Looking for the Real World
Balancing Expectation and Inspiration in Design Collaborations

Thomas Garvey, Ph.D.

Carleton University School of Industrial Design
Ottawa, Canada, garvey@ccs.carleton.ca

Abstract: This paper considers the nature of design collaborations that are carried out within a university program of design education and which involve students with external organizations. Priorities considered important in providing relevant design education are outlined along with some of the differing perceptions that exist on what can be expected from such collaborations. In particular the notion that students are to be trained primarily for entrance into the real world of professional practice is examined and the important contributions they can make by bringing a fresh perspective for future possibilities is discussed. Three sample collaborations, to design a patient room prototype, forest firefighting equipment, and a ski hill to invigorate a town, are presented with an identification of some of the characteristics of each that contributed to success. Image collages of the collaborative process and project outcomes are included and provide reference to the scope of the projects undertaken.

Key words: Collaboration in design education, design case studies, experiential and applied learning, student aspirations.

1. Introduction
The last few decades have seen an increase in the recognition of design as a value within organizations that can fundamentally affect success or failure, and stimulate economies [2, 3, 7]. At the same time we better understand the uniqueness of the how designers know and think about the world [1]. So it is no surprise that the contact between design schools and external organizations, that provide or rely on design services, is increasing. Exciting and meaningful experiences are usual outcomes for students when they are presented with opportunities of conducting design research and projects with external organizations. It is equally usual that one of a number of challenges will be encountered as a result of different understandings of that connection between research and practice, or more often between the expectations of an educational environment and the world of practice.

One of these challenges revolves around the idea of the real world. This term that can be found throughout documents on education and often as part of marketing efforts to attract prospective students. The implication is that there is a world other than the real that exists somewhere in the halls of academic institutions. Although the intentions of the use of the term real world are clear and usually well meaning, it can also be unintentionally limiting and even restrictive to the full development of young designers.
The following sections will outline how design education balances priorities in preparing young people for the design professions, and should balance expectations and inspirations in collaborations with external organizations. Then samples of successful collaborations will highlight how participants have benefitted from a productive balance.

2. Balancing Priorities in Providing Relevant Design Education

Carleton University’s School of Industrial Design has established a reputation as a premiere program in Canada and internationally, in part because of its broad based program of studies that require students to combine design studies with courses in economics, mathematics, physics, and psychology, and partly because of the rigor of expectations that students understand the processes by which ideas become manufactured or produced realities. Graduates are highly sought after and companies offering to give students real world projects to work on approach the school with increasing regularity. Often however they are actually proposing opportunities for students to work on projects that are part of their professional portfolio in the belief that the experience alone will benefit the student’s transition eventually into the world of practice. In such cases, the experience is proposed as sufficient compensation. Also increasingly, other companies and organizations are coming to see the much greater value of collaborating and the richer complexity of the experience.

The design education that is delivered in a university design school results from balancing three important forces: the combination of university agenda and curriculum of the school, the expectations of industry into which successful students will enter and be expected to perform, and the personal aspirations of each unique student. Since the clarity of definition of each progressively decreases, the last can at times be less integrated.

The agenda of the university and the curriculum of the school, through an ongoing series of reviews and articulations, can be quite definitive. The academic rules and requirements, the structure of courses and content, and the flow-through of knowledge and skill objectives, once determined, are usually easy to monitor and integrate into teaching. As for the expectations of industry, the first priority must be providing students with solid, fundamental, and relevant design knowledge and skills. Relevance can be maintained in part by working closely with practicing professionals and incorporating their knowledge and experience. Internships offer valuable experiences to the student but these presuppose an already present skill level and usually occur near the end of a student’s education. Prior to that industry sponsored projects within the school curriculum may be seen as valuable.

Educating students requires recognizing that each has individually unique goals, and acceptance to the program indicates that their goals are at least compatible with those of the program. The aim then becomes one of empowerment and facilitating their learning of what they want, and by extension need, to know. Other research [10] also recognizes the importance of seeing students more individually and explores customized and negotiated learning outcomes in order to create direct links between the knowledge a student wants and the learning outcomes they will be assessed on. Every individual wants to make a worthwhile contribution. In this respect design education must be inclusive rather than exclusive of the varied backgrounds and aspirations of students.
who have decided for themselves that designing is one way in which they can contribute. This must become an essential part of involving students in external collaborations.

3. Balancing Expectation and Inspiration in Design Collaborations

Design collaborations can bring together a rich variety of combinations of people and resources. The success of collaborations with external organizations ultimately comes down to the notion of value and whether expectations are met. There needs to be an understanding of the value of exchanges that are made. Despite the wide range of collaboration scenarios that are conceivable it is possible to identify a few values common to most: values for the student, external organization and the school.

