site between Sharp Medical Center, a major primary care facility, and the Mary Birch Women's Center in San Diego. Upon arrival teams were expected to set up work stations in one of the hotel meeting rooms and brainstorm collective strategy. The following morning tours of the site were made and current concerns of PSRCCs and other more general health care design issues were presented by charrette faculty. By the end of 48 hours each team would present drawings and models of their ideas for review by a jury composed of distinguished architects, educators and other individuals involved in health care architecture.

The final design response from the Utah team was a two story addition to an existing birthing and nursery center replaced by the new Mary Birch Women's Center across a courtyard. The response would provide a link between a newly developed outpatient surgery center and Sharp Medical Center, the primary hospital. Within this link, the lower level served circulation of supplies, staff and storage while the upper level was developed into patient recovery rooms. Seminars surrounding the charrette activities projected facilities like the PSRCC would become quite popular and, in short, would become a version of *the hospital of the future*. Facilities such as these served a patient population recovering from medical procedures or treatments that require three hour or three day stays (the majority of medical procedures in hospitals). By incorporating the existing structure some of the tight budgetary restrictions were solved and with no site taken over by design footprint a courtyard with physical and visual access from all the surrounding facilities was developed. The jury was very impressed with the results of the charrette. Their comments for the Utah team acknowledged a very delightful, yet serious, response to the programmatic concerns, but the *way* ideas were presented told them much more. While the presentation provided a setting for required models and drawings needed to understand the design, the presentation *format* was conceptual, interactive, and proposed a reading of the community and the current situation of health care, in particular, the PSRCC. The jury felt the presentation pointed out to them an opportunity to address community scale, materials, colors and textures. *Not only was this a medical facility, but the design conceptually modeled the suggestion to redefine the institutuion of medicine and return patients to a more home-like environment.*

Everyone in the team felt this had been a great experience. Back home students, administration, and faculty all applauded the results and the group effort. During a brown bag members of the team announced that, clearly, the most valuable experience was the way they had worked together - practitioner, faculty and students learning from one another. But in post-charrette discussions students wondered

aloud why group experiences within the studio or classroom environment usually were not as successful and the outcomes as fruitious. They felt the San Diego experience encouraged a richer learning experience in several ways. In one way a faculty and practitioner worked directly on the job -- cutting, designing, painting and drawing -- with students. *We were a team.* In another way individual tasks were assigned to meet an end -- each member of the team could not become an overnight expert in each area, nor was there time to generate six ideas and go with the best. The team was broken down into building design, site development, and presentation with two members on each task. *We resolved specific problems by negotiating with another.* In another way, the team expressed a willingness to live with compromise due to any number of factors: time, knowledge, people on task, resource people outside of our team. *We were willing to acknowledge the expertise of a larger community.* And finally, students witnessed faculty and practitioner solve problems, craft models and drawings. Faculty and practitioner rallied behind student's knowledge of technology or fresh ideas. *Novice and expert were learning from each other.* In contrast, a traditional academic experience rewards the competitive "best" and work, even when executed as a group effort, is celebrated as a project, not process, even expected to look like it was generated by one hand and mind. In the San Diego team experience, a presentation method was designed to incorporate and celebrate differences of hands and styles at work -- *because it was necessary.* And obviously, the rewards were quite different from an academic experience. The team would present its "group" effort and be juried accordingly. The student acting alone is encouraged to look out for his or her self simply because their academic performance is recorded to encourage self-reliance. Grade point average and advancement are accorded by classes passed and scholarships and awards are, usually, for individual recognition.

2 SOLITARY GENIUS VS. ENTREPRENEURIAL TEAM

The issues comparing a competitive educational experience with a more cooperative one have been raised among cognitive scientists. Roger T. Johnson and David W. Johnson in a chapter titled *An Overview of Cooperative Learning* describe three basic ways students can interact with each other as they learn. They can compete to see who is "best," they can work individualistically toward a goal without paying attention to other students, or they can work cooperatively with a vested interest in each other's learning as well as their own. The Johnsons tell us of the three interaction patterns, competition is presently the most dominant. Their research indicates that a "vast majority of students in the United States view school as a competitive enterprise where one tries to be better than other students."[1] It would seem that learning situations like the San Diego experience encourage an application and blending of skills, an enhancement of team

creativity, and development of cooperative practices more common to the real world.

However reasonable this may appear, the image of the rugged individual as a hero in American success stories still haunts learning environments. In a series of essays published by the Harvard Business Review titled *Entrepreneurship: Creativity at Work*, Robert B. Reich begins his essay, "Entrepreneurship Reconsidered: The Team as Hero," with two stories that symbolize two fundamentally different versions of American success. The first is Horatio Alger's first book, *Ragged Dick or Street Life in New York*, the first of 135 tales in the late 1800s together selling close to 20 million copies. Alger's begins the story with the conversation between an impatient man and a young vagabond sleeping in the street. Like all the books that followed, *Ragged Dick* told the story of "a young man who, by pluck and luck, rises from his lowly station to earn a respectable job and the promise of a better life."[2] This is in contrast to the second story in Reich's essay portraying American success. He uses Tracy Kidder's *The Soul of a New Machine*, a 1981 tale of how a team of hardworking inventors built a computer by pooling their efforts. The tale uses the metaphor of a crew on a 35 foot sloop fighting together the stormy seas as a metaphor for the team's treacherous journey.

The traditional view of success portrayed in Alger's tales combine what Reich describes as "Dale Carnegie-esque self-improvement, Norman Vincent Peale-esque faith, Sylvester Stallone-esque assertiveness, and plain, old fashioned good luck. Tracy Kidder's story, by contrast teaches that economic success comes through the talent, energy, and commitment of a team - through *collective* entrepreneurship."[3] Reich warns that "to the extent that we continue to celebrate the traditional myth of the entrepreneurial hero, we will slow the progress of change and adaptation that is essential to our economic success. If we are to compete effectively in today's world, we must begin to celebrate collective entrepreneurship, endeavors in which the whole of the effort is greater than the sum of individual contributions. We need to honor our teams more, our aggressive leaders and maverick geniuses less."[4]

3 TEAMWORK AND ANTECEDENTS

Perhaps some of the mythical stories need to be rewritten. With unprecedented growth in service industries and interdisciplinary practices, students need to hear about the development of ideas over time and among other people. Heros such as Henry Ford in the 1900s made his fortune mass-producing the Model T, and in the process became both a national folk hero and a potential presidential candidate. But the myth doesn't make room for the nameless and faceless workers who lined up for work in response to Henry Ford's visionary offer of a $5-per-day paycheck. They are the unsung heros of the entrepreneurial hero's grand design. The problem with the hero and genius myth is not that there aren't bright, inventive, and creative people in the world. In fact,

Americans continue to lead the world in breakthroughs and scientific discoveries. But the Big Ideas that start in this country are sold to countries where they undergo continuous development and improvement. They are handed over to someone else, not the author of a design, for improvement. Countries like Japan have found a different way to achieve competitive advantage - by embracing this collective entrepreneurship. *The biggest difference between telling students stories of collective enterprise would be to celebrate continuous, incremental innovation and refinement of a variety of ideas that can allow every student to feel they occupy a place in the success story.*

And virtually all inventions are the result of continuous, incremental innovation and refinement of ideas. For example: "Vacuum-tube radios become transistorized radios, then stereo pocket radios audible through earphones, then compact discs and compact disc players, and then optical-disc computer memories. Color televisions evolved into digital televisions capable of showing several pictures simultaneously; vidocassette recorders into camcorders. A single strand of technological evolution connects electronic sewing machines, electronic typewriters, and flexible electronic workstations. Basic steels give way to high-strength and corrosion-resistant steels, then to new material composed of steel mixed with silicon and custom-made polymers. Copper wire gives way to copper cables, then to fiberoptic cables."[5] These are not single ideas without an antecedent. Designers and workers at all levels add value by continuously discovering opportunities for improvement in product and process. Similarly, in this context, it makes no sense to speak of an autonomous industry or discipline like automobiles, banking, or architecture. There are no clear boundaries around any of these clusters of goods or services. Products and processes grow and develop when its creative work force can adapt an already functioning and purposeful work to an equally changing marketplace. Building confidence in a student's abilities to critique a current situation and improve upon it are the ingredients to more realistic success stories.

Peter Shaffer's *Amadeus* portrays Wolfgang Amadeus Mozart as an immature, asocial individual who is nonetheless capable of producing miraculous music, as if through the intervention of a higher power. In the course of his short life, he demonstrated mastery of many musical forms and produced more than 600 compositions. What Shaffer doesn't portray is after Mozart's death, his widow kept his manuscripts and in 1799 she noted in a letter that she discarded "unuseable autographs" before selling the rest. The few Mozart sketches that do exist indicate that he typically wrote the melody and bass lines as he composed, and filled in the other parts later, which contradicts the naive view that Mozart simply had the whole composition mentally available.[6] *Ideas, even those accounting for repeated success are disciplined and developed.*