Beginning with the student, values include the experience of working in realistic work scenarios and the potential of further job opportunities, and an increase in the credibility of their design portfolios. More importantly they will in some way be able to express unique ideas that reflect their individual aspirations about what the products and environments, and lifestyles, of their own future might be like.

For the external organization values include access to young fresh ideas that by extension can often rejuvenate employees, getting insight into and potentially influencing the program of study, and exposure to top students in what can be seen as extended job interviews to evaluate future prospects. More importantly they benefit significantly since the experience is a natural research and development center without the overhead. Finally, they’re going to be getting people coming out of school who have some relationship to what they really need.

The values for the school include opportunities to promote students, gaining key insight into changes in the industry, unofficial advisory committees, enhanced credibility and unique opportunities for public relations, and externalization of the objectives of the program. The potential for research agreements that are created to support the collaborations or that evolve naturally out of successful collaborations are tremendously important.

The value for all parties may seem obvious but the key to success is a certain flexibility that is required in collaborations with students in an educational environment. It is essential to acknowledge that the real world as it exists is not the only one they imagine, and they can envision new worlds that they can contribute to making real. Flexibility also requires understanding that the results of their explorations are not predictable and not always successful. There is always the danger of educating a student to fit only into industry’s image but this can be avoided by teaching them at the same time that they’re trying to have a balanced relationship with industry. Optimally, the student comes out feeling confident as an individual and industry gets a fresh look at what they’re trying to sell [8]. Industry itself often fails to exploit opportunities sufficiently by focusing too much on existing problems [6].

It has been found that the best way to ensure the communication of values and the integrity of the collaborative process internally is for the school to have direct contact with the students and external organization but for the relationship between the two to always be mediated.
4. Patient Room Prototype Project (PRPP)

In January 2003, a team of industrial design, architecture and fine art students from Carleton University and Clemson University (United States) were connected across programs of undergraduate and graduate studies, design disciplines, and countries to begin a collaborative process resulting in the design of an improved patient room prototype. It was the beginning of a process and series of studio projects that continues today, and which has now involved over 40 students. Supported by faculty members from both universities, and professionals from the fields of nursing and hospital administration, the student work has garnered awards in both countries and has been presented internationally at conferences and exhibits. Awards include 1st place in the student category of the 2004 Healthcare Environment Awards Competition sponsored by the US-based Contract Magazine and again 1st place in the same 2006 competition in the professional conceptual category.

Each year began with research trips to selected healthcare facilities, manufacturers of hospital equipment and healthcare facility design firms. Students interacted with and learned from experienced healthcare design professionals, gaining knowledge of critical design issues centering on patient control and comfort, staff and guest experiences, and functional room efficiency. Then through a series of regular design charrettes held at both universities, and regular virtual on-line meetings in the intervals, the teams were able to develop fully comprehensive proposals for building and testing.

The first year was conducted with internal funding. The subsequent years were supported by significant sponsorship from the Spartanburg Regional Healthcare System (SRHS) of Spartanburg, South Carolina. Carried out over a multi-year period, this collaborative service-learning-research project led to the design and full-scale mock-up of a patient room prototype built on the Clemson University campus followed by a series of fully constructed occupant rooms at the SRHS Pelham Campus Hospital.

Unique characteristics of the collaboration that contributed to success included:
- Undergraduate students working alongside graduate students in mutually supportive ways
- Overlap in domain knowledge (industrial design and architecture) resulting in harmonious overall results
- Understanding obtained during the tours of architectural firms, healthcare facilities and manufacturers
- Physical and virtual meetings, and focused charrettes as milestones along a time path
• Access to technologies that enabled networking, sharing, and storage of ongoing project files
• Significant financial resources for research travel and production of multiple full-scale prototypes
• Abundant physical facilities to house students and provide ongoing working spaces

5. Ontario Ministry of Natural Resources (OMNR)

For five years Carleton University students have been actively collaborating with the Ontario Ministry of Natural Resources Aviation and Forest Fire Management Branch (OMNR/AFFMB) but for closer to ten years the idea that collaboration was possible has been there. This resulted from the tenacity of an industrial design graduate who became a firefighter and her conviction that design could significantly improve firefighting in the province and potentially save firefighter lives. In the summer of 2004 conversations between senior researchers in the ministry and the school led to the first collaborative research agreement for projects to begin in September 2004.

In the first year, three students focused on initial attack teams and the design of three pieces of equipment that, with the operating personnel, are deployed by helicopter in the early stages of a fire. Two of the designs were considered sufficiently developed to be prototyped and field-tested across the province. It was an auspicious start to what has continued to be a flourishing collaboration now in its fourth edition. Since then, in total 12 product categories have been developed including hose, pump, and chainsaw carrying packs, clothing, protective helmets with embedded communications systems, camping gear, raincoats, battery packs and sprinkler systems for protecting homes. Currently one student project is being considered for manufacture.
The relationship is expanding positively. Students between their third and fourth year of study must normally consider a variety of project offerings for their final capstone project in the fourth year of study. This past summer the opportunity was expanded to include summer internships at the OMNR product development facilities for a third year student contemplating involvement with the OMNR in their fourth year and at the point of this writing student interest in the project for the coming year has been encouraging.