Alexander Calder (1898-1976), famous for inventing the "mobile" made jewelry, toys and gadgets out of wire since he was a child. His father and grandfather were sculptors and he studied engineering. He worked as an illustrator for the *National Police Gazette* and he drew circus scenes for this publication. The circus animals and birds showed up in his mechanical and wind driven wire scupltures. His visit to Mondrian's studio in Paris revealed work that was abstract and strongly geometric in organization. He saw white canvases divided by black lines into rectangular blocks painted in different primary colors. As one tracks a lifetime of artistic work, Calder's development of the mobile involved no great leaps of artistic intuition. Rather, Calder seems to have held a consistent interest in a particular material and means of movement, and the refinement of his ideas are influenced by other creative works. *Careers are developed through an ongoing interest and continual refinement.*

James Watt (1736-1819) is often given credit for inventing the steam engine, and because of its importance in the development of the industrial revolution, he has been accorded hero's status. Watt was a scientific-instrument maker by trade, and was appointed instrument maker at the University of Glasgow in 1757. In 1763, he was assigned to repair a model for a lecture demonstration, and thus began the sequence of events that culminated in his seminal invention, not of the steam engine, but, as Robert W. Weisberg describes in *Creativity: Beyond the Myth of Genius,* of the separate-condenser steam engine. "Watt could not have invented the steam engine in 1763 because steam engines had been in use in England for over sixty years. Watt's assignment was to repair a working model of an engine that had been designed by Thomas Newcomen over forty years earlier to pump water from coal mines. The Newcomen engine was already known when Watt was repairing the model, with several hundred in operation in the British Isles."[7] Weisberg goes on to descibe Watt's most significant improvement was that steam was condensed in a separate condensing cylinder, which eliminated the need to constantly cool and reheat the main cylinder, so that it could be insulated to stay hot, thereby saving energy. Watt also made several other improvements to Newcomen's engine, increasing its efficiency and making it practical for use in factories. Thus, Watt's great advance was an improvement to an already existing engine. But Watt is not alone. According to Weisberg, historians like Joseph Needham have concluded that "no single person, or single culture, was the inventor of the steam engine."[8] *Watt was capable of moving beyond what was already available, improving on it but, nonetheless, not developing something in one intuitive sweep. He was also, basically, doing his job!*

In these paradigms the "best" works are not the sole effort of the company's founder or its top managers or those receiving the "best" grades. Rather, it is a capability and attitude that is diffused throughout a company and a culture. Experimentation and development go on all the time as *many* people search for new ways to capture and build on the knowledge already accumulated by others. Because production in society is a continuous process of reinvention, cooperative

efforts focus on many thousands of small ideas rather than on just a few big ones.

These are paradigms worth exploring in the studio and classroom of design. Experiences with all the ambiguity and cooperation of the AIA/AAH Charrette (the San Diego Experience) offer enormous potential to highly effective learning situations. As Reich puts it: "if one considers and acknowledges that most of the training for working in this fashion takes place on the job, then formal education must prepare people to absorb and integrate experience, but it does not supply the experience. No one can anticipate the precise skills that workers will need to succeed on the job when information processing, knowhow, and creativity are the value added. Any job that could be fully prepared for in advance is, by definition, a job that could be exported to a low-wage country or programmed into robots and computers; a routine job is a job distined to disappear."[9]

4 ENCOURAGING COOPERATIVE LEARNING

In order for formal education to establish learning situations where people can absorb and integrate experience we also need to find new ways of evaluating and rewarding that effort. When Reich talks about ways of measuring success from entrepreneurial teams he suggests "simple accounting systems are no longer adequate or appropriate for monitoring and evaluatiang job performance: tasks are intertwined and interdependent, and the quality of work is often more important than the quantity of work. In a system where the success of the project or company depends on all--the only appropriate measure of accomplishment is a collective one."[10]

In 1986 the U.S. Army changed the way it assigned its personnel and favored a system that kept teams of soldiers together for their tour of duty. They discovered that individuals perform better when they are part of a stable group. They are more reliable. They also take responsibility for the success of the overall operation. When individuals work together toward a common goal, their mutual dependency often motivates them to work harder to help the group, and thereby themselves, to succeed. In addition, they often must help specific members of the group do well and they often come to like and value the members of the group. Cooperative learning begins with the conviction that teams are a way of life, and learning about a subject is more than individually absorbing that knowledge, but working with that knowledge in a way that makes sense for the world they are about to enter.