Unique characteristics of the collaboration that contributed to success included:

- Energetic support from project sponsors throughout the government agency
- Technically capable design students interested in and knowledgeable about production methods
- Multiple research trips at various stages of the project for data gathering and sharing ideas
- Access to Ministry equipment warehouses and product development facilities personnel
- Financial resources for research travel and production of a range of functional prototypes
- Opportunities for field testing prototypes with professional firefighters

6. Batawa Project

The Batawa Project was a 6-week pilot project for a larger collaborative interdisciplinary effort between Carleton University and the Batawa Development Corporation (BDC) to breathe new life into the declining manufacturing town of Batawa in southern Ontario, Canada. The project was built on the foundation of Mrs. Sonja Bata’s dream and work to introduce sustainable development that recognizes the town’s proud history and community spirit. Starting in May 2009, a summer studio was established that brought together 16 students and 3 faculty members from architecture with 10 students and 2 faculty members from industrial design. The studio was organized as an immersive process that kept students involved for eight or more hours per day with lectures most mornings, and research and design reviews every few days. The industrial design students focused on the redesign of the Batawa Ski Hill and surrounding area to transform it into a year-round facility that could be a major destination for surrounding communities and a significant source of income for the town.
The process began with research activities that allowed students to gather as much relevant information as possible. They resided periodically in the town and set up a design studio in the ski hill chalet. They spent many hours in consultation with residents both ongoing and at events organized to bring the community together to see first initial and then more final concepts, and to identify common issues of importance. BDC executive members also visited and advised students in their university studios and this kept everyone focused on shared project objectives.

Finally students presented to Mrs. Bata and the BDC their ideas for sport and recreational facilities, community gathering spaces, hill top structures for education and enjoyment of the natural surroundings, memorial and educational trails, and signage and wayfinding systems to bring it all together. The presentations were followed by media events attended by the university president and deans, and the project was the focus of a range of local and national news programs on television and in print.

Unique characteristics of the collaboration that contributed to success included:
- Wide variety of student participants with varied educational development, skills, and cultural backgrounds
- Energetic support from project sponsors and immediate access to needs for ongoing background information
- Access to enthusiastic and interested community members of all ages
- Abundant physical facilities to house students and provide ongoing working spaces
- Financial resources for research travel, production of deliverables, and student scholarships
- Noted and highly respected public figure to draw media and other support

Figure 5. Batawa Project Image Collage 1
7. Findings and Discussion

Although unique in many ways the successful collaborations outlined all benefited from some shared characteristics:

- Open-minded individuals within organizations recognizing the value of student ideas and that positive results sometimes occur over multiple projects and not with every interaction
- Support persons within the organizations that were committed to providing ongoing support and time
- Exchanges of key information at all stages in the project process
- Access to end-users and key people in the line from idea through implementation
- Sufficient flexibility in project definition to allow individual students to choose some project outcomes
- Teams of students large enough to provide internal structure but with individual students diverse enough to foster variability in potential project outcomes
- A research component of the project large enough to sustain the collaboration over successive iterations
- Provision of financial resources and access to physical facilities and technology

We recognized early in the process that when dealing with teams, and in particular large teams, we are relying on groups of individuals with often a wide range of different expertise and knowledge. Some research [4] suggests that personal characteristics and personal creativity modes could be used to customize design education and to manage design teams and this might inform our process going forward. It would also be interesting to see how our experiences can be interpreted through other research in the field [5] that seeks to visualize similar collaborations as parts of a learning ecosystem complete with living (people) and nonliving (equipment, resources and physical outcomes) entities that can be visualized as interactions of the wholeness of the system of learning. It is likely that future project structures might be informed by research [9] that suggests entirely new scales of collaboration are possible and beneficial.

One key issue that was not included but which is central to negotiations for any collaboration between students and external organizations is intellectual property. It would be interesting, in combination with professional ethics, to outline in a subsequent paper some variations that have been found to be suitable depending on the
type of external organization and the nature of the projects. It is always the aim to protect the students’ intellectual property and to inform them on how to negotiate any release.

8. Conclusions

Based on experience to date across a wide range of collaborations, and in particular those cited in this paper, we can conclude that the models we are operating with have great value. We know that given opportunities and sufficient support, students quite naturally express new ideas that are both visionary yet implementable, and the future real world can be found in those ideas. When these collaborations have a structure, which provides some protection and mediation and which incorporates the values outlined above, the results have proven consistently beyond expectation. Collaborative research and design projects with external organizations will continue to be important components of the design education curriculum and opportunities likely exist that we currently can’t envision.

9. Citations