The reasons for success in the San Diego experience have, since then, become pretty apparent. It included four critical methods of cooperative learning that have been explored by cognitive scientists for years: *teamwork, conflict resolution, community collaboration*, and *tutoring*. In *teamwork* it is crucial that all the members of the group are rewarded based on the group's overall achievement and not according to the merit of any individual's contribution or effort. *The San Diego design efforts were not graded, but the work of the entire team was evaluated (and ranked) in the minds of the*

jury. Ideas suggested by cognitive scientists in this method include: members of different teams may read, study, or design certain parts. Then the members of the different teams who have studied the same parts might meet to discuss and clarify their sections, after which they would return to their original group to teach and quiz their teammates about their section. Whether collectively compiling test scores for a group or evaluating a group design, assessing teamwork efforts means there needs to be a scheme that allows each member to contribute to the team's score in a significant way.

In *conflict resolution*, a student's intellectual development is accelerated by forcing him or her to systematically confront another person who holds an opposing, or at least another, point of view about the answer to some task or situation. This relationship is called a *dyad* and they are asked to work together until they can agree or come to a common solution. *Each of the three tasks - design, site, and presentation - identified by the Utah team involved two of its members working together*. Working this way, even playing this way, is a very natural way of learning about something. Someone knows more, someone knows less. We all have different ways of approaching a problem and we all have different outcomes. In developing this method students can also be instructed to *imitate* a correct problem solver or take a particular point of view, perhaps different than their own.

Community collaboration suggests that human mental functions and accomplishments have their origins in our social relationships. According to Frank B. Murray in "Why Understanding the Theoretical Basis of Cooperative Learning Enhances Teaching Success," "Mental functioning in this view is the internalized and transformed version of the accomplishments of the group."[11] In other words, members of the group are also members of a larger community and society. Values and methods that have become internalized, even habitualized, by each member of the group are transformed by the collaboration of that new design community. *The AAH conference was not an isolated design experience for the Utah team. Back home, students had been involved in the design of a Palliative Care Center (a pain clinic), in which students were exposed to the ideas of members of the University Medical Center, Hospice of Utah, Community Nursing Services, the Business School, and local HMOs*. This community of resource people added to the complexity of the problem and students came to realize, as Frank B. Murray describes, that "Solutions to problems are arrived at through debate, argument, negotiation, discussion, compromise and dialectic. Often the object of instruction is the narrative inquiry as a pedagogical device in which the student's story or narrative confers meaning on the objectives."[12]

Tutoring makes provisions for modeling, coaching, and scaffolding, and reciprocal teaching. Again, Murray points to research by cognitive scientists that "when teachers and students exchange places comprehension of the problem is greatly increased. Basically, the method is thought to be successful because the student gradually, but solidly, devel-

ops a new conceptual model for the skill and couples it with specific strategies that are used by others they consider successful."[13] This cooperative learning feature of novice-expert teaching leads students to integrate the multiple roles that the succesful problem solver inevitably masters. *How each team included their faculty and practioner advisors varied in the AAH Charrette. The Utah team all worked together. Advising came through the tutorial act of sharing what was known and what had proven successful in the past.*

5 CONCLUSION

Overall, cooperative learning situations, like the AAH Charrette -- between students and students and between students and facutly and between students and professionals -- may be the essential means by which the mind constructs knowledge and invents meaning. Perhaps if educational environments can grasp the reasons behind some of these marketplace strategies *teaching* strategies such as cooperative learning will be guided to the core of education, namely the development of the student's mind and the student's ability to use it well.

NOTES

[1] Johnson, Roger T., and David W. Johnson. "An Overview of Cooperative Learning." In *Creativity and Collaborative Learning: A Practical Guide to Empowering Students and Teachers*, edited by Jacqueline S. Thousand, Richard A. Villa, and Ann I. Nevin, 31-32. Baltimore: Paul H. Brookes Publishing Co., Inc., 1994.

[2] Reich, Robert B. "Entrepreneurship Reconsidered: The Team as Hero." In *Entrepreneurship: Creativity at Work*, 127. A Harvard Business Review Paperback No. 90076, 1991.

[3] Ibid.

[4] Ibid., 128.

[5] Ibid., 130.

[6] Weisberg, Robert W. *Creativity: Beyond the Myth of Genius*, 224. New York: W. H. Freeman and Company, 1993.

[7] Ibid., 127.

[8] Ibid., 129.

[9] Reich, 131.

[10] Ibid., 131-132.

[11] Murray, Frank B. "Why Understanding the Theoretical Basis of Cooperative Learning Enhances Teaching Success." In *Creativity and Collaborative Learning*, edited by Thousand, et. al., 9.

[12] Ibid.

[13] Ibid., 10.